

AMENDED REPORT

Capacitor Bank Study report for NRPC



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Sl No.		Page No.
1.0	Introduction	1
2.0	Methodology-	1
	<i>A) Northern grid network upgration for year 2017-18</i>	1
	<i>B) Load Projection for year 2017-18</i>	2
	<i>C) Recommendation Criteria</i>	3
3.0	Simulation Results for base case file for Sept. 2016 Northern Grid network	3
4.0	Simulation Results for 2017-18 Upgraded Northern Network	7
5.0	Recommendation for year 2017-18	13
6.0	References	14
List of Tables		
Table.1	Planned Generation for year 2017-18	1
Table.2	Load projection in northern Grid	2
Table.3	Voltage limits as per IEGC	3
Table.4	Summary of load flow for base case PSSE file - Northern grid	4
Table.5	CTU/STU Power flow exchange in Northern Grid	5
Table.6	Inter- regional power import-base case	7
Table.7	Summary of load flow for base case PSSE file - Upgraded Northern Network	7
Table.8	Summary of load flow for base case PSSE file - Upgraded Northern Network-with recommended capacitor banks	9
Table.9	Inter CTU/STU Power flow exchange in Upgraded Northern Network	10
Table.10	Inter-regional flow for Year 2017-18	13
Table.11	Recommended Compensation for the northern grid	14
Annexures		
Annexure-1	New substations in the northern region for year 2017-18-Details	15
Annexure-2	Detailed flow of power exchange from each STU-Base case (Sep 2016)	23
Annexure-3	Detailed flow of power exchange from each STU-New case (Year 2017-18)	36
Annexure-4	Bus voltage comparison with recommended capacitor banks, existing capacitor bank and recommended capacitor bank details on each state	55
Annexure – 4-(a).-1	Punjab-Voltage profile	55

Annexure –4-(a).-2	Punjab-Existing capacitor bank details	60
Annexure –4-(a).-3	Punjab-recommended capacitor bank details	63
Annexure –4-(b).-1	Haryana-Voltage profile	65
Annexure –4-(b).-2	Haryana -Existing capacitor bank details	72
Annexure –4-(b).-3	Haryana -recommended capacitor bank details	72
Annexure –4-(c).-1	Rajasthan-Voltage profile	74
Annexure –4-(c).-2	Rajasthan -Existing capacitor bank details	88
Annexure –4-(c).-3	Rajasthan -recommended capacitor bank details	97
Annexure –4-(d).-1	Uttar Pradesh -Voltage profile	100
Annexure –4-(d).-2	Uttar Pradesh -Existing capacitor bank details	113
Annexure –4-(d).-3	Uttar Pradesh -recommended capacitor bank details	113
Annexure –4-(e).-1	Uttarakhand -Voltage profile	117
Annexure –4-(e).-2	Uttarakhand -Existing capacitor bank details	119
Annexure –4-(e).-3	Uttarakhand -recommended capacitor bank details	119
Annexure –4-(f).-1	JAMMU & KASHMIRE -Voltage profile	120
Annexure –4-(f).-2	JAMMU & KASHMIRE -Existing capacitor bank details	121
Annexure –4-(f).-3	JAMMU & KASHMIRE -recommended capacitor bank details	121
Annexure – 4-(g).-1	Himachal Pradesh -Voltage profile	123
Annexure –4-(g).-2	Himachal Pradesh -Existing capacitor bank details	124
Annexure –4-(g).-3	Himachal Pradesh -recommended capacitor bank details	125

1.0 Introduction

With reference to the letter NPRC/OPN/104/1/2016/11885 dated 29th Dec. 2016, Northern Region Power Committee (NRPC) has utilized the services of Power Systems Division (PSD) of Central Power Research Institute (CPRI) for carrying out the Capacitor Bank requirement for the Northern region of Indian Grid for years 2017-18 & 2018-19. Northern region consists of Central Transmission utilities (CTU) (Power Grid/POSOCO) and state Transmission utilities (STU) of Uttar Pradesh, Rajasthan, Haryana, Punjab, Delhi, Uttarakhand, Himachal Pradesh and Jammu & Kashmir.

As per the information provided by NRPC, approximate demand of the northern region is 52,000 MW against a power generation of 46,000 MW in September 2016. It is also learned from NRPC that, voltage profile in most of Northern region was extremely poor, especially during winter and summer periods. Particularly in summer, the voltage profile in Uttar Pradesh and Rajasthan is extremely poor, while JK & Punjab are experiencing same problem in winter period. This poor transmission voltage profile of state utilities, results in heavy drawl of reactive power over Interstate transmission line (ISTS) and inter-regional power transmission lines of Central utility.

In this context, a study has been carried out for recommending of required capacitor bank for years 2017-18 & 2018-19 at 132 kV & 220 kV substations of the NRPC state utilities, to minimize the exchange of the reactive power on interstate transmission lines. This will subsequently relieve inter-regional power transmission lines from heavy exchange of reactive power during extreme loading conditions in the Northern Grid.

2.0 Methodology

The capacitor bank study for the Northern region for the years 2017-18 & 2018-19 is carried out as per the following procedure.

A) Northern Grid network upgradation for year 2017-18

NRPC had provided the PSSE data file for Indian grid for Sept.2016. Planned generation for year 2016-17 & 2017-18, network data (Transmission lines & transformers) for all concerned state utilities was also provided to CPRI. Based on the provided data, CPRI upgraded the PSSE data file in consultation with NRPC/state transmission utilities. The planned generation for year 2017-18 is listed in Table.1 below and the same is modeled in the updated simulation PSSE file for the study.

Table.1 Planned Generation for year 2017-18

Sl. no	State	Location	Type Hydro/ Thermal	Capacity of Each Unit (Mw)	Available Generation of Each Unit (MW)
1	Uttarakhand	KHATIMA	Hydro	13.8	4.9
			Hydro	13.8	4.8
2	Uttar Pradesh	RIHAND	Hydro	50	47
			Hydro	50	47
			Hydro	50	47
		BARA	Thermal	660	348
			Thermal	660	348
		MEJA STPP	Thermal	660	578.7
			Thermal	660	578.7
		UNCHA HAR	Thermal	210	192
Thermal	660		457.6		
3	Rajasthan	CHABRA	Thermal	250	209.5
			Thermal	250	91.9
			Thermal	660	578.7
			Thermal	660	578.7
		SURATGARH	Thermal	660	578.7
			Thermal	660	578.7
Total					5270

B) Load Projection for year 2017-18

In consultation with NRPC, CPRI has scaled up the loads at all 220 kV and 132 kV substations in all concerned state utilities. Different scaling factors are adopted for different state utilities based upon their past annual load growth. The percentage increase in load for each state utility is listed in Table.2 below. Newly planned substations for the year 2017-18 are also modeled and their aggregate load is listed in last row of Table 2.

Table 2: Load Projection in Northern Grid

AREA Code in PSSE	AREA NAME	Load (Sept 2016)		Load % increment	Load (2017-18)	
		P (MW)	Q (MVAr)		P (MW)	Q(MVAr)
1001	PUNJAB	9402.1	3120.4	7	10022.1	3324.6
1002	HARYANA	7797.8	2588.7	7	8316.9	2762.3
1003	RAJASTHA	10026.5	3328.6	8	10781.7	3578.6
1004	DELHI	4844.1	376.9	8	5206	405
1005	UTTARPRA	15230	5069.6	8	16417.4	5430.3
1006	UTTARAKH	1687.8	560.3	6	1797.4	592.9
1007	HIMACHAL	1172.6	389.3	6	1236.9	410.6
1008	JAMUKASH	2246.2	735.7	6	2411.9	793.1
1009	CHANDIGA	286.5	95.1	7	305	101.3
	*New stations	0	0		1888.9	746.8
	TOTAL	52693.6	16264.5		58384.2	18145.4

The detailed breakup of new substations added in the Northern region for year 2017-18 along with the load at these substations is given in Annexure-1.

C) Recommendation Criteria

As per the Indian Electricity Grid Code regulation 2010, Reactive Power compensation and/or other facilities, shall be provided by STUs, and users connected to ISTS as far as possible in the low voltage systems close to the load points thereby avoiding the need for exchange of Reactive Power to/from ISTS and to maintain ISTS voltage within the specified range listed in Table 3 below.

Table 3: Voltage limits as per IEGC

Voltage level in RMS (kV)		
Nominal Voltage	Minimum Voltage	Maximum Voltage
765	728	800
400	380	420
220	198	245
132	122	145

Also as per IEGC guide lines, STUs shall provide adequate reactive compensation to bring power factor as close to unity at 132 kV and 220 kV voltage levels. Reactive power flow through 400/220kV or 400/132kV or 220/132 (or 66) kV ICTs, shall be minimal.

In this study, the above criteria are adopted for recommendation of capacitor banks at outgoing of 132 kV and 220 kV substations of STUs to maintain the bus voltage within IEGC limits (5% variation from the nominal bus voltage) & minimized flow of reactive power exchange on the ISTS & Inter Regional lines. Highly sensitive buses are identified for recommending location for installation of new capacitor banks.

3.0 Simulation Results - Base Case (Sept. 2016)

The active and reactive power flow in the northern region in respect of different STU & CTU's is listed in Table. 4 below. It consists of various power systems elements which are contributing to the generation/absorption of the reactive power in the grid. The transformers, transmission lines, shunt reactors and loads are main sink centers, while generating stations, line/cable and shunt capacitor bank are source for the reactive power. The total reactive power demand in the northern region is 53676.9 MVAR which consists of 16269.6 MVAR load demand, line shunt absorption is 13565.6 MVAR and network reactive loss is 23841.7 MVAR. This huge reactive power is met from Generating station (8333.8 MVAR), line charging (45029 MVAR), bus shunt capacitor/inductor (-1390.1 MVAR) and total is 547722.3 MVAR. A deficient of 1704.2 MVAR is imported from other regions of the grid. This huge exchange of reactive power flow on ISTS, STU and inter regional lines cause artificial loading of lines, high system loss, poor bus voltages and over loading of power components.

Table 4. Summary of load flow for base case - Northern grid

Utility	Generation		Load		Shunt Capacitor (-cap/+ind.)	Line Absorption (Inductive)	Line Charging (capacitive)	Losses		Tie-Line Flow (- import/+export)	
	P	Q	P	Q	Q	Q	Q	P	Q	P	Q
	MW	MVAR	MW	MVAR	MVAR	MVAR	MVAR	MW	MVAR	MW	MVAR
PUNJAB	5466	782.2	9402.1	3120.4	-1291.6	0	2085.8	124.5	1613.8	-4060.6	-574.6
HARYANA	2610	1041.8	7797.8	2588.7	-54.5	-4.8	1449.4	94.6	1379.4	-5284.3	-1417.6
RAJASTHA	6332.6	1124	10026.5	3328.6	47.4	2468.7	7120.3	433.7	3444.7	-4127.6	-1045.1
DELHI	962	373	4844.1	376.9	0	0	468.1	28	711	-3910.1	-246.7
UTTARPRA	8614.2	2247.9	15230	5069.6	170.5	1175.4	5155.5	610.8	5998.2	-7226.6	-5010.4
UTTARAKH	810	207.6	1687.8	560.3	0	0	502.4	63.9	495.1	-941.7	-345.4
HIMACHAL	815.5	-158.1	1172.6	389.3	-611.6	0	234.3	47.3	224.4	-404.5	74.2
JAMUKASH	865.9	253.4	2246.2	735.7	0	0	123.2	25.5	313.3	-1405.8	-672.5
CHANDIGA	0	0	286.5	95.1	0	0	3.4	1.6	24.5	-288.1	-116.2
NR_ISTS_PUN	0	0	0	0	767.8	1033.5	3082.1	19.9	262.3	-19.9	1018.5
NR_ISTS_HAR	0	0	0	0	656.6	771	3297.7	30.9	409.3	-30.9	1460.7
NR_ISTS_RAJ	0	0	0	0	-150.7	545.5	1800.3	43.5	533.6	-43.6	871.9
NR_ISTS_DEL	0	0	0	0	277.5	934.4	1182.7	7	149.3	-7	-178.5
NR_ISTS_UP	0	0	0	0	2092.8	6060.6	14146.7	195.1	3918.5	-195.2	2074.8
NR_ISTS_UTT	0	0	0	0	0	0	162.8	0.3	4.6	-0.3	158.1
NR_ISTS_HP	0	0	0	0	317.2	140.4	850.5	18.5	232.7	-18.5	160.2
NR_ISTS_JK	0	0	0	0	129.7	169.9	587.2	17	219.1	-17	68.5
RAILWAYS	0	0	0	0	0	0	0		0	0	0
NRIST-BB	0	0	0	0	0	0	381.2	29.8	225.9	-29.8	155.4
NR_ISTS	0	0	0	0	-1164.8	45.4	441.1	225.8	2918.2	-225.8	-1357.6
SINGRAUL	1372.5	199.4	0	0	48.1	119	301.6	9	100.7	1363.5	233.2
RIHAND-G	2745.5	115.2	0	0	77	0	0		0	2745.5	38.2
DADRI_C	576.4	229	0	0	0	0	0	1.5	30.8	574.9	198.2
DADR-NCR	896.7	35.3	0	0	0	0	145.1	1.4	15.5	895.3	164.9
UNCHAHAR	768.6	187.3	0	0	0	0	115.2	7.3	37	761.3	265.5
IGSTPS	915	-49.8	0	0	0	0	0		0	915	-49.8
SHRE_CEM	274.5	180	0	0	78.5	0	151.6	1.2	13.5	273.3	239.6
DADRI-G	378.9	152.7	0	0	0	0	0	1	20	377.8	132.7
ANTA	235	198.4	0	0	0	0	117.4	6	32.6	229	283.1
AURAIYA	321.7	199	0	0	0	0	46.2	14	75.3	307.7	169.9
NAPS	201.3	132	0	0	0	0	4	0.2	0.8	201.1	135.2
RAPS-B	201.3	131.8	0	0	0	0	39.3	8.8	46.9	192.5	124.2
RAPS-C	402.6	212.2	0	0	0	87.2	225.1	4.1	45.7	398.5	304.4
CHAMER-1	468	-49.1	0	0	0	0	21.2	0	0.3	468	-28.2
CHAMER-2	305	119.6	0	0	0	0	0	0	0	305	119.6
CHAMER-3	234	-16.7	0	0	0	0	73.9	0.1	0.7	233.9	56.5
BAIRASIU	183	-54	0	0	0	0	0	0	0	183	-54
SALAL	669	61.4	0	0	0	0	30.4	1.3	7	667.7	84.8
TANAKPUR	94	-9.7	0	0	0	0	0	0	0	94	-9.7
URI-1	349	-62.8	0	0	0	0	0	0	0	349	-62.8
URI-2	179	108	0	0	0	0	59.5	0.6	6.8	178.4	160.6
DHAULIGA	286	42	0	0	0	19.5	46.7	3.1	34.4	282.9	34.8
DULHASTI	401	30.2	0	0	0	0	0	0	0	401	30.2
SEWA-II	0	0	0	0	0	0	1	0.1	0.2	-0.1	0.8
JHAKRI	1624	-36.7	0	0	0	0	0	0	0	1624	-36.7
RAMPUR HEP	375	163.4	0	0	0	0	30.5	0.5	6.7	374.5	187.2
TEHRI	807	356.3	0	0	0	0	34.5	0.7	15.2	806.3	375.6
KOTESWAR	102	-9.4	0	0	0	0	2.9	0	0	102	-6.5
BHAKRA	1447	412.4	9.1	5	0	0	1.1	0.6	64.3	1437.3	344.2
DEHAR	825	-187.3	0	0	0	0	0.2	1.4	11.9	823.6	-199.1
PONG	384	16.5	0	0	0	0	41.7	3.6	19.2	380.4	39
ADHYDRO	108	-17.8	0	0	0	0	24.8	2.1	11.1	105.9	-4.2
KARCHAMW	1000	-42.2	0	0	0	0	243.4	5.5	93.5	994.5	107.6
MALAN-II	109	-2.9	0	0	0	0	0	0	0	109	-2.9
KOLDAM	846	-145.4	0	0	0	0	35.9	0	0.7	846	-110.2

PARBATI-3	397	-136.3	0	0	0	0	0	0	0	397	-136.3
PARBATI-2	0	0	0	0	0	0	0	0	0	0	0
SORANG	0	0	0	0	0	0	161.1	4.2	72.7	-4.2	88.4
Total	46958.2	8333.8	52702.6	16269.6	1390.1	13565.6	45029	2096.1	23841.7	-7842.6	-1704.2

The Exchange of active and reactive power among different power transmission & generation utilities in northern grid is mentioned in Table 5. From Table 5, it is seen that reactive power is imported by all the STUs. Major importer of reactive power are Rajasthan (1045.1 MVAR) and Uttar Pradesh (5010.4 MVAR). Similarly the reactive power import for other states is also listed in Table.5. However, the detailed flow of power exchange from each STU to its connected transmission lines is provided in Annexure-2

Table.5. CTU/STU Power flow exchange in Northern Grid.

From (- import/+export)	To	MW	MVAR
Rajasthan	1002 HARYANA	-45.9	9.3
	1004 DELHI	-15.1	-31.6
	1005 UTTARPRA	-134.6	-18.6
	1021 NR ISTS HAR	534.7	-181.9
	1022 NR ISTS RAJ	-2230.9	-706.1
	1024 NR ISTS UP	-310.7	344.7
	1041 NRIST-BB	-368.6	-43
	1106 SHRE CEM	-253.8	-169.5
	1151 ANTA	-191.9	-261.4
	1155 RAPS-B	-229.6	-145.9
	3014 MP	51.7	-17.4
	3035 WR ISTS MP	-933	176.2
	Total	-4127.6	-1045.1
Uttar Pradesh	1003 RAJASTHA	134.6	18.6
	1004 DELHI	-0.3	-1.1
	1006 UTTARAKH	-121	-32.2
	1024 NR ISTS UP	-5096.4	-4379.6
	1025 NR ISTS UTT	170	3.3
	1050 NR ISTS	-773.5	-356.1
	1100 SINGRAUL	-382.6	188
	1103 DADR-NCR	-385.8	-193.5
	1104 UNCHAHAR	-163.7	-77.3
	1152 AURAIYA	-251.1	-125.7
	1153 NAPS	-201.1	-135.2
	1208 DHAULIGA	-110.3	-8.6
	2051 ER ISTS BIH	-43.3	65.7
	Total	-7226.6	-5010.4
Uttrakhand	1005 UTTARPRA	121	32.2
	1007 HIMACHAL	-34.4	-27.2
	1024 NR ISTS UP	-818.6	-250.6
	1025 NR ISTS UTT	56.4	73.3
	1050 NR ISTS	-266	-173.1

	Total	-941.7	-345.4
From	To	MW	MVAR
Delhi	1002 HARYANA	-361.8	-85
	1003 RAJASTHA	15.1	31.6
	1005 UTTARPRA	0.3	1.1
	1021 NR ISTS HAR	-373	-189.7
	1023 NR ISTS DEL	-1143.2	92.9
	1041 NRIST-BB	0.3	2.2
	1050 NR ISTS	-1588.6	-30.4
	1103 DADR-NCR	-459.3	-69.5
	Total	-3910.1	-246.7
From	To	MW	MVAR
Haryana	1001 PUNJAB	-46.8	-2
	1003 RAJASTHA	45.9	-9.3
	1004 DELHI	361.8	85
	1007 HIMACHAL	-104.5	-33.8
	1009 CHANDIGA	15.1	0.6
	1021 NR ISTS HAR	-2310.7	-1313.3
	1022 NR ISTS RAJ	81.7	-14.1
	1041 NRIST-BB	-842.3	-372.1
	1050 NR ISTS	-1848.2	255.8
	1103 DADR-NCR	-146	-52.1
	1105 IGSTPS	-490.2	37.7
Total	-5284.3	-1417.6	
From	To	MW	MVAR
J &K	1027 NR ISTS JK	-92.1	-183.2
	1050 NR ISTS	-1313.7	-488.4
	1210 SEWA-II	0.1	-0.8
	Total	-1405.8	-672.5
	From Chandigarh to	MW	MVAR
	1001 PUNJAB	-102	-41.6
	1002 HARYANA	-15.1	-0.6
	1026 NR ISTS HP	-171	-74
Total	-288.1	-116.2	
From	To	MW	MVAR
Punjab	HARYANA (1002)	46.8	2
	HIMACHAL (1007)	-40.5	7.9
	CHANDIGA (1009)	102	41.6
	NR-ISTS-PUN (1020)	-2469.3	-539.4
	NR-ISTS-HAR (1021)	-13.6	42.5
	NR-ISTS-HP (1026)	-109.3	11.3
	NR-ISTS-JK (1027)	-74.4	71.5
	NR-ISTS-BB(1041)	-701.7	-211.8
	NR-ISTS(1050)	-100.6	98.7
	BHAKRA 1215)	-506.3	-83.9
	PONG 1217)	-193.7	-15
	Total	-4060.6	-574.6

The cumulative import of reactive power from the other regions is 1704.2 MVAR and is listed in Table 6 with brief details.

Table 6. Inter- Regional power import

FROM AREA	TO AREA	Base case flows Sept. 2016	
		P (MW)	Q(MVAr)
UP(1005)	ISTS_Bihar(2051)	-43	66
ISTS_UP(1024)	ISTS_Bihar(2051)	-1154	-697
ISTS_UP(1024)	BARH(2105)	-403	215
Rajasthan(1003)	MP(3014)	52	-17
NR_ISTS_RAJ(1022)	Gujarat(3013)	-32	-66
NR_ISTS(1050)	Gujarat(3013)	-2509	-1350
AURAIYA(1152)	MP(3014)	61	-14
ISTS_UP(1024)	VINDHYACHA(3020)	501	199
Rajasthan(1003)	WR_ISTS_MP(3035)	-933	176
NR_ISTS_UP (1024)	WR_ISTS_MP(3035)	-2882	-27
NR_ISTS_UP (1024)	NER-ISTS(5001)	-501	-189
Total		-7843	-1704

4.0 Simulation Results for 2017-18 Updated Northern Network

The network is updated as discussed in section-2 above, for year 2017-18. Newly planned substations together with increased load projection for the existing substations results in increased reactive power demand. Additional generation for year 2017-18, will supply the increased load for year 2017-18 and also result in import of active & reactive power over the inter regional tie lines. Similarly, additional reactive power requirement can be met from the generating units in NRPC and inter regional tie lines flow. But transportation of huge reactive power over the ISTS lines results in artificial loading of the lines. The power flow balance for updated file is listed in Table 7 (without capacitor banks) and 8 (with recommended capacitor banks) . Flow of active and reactive power from one CTU/STU to another CTU/STU is provided in Table 9. The detailed flow of power exchange for upgraded northern network from each STU to its corresponding to associated transmission lines is provided in Annexure-3.

Table 7 .Summary of load flow for base case - Updated Network (2017-18)

Utility	Generation		Load		Shunt	Line	Line	Losses		Tie-Line Flow	
					Capacitor	Absorption	Charging			(- import/+export)	
					(-cap/+ind.)	(Inductive)	(capacitive)			P	Q
	P	Q	P	Q	Q	Q	Q	P	Q	P	MVAR
	MW	MVAR	MW	MVAR	MVAR	MVAR	MVAR	MW	MVAR	MW	MVAR
Additional Network*	0	0	1887.6	746.3	0	0	72.3	23.3	146	-	-820
PUNJAB	5466	1277.9	1002.1	3324.6	-1282.5	0	2385.5	127.9	1788.7	-4684	-167.2
HARYANA	3767.5	1569	8316.9	2762.3	59.9	0	1555.9	111.8	1610.2	-	1307.5
RAJASTHA	8948.8	1170.6	10759.4	3571.2	46.4	3005.9	8939	481.2	4007.7	-	-521.6
DELHI	962	356.3	5206	405	0	0	465.6	23.9	761.4	-	-344.6
UTTARPRA	10503	3296.6	16386.3	5456.3	579.8	6315.3	9040.5	723.3	6834.2	-	-
										6606.6	6848.4

UTTARAKH	819.6	289.6	1797.4	592.9	0	0	523.7	63	501.7	-1040.8	-281.2
HIMACHAL	815.5	-107.7	1236.9	410.6	-607.5	0	267.1	38.6	228	-460	128.4
JAMUKASH	865.9	336.6	2411.9	793.1	0	0	137.2	32.4	413	-1578.4	-732.3
CHANDIGA	0	0	305	101.3	0	0	3.3	2.1	30.5	-307.1	-128.5
NR_ISTS_PUN	0	0	0	0	739.5	1598.7	3593.6	16.5	218.5	-16.5	1036.9
NR_ISTS_HAR	0	0	0	0	190.7	69.2	2040.8	30.1	376.7	-30.1	1404.3
NR_ISTS_RAJ	0	0	0	0	-137.3	543.3	2161.3	60.6	762.9	-60.6	992.4
NR_ISTS_DEL	0	0	0	0	264	1217.7	1193.6	10.5	232.7	-10.5	-520.8
NR_ISTS_UP	0	0	0	0	1981.1	6497.4	13840.4	223.5	4033.7	-223.6	1328.1
NR_ISTS_UTT	0	0	0	0	0	0	159.4	0.3	4.9	-0.3	154.5
NR_ISTS_HP	0	0	0	0	316	139.2	889.9	20.6	254.4	-20.6	180.2
NR_ISTS_JK	0	0	0	0	128.7	168.9	583.2	21.5	283.7	-21.5	1.9
RAILWAYS	0	0	0	0	0	0	0	0	0	0	0
NRIST-BB	0	0	0	0	0	0	411.9	23.1	195.1	-23.1	216.8
NR_ISTS	0	0	0	0	-1124.5	44	481	226.6	2923	-226.6	-1361.5
SINGRAUL	1372.5	318.3	0	0	48.1	117.1	297.9	11.5	127.7	1361	323.2
RIHAND-G	2745.5	150.8	0	0	77	0	0	0	0	2745.5	73.8
DADRI_C	576.4	276.6	0	0	0	0	0	1.6	32.7	574.8	243.9
DADR-NCR	896.7	588	0	0	0	0	143.6	1.3	14.6	895.4	717
UNCHA HAR	1418.4	354.9	0	0	0	0	113.1	25.8	131.6	1392.6	336.4
IGSTPS	915	375.3	0	0	0	0	0	0	0	915	375.3
SHRE_CEM	274.5	154.9	0	0	78.5	0	150.6	3.6	40.2	270.9	186.8
DADRI-G	378.9	184.4	0	0	0	0	0	1.1	21.3	377.8	163.1
ANTA	235	198.4	0	0	0	0	117.1	7.3	39.6	227.7	275.9
AURAIYA	321.7	199	0	0	0	0	43.5	15.5	82.9	306.2	159.7
NAPS	201.3	132	0	0	0	0	3.9	0.3	1.4	201	134.5
RAPS-B	201.3	118.4	0	0	0	0	39.5	8.1	43.4	193.2	114.6
RAPS-C	402.6	264	4.6	1.5	0	0	79.9	3.5	38.9	394.5	303.4
CHAMER-1	468	-24.2	0	0	0	0	21.2	0	0.3	468	-3.3
CHAMER-2	305	159.5	0	0	0	0	0	0	0	305	159.5
CHAMER-3	234	-16.4	0	0	0	0	73.9	0.1	0.7	233.9	56.7
BAIRASIU	183	-54	0	0	0	0	0	0	0	183	-54
SALAL	669	172.7	0	0	0	0	30.1	1	5.4	668	197.4
TANAKPUR	94	3.1	0	0	0	0	0	0	0	94	3.1
URI-1	349	11.7	0	0	0	0	0	0	0	349	11.7
URI-2	179	108	0	0	0	0	59.1	0.6	7.1	178.4	160.1
DHAULIGA	286	62.1	0	0	0	19.5	46.3	3.1	34.2	282.9	54.8
DULHASTI	401	46.3	0	0	0	0	0	0	0	401	46.3
SEWA-II	0	0	0	0	0	0	0.9	0.1	0.3	-0.1	0.7
JHAKRI	1624	-5.3	0	0	0	0	0	0	0	1624	-5.3
RAMPUR HEP	375	189.2	0	0	0	0	30.5	0.6	8.4	374.4	211.3

TEHRI	807	577.1	0	0	0	0	34.4	0.9	19.4	806.1	592.1
KOTESWAR	102	120	0	0	0	89	126	0.7	12.3	101.3	144.6
BHAKRA	1447	401.5	9.7	5.3	0	0	1.1	0.7	64.7	1436.6	332.5
DEHAR	825	-176.9	0	0	0	0	0.2	5.8	20.3	819.2	-197
PONG	384	26.5	0	0	0	0	56.7	2.7	14.5	381.3	68.7
ADHYDRO	108	-13.5	0	0	0	0	24.7	2.1	11.1	105.9	0.1
KARCHAMW	1000	-10.9	0	0	0	0	242.3	5.1	86.8	994.9	144.6
MALAN-II	109	-2.4	0	0	0	0	0	0	0	109	-2.4
KOLDAM	846	-115.5	0	0	0	0	35.9	0	0.6	846	-80.3
PARBATI-3	397	-92.3	0	0	0	0	0	0	0	397	-92.3
PARBATI-2	0	0	0	0	0	0	0	0	0	0	0
SORANG	0	0	0	0	0	0	160.1	3.9	67.2	-3.9	92.9
Total	53280	12870.3	58343.8	18170.3	1357.8	19825.3	50677.7	2367.8	26534.8	-7431.7	-2340.1

Table 8 .Summary of load flow for base case - Updated Network (2017-18) – with recommended Capacitor banks

Utility	Generation		Load		Shunt Capacitor (-cap/+ind.)	Line Absorption (Inductive)	Line Charging (capacitive)	Losses		Tie-Line Flow (- import/+export)	
	P	Q	P	Q	Q	Q	Q	P	Q	P	Q
	MW	MVAR	MW	MVAR	MVAR	MVAR	MVAR	MW	MVAR	MW	MVAR
Additional Network*	0	0	1888.9	746.8			85.1	16.2	106	-1905.1	-767.8
PUNJAB	5466	14.3	10022.1	3324.6	-2385.9	0	2448.4	117.9	1645.8	-4674	-121.7
HARYANA	3767.5	-221.6	8316.9	2762.3	-2185.8	0	1667.9	102.3	1413.6	-4651.8	-543.8
RAJASTHA	8948.8	-264.5	10781.7	3578.6	-1058.3	0	9406.2	380.2	3249.6	-2213.2	-67.6
DELHI	962	-160.5	5206	405	-726.7	0	494.9	22.1	705.6	-4266.1	-49.5
UTTARPRA	10503	14	16417.4	5430.3	-4163.1	0	9643.3	577.2	5495.9	-6491.6	-3752
UTTARAKH	819.6	-352.2	1797.4	592.9	-519.9	0	602.1	52	392.2	-1029.7	-215.4
HIMACHAL	815.5	-194.1	1236.9	410.6	-636.6	0	271.4	33.8	209	-455.2	94.3
JAMUKASH	865.9	-144.4	2411.9	793.1	-1056.1	0	171.6	27.3	321.7	-1573.4	-31.5
CHANDIGA	0	0	305	101.3	0	0	3.5	2.1	27.2	-307.2	-124.9
NR_ISTS_PUN	0	0	0	0	767.5	0	3725	15.4	201.4	-15.4	1085
NR_ISTS_HAR	0	0	0	0	196.8	0	2123.3	28.9	361.1	-28.9	1492
NR_ISTS_RAJ	0	0	0	0	-157.3	0	2280	55.5	709.4	-55.5	1154
NR_ISTS_DEL	0	0	0	0	277.9	0	1255.9	9.1	203.2	-9.1	-508.8
NR_ISTS_UP	0	0	0	0	2129.2	0	14606.7	209.1	3995.8	-209	1618
NR_ISTS_UTT	0	0	0	0	0	0	177.9	0.3	5	-0.3	172.9
NR_ISTS_HP	0	0	0	0	318.8	0	899.8	19.9	246.1	-19.9	193.3
NR_ISTS_JK	0	0	0	0	131.3	0	597.5	18.8	246.9	-18.8	44.9
RAILWAYS	0	0	0	0	0	0	0	0	0	0	0
NRIST-BB	0	0	0	0	0	0	432.9	21.2	176.8	-21.2	256.1
NR_ISTS	0	0	0	0	-1183.9	0	500.2	222.5	2940.6	-222.5	-1303
SINGRAUL	1372.5	161.9	0	0	48.1	0	305.7	11.2	125.1	1361.3	173.3
RIHAND-G	2745.5	100.4	0	0	77	0	0	0	0	2745.5	23.4
DADRI_C	576.4	132.2	0	0	0	0	0	1.4	28	575	104.2
DADR-NCR	896.7	-294	0	0	0	0	149	1.2	13.2	895.5	-158.2
UNCHAHAHAR	1418.4	-38.6	0	0	0	0	116.5	23.8	121.3	1394.6	-43.4
IGSTPS	915	-270.2	0	0	0	0	0	0	0	915	-270.2
SHRE_CEM	274.5	43.1	0	0	78.5	0	151.9	3.3	36.7	271.2	79.8
DADRI-G	378.9	88.1	0	0	0	0	0	0.9	18.2	377.9	70
ANTA	235	117.3	0	0	0	0	122.2	5.3	29	229.7	210.5
AURAIYA	321.7	-11.3	0	0	0	0	53.1	9.2	48.9	312.6	-7

NAPS	201.3	-66	0	0	0	0	4.4	0	0.1	201.3	-61.7
RAPS-B	201.3	-27	0	0	0	0	41.4	6.4	33.9	194.9	-19.5
RAPS-C	402.6	184.5	4.6	1.5	0	0	82.6	3.3	36.3	394.7	229.3
CHAMER-1	468	-87.5	0	0	0	0	21.2	0	0.3	468	-66.7
CHAMER-2	305	61.9	0	0	0	0	0	0	0	305	61.9
CHAMER-3	234	-17.1	0	0	0	0	73.9	0.1	0.7	233.9	56.1
BAIRASIU	183	-54	0	0	0	0	0	0	0	183	-54
SALAL	669	-207	0	0	0	0	30.9	1.8	9.6	667.2	-185.7
TANAKPUR	94	-28.3	0	0	0	0	0	0	0	94	-28.3
URI-1	349	-108	0	0	0	0	0	0	0	349	-108
URI-2	179	15.3	0	0	0	0	60.9	0.6	6.5	178.4	69.7
DHAULIGA	286	-47.1	0	0	0	0	48.9	3	33.4	283	-51
DULHASTI	401	6.1	0	0	0	0	0	0	0	401	6.1
SEWA-II	0	0	0	0	0	0	1.2	0.1	0.2	-0.1	1
JHAKRI	1624	-95.6	0	0	0	0	0	0	0	1624	-95.6
RAMPUR HEP	375	135.7	0	0	0	0	30.5	0.6	8.2	374.4	158
TEHRI	807	284.2	0	0	0	0	34.6	0.6	14.3	806.4	304.5
KOTESWAR	102	-60	0	0	0	0	130	0.4	7.2	101.6	-29.1
BHAKRA	1447	240.7	9.7	5.3	0	0	1.1	0.7	64.4	1436.7	172
DEHAR	825	-247.5	0	0	0	0	0.2	5.3	18.3	819.7	-265.7
PONG	384	-62.2	0	0	0	0	57	2.7	14.6	381.3	-19.8
ADHYDRO	108	-25.8	0	0	0	0	24.9	2.1	11.2	105.9	-12.1
KARCHAMW	1000	-93.8	0	0	0	0	244.6	5	86.2	995	64.6
MALAN-II	109	-4	0	0	0	0	0	0	0	109	-4
KOLDAM	846	-240	0	0	0	0	36.2	0.1	1	845.9	-204.9
PARBATI-3	397	-156	0	0	0	0	0	0	0	397	-156
PARBATI-2	0	0	0	0	0	0	0	0	0	0	0
SORANG	0	0	0	0	0	0	162.4	3.9	66.4	-3.9	96
Total	53280	-1978.5	58398.5	18152.2	-10048.7	0	53378.8	2024.6	23486.2	-7143.2	-1335.9

Table.9 Inter CTU/STU Power flow exchange (with Capacitor Banks) in Updated Northern Grid Network

FROM PUNJAB	To	MW	MVAR
	1002 HARYANA	3.8	-1.8
	1007 HIMACHAL	-40.5	11.3
	1009 CHANDIGA	102.7	64
	1020 NR_ISTS_PUN	-3140.7	-174.8
	1021 NR_ISTS_HAR	-74.5	60.1
	1026 NR_ISTS_HP	-194.8	20.4
	1027 NR_ISTS_JK	-48.7	55.4
	1041 NRIST-BB	-658.7	-176.7
	1050 NR_ISTS	-66.9	-7.8
	1215 BHAKRA	-500.1	-46.1
	1217 PONG	-263.1	8.7
	TOTAL	-4881.5	-187.3
FROM HARYANA	TO	MW	MVAR
	1001 PUNJAB	-3.8	1.8
	1003 RAJASTHAN	19.2	11.5
	1004 DELHI	209.6	162.6
	1005 UTTARPRADESH	-237.9	14.8

	1007 HIMACHAL	-156.5	-11.3
	1009 CHANDIGARH	18.1	-0.5
	1021 NR_ISTS_HAR	-2691.8	-1107.7
	1022 NR_ISTS_RAJ	-61.3	-16.6
	1024 NR_ISTS_UP	1382.5	-312.8
	1041 NRIST-BB	-1102.9	-142.4
	1050 NR_ISTS	-1841.6	345.5
	1103 DADR-NCR	-266	46.3
	1105 IGSTPS	-497.3	216.1
	TOTAL	-5229.7	-792.7
FROM RAJASTHAN	TO	MW	MVAR
	1002 HARYANA	-19.2	-11.5
	1004 DELHI	-28.3	-17.9
	1005 UTTARPRA	684.3	190.8
	1022 NR_ISTS_RAJ	-461.2	-569.8
	1024 NR_ISTS_UP	-215.9	341
	1041 NRIST-BB	-62.4	-22.1
	1106 SHRE_CEM	-427.9	23.3
	1151 ANTA	-203.1	-181.8
	1155 RAPS-B	-216.9	-7.7
	1156 RAPS-C	-725.1	-62.2
	3014 MP	94	-17.6
	3035 WR_ISTS_MP	-967.8	121.5
	TOTAL	-2549.5	-214
	FROM DELHI TO	MW	MVAR
	1002 HARYANA	-209.6	-162.6
	1003 RAJASTHA	28.3	17.9
	1005 UTTARPRA	0	-0.7
	1021 NR_ISTS_HAR	-619.6	-380.5
	1023 NR_ISTS_DEL	-1443.6	269.6
	1041 NRIST-BB	63.1	-110.9
	1050 NR_ISTS	-1622.7	338.6
	1103 DADR-NCR	-496.7	-35.1
	TOTAL	-4300.8	-63.7
FROM UTTARA PRADESH	TO	MW	MVAR
	1002 HARYANA	237.9	-14.8
	1003 RAJASTHA	-684.3	-190.8
	1004 DELHI	0	0.7
	1006 UTTARAKH	66.9	200.3
	1020 NR_ISTS_PUN	249.6	-230.2
	1021 NR_ISTS_HAR	128.3	-523.6
	1023 NR_ISTS_DEL	409.2	-248.6
	1024 NR_ISTS_UP	-4599.1	-2882.3

	1025 NR_ISTS_UTT	195	-78.1
	1050 NR_ISTS	-831.1	-320.8
	1100 SINGRAUL	-676.7	242.9
	1103 DADR-NCR	-232	14.3
	1104 UNCHA HAR	-308.3	-3.7
	1152 AURAIYA	-251.9	14.2
	1153 NAPS	-201.3	61.7
	1205 TANAKPUR	-4.7	17.1
	1208 DHAULIGA	-105	19.6
	1214 KOTESWAR	-138.9	-101.1
	2051 ER_ISTS_BIH	-143.9	114.9
	TOTAL	-6890.3	-3908.3
FROM UTTARAKHAND	TO	MW	MVAR
	1005 UTTARPRA	-66.9	-200.3
	1007 HIMACHAL	7.2	-34.2
	1024 NR_ISTS_UP	-818.6	12.9
	1025 NR_ISTS_UTT	81.9	74.8
	1050 NR_ISTS	-283.6	-85.9
	TOTAL	-1080	-232.7
FROM HIMACHAL	TO	MW	MVAR
	1001 PUNJAB	40.5	-11.3
	1002 HARYANA	156.5	11.3
	1006 UTTARAKH	-7.2	34.2
	1020 NR_ISTS_PUN	173.5	-8.6
	1026 NR_ISTS_HP	-535.4	-36.2
	1050 NR_ISTS	-120.3	27.9
	1202 CHAMER-3	59.6	-1.5
	1216 DEHAR	-433.8	76.7
	1218 ADHYDRO	-15.2	6.4
	1219 KARCHAMW	217.9	-58.2
	1220 MALAN-II	-109	4
	TOTAL	-572.9	44.7
FROM 1008 JAMUKASH	TO	MW	MVAR
	1027 NR_ISTS_JK	-277.5	-38.6
	1050 NR_ISTS	-1421	-52.1
	1210 SEWA-II	0.1	-1
	TOTAL	-1698.4	-91.7
FROM 1009 CHANDIGARH	TO	MW	MVAR
	1001 PUNJAB	-102.7	-64
	1002 HARYANA	-18.1	0.5
	1026 NR_ISTS_HP	-186.3	-61.5
	TOTAL	-307.2	-124.9

The cumulative import for updated file with recommended capacitor banks is reduced to 1336 MVar. The inter-regional flows are given in Table 10.

Table 10 Inter regional Power flow for Year 2017-18

FROM AREA	TO AREA	Year 2017-18	
		P (MW)	Q(MVAr)
UP(1005)	ISTS_Bihar(2051)	-144	115
ISTS_UP(1024)	ISTS_Bihar(2051)	-618	-608
ISTS_UP(1024)	BARH(2105)	-383	277
Rajasthan(1003)	MP(3014)	94	-18
NR_ISTS_RAJ(1022)	Gujarat(3013)	210	95
NR_ISTS(1050)	Gujarat(3013)	-2509	-1350
AURAIYA(1152)	MP(3014)	60	-9
ISTS_UP(1024)	VINDHYACHA(3020)	501	199
Rajasthan(1003)	WR_ISTS_MP(3035)	-968	121
NR_ISTS_UP (1024)	WR_ISTS_MP(3035)	-2886	32
NR_ISTS_UP (1024)	NER-ISTS(5001)	-501	-190
Total		-7144	-1336

In this table, it is observed there is reduction in import of reactive power with the recommended compensation as compare with the existing compensations (Refer Table 6 & 7).

5.0 Recommendation for year 2017-18

From the load flow results mentioned in section 3 and 4, above, it is observed that voltage profile of most of the 220 kV and 132 kV substations in all utilities in northern grid is below the values specified in IEGC code. This poor voltage profile for all 132kV and above buses in each state is given in Annexure –4 -(X).1. This poor voltage profile results in heavy flow of reactive power from the generating units, over the ISTS lines and result in excessive losses in the northern grid. Therefore, fixed capacitor bank compensation are proposed at identified sensitive 132 kV and 220 kV buses in each state to minimize the exchange of reactive power and regulation of voltage of these buses within specified limits of IEGC.

To meet the reactive power compensation in the Northern region for year 2017-18, a detailed information has been provided in Table 11. The first column (a) gives a detailed information of existing operational capacitor bank at that particular grid operating state. The column (b), shows the information of capacitor banks provided by individual utility which are not in operation for that grid operating state.

In order to meet the required compensation i.e. column (e), the non-operational capacitor banks are first turned on i.e. column (c) and then additional capacitor banks are recommended as per column (d) in addition to existing operational capacitor banks i.e. column (a).

Table 11.Recommended Capacitor Compensation for the northern grid.

Sl. No	Utility	Existing Capacitor Bank		Recommended to be switched on from column.(b)	Additional Recommended capacitor banks	Total capacitor banks (a+c+d)
		Operational	Not in operation			
		(a)	(b)			
		(MVAR)	(MVAR)			
1	Punjab	1563.9	0	0	1039.26	2603.16
2	Haryana	59.7	167.4	167.4	1996.18	2223.28
3	Rajasthan	235.5	3934.25	1299.05	0	1534.55
4	Delhi	0	712.56	712.56	0	712.56
5	Uttara Pradesh	1367.2	0	0	4531.6	5898.8
6	Uttarakhand	0	0	0	523	523
7	Himachal Pradesh	609.14	687.48	0	0	609.14
8	Jammu- Kashmir	0	0	0	1102.8	1102.8
9	Total	3835.44	4789.13	2179.1	9192.84	15207.29

Clarification: Reference Draft report

In Row no-04 of Table 11, 712.56 MVAR was mentioned as newly recommended. Actually this is already existing capacitor bank but not in operation (was a typing error). Corresponding changes incorporated in Amended version.

Cumulative summary of the capacitor bank identified for each utility in the northern grid is also listed in Table 11. The recommended capacitor banks to be switched on from non-operational capacitor banks are 2179.1 MVAR. Additional recommended capacitor banks for all utilities are 9192.84 MVAR. The total required capacitor banks (15207.29 MVAR) are summation of existing operational, recommended switched on and additional recommended capacitor banks.

It is observed that Himachal Pradesh has already installed sufficient capacitor in their power network and hence no additional capacitor compensation is recommended. While, maximum compensation is required in Uttar Pradesh, Punjab, Haryana and Rajasthan.

The recommended compensation improves the bus voltage profile resulting in re-distribution of the reactive power flow in the northern grid. The re-distributed reactive power flow with contribution from all individual constituents is listed in Table 10 above. From this Table it can be concluded that recommended compensation reduces the flow of reactive power from neighboring STU lines, inter regional tie lines, ISTS lines and results in overall network loss reduction and voltage profile improvement.

The improvement in bus voltage profile with recommended compensation with respect to each STU and their substation is listed in Annexure – 4-(X).-1. The substation wise existing and recommended ratings of capacitor banks for all STU’s in the northern grid are listed in Annexure –4-(X).-2 and Annexure –4-(X).-3 respectively.

Notation- X refers to each state.

5.0 Reference

1. IEGC regulation 2010.<http://www.cercind.gov.in/2016/regulation/9.pdf>.
2. http://cea.nic.in/reports/others/ps/pspa2/tr_plg_criteria_manual_jan13.pdf

ANNEXURE-1

List of New Substations (STU wise) for year 2017-18

JAMMU & KASHMIR			
Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
1001	RTSS SAMBA 132.00	2.415	0.805
1004	BATAL MANWAL132.00	5.25	2.5427
1005	GRAN (REASI)132.00	5.95	2.8817
1006	SANGALDAN 132.00	8.05	3.8988
1009	MERANSAHIB3333.000	11.2	5.4244
1010	KATHUA 66KV 66.000	9.45	4.5768
1011	RAJOURI 33KV33.000	11.3085	6.4085
1012	BARN 33KV 33.000	16.1595	7.595
1013	SIDHRA 33KV 33.000	4.4625	2.765
1014	PONICHAK 132.00	12.95	6.272
1015	PONICHAK 33.000	5.6	2.7122
1104	BEMINA 33.000	3.15	1.5256
1105	DELINA 33.000	7.63	3.9095
1106	CHESHMASHAI 33.000	1.4	0.6781
1107	MATTAN 33.000	2.45	1.1866
1108	RAWALPURA 33.000	5.25	2.5427
1109	KULGAM 33.000	8.05	3.8988
1110	KHREW 33.000	3.85	1.8646
1112	BADGAM 132.00	5.95	2.8817
1113	BADGAM 33.000	8.61	4.879
1114	CHADOORA 33.000	3.85	1.8646
TOTAL		142.9855	71.1133
HIMACHAL PRADESH			
Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
1203	TRILOKPUR 132.00	8.4	4.0683
1204	GAGRET 132.00	8.561	2.695
1205	PANDOGA 132.00	8.05	3.8988
1206	CHULLA P/H 132.00	4.2	2.0342
1207	KANGHEIN 132.00	11.9	5.7634
1208	DHARAMPUR 132.00	11.55	5.5939
1209	NEHRIAN 132.00	11.2	5.4244
1210	PATTI 132.00	4.2	2.0342
1211	SUNDERNAGAR 132.00	8.4	4.0683
1214	MATTANSIDH 132.00	5.6	2.7122
1215	PANDOGA 33.000	2.1	1.0171
1216	KANGHAIN 33.000	3.15	1.5256
1217	MALIANA 33.000	3.15	1.5256

1218	BIJNI 33.000	4.2	2.0342
1219	AMB 33.000	15.4	1.4
1221	SUNDARNAGAR 33.000	2.45	1.1866
1222	DHARAMPUR 33.000	1.75	0.8476
1223	TAHLIWALA 132.00	2.8	1.3545
TOTAL		117.061	49.1839
PUNJAB			
Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
1301	SARAINAGA 66.000	7.5366	2.5021
1302	SARAINAGA 11.000	3.3915	1.2775
1303	PATHANKOT 11.000	3.15	1.6555
1304	IGCBHATI 11.000	3.5	1.6951
1305	BATALA 66.000	9.9015	1.4105
1306	TARANTAR 11.000	4.214	0.595
1307	TANGRA 11.000	3.409	0.854
1308	POWERCOLONY 66.000	9.688	3.178
1309	MALOUT 66.000	5.25	2.5427
1310	TANDA 11.000	7.735	1.085
1311	EKALGADDA 11.000	3.0415	0.763
1312	GTROADAM 66.000	7.217	2.3695
1313	VERPAL 132.00	25.277	8.6765
1314	ABOHAR 66.000	10.367	2.1035
1316	BADAL 66.000	0.987	0.2485
1317	MAHILPUR 66.000	2.6799	0.5355
1318	DHARAMKOT 66.000	22.316	4.326
1319	TALWANDIBHAI 66.000	8.75	4.2378
1325	KANJALI 66.000	20.027	3.9585
1327	HOSHIARPUR 66.000	12.25	5.9329
1329	BHAWANIGARH 66.000	5.95	2.8817
1333	BADNIKALAN 66.000	3.7415	0.7245
1335	ALWALPUR 66.000	3.605	0.525
1340	BHARI 66.000	7.525	3.6445
1341	JADLA 66.000	7.5124	1.8802
1342	LADOWAL 66.000	8.4	3.3199
TOTAL		207.4219	62.9229
DELHI			
Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
1506	BYPL 33.000	6.3	2.4899
1507	BRPL 33.000	4.55	1.7983
1508	TPDDL 66.000	3.85	1.5216
1509	TPDDL 33.000	8.05	3.1816
1510	BRPL 66.000	11.9	4.7032
TOTAL		34.65	13.6946
UTTARAKHAND			

Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
1600	BAGESHWAR 132.00	15.75	6.2248
1601	JAJHRA 132.00	12.95	5.1182
1602	LOHAGHAT 132.00	13.65	5.3948
1609	JAFFARPUR 33.000	2.8	1.1066
1610	IIP DEHRADUN33.000	1.4	0.5533
1611	BAGESHWAR 33.000	1.75	0.6916
1612	PIRANKALIYAR33.000	1.75	0.6916
TOTAL		50.05	19.7809
HARYANA			
Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
2003	NEEMWALA 132132.00	14	6.79
2006	CHANDI 132 132.00	1.75	0.847
2007	MUNDKA 132 132.00	4.2	2.037
2008	SATROD 132 132.00	3.5	1.694
2009	TSS MANHERU 132.00	7.35	2.45
2010	BHOJRAJ 132 132.00	4.2	1.6599
2011	JASTUSANA 13132.00	7.35	2.9049
2012	KAITHAL 33 33.000	7.7	3.0432
2013	CHAKULAD 33 33.000	2.8	1.1066
2014	NOUTCH 33 33.000	2.1	0.83
2015	KHERI GULM 333.000	1.75	0.6916
2016	CHEEKA 33 33.000	3.15	1.245
2017	SIWAN 33 33.000	3.5	1.3833
2018	BHAGAL 33 33.000	4.2	1.6599
2019	RAJOUND 33 33.000	5.25	2.0749
2020	PAI 33 33.000	1.4	0.5533
2021	PUNDARI 33 33.000	1.05	0.415
2022	KIRMICH 33 33.000	1.05	0.415
2023	PIPLI 33 33.000	2.45	0.9683
2024	ADHOUN 33 33.000	4.2	1.6599
2025	BHUSTHALA 3333.000	5.25	2.0749
2026	ISMAILABAD 333.000	2.1	0.83
2027	MALIKPUR 33 33.000	3.15	1.245
2028	PILPLI 11 11.000	0.7	0.2767
2029	NILOKHERI 3333.000	4.2	1.6599
2030	MADHUBAN 33 33.000	0.7	0.2767
2031	BHADSON 33 33.000	5.6	2.2133
2032	NEWAL 33 33.000	8.4	3.3199
2033	GHARAUNDA 3333.000	4.2	1.6599
2034	JUNDLA 33 33.000	2.45	0.9683
2035	JALMANA 33 33.000	5.95	2.3516
2036	SAGGA 33 33.000	5.25	2.0749
2037	SATAUNDI 33 33.000	4.9	1.9366

2038	NAGLA MEGHA 33.000	8.05	3.1816
2039	MUNAK 33 33.000	8.75	3.4582
2040	MUND 33 33.000	11.9	4.7032
2041	SAMALKHA 33 33.000	7.35	2.9049
2042	CHHAJPUR 33 33.000	1.05	0.415
2043	SAMALKHA21 333.000	2.45	0.9683
2044	NAULTHA 33 33.000	5.6	2.2133
2045	BEHOLI 33 33.000	8.75	3.4582
2046	IE PANIPAT 333.000	3.5	1.3833
2047	PANIPAT SEC-33.000	3.5	1.3833
2048	KABRI 33 33.000	3.5	1.3833
2049	CHANDOLI 33 33.000	3.5	1.3833
2050	SAFIDON 33 33.000	3.5	1.3833
2051	DABLAIN 33 33.000	3.5	1.3833
2052	ALEWA 33 33.000	3.5	1.3833
2053	JULANA 33 33.000	3.5	1.3833
2054	GARHI 33 33.000	3.5	1.3833
2055	GHOGHARIAN 333.000	3.5	1.3833
2056	UNCHANA 33 33.000	3.5	1.3833
2057	NARWANA NEW333.000	3.5	1.3833
2058	JIND NEW33 33.000	3.5	1.3833
2059	KHERI TALODA33.000	3.5	1.3833
2060	DHANAURI33 33.000	3.5	1.3833
2061	BIBIPUR33 33.000	3.5	1.3833
2062	BEGA33 33.000	3.5	1.3833
2063	MUNDLANA 33 33.000	3.5	1.3833
2064	MURTHUL33 33.000	3.5	1.3833
2065	GANAUR 33 33.000	3.5	1.3833
2066	HARSANA33 33.000	3.5	1.3833
2067	RAI 33 33.000	3.5	1.3833
2068	KHARKHODA 3333.000	3.5	1.3833
2069	SE-3 ROHTAK 33.000	3.5	1.3833
2070	KALANAUR33 33.000	3.5	1.3833
2071	MEHAM 33 33.000	3.5	1.3833
2072	HSI IDC-ROHTA33.000	3.5	1.3833
2073	MDU-ROHTAK3333.000	3.5	1.3833
2074	SAMPLA33 33.000	3.5	1.3833
2075	JASSIA33 33.000	3.5	1.3833
2076	BAHADURGARH 33.000	3.5	1.3833
2077	JAJAR33 33.000	3.5	1.3833
2078	BAHU 33 33.000	3.5	1.3833
2079	BAHU11 11.000	3.5	1.3833
2080	ASSAUDHA33 33.000	3.5	1.3833
2081	BERI33 33.000	3.5	1.3833

2082	IA HISAR 33 33.000	3.5	1.3833
2083	BARWALA 33 33.000	3.5	1.3833
2084	HISAR CANT3333.000	3.5	1.3833
2085	SEC-27-28 HI33.000	3.5	1.3833
2086	BHUNA 33 33.000	3.5	1.3833
2087	BHATTU 33 33.000	3.5	1.3833
2088	UKLANA 33 33.000	3.5	1.3833
2089	DHARSUL 33 33.000	3.5	1.3833
2090	BEHAL33 33.000	3.5	1.3833
2091	HALUWAS 33 33.000	3.5	1.3833
2092	SAHGWAN33 33.000	3.5	1.3833
2093	KAIRU33 33.000	3.5	1.3833
2094	BERLA33 33.000	3.5	1.3833
2095	IABHIWANI33 33.000	3.5	1.3833
2096	LOHARU33 33.000	3.5	1.3833
2097	RANINA33 33.000	3.5	1.3833
2098	DHUDHIYANWAL33.000	3.5	1.3833
2099	ASSA KHERA3333.000	3.5	1.3833
2100	DING33 33.000	3.5	1.3833
2101	BEGU33 33.000	3.5	1.3833
2102	DABWALI33 33.000	3.5	1.3833
2103	JIWAN NAGAR333.000	3.5	1.3833
2104	MADHOSIN33 33.000	3.5	1.3833
2105	SIKANDERPUR333.000	3.5	1.3833
2106	ODHAN33 33.000	3.5	1.3833
2107	MELA GROUND333.000	3.5	1.3833
2108	MOHENDERGARH33.000	3.5	1.3833
2109	SATNALI33 33.000	3.5	1.3833
2110	SEKA33 33.000	3.5	1.3833
2111	GOTHARA P33 33.000	3.5	1.3833
2112	BUROLI33 33.000	3.5	1.3833
2113	IE PANIPAT 1132.00	11.9	4.7032
2118	AIR LIQUID N132.00	15.75	6.2248
2119	PASINA KHURD132.00	11.2	4.4265
2120	BARHI132 132.00	12.95	5.1182
2121	BARHI33 33.000	7.35	2.9049
2122	TAJPUR132 132.00	8.05	3.1816
2124	SAMAIN132 132.00	12.6	4.9798
2126	MEHNA KHERA 132.00	12.95	5.1182
2127	MEHNA KHERA 33.000	7.35	2.9049
2128	FARUKHNAGAR666.000	4.2	1.6599
2129	PANCHUGON66 66.000	7	2.7666
2133	SONTA66 66.000	17.5	8.4735
2134	SONTA11 11.000	3.5	1.694

2135	NEEMWALA33 33.000	7	3.388
2136	TAJPUR33 33.000	4.55	1.7983
2137	HUKMAWALI132132.00	4.9	1.9366
2138	HUKMAWALI33 33.000	5.25	2.0749
2142	PUNHANA66 66.000	8.05	3.1816
2144	SEC46-GUA 66.000	7	2.7666
2145	SEC58-GUA 66.000	8.05	3.1816
2146	SEC107-GUA 33.000	5.25	2.0749
2147	SEC95-GUA 33.000	5.25	2.0749
2148	PASINA33 33.000	5.25	2.0749
2149	CHANDI33 33.000	5.25	2.0749
2150	KARNAL33 33.000	5.25	2.0749
2151	DABRI33 33.000	5.25	2.0749
TOTAL		632.8	254.2334
UTTAR PRADESH			
Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
5000	NINDURA 132 132.00	12.95	5.1182
5001	RSG 132 132.00	8.75	3.4582
5002	BUDHWAL TSS 132.00	7.35	2.9049
5008	COLONELGANJ 132.00	12.6	4.9798
5009	BHINGA 132 132.00	12.95	5.1182
5011	SPN 132 132.00	9.8	3.8732
5012	POWAYAN 132 132.00	7	2.7666
5013	JALALABAD 13132.00	7	2.7666
5014	DHAURAH 132 132.00	7	2.7666
5015	JALALPUR 132132.00	7	2.7666
5017	BIKAPUR 132 132.00	7	2.7666
5018	KURSOTO 132 132.00	7	2.7666
5019	RKT 132 132.00	7	2.7666
5022	SANGIPUR 132132.00	7.7	3.0432
5023	PURANCHHAPAR132.00	7.35	2.9049
5025	DUMARIGANJ 132.00	11.9	4.7032
5026	RASARA 132 132.00	15.75	6.2248
5029	GOVINDPURAM 132.00	11.55	4.5649
5030	GHARMUKTESHW132.00	9.1	3.5966
5031	PILKHUA 132132.00	9.1	3.5966
5034	BAPUDHAM 132132.00	11.9	4.7032
5038	AGWANPUR 132132.00	11.2	4.4265
5039	KOTHIKHIDMAT132.00	4.2	1.6599
5040	ASMOULI 132 132.00	4.2	1.6599
5042	PILAKHINI 13132.00	4.2	1.6599
5042	PILAKHINI 13132.00	4.2	1.6599
5043	GABHANA132 132.00	4.2	1.6599
5044	IGLAS 132 132.00	4.2	1.6599

5045	HCM T/L 132 132.00	4.2	1.6599
5047	NIGHASAN 132132.00	4.2	1.6599
5048	MAHAMODABAD 132.00	4.2	1.6599
5049	LAHARPUR 132132.00	4.2	1.6599
5050	MAQSOODABAD 132.00	4.2	1.6599
5053	RUDRAPUR 132.00	8.05	3.1816
5055	GOLA GORAKHP132.00	11.2	4.4265
5067	MODIPURAM 132.00	5.6	2.2133
5068	CHARLA 132 132.00	4.9	1.9366
5071	RAMRAJ 132 132.00	8.4	3.3199
5072	VEDH VYAS 132.00	8.75	3.4582
5073	PRATAPUR 132132.00	8.05	3.1816
5079	SULTAN GANJ 132.00	5.25	2.0749
5080	SIKADRA RAO 132.00	8.05	3.1816
5081	BONAR 132 132.00	7.35	2.9049
5083	HASAYAN 132 132.00	4.9	1.9366
5086	PAHADI 132 132.00	16.1	6.3631
5090	PANWARI 132.00	11.9	4.7032
5091	SARILA 132.00	0	0
5092	GURSARAI 132.00	11.55	4.5649
5093	KONCH 132.00	12.95	5.1182
6001	KURSI ROAD 33.000	11.2	4.4265
6002	KHURRAM NAGA33.000	8.05	3.1816
6003	HAIDERGARH 33.000	1.75	0.6916
6004	RICHHA 33.000	2.1	0.83
6202	GUJRAYAN SOL132.00	2.45	0.9683
6204	RANIA132 132.00	3.15	1.245
TOTAL		416.85	164.7496
RAJASTHAN			
Bus Number	Bus Name	Pload (MW)	Qload (Mvar)
7001	KANASA 132 132.00	8.05	3.1816
7008	AMBERI132 132.00	11.9	4.7032
7021	MANGROL 132.00	12.95	5.1182
7022	PAHARI 132.00	10.5	4.1499
7023	DEGANA 132 132.00	10.5	4.1499
7024	BHIKAMKORE 132.00	10.5	4.1499
7500	MAMONI132 132.00	10.5	4.1499
7501	DADABARI KOT132.00	10.5	4.1499
7502	CHOUTH KA BA132.00	10.5	4.1499
7503	BABA RAM TEM132.00	10.5	4.1499
7504	KESHORAIPATA132.00	10.5	4.1499
7505	RAJAKHERA 132.00	10.5	4.1499
7506	GANGDHAR 132.00	10.5	4.1499
7507	NANTA 132.00	10.5	4.1499

7508	SAROLA KALANI	132.00	10.5	4.1499
7509	JOOJHPURA	132.00	10.5	4.1499
7510	SANWALI ROAD	132.00	10.5	4.1499
7511	BHOPALSGR	132.00	10.5	4.1499
7512	CHORDI	132.00	10.5	4.1499
7513	BAPINI	132.00	10.5	4.1499
7514	SANGARH	132.00	10.5	4.1499
7515	BANA KA BAS	132.00	10.5	4.1499
7516	KITASAR	132.00	8.75	3.4582
7517	NETHRAU	132.00	8.75	3.4582
7518	BERA	132.00	8.75	3.4582
7519	BHAMASTAR	132.00	8.75	3.4582
7520	SRI GANGANGR	132.00	8.75	3.4582
7521	TATASAR	132.00	8.75	3.4582
7522	TOONGA	132.00	8.75	3.4582
7523	DESURI	132.00	8.75	3.4582
7524	BALICHA	132.00	8.75	3.4582
7525	GOGELAW	132.00	8.75	3.4582
7526	MOKHAMPURA	132.00	8.75	3.4582
7527	CHHATARGARH	132.00	8.75	3.4582
7528	KHANERA	132.00	8.75	3.4582
TOTAL			346.15	136.8077

ANNEXURE-2

Power flow on the tie lines within each STU for base file-Northern grid.

(a)

FROM AREA 1009 CHANDIGA- To 1001 PUNJAB									
BUS	NAME	VOLTAGE (p.u)	BUS	NAME	VOLTAGE (p.u)	BASE KV	CKT	MW	MVAR
190000	CHANDIGA_S3966.000	0.9402	110048	MOHALI-II	0.9539	66.000*	1	-25.1	-9.9
190000	CHANDIGA_S3966.000	0.9402	110048	MOHALI-II	0.9539	66.000*	2	-25.1	-9.9
190010	CHANDIGA_S5666.000	0.9416	110048	MOHALI-II	0.9539	66.000*	1	-25.9	-10.9

190010	CHANDIGA_S5666.000	0.9416	110048	MOHALI-II	0.9539	66.000*	2	-25.9	-10.9
Sub Total								-102	-41.6
FROM AREA 1009 CHANDIGA to 1002 HARYANA									
190004	CHANDIGA_S2866.000	0.9473	120002	DHULKOTE	0.9722	66.000*	1	-7.5	-0.3
190004	CHANDIGA_S2866.000	0.9473	120002	DHULKOTE	0.9722	66.000*	2	-7.5	-0.3
Sub Total								-15.1	-0.6
FROM AREA 1009 CHANDIGA to 1026 TO NR_ISTS_HP									
192000	KISHANGA_CHA220.00*	0.9906	172013	NALLAGAR	1.0134	220	1	-85.5	-37
192000	KISHANGA_CHA220.00*	0.9906	172013	NALLAGAR	1.0134	220	2	-85.5	-37
Sub Total								-171	-74
Total								-288.1	-116.2

(b)

FROM AREA 1001 PUNJAB TO AREA 1002 HARYANA								
BUS	NAME		BUS	NAME	BASE KV	CKT	MW	MVAR
111110	ROPAR 132.00*		121001	PINJORE	132	1	23.4	1
111110	ROPAR 132.00*		121001	PINJORE	132	2	23.4	1
Subtotal							46.8	2
FROM AREA 1001 PUNJAB TO AREA 1007 HIMACHAL								
111015	CHOHAL 132.00*		171006	HAMIRP-2	132	1	-51.5	3.6
111089	JOGINDERNAGA132.00		171007	BASSII	132.00*	1	5.5	2.1
111089	JOGINDERNAGA132.00		171007	BASSII	132.00*	2	5.5	2.1
Subtotal							-40.5	7.9
FROM AREA 1001 PUNJAB TO AREA 1009 CHANDIGA								
110048	MOHALI-II 66.000*		190000	CHANDIGA_S39	66	1	25.1	9.9
110048	MOHALI-II 66.000*		190000	CHANDIGA_S39	66	2	25.1	9.9
110048	MOHALI-II 66.000*		190010	CHANDIGA_S56	66	1	25.9	10.9
110048	MOHALI-II 66.000*		190010	CHANDIGA_S56	66	2	25.9	10.9
Subtotal							102	41.6
FROM AREA 1001 PUNJAB TO AREA 1020 NR_ISTS_PUN								
112006	NAKODAR 220.00*		112101	JALAN-PG	220	1	-152.5	-21.7
112007	KARTARPUR 220.00*		112101	JALAN-PG	220	1	-125.6	-5.1
112064	KAPURTHALA 220.00*		112101	JALAN-PG	220	1	-15.7	-18.7
112064	KAPURTHALA 220.00*		112101	JALAN-PG	220	2	-15.7	-18.7
112096	AMRIT-PG 220.00		114008	AMRITSAR	400.00*	1	-159.2	-52.2
112096	AMRIT-PG 220.00		114008	AMRITSAR	400.00*	2	-159.2	-52.2
112096	AMRIT-PG 220.00		114008	AMRITSAR	400.00*	3	-252.7	-82.8
112097	MALER-PG 220.00		114011	MALERKOT	400.00*	1	-118	-13.5
112097	MALER-PG 220.00		114011	MALERKOT	400.00*	2	-118	-13.5
112097	MALER-PG 220.00		114011	MALERKOT	400.00*	3	-187.3	-21.3
112098	MOGA-PG 220.00		114007	MOGA	400.00*	1	-220	-42.3
112098	MOGA-PG 220.00		114007	MOGA	400.00*	2	-220	-42.3
112098	MOGA-PG 220.00		114007	MOGA	400.00*	3	-110	-21.1
112098	MOGA-PG 220.00		114007	MOGA	400.00*	4	-138.6	-26.7
112099	LUDHIANA 220.00		114009	LUDHIANA	400.00*	1	-158.1	-50.4
112099	LUDHIANA 220.00		114009	LUDHIANA	400.00*	2	-158.1	-50.4
112099	LUDHIANA 220.00		114009	LUDHIANA	400.00*	3	-158.1	-50.4
112099	LUDHIANA 220.00		114009	LUDHIANA	400.00*	4	-250.9	-79.9

112100	PATIA-PG	220.00	114012	PATIALA	400.00*	1	-80.5	-12.1
112100	PATIA-PG	220.00	114012	PATIALA	400.00*	2	-80.5	-12.1
112100	PATIA-PG	220.00	114012	PATIALA	400.00*	3	-127.8	-19.2
114000	TALWANDISABO	400.00*	114007	MOGA	400	1	323.7	3.4
114002	MAKHU	400.00*	114008	AMRITSAR	400	1	39.3	7.6
114002	MAKHU	400.00*	114008	AMRITSAR	400	2	39.3	7.6
114004	NAKODAR	400.00	114007	MOGA	400.00*	1	134.8	148.7
Subtotal							-2469.3	-539.4
FROM AREA 1001 PUNJAB TO AREA 1021 NR_ISTS_HAR								
114004	NAKODAR	400.00	124026	KURUKSHETRA	400.00*	1	-13.6	42.5
Subtotal							-13.6	42.5
FROM AREA 1001 PUNJAB TO AREA 1026 NR_ISTS_HP								
112047	MOHALI-1	220.00*	172013	NALLAGAR	220	1	-54.7	5.6
112047	MOHALI-1	220.00*	172013	NALLAGAR	220	2	-54.7	5.6
Subtotal							-109.3	11.3
FROM AREA 1001 PUNJAB TO AREA 1027 NR_ISTS_JK								
112018	SARNA	220.00	182011	KISHENPUR	220.00*	1	-37.2	35.8
112018	SARNA	220.00	182011	KISHENPUR	220.00*	2	-37.2	35.8
Subtotal							-74.4	71.5
FROM AREA 1001 PUNJAB TO AREA 1041 NRIST-BB								
110002	JAMALPUR	66.000	112107	JAMALPUR	220.00*	1	-48.3	-19.3
110002	JAMALPUR	66.000	112107	JAMALPUR	220.00*	2	-48.3	-19.3
110002	JAMALPUR	66.000	112107	JAMALPUR	220.00*	3	-48.3	-19.3
111041	JAMALPUR21	132.00	112107	JAMALPUR	220.00*	1	-46.4	-8.9
111041	JAMALPUR21	132.00	112107	JAMALPUR	220.00*	2	-46.4	-8.9
112001	DANDHARI	220.00	112107	JAMALPUR	220.00*	1	-112.5	-20.7
112001	DANDHARI	220.00	112107	JAMALPUR	220.00*	2	-112.5	-20.7
112033	GOBINDGARH-2	220.00	112103	GANGUWAL	220.00*	1	-74.8	-18.9
112033	GOBINDGARH-2	220.00	112103	GANGUWAL	220.00*	2	-74.8	-18.9
112081	MOHALI-S	220.00	112103	GANGUWAL	220.00*	1	-43.1	-17.7
112102	JALANDHAR-BB	220.00*	112107	JAMALPUR	220	1	4.8	-6.7
112102	JALANDHAR-BB	220.00*	112107	JAMALPUR	220	2	4.8	-6.7
112115	MAJRA	220.00*	112103	GANGUWAL	220	1	-55.9	-25.9
Subtotal							-701.7	-211.8
FROM AREA 1001 PUNJAB TO AREA 1050 NR_ISTS								
110001	SANGRUR	66.000	112104	SANGRUR	220.00*	2	-33.9	-14.1
110001	SANGRUR	66.000	112104	SANGRUR	220.00*	3	-25.4	-10.6
110001	SANGRUR	66.000*	112104	SANGRUR	220	4	-25.4	-8.4
110027	DASUYA	66.000	112106	DASUYA	220.00*	1	-42.8	-17.4
112004	LEHRAMOHABBA	220.00*	112105	BARNALAB2	220	1	51.6	0.1
112018	SARNA	220.00*	112106	DASUYA	220	1	-17.7	-30.1
112018	SARNA	220.00*	112106	DASUYA	220	2	-17.7	-30.1
112018	SARNA	220.00	182004	HIRANAGAR2	220.00*	1	199.2	157.5
112018	SARNA	220.00	182005	UDAMPUR2	220.00*	1	-9.4	37.9
112043	BARNALA-PS	220.00	112105	BARNALAB2	220.00*	1	-20.3	-4.7
112064	KAPURTHALA	220.00	112106	DASUYA	220.00*	3	-10	13.4
112064	KAPURTHALA	220.00	112106	DASUYA	220.00*	4	-10	13.4

112102	JALANDHAR-BB220.00*	112106	DASUYA	220	1	-69.4	-4.1
112102	JALANDHAR-BB220.00*	112106	DASUYA	220	2	-69.4	-4.1
Subtotal						-100.6	98.7
FROM AREA 1001 PUNJAB TO AREA 1215 BHAKRA							
111110	ROPAR 132.00	111114	KOTLA	132.00*	1	-61.1	-2.4
111110	ROPAR 132.00	111114	KOTLA	132.00*	2	-61.1	-2.4
111110	ROPAR 132.00	111114	KOTLA	132.00*	3	-61.1	-2.4
112012	MAHILPUR 220.00	172016	BHAKRA_R	220.00*	1	-161.5	-38.4
112012	MAHILPUR 220.00	172016	BHAKRA_R	220.00*	2	-161.5	-38.4
Subtotal						-506.3	-83.9
FROM AREA 1001 PUNJAB TO AREA 1217 PONG							
112102	JALANDHAR-BB220.00*	172021	PONG	220	1	-96.8	-7.5
112102	JALANDHAR-BB220.00*	172021	PONG	220	2	-96.8	-7.5
Subtotal						-193.7	-15
TOTAL						-4060.6	-574.6

(c)

FROM AREA 1008 JAMUKASH-DETAILS to1027 NR ISTS JK									
From BUS	NAME	VOLTAGE(p.u)	To BUS	NAME	BASE KV	VOLTAGE(p.u)	CKT	MW	MVAR
182000	ZAINKOTE2 220.00*	0.9139	182007	WAGOORA	220	0.9355	1	-164.2	-53.3
182000	ZAINKOTE2 220.00*	0.9139	182007	WAGOORA	220	0.9355	2	-164.2	-53.3
182001	RAMBAN 220.00	0.9462	182011	KISHENPUR	220.00*	0.965	1	-66.8	-19
182003	BARN2 220.00	0.9377	182011	KISHENPUR	220.00*	0.965	1	-141.5	-60.2
182003	BARN2 220.00	0.9377	182011	KISHENPUR	220.00*	0.965	2	-141.4	-60.2
184000	BAGLIHAR4 400.00*	1.01	184002	KISHENPUR	400	1.0001	1	293	31.4
184000	BAGLIHAR4 400.00*	1.01	184002	KISHENPUR	400	1.0001	2	293	31.4
Sub Total								-92.1	-183.2
FROM AREA 1008 JAMUKASH-DETAILS 1050 NR ISTS									
181001	MIRBAZAR 132.00*	0.8939	182006	MIRBAZAR	220	0.9292	1	-77.6	-20.7
181001	MIRBAZAR 132.00*	0.8939	182006	MIRBAZAR	220	0.9292	2	-77.6	-20.7
181008	UDAMPUR1 132.00	0.9088	182005	UDAMPUR2	220.00*	0.9549	1	-225.2	-99.9
181027	PAMPPORE1 132.00	0.9065	182008	PAMPPORE2	220.00*	0.9303	1	-120.7	-33.8
181027	PAMPPORE1 132.00	0.9065	182008	PAMPPORE2	220.00*	0.9303	2	-120.7	-33.8
181027	PAMPPORE1 132.00	0.9065	182008	PAMPPORE2	220.00*	0.9303	3	-120.7	-33.8
181035	GLADINII 132.00	0.88	182010	JAMMU2	220.00*	0.9037	1	-393.5	-117.3
181038	HERANAGAR1 132.00	0.8935	182004	HIRANAGAR2	220.00*	0.9031	1	-244	-152.7
182001	RAMBAN 220.00*	0.9462	182006	MIRBAZAR	220	0.9292	1	66.3	24.5
Sub Total								-1313.7	-488.4
FROM AREA 1008 JAMUKASH-DETAILS 1210 SEWA-II									
181000	KATHUA1 132.00*	0.8796	181045	SEWA-II	132	0.8883	1	-12.4	-9.1
181010	MAHANPUR 132.00	0.8843	181045	SEWA-II	132.00*	0.8883	1	-29.6	-6.6
181038	HERANAGAR1 132.00	0.8935	181045	SEWA-II	132.00*	0.8883	1	21.1	7.4
181038	HERANAGAR1 132.00	0.8935	181045	SEWA-II	132.00*	0.8883	2	21.1	7.4
Subtotal								0.1	-0.8
Total								-1405.8	-672.5

(d)

FROM AREA 1007 HIMACHAL To 1001 PUNJAB									
BUS	NAME	VOLTAGE(p.u)	BUS	NAME	VOLTAGE(p.u)	BASE KV	CKT	MW	MVAR
171006	HAMIRP-2 132.00	1.0245	111015	CHOHAL	0.9791	132.00*	1	51.5	-3.6
171007	BASSII 132.00*	0.9893	111089	JOGINDERNAGA	0.99	132	1	-5.5	-2.1
171007	BASSII 132.00*	0.9893	111089	JOGINDERNAGA	0.99	132	2	-5.5	-2.1
Sub Total								40.5	-7.9

FROM AREA 1007 HIMACHAL To 1002 HARYANA										
171009	GIRI1	132.00*	0.9384	121007	ABDULLAPURI	0.9385	132	1	0	-0.7
172004	BADDI2	220.00	1.0119	122005	MADANPUR	1.0043	220.00*	1	112.1	27.3
172009	KUNIHAR2	220.00	1.0052	122005	MADANPUR	1.0043	220.00*	1	-7.6	7.2
Sub Total									104.5	33.8
FROM AREA 1007 HIMACHAL TO 1006 UTTARAKH										
171009	GIRI1	132.00	0.9384	161037	KULHALHE	0.9088	132.00*	1	118	15.6
172011	MAJRI2	220.00	0.9205	162016	KHODRIHE	0.9225	220.00*	1	-41.8	5.8
172011	MAJRI2	220.00	0.9205	162016	KHODRIHE	0.9225	220.00*	2	-41.8	5.8
Sub Total									34.4	27.2
FROM AREA 1007 HIMACHAL 1020 NR_ISTS_PUN										
172001	HAMIRPUR42	220.00	1.0122	112101	JALAN-PG	1.0033	220.00*	1	25.2	12.9
172001	HAMIRPUR42	220.00	1.0122	112101	JALAN-PG	1.0033	220.00*	2	25.2	12.9
Sub Total									50.5	25.8
FROM AREA 1007 HIMACHAL TO 1026 NR_ISTS_HP										
172001	HAMIRPUR42	220.00	1.0122	174006	HAMIRPUR	1.012	400.00*	1	-69.3	2.9
172001	HAMIRPUR42	220.00	1.0122	174006	HAMIRPUR	1.012	400.00*	2	-69.3	2.9
172004	BADDI2	220.00*	1.0119	172013	NALLAGAR	1.0134	220	1	-178.5	17.3
172004	BADDI2	220.00*	1.0119	172013	NALLAGAR	1.0134	220	2	-178.5	17.3
172005	UPARNANG	220.00	1.0129	172013	NALLAGAR	1.0134	220.00*	1	-28.4	-10
172005	UPARNANG	220.00	1.0129	172013	NALLAGAR	1.0134	220.00*	2	-28.4	-10
172006	CHHAUR	220.00	1.0245	172013	NALLAGAR	1.0134	220.00*	1	120.5	-9.6
Sub Total									-431.8	10.6
FROM AREA 1007 HIMACHAL To 1050 NR_ISTS										
171017	JASSOR1	132.00	1.0255	172019	JASSOR2	1.0092	220.00*	1	-119.3	19.1
Sub Total									-119.3	19.1
FROM AREA 1007 HIMACHAL To 1202 CHAMER-3										
172000	BUDHIL	220.00*	1.043	172020	CHAMER-3	1.042	220	1	29.8	-0.7
172000	BUDHIL	220.00*	1.043	172020	CHAMER-3	1.042	220	2	29.8	-0.7
Sub Total									59.6	-1.5
FROM AREA 1007 HIMACHAL TO 1216 DEHAR										
171023	KNGO SPL	132.00*	1.0176	171029	DEHAR1	1.0191	132	1	-90.1	14.7
172003	KANGOO2	220.00	1.0074	172017	DEHAR	1.0082	220.00*	1	-146.6	4.9
Sub Total									-236.7	19.7
FROM AREA 1007 HIMACHAL TO 1218 ADHYDRO										
172006	CHHAUR	220.00	1.0245	172022	ADHYDRO	1.026	220.00*	1	-15.1	2.8
Sub Total									-15.1	2.8
FROM AREA 1007 HIMACHAL TO 1219 KARCHAMW										
174000	BASPA4	400.00	1.0489	174010	KARCHAMW	1.05	400.00*	1	109	-29.1
174000	BASPA4	400.00	1.0489	174010	KARCHAMW	1.05	400.00*	2	109	-29.1
Sub Total									217.9	-58.2
FROM AREA 1007 HIMACHAL TO 1220 MALAN-II										
171004	CHHAUR	132.00	1.0117	171028	MALAN-II	1.02	132.00*	1	-54.5	1.5
171004	CHHAUR	132.00	1.0117	171028	MALAN-II	1.02	132.00*	2	-54.5	1.5
Sub Total									-109	2.9
Total									-404.5	74.2

(e)

FROM AREA 1006 UTTARAKH-TO 1005 UTTARPRA

BUS	NAME	VOLTAGE(p.u)	BUS	NAME	VOLTAGE(p.u)	BASE KV	CKT	MW	MVAR	
161011	KICCHHA	132.00*	0.8673	151051	RICHA	0.8905	132	1	-19.8	-9.7
161013	KHATIMAH	132.00	0.8383	151414	PILIBHI1	0.8392	132.00*	1	-5.2	2.1
161014	KOTDWAR	132.00	0.8029	151030	NAZIBABA	0.8262	132.00*	1	-48.4	-16.7
161015	MANGLORE	132.00*	0.8232	151249	KIRATPUR	0.8335	132	1	-1.1	-5.5
161016	BHAGWANN	132.00*	0.8041	151200	SREAMBAL	0.807	132	1	-4.7	-4.9
161029	SITARGAN	132.00	0.9393	151022	DOHANA1	0.9105	132.00*	1	-3.6	-2.5
161030	LAKSAR	132.00	0.8965	151021	NEHTOR1	0.8527	132.00*	1	-23.9	-12.5
161030	LAKSAR	132.00*	0.8357	151382	CHANDAK	0.8432	132	1	-18.6	-10.6
161031	KALAGARH	132.00	0.88	151021	NEHTOR1	0.8527	132.00*	1	23.6	9.1
161031	KALAGARH	132.00	0.88	151067	DHAMPR1	0.8432	132.00*	1	17.1	6.6
161031	KALAGARH	132.00	0.88	151067	DHAMPR1	0.8527	132.00*	2	17.1	6.6
161032	KASHIPU1	132.00	0.8823	151205	THAKURWA	0.8635	132.00*	1	47.4	-6.3
161033	ROORKEE1	132.00	0.8311	151035	SAHARANI	0.8635	132.00*	1	43.8	8.4
161035	CHILLA-H	132.00*	0.8708	151030	NAZIBABA	0.877	132	1	48.8	12.5
162005	PANTNAG2	220.00	0.9056	152026	BAKNTPR2	0.8088	220.00*	1	-175.3	-69.4
162008	RORKEE2	220.00	0.9173	152043	NARA2	0.8262	220.00*	1	29.5	18.6
162016	KHODRIHE	220.00	0.9225	152041	SAHARNP2	0.8866	220.00*	1	84.5	29.3
162016	KHODRIHE	220.00	0.9225	152041	SAHARNP2	0.8866	220.00*	2	82.5	28.8
164001	KASHIPU4	400.00	0.9866	154009	MURADAB4	0.9816	400.00*	1	27.3	48.3
Sub Total								121	32.2	
FROM AREA 1006 UTTARAKH-TO 11007 HIMACHAL										
161037	KULHALHE	132.00*	0.9088	171009	GIRI1	0.9384	132	1	-118	-15.6
162016	KHODRIHE	220.00*	0.9225	172011	MAJRI2	0.9205	220	1	41.8	-5.8
162016	KHODRIHE	220.00*	0.9225	172011	MAJRI2	0.9205	220	2	41.8	-5.8
Sub Total								-34.4	-27.2	
FROM AREA 1006 UTTARAKH-TO 11024 NR_ISTS_UP										
161019	PITHORAG	132.00	0.9393	162018	PITHORGA	0.9643	220.00*	1	-83.9	-24.2
161029	SITARGAN	132.00	0.8965	162017	SITARGAN	0.922	220.00*	1	-63.3	-21.8
161029	SITARGAN	132.00	0.8965	162017	SITARGAN	0.922	220.00*	2	-63.3	-21.8
164001	KASHIPU4	400.00	0.9866	154055	BARELI74	1.0085	400.00*	1	-304.1	-91.4
164001	KASHIPU4	400.00	0.9866	154055	BARELI74	1.0085	400.00*	2	-304.1	-91.4
Sub Total								-818.6	-250.6	
FROM AREA 1006 UTTARAKH-TO 11025 NR_ISTS_UTT										
164000	RISHIKE4	400.00	0.9866	164002	ROORKEE	0.9704	400.00*	1	-51.1	-14.5
164001	KASHIPU4	400.00*	0.9866	164002	ROORKEE	0.9704	400	1	53.8	43.9
164001	KASHIPU4	400.00*	0.9866	164002	ROORKEE	0.9704	400	2	53.8	43.9
Sub Total								56.4	73.3	
FROM AREA 1006 UTTARAKH-TO 11050 NR_ISTS										
162007	HARIDWA2	220.00	0.9098	162020	ROORK-PG	0.9291	220.00*	1	-70	-59.7
162008	RORKEE2	220.00	0.9173	162020	ROORK-PG	0.9291	220.00*	1	-196.1	-113.4
Sub Total								-266	-173.1	
Total								-941.7	-345.4	

(f)

FROM AREA 1005 UTTARPRA TO 1003 RAJASTHA										
BUS	NAME	VOLTAGE(p.u)	BUS	NAME	VOLTAGE(p.u)	BASE KV	CKT	MW	MVAR	
152049	SIKANDR2	220.00	0.8651	132011	BHTRATPU	0.8435	220.00*	1	134.6	18.6
Sub Total								134.6	18.6	
FROM AREA 1005 UTTARPRA TO 1004 DELHI										
152005	NOIDA20S	220.00	0.9778	142032	GAZIPUR_DL	0.9808	220.00*	1	-199.5	-29.7
152005	NOIDA20S	220.00*	0.9778	142045	BADARPR2	0.967	220	1	199.1	28.6
Sub Total								-0.3	-1.1	
FROM AREA 1005 UTTARPRA TO 1006 UTTARAKH										
151021	NEHTOR1	132.00*	0.8527	161030	LAKSAR	0.8357	132	1	23.9	12.5

151021	NEHTORI	132.00*	0.8527	161031	KALAGARH	0.88	132	1	-23.6	-9.1
151022	DOHANAI	132.00*	0.9105	161029	SITARGAN	0.8965	132	1	3.6	2.5
151030	NAZIBABA	132.00*	0.8262	161014	KOTDWAR	0.8029	132	1	48.4	16.7
151030	NAZIBABA	132.00*	0.8262	161035	CHILLA-H	0.8708	132.00*	1	-48.8	-12.5
151035	SAHARANI	132.00*	0.8088	161033	ROORKEE1	0.8311	132	1	-43.8	-8.4
151051	RICHA	132.00	0.8905	161011	KICCHHA	0.8673	132.00*	1	19.8	9.7
151067	DHAMPR1	132.00*	0.8635	161031	KALAGARH	0.88	132	1	-17.1	-6.6
151067	DHAMPR1	132.00*	0.8635	161031	KALAGARH	0.88	132	2	-17.1	-6.6
151200	SREAMBAL	132.00	0.807	161016	BHAGWANN	0.8041	132.00*	1	4.7	4.9
151205	THAKURWA	132.00*	0.877	161032	KASHIPU1	0.8823	132	1	-47.4	6.3
151249	KIRATPUR	132.00	0.8335	161015	MANGLORE	0.8232	132.00*	1	1.1	5.5
151382	CHANDAK	132.00	0.8432	161030	LAKSAR	0.8357	132.00*	1	18.6	10.6
151414	PILIBHI1	132.00*	0.8392	161013	KHATIMAH	0.8383	132	1	5.2	-2.1
152026	BAKNTPR2	220.00*	0.9645	162005	PANTNAG2	0.9056	220	1	175.3	69.4
152041	SAHARNP2	220.00*	0.8866	162016	KHODRIHE	0.9225	220	1	-84.5	-29.3
152041	SAHARNP2	220.00*	0.8866	162016	KHODRIHE	0.9225	220	2	-82.5	-28.8
152043	NARA2	220.00*	0.9067	162008	RORKEE2	0.9173	220	1	-29.5	-18.6
154009	MURADAB4	400.00*	0.9816	164001	KASHIPU4	0.9866	400	1	-27.3	-48.3
Sub Total									-121	-32.2
FROM AREA 1005 UTTARPRA TO 1024 NR ISTS UP										
151220	RAEBRL_P	132.00	0.978	152101	RAEBAREI	1.003	220.00*	1	-61	-25.2
151220	RAEBRL_P	132.00	0.978	152101	RAEBAREI	1.003	220.00*	2	-61	-25.2
151220	RAEBRL_P	132.00	0.978	152101	RAEBAREI	1.003	220.00*	3	-61	-25.2
152011	CHINHAT2	220.00	0.9701	152101	RAEBAREI	1.003	220.00*	1	-92.7	-12.4
152026	BAKNTPR2	220.00*	0.9645	162018	PITHORGA	0.9643	220	1	-87.8	-0.7
152029	SAROJNI2	220.00	0.9788	152101	RAEBAREI	1.003	220.00*	1	-100.8	-13.5
152048	ORAI2	220.00*	0.9982	152102	KANPU-PG	0.9917	220	1	26.5	-1.6
152052	MAINPUR2	220.00*	0.9595	152102	KANPU-PG	0.9917	220	1	-71	-16.2
152055	PANKI2	220.00*	0.9877	152102	KANPU-PG	0.9917	220	1	-116	-24.2
152055	PANKI2	220.00*	0.9877	152102	KANPU-PG	0.9917	220	2	-82	-17.6
152056	NAUBSTA2	220.00*	0.9767	152102	KANPU-PG	0.9917	220	1	-153.6	-91.4
152067	CBGANJ2	220.00	0.9494	162017	SITARGAN	0.922	220.00*	1	35.3	28.2
152095	MEERUT	220.00	0.9301	154024	MEERUT	0.9896	400.00*	1	-276.3	-150.2
152095	MEERUT	220.00	0.9301	154024	MEERUT	0.9896	400.00*	2	-276.3	-150.2
152095	MEERUT	220.00	0.9301	154024	MEERUT	0.9896	400.00*	3	-276.3	-150.2
152095	MEERUT	220.00	0.9301	154024	MEERUT	0.9896	400.00*	4	-436.9	-221.9
152096	FATEH-PG	220.00	0.9982	154049	FATEH-PG	0.9896	400.00*	1	-109.4	-16.8
152096	FATEH-PG	220.00	0.9982	154049	FATEH-PG	1.0061	400.00*	2	-109.4	-16.8
152097	LUCKNOW	220.00	0.9992	154040	LUCK4-PG	1.0225	400.00*	1	-115.6	-56.8
152097	LUCKNOW	220.00	0.9992	154040	LUCK4-PG	1.0225	400.00*	2	-185.6	-84.7
152098	MANPURI2	220.00	0.9701	154047	MAINPURI	1.0183	400.00*	1	-261.1	-123.6
152098	MANPURI2	220.00	0.9701	154047	MAINPURI	1.0183	400.00*	2	-261.1	-123.6
152099	ALLAHABA	220.00	0.9829	154053	ALLAHABA	1.0094	400.00*	1	-129.7	-64.2
152099	ALLAHABA	220.00	0.9829	154053	ALLAHABA	1.0094	400.00*	2	-129.7	-64.2
152099	ALLAHABA	220.00	0.9829	154053	ALLAHABA	1.0094	400.00*	3	-129.7	-64.2
152100	GORAK-PG	220.00	1.0046	154036	GORAKHPU	1.0305	400.00*	1	-113.1	-64
152100	GORAK-PG	220.00	1.0046	154036	GORAKHPU	1.0305	400.00*	2	-113.1	-64
152106	SHAHJAHAN4	220.00	1.0255	154050	SHAHJ-PG	1.0255	400.00*	1	0	0
152106	SHAHJAHAN4	220.00	1.0255	154050	SHAHJ-PG	1.0255	400.00*	2	0	0
152114	BAGPAT-PG	220.00	0.9763	154070	BAGPAT	0.9917	400.00*	1	-110	-56.8
152115	AGRA-PG	220.00	0.9335	154034	AGRA	0.9859	400.00*	1	-315.5	-151.3
152117	SAHARANPR-PG220.00*		0.8958	154071	SAHARNPUR400	0.961	400	1	-77.3	-42.3
152117	SAHARANPR-PG220.00*		0.8958	154071	SAHARNPUR400		400	2	-77.3	-42.3
154000	AGRAUP4	400.00*	0.9638	154034	AGRA	0.9859	400	1	-489	-298.3
154000	AGRAUP4	400.00*	0.9638	154034	AGRA	0.9859	400	2	-489	-298.3
154001	UNNAO4	400.00*	1.0109	154040	LUCK4-PG	1.0225	400	1	78.7	-103.9
154001	UNNAO4	400.00*	1.0109	154040	LUCK4-PG	1.0225	400	2	78.7	-103.9
154002	BARELI4	400.00*	1.0031	154025	BAREL-PG	1.0084	400	1	-21.8	-179.2
154002	BARELI4	400.00*	1.0031	154025	BAREL-PG	1.0084	400	2	-21.8	-179.2
154005	PARICHHA	400.00*	1.0419	154047	MAINPURI	1.0183	400	1	169.5	-35.1
154005	PARICHHA	400.00*	1.0419	154047	MAINPURI	1.0183	400	2	169.5	-35.1
154007	GORAK_UP	400.00*	1.0214	154036	GORAKHPU	1.0305	400	1	-38.6	-108
154007	GORAK_UP	400.00*	1.0214	154036	GORAKHPU	1.0305	400	2	-38.6	-108

154008	LUCKN_UP	400.00*	1.0105	154025	BAREL-PG	1.0084	400	1	99.4	-35
154008	LUCKN_UP	400.00*	1.0105	154040	LUCK4-PG	1.0225	400	1	15.5	-111.7
154009	MURADAB4	400.00*	0.9816	154025	BAREL-PG	1.0084	400	1	-284.1	-128.4
154009	MURADAB4	400.00*	0.9816	154025	BAREL-PG	1.0084	400	2	-287	-129.3
154010	MUZAFRN4	400.00*	0.9708	154024	MEERUT	0.9896	400	1	-526	-187.5
154013	PANKI4	400.00*	1.0015	154037	KANPUR	1.0017	400	1	11	-13.2
154013	PANKI4	400.00*	1.0015	154037	KANPUR	1.0017	400	2	10.8	-13.2
154017	ROSA-TP2	400.00*	1.033	154025	BAREL-PG	1.0084	400	1	320.3	52.5
154017	ROSA-TP2	400.00*	1.033	154040	LUCK4-PG	1.0225	400	1	60.5	-24.6
154019	SARNATH4	400.00	1.007	154067	VARANASI-PG	1.0162	400.00*	1	203	-66.5
154022	SULTANP4	400.00*	1.0036	154040	LUCK4-PG	1.0225	400	1	108.7	-108.9
154023	MAU4	400.00*	1.0186	154054	BAL74-PG	1.0207	400	1	51.8	-120.6
154023	MAU4	400.00*	1.0186	154054	BAL74-PG	1.0207	400	2	51.8	-120.6
157011	GR.NOIDA	765.00	0.9798	157007	AGRA-PG	0.9968	765.00*	1	-522.3	-36.9
157011	GR.NOIDA	765.00*	0.9798	157008	MERUT-PG	0.9817	765	1	521.3	46.2
Sub Total									-5096.4	-4379.6
FROM AREA 1005 UTTARPRA TO 1025 NR ISTS UTT										
154010	MUZAFRN4	400.00	0.9708	164002	ROORKEE	0.9704	400.00*	1	170	3.3
Sub Total									170	3.3
FROM AREA 1005 UTTARPRA TO 1050 NR ISTS										
152002	GNOIDA2	220.00	0.9649	154059	GNOIDA4	0.9922	400.00*	1	-246.4	-116.5
152002	GNOIDA2	220.00	0.9649	154059	GNOIDA4	0.9922	400.00*	2	-140.3	-61.5
152002	GNOIDA2	220.00	0.9649	154059	GNOIDA4	0.9922	400.00*	3	-140.3	-61.5
152002	GNOIDA2	220.00	0.9649	154059	GNOIDA4	0.9922	400.00*	4	-246.4	-116.5
152107	RASRA	220.00*	0.9504	151416	RASRA	0.9504	132	1	0	0
152107	RASRA	220.00*	0.9504	151416	RASRA	0.9504	132	2	0	0
Sub Total									-773.5	-356.1
FROM AREA 1005 UTTARPRA TO 1100 SINGRAUL										
154008	LUCKN_UP	400.00*	1.0105	154056	SINGRL4	1.03	400	1	-312.7	-11
154014	ANPARA4	400.00*	1.04	154056	SINGRL4	1.03	400	1	-69.9	199
Sub Total									-382.6	188
FROM AREA 1005 UTTARPRA TO 1103 DADR-NCR										
154066	MURADNGR	NEW400.00*		154061	DADR-NCR	1	400	1	-385.8	-193.5
Sub Total									-385.8	-193.5
FROM AREA 1005 UTTARPRA TO 1104 UNCHAHAR										
152064	FATEHPR2	220.00*	0.9965	154058	UNCHHR2	1.02	220	1	-81.9	-38.7
152064	FATEHPR2	220.00*	0.9965	154058	UNCHHR2	1.02	220	2	-81.9	-38.7
Sub Total									-163.7	-77.3
FROM AREA 1005 UTTARPRA TO 1152 AURAIYA										
152049	SIKANDR2	220.00*	0.8651	154060	AURYA2	1.0184	220	1	-125.6	-62.8
152049	SIKANDR2	220.00*	0.8651	154060	AURYA2	1.0184	220	2	-125.6	-62.8
Sub Total									-251.1	-125.7
FROM AREA 1005 UTTARPRA TO 1153 NAPS										
152003	ATRAULI2	220.00*	0.9251	152105	NAPP2	0.9392	220	1	-16.3	-50.2
152030	SAMBHAL	220.00	0.9132	152105	NAPP2	0.9392	220.00*	1	-29.3	-39.1
152045	KHURJA2	220.00	0.9317	152105	NAPP2	0.9392	220.00*	1	-60.9	-15.5
152045	KHURJA2	220.00	0.9317	152105	NAPP2	0.9392	220.00*	2	-60.9	-15.5
152121	DEBAI	220.00	0.9298	152105	NAPP2	0.9392	220.00*	2	-33.7	-14.9
Sub Total									-201.1	-135.2
FROM AREA 1005 UTTARPRA TO 1205 TANAKPUR										
152067	CBGANJ2	220.00	0.9494	162019	TANAKPUR2	0.934	220.00*	1	-2	23.4
Sub Total									-2	23.4
FROM AREA 1005 UTTARPRA TO 1208 DHAULIGA										
152026	BAKNTPR2	220.00*	0.9645	164005	DHAULI2	0.9825	220	1	-110.3	-8.6
Sub total									-110.3	-8.6
FROM AREA 1005 UTTARPRA TO 2051 ER ISTS BIH										
152065	SAHUPU_N	220.00*	0.9703	212014	PUSAULI2	0.9534	220	1	108.2	7.9
154019	SARNATH4	400.00*	1.007	214012	SASARAM_N4	0.9975	400	1	-151.5	57.8
Sub total									-43.3	65.7
TOTAL									-7226.6	-5010.4

(g)

FROM AREA 1004 DELHI-To 1002 HARYANA									
BUS	NAME	VOLTAGE(p.u)	BUS	NAME	VOLTAGE(p.u)	BASE KV	CKT	MW	MVAR
144006	BAWANA4 400.00	1.0049	124006	DEEPALPUR	1.0101	400.00*	1	-361.8	-85
Sub Total								-361.8	-85
FROM AREA 1004 DELHI-To 1003 RAJASTHA									
142045	BADARPR2 220.00	0.967	132107	MIA-ALWA	0.9358	220.00*	1	15.1	31.6
Sub Total								15.1	31.6
FROM AREA 1004 DELHI-To 1005 UTTARPRA									
142032	GAZIPUR_DL 220.00*	0.9808	152005	NOIDA20S	0.9778	220	1	199.5	29.7
142045	BADARPR2 220.00	0.967	152005	NOIDA20S	0.9778	220.00*	1	-199.1	-28.6
Sub Total								0.3	1.1
FROM AREA 1004 DELHI-To 1021 NR ISTS HAR									
144000	BAWANA-G 400.00*	1.005	124016	BAHADURG	1.01	400	1	-18.8	-61.4
144000	BAWANA-G 400.00*	1.005	124021	BHIWN-PG	1.0001	400	1	-136.9	10.1
144006	BAWANA4 400.00*	1.0049	124012	ABDULLAP	1.0344	400	1	-217.3	-138.4
Sub Total								-373	-189.7
FROM AREA 1004 DELHI-To 1023 NR ISTS DEL									
142012	MANDOLA 220.00	0.969	144003	MANDOLA	0.9998	400.00*	1	-201.1	-20.3
142012	MANDOLA 220.00	0.969	144003	MANDOLA	0.9998	400.00*	2	-201.1	-20.3
142012	MANDOLA 220.00	0.969	144003	MANDOLA	0.9998	400.00*	3	-201.1	-20.3
142012	MANDOLA 220.00	0.969	144003	MANDOLA	0.9998	400.00*	4	-201.1	-20.3
142033	MAHARANIBAGH220.00	0.9875	144002	MAHARANI	0.9941	400.00*	1	-136.3	-13.5
142033	MAHARANIBAGH220.00	0.9875	144002	MAHARANI	0.9941	400.00*	2	-136.3	-13.5
142033	MAHARANIBAGH220.00	0.9875	144002	MAHARANI	0.9941	400.00*	3	-216.3	-21.4
142033	MAHARANIBAGH220.00	0.9875	144002	MAHARANI	0.9941	400.00*	4	-216.3	-21.4
144006	BAWANA4 400.00*	1.0049	144003	MANDOLA	0.9998	400	1	183.1	122
144006	BAWANA4 400.00*	1.0049	144003	MANDOLA	0.9998	400	2	183.1	122
Sub Total								-1143.2	92.9
FROM AREA 1004 DELHI- To 1041 NRIST-BB									
142004	NARELA_D 220.00	0.968	122078	PANIPAT	0.9753	220.00*	1	-22.1	-7.2
142004	NARELA_D 220.00	0.968	122078	PANIPAT	0.9753	220.00*	2	-22.1	-7.2
142004	NARELA_D 220.00	0.968	122078	PANIPAT	0.9753	220.00*	3	-22.1	-7.2
142004	NARELA_D 220.00*	0.968	142046	NARELA_BB	0.968	220	1	66.5	24
Subtotal								0.3	2.2
FROM AREA 1004 DELHI-To 1050 NR ISTS									
142002	BAMNOLI2 220.00	0.9715	144007	BAMNOLI4	0.9853	400.00*	1	-210.1	-34.8
142002	BAMNOLI2 220.00	0.9715	144007	BAMNOLI4	0.9853	400.00*	2	-311	-51.5
142002	BAMNOLI2 220.00	0.9715	144007	BAMNOLI4	0.9853	400.00*	3	-311	-51.5
142002	BAMNOLI2 220.00	0.9715	144007	BAMNOLI4	0.9853	400.00*	4	-210.1	-34.8
142043	MUNDKA 220.00	0.9947	144008	MUNDKA	0.9961	400.00*	1	-136.7	-0.5
142043	MUNDKA 220.00	0.9947	144008	MUNDKA	0.9961	400.00*	2	-136.7	-0.5
142043	MUNDKA 220.00	0.9947	144008	MUNDKA	0.9961	400.00*	3	-136.7	-0.5
144006	BAWANA4 400.00*	1.0049	144008	MUNDKA	0.9961	400	1	-68.2	71.8
144006	BAWANA4 400.00*	1.0049	144008	MUNDKA	0.9961	400	2	-68.2	71.8
Sub TOTAL								-1588.6	-30.4
FROM AREA 1004 DELHI- To 1103 DADR-NCR									
144001	HARSHVIHAR 400.00	0.9928	154061	DADR-NCR	1	400.00*	1	-229.6	-34.7
144001	HARSHVIHAR 400.00	0.9928	154061	DADR-NCR	1	400.00*	2	-229.6	-34.7
Sub TOTAL								-459.3	-69.5
Total								-3910.1	-246.7

(h)

FROM AREA 1002 HARYANA To TO AREA 1001 PUNJAB									
BUS	NAME	VOLTAGE(p.u)	BUS	NAME	VOLTAGE(p.u)	BASE KV	CKT	MW	MVAR
121001	PINJORE 132.00	0.9841	111110	ROPAR	0.9885	132.00*	1	-23.4	-1
121001	PINJORE 132.00	0.9841	111110	ROPAR	0.9885	132.00*	2	-23.4	-1
Sub TOTAL								-46.8	-2
FROM AREA 1002 HARYANA To TO AREA 1003 RAJASTHA									
121021	HISAR 132.00*	0.9686	131158	HANUMANG	0.9762	132	1	10.3	-10.1

121021	HISAR	132.00*	0.9686	131367	RAJGARH	0.9402	132	1	35.6	0.9
Sub Total									45.9	-9.3
FROM AREA 1002 HARYANA To 1004 DELHI										
124006	DEEPALPUR	400.00*	1.0101	144006	BAWANA4	1.0049	400	1	361.8	85
Sub Total									361.8	85
FROM AREA 1002 HARYANA To 1007 HIMACHAL										
121007	ABDULLAPUR1	132.00	0.9385	171009	GIRI1	0.9384	132.00*	1	0	0.7
122005	MADANPUR	220.00*	1.0043	172004	BADDI2	1.0119	220	1	-112.1	-27.3
122005	MADANPUR	220.00*	1.0043	172009	KUNIHAR2	1.0052	220	1	7.6	-7.2
Sub Total									-104.5	-33.8
FROM AREA 1002 HARYANA To 1009 CHANDIGA										
120002	DHULKOTE	66.000*	0.9722	190004	CHANDIGA S28	0.9473	66	1	7.5	0.3
120002	DHULKOTE	66.000*	0.9722	190004	CHANDIGA S28	0.9473	66	2	7.5	0.3
SUB TOTAL									15.1	0.6
FROM AREA 1002 HARYANA To 1021 NR ISTS HAR										
122000	FATEHABAD	220.00	0.9787	124010	FATEHABAD	1.0021	400.00*	1	-161.6	-56
122000	FATEHABAD	220.00	0.9787	124010	FATEHABAD	1.0021	400.00*	2	-161.6	-56
122020	FATEHABAD	220.00*	0.976	122075	HISAR-PG	0.9866	220	1	-37.6	-15.9
122020	FATEHABAD	220.00*	0.976	122075	HISAR-PG	0.9866	220	2	-37.6	-15.9
122028	IA-HISAR	220.00*	0.9806	122075	HISAR-PG	0.9866	220	1	-117.6	-30.3
122028	IA-HISAR	220.00*	0.9806	122075	HISAR-PG	0.9866	220	2	-117.6	-30.3
122059	SAGWAN	220.00*	0.9816	122075	HISAR-PG	0.9866	220	1	-50.1	-11.9
122059	SAGWAN	220.00*	0.9816	122075	HISAR-PG	0.9866	220	2	-50.1	-11.9
122061	REWALI	220.00*	1.0116	122076	PANCHKU	1.0164	220	1	-122.1	-25.6
122061	REWALI	220.00*	1.0116	122076	PANCHKU	1.0164	220	2	-122.1	-25.6
122070	ABDULLAP	220.00	1.0124	124012	ABDULLAP	1.0344	400.00*	1	-146.3	-53.9
122070	ABDULLAP	220.00	1.0124	124012	ABDULLAP	1.0344	400.00*	2	-146.3	-53.9
122070	ABDULLAP	220.00	1.0124	124012	ABDULLAP	1.0344	400.00*	3	-146.3	-53.9
122070	ABDULLAP	220.00	1.0124	124012	ABDULLAP	1.0344	400.00*	4	-146.3	-53.9
122071	KAITH-PG	220.00	0.9768	124013	KAITHAL	1.0037	400.00*	1	-152.9	-65
122071	KAITH-PG	220.00	0.9768	124013	KAITHAL	1.0037	400.00*	2	-152.9	-65
122072	BAHDURG2	220.00	0.9851	124016	BAHADURG	1.01	400.00*	1	-125.9	-60.3
122072	BAHDURG2	220.00	0.9851	124016	BAHADURG	1.01	400.00*	2	-199.9	-95.7
122074	SONEP-PG	220.00	0.991	124018	SONEP-PG	1.0195	400.00*	1	-130.1	-69.8
122074	SONEP-PG	220.00	0.991	124018	SONEP-PG	1.0195	400.00*	2	-130.1	-69.8
122086	GURGAON PG2	220.00	0.9731	124017	GURGAON	0.9963	400.00*	1	-159.9	-55.5
122086	GURGAON PG2	220.00	0.9731	124017	GURGAON	0.9963	400.00*	2	-159.9	-55.5
122089	MANESAR-PG	220.00	0.9793	124019	MANESAR	0.9959	400.00*	1	-168.4	-61.5
122089	MANESAR-PG	220.00	0.9793	124019	MANESAR	0.9959	400.00*	2	-168.4	-61.5
124001	KHEDAR	400.00	1.01	124010	FATEHABAD	1.0021	400.00*	2	287.2	77.6
124002	DAULATABAD4	400.00*	0.9976	124017	GURGAON	0.9963	400	1	475.5	4.7
124002	DAULATABAD4	400.00*	0.9976	124017	GURGAON	0.9963	400	2	475.5	4.7
124005	NAWADA	400.00	0.9927	124014	BALLABHG	0.9947	400.00*	1	106	-87.5
124006	DEEPALPUR	400.00*	1.0101	124012	ABDULLAP	1.0344	400	1	-189.7	-132.2
124009	NUHIYANWALI	400.00	0.9993	124010	FATEHABAD	1.0021	400.00*	1	-92	11.9
124024	PANIPAT	400.00	0.9996	124020	PANCH-PG	1.0298	400.00*	1	-261.4	-37.7
Sub Total									-2310.7	-1313.3
FROM AREA 1002 HARYANA To 1022 NR ISTS RAJ										
122034	REWARI SPLIT	220.00*	0.9685	132141	BHIWADI	0.9718	220	1	-5.1	-32.2
122049	MAU HR	220.00*	0.9758	132141	BHIWADI	0.9718	220	1	86.8	18.1
Sub Total									81.7	-14.1
FROM AREA 1002 HARYANA To 1041 NRIST-BB										
120000	JAGADHARI	66.000	0.9668	122085	JAGADHARI	0.9722	220.00*	1	-9	-3.2
120000	JAGADHARI	66.000	0.9668	122085	JAGADHARI	0.9722	220.00*	2	-9.5	-3.3
120000	JAGADHARI	66.000	0.9668	122085	JAGADHARI	0.9722	220.00*	3	-9.2	-3.2
120002	DHULKOTE	66.000	0.9722	122083	DHULKOTE	0.9934	220.00*	1	-40.2	-14.2
120002	DHULKOTE	66.000	0.9722	122083	DHULKOTE	0.9934	220.00*	2	-40.5	-14.3
120003	BALABGR1	66.000	0.9438	122080	BALLABGARH	0.9761	220.00*	1	-75.2	-32.6
120003	BALABGR1	66.000	0.9438	122080	BALLABGARH	0.9761	220.00*	2	-75.2	-32.6
120003	BALABGR1	66.000	0.9438	122080	BALLABGARH	0.9761	220.00*	3	-75.2	-32.6
120005	SEWAH	33.000	0.9706	122078	PANIPAT	0.9753	220.00*	1	-6.5	-2.3
120005	SEWAH	33.000	0.9706	122078	PANIPAT	0.9753	220.00*	2	-6.5	-2.3
121000	BHIWANIBB	132.00	0.958	122079	BHIWANI	0.9726	220.00*	1	-44.7	-12.7
121010	KURUKSHETRA1	132.00	0.9491	122077	KURUKSHETRA	0.9614	220.00*	1	-24.7	-7.6
121010	KURUKSHETRA1	132.00	0.9491	122077	KURUKSHETRA	0.9614	220.00*	2	-25.1	-7.8

121010	KURUKSHETRA1132.00	0.9491	122077	KURUKSHETRA	0.9614	220.00*	3	-29.6	-9.1
121010	KURUKSHETRA1132.00	0.9491	122077	KURUKSHETRA	0.9614	220.00*	4	-29.6	-9.1
121016	SEWAH 132.00	0.9405	122078	PANIPAT	0.9753	220.00*	1	-85.2	-37.4
121016	SEWAH 132.00	0.9405	122078	PANIPAT	0.9753	220.00*	2	-81.5	-35.8
121021	HISAR 132.00	0.9686	122081	HISAR-BB	0.9799	220.00*	1	-54.3	-11.5
121021	HISAR 132.00	0.9686	122081	HISAR-BB	0.9799	220.00*	2	-50.6	-10.8
121202	DADR2-HS 132.00	0.9476	122084	CHARKHIDADRI	0.9657	220.00*	1	-42.5	-18.5
121202	DADR2-HS 132.00	0.9476	122084	CHARKHIDADRI	0.9657	220.00*	2	-35.4	-15.4
121214	NARELA BB 132.00	0.9474	142046	NARELA_BB	0.968	220.00*	1	-22.9	-8.2
121214	NARELA_BB 132.00	0.9474	142046	NARELA_BB	0.968	220.00*	2	-43.7	-15.7
122002	BADSHAHPUR 220.00*	0.9722	122082	SAMAYPUR	0.9779	220	1	-15.8	-23.9
122002	BADSHAHPUR 220.00*	0.9722	122082	SAMAYPUR	0.9779	220	2	-13.8	-21.9
122010	PANIPAT OLD 220.00	0.9736	122078	PANIPAT	0.9753	220.00*	1	-24.7	-10.2
122010	PANIPAT OLD 220.00	0.9736	122078	PANIPAT	0.9753	220.00*	2	-24.7	-10.2
122010	PANIPAT OLD 220.00	0.9736	122078	PANIPAT	0.9753	220.00*	3	-24.7	-10.2
122010	PANIPAT OLD 220.00	0.9736	122078	PANIPAT	0.9753	220.00*	4	-24.7	-10.2
122015	MAHINDERGARH220.00*	0.9558	122084	CHARKHIDADRI	0.9657	220	1	-62.6	-19.9
122015	MAHINDERGARH220.00*	0.9558	122084	CHARKHIDADRI	0.9657	220	2	-62.3	-19.8
122017	PALWAL 220.00*	0.9733	122082	SAMAYPUR	0.9779	220	1	-62.7	-18
122017	PALWAL 220.00*	0.9733	122082	SAMAYPUR	0.9779	220	2	-62.7	-18
122019	PALI 220.00*	0.9717	122082	SAMAYPUR	0.9779	220	1	-54.6	-24.6
122019	PALI 220.00*	0.9717	122082	SAMAYPUR	0.9779	220	2	-54.6	-24.6
122028	IA-HISAR 220.00	0.9806	122081	HISAR-BB	0.9799	220.00*	1	114	4
122028	IA-HISAR 220.00	0.9806	122081	HISAR-BB	0.9799	220.00*	2	105.1	3.9
122041	BAPORA 220.00	0.9704	122079	BHIWANI	0.9726	220.00*	1	-67.3	-22.6
122041	BAPORA 220.00	0.9704	122079	BHIWANI	0.9726	220.00*	2	-67.3	-22.6
122042	JINDALSTEEL 220.00	0.9799	122081	HISAR-BB	0.9799	220.00*	1	-6	-2
122050	CHHAJPUR 220.00	0.9736	122078	PANIPAT	0.9753	220.00*	1	-39.4	-6.4
122050	CHHAJPUR 220.00	0.9736	122078	PANIPAT	0.9753	220.00*	2	-39.4	-6.4
122056	LULAAHIR 220.00	0.9786	122084	CHARKHIDADRI	0.9657	220.00*	1	174.6	7.5
122073	FARIDAB2 220.00	0.9826	122082	SAMAYPUR	0.9779	220.00*	1	-8.9	34.3
122073	FARIDAB2 220.00	0.9826	122082	SAMAYPUR	0.9779	220.00*	2	-8.9	34.3
124024	PANIPAT 400.00*	0.9996	122078	PANIPAT	0.9753	220	1	202.7	77.7
124024	PANIPAT 400.00*	0.9996	122078	PANIPAT	0.9753	220	2	202.7	77.7
Sub Total								-842.3	-372.1
FROM AREA 1002 HARYANA To 1050 NR_ISTS									
124005	NAWADA 400.00*	0.9927	154059	GNOIDA4	0.9922	400	1	-250.2	25
124008	DHANONDA 400.00*	1.0053	124025	MAHIN HV	1.0047	400	1	-799	115.4
124008	DHANONDA 400.00*	1.0053	124025	MAHIN HV	1.0047	400	2	-799	115.4
Sub Total								-1848.2	255.8
FROM AREA 1002 HARYANA To 1103 DADR-NCR									
124024	PANIPAT 400.00*	0.9996	154061	DADR-NCR	1	400	1	-74.3	-25.3
124024	PANIPAT 400.00*	0.9996	154061	DADR-NCR	1	400	2	-71.6	-26.7
Sub Total								-146	-52.1
FROM AREA 1002 HARYANA To 1105 IGSTPS									
124002	DAULATABAD4 400.00	0.9976	124023	JHAJJAR4	1	400.00*	1	-244.1	18.8
124002	DAULATABAD4 400.00	0.9976	124023	JHAJJAR4	1	400.00*	2	-246.1	18.9
Sub Total								-490.2	37.7
TOTAL								-5284.3	-1417.6

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FROM AREA 1003 RAJASTHAN-DETAILS TO 1002 HARYANA									
BUS	NAME	VOLTAGE(p.u)	BUS	NAME	VOLTAGE(p.u)	BASE KV	CKT	MW	MVAR
131158	HANUMANG 132.00	0.9762	121021	HISAR	0.9686	132.00*	1	-10.3	10.1
131367	RAJGARH 132.00	0.9402	121021	HISAR	0.9686	132.00*	1	-35.6	-0.9
TOTAL								-45.9	9.3
FROM AREA 1003 RAJASTHAN-DETAILS TO 1004 DELHI									
132107	MIA-ALWA 220.00*	0.9358	142045	BADARPR2	0.967	220	1	-15.1	-31.6

TOTAL									-15.1	-31.6
FROM AREA 1003 RAJASTHAN-DETAILS TO 1005 UTTARPRA										
132011	BHTRATPU	220.00*	0.8435	152049	SIKANDR2	0.8651	220	1	-134.6	-18.6
TOTAL									-134.6	-18.6
FROM AREA 1003 RAJASTHAN-DETAILS TO 1021 NR_ISTS_HAR										
137000	PHAGI	765.00*	1.0011	127000	BHIWN-PG	0.9825	765	1	534.7	-181.9
TOTAL									534.7	-181.9
FROM AREA 1003 RAJASTHAN-DETAILS TO 1022 NR_ISTS_RAJ										
132000	DAUSA	220.00*	0.9268	132140	BASSI	0.9516	220	1	-188.4	-55.5
132000	DAUSA	220.00*	0.9268	132140	BASSI	0.9516	220	2	-188.4	-55.5
132002	BHIWA-RS	220.00*	0.9626	132141	BHIWADI	0.9718	220	1	-233	-90.2
132002	BHIWA-RS	220.00*	0.9626	132141	BHIWADI	0.9718	220	2	-233	-90.2
132006	KUKAS	220.00*	0.9383	132140	BASSI	0.9516	220	1	-105	-25.1
132007	KANKR-PG	220.00	0.9449	134022	KANKROLI	0.9804	400.00*	1	-128.6	-84.7
132007	KANKR-PG	220.00	0.9449	134022	KANKROLI	0.9804	400.00*	2	-128.6	-84.7
132007	KANKR-PG	220.00	0.9449	134022	KANKROLI	0.9804	400.00*	3	-128.6	-84.7
132009	RATANGAR	220.00*	0.9956	132144	SIKAR-PG	0.9784	220	1	17.4	18.9
132009	RATANGAR	220.00*	0.9956	132144	SIKAR-PG	0.9784	220	2	17.4	18.9
132014	KHETRI	220.00*	0.9392	132143	NEEMR-PG	0.984	220	1	-88	-23
132025	KOTPU-RS	220.00*	0.9643	132142	KOTPU-PG	0.9734	220	2	-232.3	-63.5
132036	NEEMR-RS	220.00*	0.9794	132143	NEEMR-PG	0.984	220	1	-92	-37.4
132036	NEEMR-RS	220.00*	0.9794	132143	NEEMR-PG	0.984	220	2	-92	-37.4
132055	SIKAR-RS	220.00*	0.9661	132144	SIKAR-PG	0.9784	220	1	-212.7	-90.9
132055	SIKAR-RS	220.00*	0.9661	132144	SIKAR-PG	0.9784	220	2	-212.7	-90.9
132075	BAGRU	220.00*	0.9277	132140	BASSI	0.9516	220	1	-113.3	-14.8
132093	DUNI	220.00*	0.9688	132145	JAIPUR_PG	0.9744	220	1	-60.1	-1
132096	INDIRAGN	220.00*	0.9503	132140	BASSI	0.9516	220	1	-56.7	5.2
132104	KUNDAKID	220.00*	0.9399	132140	BASSI	0.9516	220	1	-126.1	-36.5
132121	SEZJAIP	220.00*	0.9446	132145	JAIPUR_PG	0.9744	220	1	-157.6	-30.1
132127	CHAKSU	220.00	0.973	132145	JAIPUR_PG	0.9744	220.00*	1	-47.9	-12.2
132127	CHAKSU	220.00	0.973	132145	JAIPUR_PG	0.9744	220.00*	2	-47.9	-12.2
132137	KUSHKHER	220.00	0.973	132141	BHIWADI	0.9718	220.00*	1	-69.3	-1.1
132137	KUSHKHER	220.00	0.973	132141	BHIWADI	0.9718	220.00*	2	-69.3	-1.1
132137	KUSHKHER	220.00*	0.973	132143	NEEMR-PG	0.984	220	1	-30.9	-26.1
132138	BHINM-PG	220.00	0.9446	134021	BHINMAL	0.9692	400.00*	1	-119.4	-57
132139	KOTA	220.00	1.0085	134023	KOTA	1.0332	400.00*	1	42.5	-66.9
134000	MERTA	400.00*	1.0127	134023	KOTA	1.0332	400	2	-61.7	-59
134003	HERAPU-4	400.00*	0.9765	134025	BASSI	0.9813	400	1	-408.8	-13.9
134003	HERAPU-4	400.00*	0.9765	134025	BASSI	0.9813	400	2	-398.3	-14.3
134008	KALISI-4	400.00*	1	134027	ANTA-4	1.0102	400	1	273.3	-120.9
134008	KALISI-4	400.00*	1	134027	ANTA-4	1.0102	400	2	273.3	-120.9
134010	KAWAI	400.00*	1.02	134027	ANTA-4	1.0102	400	1	312	92.8
134010	KAWAI	400.00*	1.02	134027	ANTA-4	1.0102	400	2	312	92.8
134015	JODHPU-4	400.00	0.9808	134022	KANKROLI	0.9804	400.00*	1	75.2	19.5
134016	JAIPUR_RS	400.00*	0.9898	134025	BASSI	0.9813	400	1	777.2	71.4
134016	JAIPUR_RS	400.00*	0.9898	134025	BASSI	0.9813	400	2	777.2	71.4

134019	KOTPUT	400.00*	0.987	132142	KOTPU-PG	0.9734	220	1	116.9	38.6
134019	KOTPUT	400.00*	0.987	132142	KOTPU-PG	0.9734	220	2	116.9	38.6
134019	KOTPUT	400.00	0.987	134024	BHIWADI	1.0046	400.00*	1	-144.8	-16.8
134019	KOTPUT	400.00	0.987	134025	BASSI	0.9813	400.00*	1	-89.7	61
134020	SIKAR	400.00*	1.0121	132144	SIKAR-PG	0.9784	220	1	197.3	83.5
134020	SIKAR	400.00*	1.0121	132144	SIKAR-PG	0.9784	220	2	197.3	83.5
134020	SIKAR	400.00	1.0121	134026	NEEMR-PG	1.0003	400.00*	1	-152.5	89.5
134020	SIKAR	400.00	1.0121	134026	NEEMR-PG	1.0003	400.00*	2	-152.5	89.5
137001	ANTA	765.00*	1.0064	134027	ANTA-4	1.0102	400	1	-388.9	-20.9
137001	ANTA	765.00*	1.0064	134027	ANTA-4	1.0102	400	2	-388.9	-20.9
				137001	ANTA 765.00*		134027	ANTA-4	400	3
					TOTAL					
FROM AREA 1003 RAJASTHAN-DETAILS TO 1024 NR_ISTS_UP										
134020	SIKAR	400.00	1.0121	154034	AGRA	0.9859	400.00*	1	-155.4	172.4
134020	SIKAR	400.00	1.0121	154034	AGRA	0.9859	400.00*	2	-155.4	172.4
TOTAL									-310.7	344.7
FROM AREA 1003 RAJASTHAN-DETAILS TO 1041 NRIST-BB										
132014	KHETRI	220.00	0.9392	122084	CHARKHIDADRI	0.9657	220.00*	1	-135.6	-18.8
132014	KHETRI	220.00	0.9392	122084	CHARKHIDADRI	0.9657	220.00*	2	-135.6	-18.8
132090	CHIRAWA	220.00	0.9537	122081	HISAR-BB	0.9799	220.00*	1	-97.4	-5.5
TOTAL									-368.6	-43
FROM AREA 1003 RAJASTHAN-DETAILS TO 1106 SHRE_CEM										
134000	MERTA	400.00*	1.0127	134031	SHRECEM	1.0399	400	1	-253.8	-169.5
TOTAL									-253.8	-169.5
FROM AREA 1003 RAJASTHAN-DETAILS TO 1151 ANTA										
132018	BHILWA-2	220.00*	0.941	134029	ANTA2	1.0165	220	1	-60.5	-44.2
132018	BHILWA-2	220.00*	0.941	134029	ANTA2	1.0165	220	2	-60.5	-44.2
132022	SAKATPUR	220.00*	1.0096	134029	ANTA2	1.0165	220	1	26	-23.4
132051	DAHRA	220.00*	1.004	134029	ANTA2	1.0165	220	1	29.2	-58.1
132052	SAWAIMAD	220.00*	0.9675	134029	ANTA2	1.0165	220	1	-78.6	-42.6
132125	LALSOT	220.00*	0.9386	134029	ANTA2	1.0165	220	1	-47.5	-48.9
TOTAL									-191.9	-261.4
FROM AREA 1003 RAJASTHAN-DETAILS TO 1155 RAPS-B										
132022	SAKATPUR	220.00*	1.0096	132146	RAPS_B2	1	220	1	116.2	6.2
132029	CHITTAUR	220.00*	0.908	132146	RAPS_B2	1	220	1	-118.3	-57
132029	CHITTAUR	220.00*	0.908	132146	RAPS_B2	1	220	2	-118.3	-57
132091	DEBARI	220.00	0.8781	132146	RAPS_B2	1	220.00*	1	-109.2	-38.1
TOTAL									-229.6	-145.9
FROM AREA 1003 RAJASTHAN-DETAILS TO 3014 MP										
132022	SAKATPUR	220.00	1.0096	322040	BADOD	1.008	220.00*	1	-18.1	18.4
132032	MODAK	220.00	0.9827	322089	BHANPURA	0.9916	220.00*	1	69.7	-35.8
TOTAL									51.7	-17.4

FROM AREA 1003 RAJASTHAN-DETAILS 3035 WR_ISTS_MP										
137000	PHAGI	765.00	1.0011	327003	GWALIOR	1.0067	765.00*	1	-471.8	83.5
137000	PHAGI	765.00	1.0011	327003	GWALIOR	1.0067	765.00*	2	-461.2	92.7
Sub total								-933	176.2	0.983
TOTAL								-4127.6	-1045.1	0.969

ANNEXURE-3

The detailed exchange of power flow for upgraded northern network (with Capacitor Banks) from each STU to its corresponding to associated transmission lines is provided

FROM AREA 1001 PUNJAB- To 1002 HARYANA								
BUS	NAME	BUS	NAME	BASE KV	CKT	MW	MVAR	
111110	ROPAR 132.00*	121001	PINJORE	132	1	24.9	1.5	
111110	ROPAR 132.00*	121001	PINJORE	132	2	24.9	1.5	
110002	JAMALPUR 66.000	2128	FARUKHNAGAR6	66.000*	1	2.1	0.8	
110002	JAMALPUR 66.000	2128	FARUKHNAGAR6	66.000*	2	2.1	0.8	
110002	JAMALPUR 66.000	2129	PANCHUGON66	66.000*	1	-25.1	-3.2	
110002	JAMALPUR 66.000	2129	PANCHUGON66	66.000*	2	-25.1	-3.2	
		TOTAL				3.8	-1.8	
FROM AREA 1001 PUNJAB- To 1007 HIMACHAL								
111015	CHOHAL 132.00*	171006	HAMIRP-2	132	1	-53.5	7.6	
111089	JOGINDERNAGA132.00	171007	BASSII	132.00*	1	6.5	1.8	
111089	JOGINDERNAGA132.00	171007	BASSII	132.00*	2	6.5	1.8	
		TOTAL				-40.5	11.3	
FROM AREA 1001 PUNJAB- To 1009 CHANDIGA								
110048	MOHALI-II 66.000*	190000	CHANDIGA_S39	66	1	25.5	14.7	
110048	MOHALI-II 66.000*	190000	CHANDIGA_S39	66	2	25.5	14.7	
110048	MOHALI-II 66.000*	190010	CHANDIGA_S56	66	1	25.9	17.3	

110048	MOHALI-II 66.000*	190010	CHANDIGA_S56	66	2	25.9	17.3
		TOTAL				102.7	64
FROM AREA 1001 PUNJAB- To 1020 NR_ISTS_PUN							
112006	NAKODAR 220.00*	112101	JALAN-PG	220	1	-158.7	0.6
112007	KARTARPUR 220.00*	112101	JALAN-PG	220	1	-149.6	9.5
112064	KAPURTHALA 220.00*	112101	JALAN-PG	220	1	-42.1	-16.2
112064	KAPURTHALA 220.00*	112101	JALAN-PG	220	2	-42.1	-16.2
112096	AMRIT-PG 220.00	114008	AMRITSAR	400.00*	1	-181	-44.7
112096	AMRIT-PG 220.00	114008	AMRITSAR	400.00*	2	-181	-44.7
112096	AMRIT-PG 220.00	114008	AMRITSAR	400.00*	3	-287.3	-70.9
112097	MALER-PG 220.00	114011	MALERKOT	400.00*	1	-116.4	-12.8
112097	MALER-PG 220.00	114011	MALERKOT	400.00*	2	-116.4	-12.8
112097	MALER-PG 220.00	114011	MALERKOT	400.00*	3	-184.8	-20.2
112098	MOGA-PG 220.00	114007	MOGA	400.00*	1	-261	-15.9
112098	MOGA-PG 220.00	114007	MOGA	400.00*	2	-261	-15.9
112098	MOGA-PG 220.00	114007	MOGA	400.00*	3	-130.5	-8
112098	MOGA-PG 220.00	114007	MOGA	400.00*	4	-164.5	-10
112099	LUDHIANA 220.00	114009	LUDHIANA	400.00*	1	-156.6	-29.5
112099	LUDHIANA 220.00	114009	LUDHIANA	400.00*	2	-156.6	-29.5
112099	LUDHIANA 220.00	114009	LUDHIANA	400.00*	3	-156.6	-29.5
112099	LUDHIANA 220.00	114009	LUDHIANA	400.00*	4	-248.5	-46.7
112100	PATIA-PG 220.00	114012	PATIALA	400.00*	1	-121	-16.6
112100	PATIA-PG 220.00	114012	PATIALA	400.00*	2	-121	-16.6
112100	PATIA-PG 220.00	114012	PATIALA	400.00*	3	-192.1	-26.4
114000	TALWANDISABO400.00*	114007	MOGA	400	1	202.6	16.3
114002	MAKHU 400.00*	114008	AMRITSAR	400	1	30	30.7
114002	MAKHU 400.00*	114008	AMRITSAR	400	2	30	30.7
114004	NAKODAR 400.00	114007	MOGA	400.00*	1	25.5	220.4
		TOTAL				-3140.7	-174.8
FROM AREA 1001 PUNJAB- To 1021 NR_ISTS_HAR							
114004	NAKODAR 400.00	124026	KURUKSHETRA	400.00*	1	-74.5	60.1
		TOTAL				-74.5	60.1
FROM AREA 1001 PUNJAB- To 1026 NR_ISTS_HP							
112047	MOHALI-I 220.00*	172013	NALLAGAR	220	1	-97.4	10.2
112047	MOHALI-I 220.00*	172013	NALLAGAR	220	2	-97.4	10.2
		TOTAL				-194.8	20.4
FROM AREA 1001 PUNJAB- To 1027 NR_ISTS_JK							
112018	SARNA 220.00	182011	KISHENPUR	220.00*	1	-24.3	27.7
112018	SARNA 220.00	182011	KISHENPUR	220.00*	2	-24.3	27.7

			TOTAL				-48.7	55.4
FROM AREA 1001 PUNJAB- To 1041 NRIST-BB								
1322	BHARI	220.00*	112103	GANGUWAL	220	1	-83.8	-20.2
1337	SHERPUR	220.00*	112107	JAMALPUR	220	1	-54.4	-5.2
1337	SHERPUR	220.00*	112107	JAMALPUR	220	2	-54.4	-5.2
110002	JAMALPUR	66.000	112107	JAMALPUR	220.00*	1	-36.5	-17.6
110002	JAMALPUR	66.000	112107	JAMALPUR	220.00*	2	-36.5	-17.6
110002	JAMALPUR	66.000	112107	JAMALPUR	220.00*	3	-36.5	-17.6
111041	JAMALPUR21	132.00	112107	JAMALPUR	220.00*	1	-58.8	-8.6
111041	JAMALPUR21	132.00	112107	JAMALPUR	220.00*	2	-58.8	-8.6
112033	GOBINDGARH	2220.00	112103	GANGUWAL	220.00*	1	-86.6	-15.6
112081	MOHALI-S	220.00	112103	GANGUWAL	220.00*	1	-58.1	-20.3
112102	JALANDHAR-BB	220.00*	112107	JAMALPUR	220	1	-12.6	-6
112102	JALANDHAR-BB	220.00*	112107	JAMALPUR	220	2	-12.6	-6
112115	MAJRA	220.00*	112103	GANGUWAL	220	1	-69.4	-28.2
			TOTAL				-658.7	-176.7
FROM AREA 1001 PUNJAB- To 1050 NR_ISTS								
110001	SANGRUR	66.000	112104	SANGRUR	220.00*	2	-36.1	-15.1
110001	SANGRUR	66.000	112104	SANGRUR	220.00*	3	-27.1	-11.4
110001	SANGRUR	66.000*	112104	SANGRUR	220	4	-27.1	-9
110027	DASUYA	66.000	112106	DASUYA	220.00*	1	-45.6	-18.7
112004	LEHRAMOHABBA	220.00*	112105	BARNALAB2	220	1	36.9	-17.3
112018	SARNA	220.00*	112106	DASUYA	220	1	-58.3	-18.2
112018	SARNA	220.00*	112106	DASUYA	220	2	-58.3	-18.2
112018	SARNA	220.00	182004	HIRANAGAR2	220.00*	1	230.1	62.5
112018	SARNA	220.00	182005	UDAMPUR2	220.00*	1	1.1	25.6
112043	BARNALA-PS	220.00	112105	BARNALAB2	220.00*	1	-23.7	-10.5
112064	KAPURTHALA	220.00	112106	DASUYA	220.00*	3	14.7	10.2
112064	KAPURTHALA	220.00	112106	DASUYA	220.00*	4	14.7	10.2
112102	JALANDHAR-BB	220.00*	112106	DASUYA	220	1	-44.2	1.1
112102	JALANDHAR-BB	220.00*	112106	DASUYA	220	2	-44.2	1.1
			TOTAL				-66.9	-7.8
FROM AREA 1001 PUNJAB- To 1215 BHAKRA								
111110	ROPAR	132.00	111114	KOTLA	132.00*	1	-62	-0.8
111110	ROPAR	132.00	111114	KOTLA	132.00*	2	-62	-0.8
111110	ROPAR	132.00	111114	KOTLA	132.00*	3	-62	-0.8

112012	MAHILPUR 220.00	172016	BHAKRA_R	220.00*	1	-157	-21.9
112012	MAHILPUR 220.00	172016	BHAKRA_R	220.00*	2	-157	-21.9
		TOTAL				-500.1	-46.1
FROM AREA 1001 PUNJAB- To 1217 PONG							
1334	ALWALPUR 220.00*	172021	PONG	220	1	-64.5	4.2
1334	ALWALPUR 220.00*	172021	PONG	220	2	-64.5	4.2
112102	JALANDHAR-BB220.00*	172021	PONG	220	1	-67	0.2
112102	JALANDHAR-BB220.00*	172021	PONG	220	2	-67	0.2
		TOTAL				-263.1	8.7
TOTAL FROM AREA 1001 PUNJAB						-4881.5	-187.3
FROM AREA 1002 HARYANA to 1001 PUNJAB							
121001	PINJORE 132.00	111110	ROPAR	132.00*	1	-24.9	-1.5
121001	PINJORE 132.00	111110	ROPAR	132.00*	2	-24.9	-1.5
2128	FARUKHNAGAR6	110002	JAMALPUR 66.000	66.000*	1	-2.1	-0.8
2128	FARUKHNAGAR6	110002	JAMALPUR 66.000	66.000*	2	-2.1	-0.8
2129	PANCHUGON66	110002	JAMALPUR 66.000	66.000*	1	25.1	3.2
2129	PANCHUGON66	110002	JAMALPUR 66.000	66.000*	2	25.1	3.2
						TOTAL	-3.8 1.8
FROM AREA 1002 HARYANA to 1003 RAJASTHAN							
121021	HISAR 132.00*	131158	HANUMANG	132	1	-4.4	2.2
121021	HISAR 132.00*	131367	RAJGARH	132	1	23.6	9.3
		TOTAL				19.2	11.5
FROM AREA 1002 HARYANA to 1004 DELHI							
124006	DEEPALPUR 400.00*	144006	BAWANA4	400	1	209.6	162.6
		TOTAL				209.6	162.6
1005 UTTARPRADESH							
2200	MEJA STPP 400.00*	154062	BARA	400	1	-237.9	14.8
		TOTAL				-237.9	14.8
FROM AREA 1002 HARYANA to 1007 HIMACHAL							
2115	PINJERI 220.00*	172009	KUNIHAR2	220	1	-36.4	-4.3
2115	PINJERI 220.00*	172009	KUNIHAR2	220	2	-36.4	-4.3
121007	ABDULLAPUR1 132.00	171009	GIRII	132.00*	1	-0.1	20.8
122005	MADANPUR 220.00*	172004	BADDI2	220	1	-83.7	-23.6
		TOTAL				-156.5	-11.3
FROM AREA 1002 HARYANA to 1009 CHANDIGARH							
120002	DHULKOTE 66.000*	190004	CHANDIGA_S28	66	1	9.1	-0.3
120002	DHULKOTE 66.000*	190004	CHANDIGA_S28	66	2	9.1	-0.3
		TOTAL				18.1	-0.5
FROM AREA 1002 HARYANA to 1021 NR_ISTS_HAR							

122000	FATEHABAD 220.00	124010	FATEHABAD	400.00*	1	-167.2	4.6
122000	FATEHABAD 220.00	124010	FATEHABAD	400.00*	2	-167.2	4.6
122020	FATEHABAD 220.00*	122075	HISAR-PG	220	1	-53.2	5.1
122020	FATEHABAD 220.00*	122075	HISAR-PG	220	2	-53.2	5.1
122028	IA-HISAR 220.00*	122075	HISAR-PG	220	1	-126.1	-3.3
122028	IA-HISAR 220.00*	122075	HISAR-PG	220	2	-126.1	-3.3
122059	SAGWAN 220.00*	122075	HISAR-PG	220	1	-44	-7
122059	SAGWAN 220.00*	122075	HISAR-PG	220	2	-44	-7
122061	REWALI 220.00*	122076	PANCHKU	220	1	-106.1	-19.8
122061	REWALI 220.00*	122076	PANCHKU	220	2	-106.1	-19.8
122070	ABDULLAP 220.00	124012	ABDULLAP	400.00*	1	-158.1	-59.8
122070	ABDULLAP 220.00	124012	ABDULLAP	400.00*	2	-158.1	-59.8
122070	ABDULLAP 220.00	124012	ABDULLAP	400.00*	3	-158.1	-59.8
122070	ABDULLAP 220.00	124012	ABDULLAP	400.00*	4	-158.1	-59.8
122071	KAITH-PG 220.00	124013	KAITHAL	400.00*	1	-214.7	-35
122071	KAITH-PG 220.00	124013	KAITHAL	400.00*	2	-214.7	-35
122072	BAHDURG2 220.00	124016	BAHADURG	400.00*	1	-116.5	-35.8
122072	BAHDURG2 220.00	124016	BAHADURG	400.00*	2	-184.9	-56.8
122074	SONEP-PG 220.00	124018	SONEP-PG	400.00*	1	-145.7	-37.4
122074	SONEP-PG 220.00	124018	SONEP-PG	400.00*	2	-145.7	-37.4
122086	GURGAON_PG2 220.00	124017	GURGAON	400.00*	1	-167.3	-46.5
122086	GURGAON_PG2 220.00	124017	GURGAON	400.00*	2	-167.3	-46.4
122089	MANESAR-PG 220.00	124019	MANESAR	400.00*	1	-179.4	-45.1
122089	MANESAR-PG 220.00	124019	MANESAR	400.00*	2	-179.4	-45.1
124001	KHEDAR 400.00	124010	FATEHABAD	400.00*	2	277.1	-63.8
124002	DAULATABAD4 400.00*	124017	GURGAON	400	1	350.5	-72
124002	DAULATABAD4 400.00*	124017	GURGAON	400	2	350.5	-72
124005	NAWADA 400.00	124014	BALLABHG	400.00*	1	86.7	-101.3
124006	DEEPALPUR 400.00*	124012	ABDULLAP	400	1	-109.9	-135.3
124009	NUHIYANWALI 400.00	124010	FATEHABAD	400.00*	1	-107.8	39.7
124024	PANIPAT 400.00	124020	PANCH-PG	400.00*	1	-198	-2.4
		TOTAL				-2691.8	-1107.7
FROM AREA 1002 HARYANA to 1022 NR_ISTS_RAJ							
122034	REWARI_SPLIT 220.00*	132141	BHIWADI	220	1	-83.8	-4.5
122049	MAU_HR 220.00*	132141	BHIWADI	220	1	22.5	-12.1
		TOTAL				-61.3	-16.6
FROM AREA 1002 HARYANA to 1024 NR_ISTS_UP							
2200	MEJA STPP 400.00	154053	ALLAHABA	400.00*	1	1382.5	-312.8
		TOTAL				1382.5	-312.8

FROM AREA 1002 HARYANA to 1041 NRIST-BB

2132	SECTOR-58220220.00*	122082	SAMAYPUR	220	1	-8.6	-15
2132	SECTOR-58220220.00*	122082	SAMAYPUR	220	2	-8.6	-15
120000	JAGADHARI 66.000	122085	JAGADHARI	220.00*	1	-9.6	-3.4
120000	JAGADHARI 66.000	122085	JAGADHARI	220.00*	2	-10.1	-3.6
120000	JAGADHARI 66.000	122085	JAGADHARI	220.00*	3	-9.7	-3.4
120002	DHULKOTE 66.000	122083	DHULKOTE	220.00*	1	-43.8	-14.7
120002	DHULKOTE 66.000	122083	DHULKOTE	220.00*	2	-44.1	-14.8
120003	BALABGR1 66.000	122080	BALLABGARH	220.00*	1	-80.1	-18.1
120003	BALABGR1 66.000	122080	BALLABGARH	220.00*	2	-80.1	-18.1
120003	BALABGR1 66.000	122080	BALLABGARH	220.00*	3	-80.1	-18.1
120005	SEWAH 33.000	122078	PANIPAT	220.00*	1	-6.9	-2.4
120005	SEWAH 33.000	122078	PANIPAT	220.00*	2	-6.9	-2.4
121000	BHIWANIBB 132.00	122079	BHIWANI	220.00*	1	-38.3	-5.2
121010	KURUKSHETRA1132.00	122077	KURUKSHETRA	220.00*	1	-23.3	-6.4
121010	KURUKSHETRA1132.00	122077	KURUKSHETRA	220.00*	2	-23.7	-6.5
121010	KURUKSHETRA1132.00	122077	KURUKSHETRA	220.00*	3	-27.9	-7.7
121010	KURUKSHETRA1132.00	122077	KURUKSHETRA	220.00*	4	-27.9	-7.7
121016	SEWAH 132.00	122078	PANIPAT	220.00*	1	-86	16.1
121016	SEWAH 132.00	122078	PANIPAT	220.00*	2	-82.3	15.4
121021	HISAR 132.00	122081	HISAR-BB	220.00*	1	-34.7	-5.4
121021	HISAR 132.00	122081	HISAR-BB	220.00*	2	-32.4	-5
121021	HISAR 132.00	122081	HISAR-BB	220.00*	4	-31.5	-4.8
121202	DADR2-HS 132.00	122084	CHARKHIDADRI	220.00*	1	-58.6	-4.8
121202	DADR2-HS 132.00	122084	CHARKHIDADRI	220.00*	2	-48.8	-4
121214	NARELA_BB 132.00	142046	NARELA_BB	220.00*	1	-20.5	3.1
121214	NARELA_BB 132.00	142046	NARELA_BB	220.00*	2	-39.2	5.8
122002	BADSHAHPUR 220.00*	122082	SAMAYPUR	220	1	-2.4	2.8
122002	BADSHAHPUR 220.00*	122082	SAMAYPUR	220	2	-2.2	2
122010	PANIPAT_OLD 220.00	122078	PANIPAT	220.00*	1	-29.1	8.3
122010	PANIPAT_OLD 220.00	122078	PANIPAT	220.00*	2	-29.1	8.3
122010	PANIPAT_OLD 220.00	122078	PANIPAT	220.00*	3	-29.1	8.3
122010	PANIPAT_OLD 220.00	122078	PANIPAT	220.00*	4	-29.1	8.3
122015	MAHINDERGARH220.00*	122084	CHARKHIDADRI	220	1	-65.7	6.9
122015	MAHINDERGARH220.00*	122084	CHARKHIDADRI	220	2	-65.4	6.8
122017	PALWAL 220.00*	122082	SAMAYPUR	220	3	-70.9	-14.4
122017	PALWAL 220.00*	122082	SAMAYPUR	220	4	-70.9	-14.4
122019	PALI 220.00*	122082	SAMAYPUR	220	3	-66.4	-25.2
122019	PALI 220.00*	122082	SAMAYPUR	220	4	-66.4	-25.2
122028	IA-HISAR 220.00	122081	HISAR-BB	220.00*	1	53.5	7.1
122028	IA-HISAR 220.00	122081	HISAR-BB	220.00*	2	49.3	6.7

122039	ISHERWAL	220.00*	122079	BHIWANI	220	1	-14.5	-0.5
122039	ISHERWAL	220.00*	122079	BHIWANI	220	2	-14.5	-0.5
122041	BAPORA	220.00	122079	BHIWANI	220.00*	1	-52.7	-8.8
122041	BAPORA	220.00	122079	BHIWANI	220.00*	2	-52.7	-8.8
122042	JINDALSTEEL	220.00	122081	HISAR-BB	220.00*	1	-6.4	-2.1
122050	CHHAJPUR	220.00	122078	PANIPAT	220.00*	1	-76.7	20.1
122050	CHHAJPUR	220.00	122078	PANIPAT	220.00*	2	-76.7	20.1
122056	LULAAHIR	220.00	122084	CHARKHIDADRI	220.00*	1	123.2	-23.2
122073	FARIDAB2	220.00	122082	SAMAYPUR	220.00*	2	-7.1	-13.1
124024	PANIPAT	400.00*	122078	PANIPAT	220	1	231.4	17.2
124024	PANIPAT	400.00*	122078	PANIPAT	220	2	231.4	17.2
			TOTAL				-1102.9	-142.4
FROM AREA 1002 HARYANA to 1050 NR_ISTS								
124005	NAWADA	400.00*	154059	GNOIDA4	400	1	-240	43.5
124008	DHANONDA	400.00*	124025	MAHIN_HV	400	1	-800.8	151
124008	DHANONDA	400.00*	124025	MAHIN_HV	400	2	-800.8	151
			TOTAL				-1841.6	345.5
	1103 DADR-NCR							
124024	PANIPAT	400.00*	154061	DADR-NCR	400	1	-135.5	24.8
124024	PANIPAT	400.00*	154061	DADR-NCR	400	2	-130.5	21.5
			TOTAL				-266	46.3
FROM AREA 1002 HARYANA to 1105 IGSTPS								
124002	DAULATABAD4	400.00	124023	JHAJJAR4	400.00*	1	-247.7	107.6
124002	DAULATABAD4	400.00	124023	JHAJJAR4	400.00*	2	-249.6	108.4
			TOTAL				-497.3	216.1
TOTAL FROM AREA 1002 HARYANA							-5229.7	-792.7
FROM AREA 1003 RAJASTHAN to 1002 HARYANA								
131158	HANUMANG	132.00	121021	HISAR	132.00*	1	4.4	-2.2
131367	RAJGARH	132.00	121021	HISAR	132.00*	1	-23.6	-9.3
			TOTAL				-19.2	-11.5
FROM AREA 1003 RAJASTHAN to 1004 DELHI								
132107	MIA-ALWA	220.00*	142045	BADARPR2	220	1	-28.3	-17.9
TOTAL			TOTAL				-28.3	-17.9
FROM AREA 1003 RAJASTHAN to 1005 UTTARPRA								
132011	BHTRATPU	220.00*	152049	SIKANDR2	220	1	-158	-29.1
137000	PHAGI	765.00*	127000	BHIWN-PG	765	1	842.4	219.9
			TOTAL				684.3	190.8
FROM AREA 1003 RAJASTHAN to 1022 NR_ISTS RAJ								
7005	GONER 220	220.00	132145	JAIPUR_PG	220.00*	1	-41.1	9.4

132000	DAUSA	220.00*	132140	BASSI	220	1	-189	-8.8
132000	DAUSA	220.00*	132140	BASSI	220	2	-189	-8.8
132002	BHIWA-RS	220.00*	132141	BHIWADI	220	1	-182.9	-64.1
132002	BHIWA-RS	220.00*	132141	BHIWADI	220	2	-182.9	-64.1
132006	KUKAS	220.00*	132140	BASSI	220	1	-110.2	-19.2
132007	KANKR-PG	220.00	134022	KANKROLI	400.00*	1	-156.2	-45.9
132007	KANKR-PG	220.00	134022	KANKROLI	400.00*	2	-156.2	-45.9
132007	KANKR-PG	220.00	134022	KANKROLI	400.00*	3	-156.2	-45.9
132009	RATANGAR	220.00*	132144	SIKAR-PG	220	1	35.4	4.1
132009	RATANGAR	220.00*	132144	SIKAR-PG	220	2	35.4	4.1
132014	KHETRI	220.00*	132143	NEEMR-PG	220	1	-44.5	-14.7
132025	KOTPU-RS	220.00*	132142	KOTPU-PG	220	2	-252.3	-46
132036	NEEMR-RS	220.00*	132143	NEEMR-PG	220	1	-99.8	-35.3
132036	NEEMR-RS	220.00*	132143	NEEMR-PG	220	2	-99.8	-35.3
132055	SIKAR-RS	220.00*	132144	SIKAR-PG	220	1	-210.4	-79.5
132055	SIKAR-RS	220.00*	132144	SIKAR-PG	220	2	-210.4	-79.5
132075	BAGRU	220.00*	132140	BASSI	220	1	-66.7	0.6
132093	DUNI	220.00*	132145	JAIPUR_PG	220	1	-31.1	-21.2
132096	INDIRAGN	220.00*	132140	BASSI	220	1	-40.3	-1.9
132104	KUNDAKID	220.00*	132140	BASSI	220	1	-133.3	-27.8
132121	SEZJAIP	220.00*	132145	JAIPUR_PG	220	1	-126.1	-24
132127	CHAKSU	220.00	132145	JAIPUR_PG	220.00*	1	-60.7	-4.8
132127	CHAKSU	220.00	132145	JAIPUR_PG	220.00*	2	-60.7	-4.8
132137	KUSHKHER	220.00	132141	BHIWADI	220.00*	1	-66.4	-9.2
132137	KUSHKHER	220.00	132141	BHIWADI	220.00*	2	-66.4	-9.2
132137	KUSHKHER	220.00*	132143	NEEMR-PG	220	1	-52.6	-22.2
132138	BHINM-PG	220.00	134021	BHINMAL	400.00*	1	-182	-16
132139	KOTA	220.00	134023	KOTA	400.00*	1	-241.9	-39.7
134000	MERTA	400.00*	134023	KOTA	400	2	-233.7	35.2
134002	BARMER-4	400.00*	134021	BHINMAL	400	1	121.2	-31.4
134002	BARMER-4	400.00*	134021	BHINMAL	400	2	121.2	-31.4
134003	HERAPU-4	400.00*	134025	BASSI	400	1	-292.3	25.2
134003	HERAPU-4	400.00*	134025	BASSI	400	2	-284.8	23.8
134007	CHABRA-4	400.00*	134027	ANTA-4	400	1	322	-52.9
134007	CHABRA-4	400.00*	134027	ANTA-4	400	2	322	-52.9
134008	KALISI-4	400.00*	134027	ANTA-4	400	1	273.1	-128
134008	KALISI-4	400.00*	134027	ANTA-4	400	2	273.1	-128
134010	KAWAI	400.00*	134027	ANTA-4	400	1	581.4	74.7
134010	KAWAI	400.00*	134027	ANTA-4	400	2	581.4	74.7
134015	JODHPU-4	400.00	134022	KANKROLI	400.00*	1	-10.5	89.1
134016	JAIPUR_RS	400.00*	134025	BASSI	400	1	742	-90.2

134016	JAIPUR_RS	400.00*	134025	BASSI	400	2	742	-90.2	
134019	KOTPUT	400.00*	132142	KOTPU-PG	220	1	126.9	30.3	
134019	KOTPUT	400.00*	132142	KOTPU-PG	220	2	126.9	30.3	
134019	KOTPUT	400.00	134024	BHIWADI	400.00*	1	-86.7	-7.7	
134019	KOTPUT	400.00	134025	BASSI	400.00*	1	-167.9	74.3	
134020	SIKAR	400.00*	132144	SIKAR-PG	220	1	176.6	81.6	
134020	SIKAR	400.00*	132144	SIKAR-PG	220	2	176.6	81.6	
134020	SIKAR	400.00	134026	NEEMR-PG	400.00*	1	3	118.2	
134020	SIKAR	400.00	134026	NEEMR-PG	400.00*	2	3	118.2	
134032	CHITTORGARH	400.00	134022	KANKROLI	400.00*	1	315.2	23.5	
134032	CHITTORGARH	400.00	134022	KANKROLI	400.00*	2	315.2	23.5	
137001	ANTA	765.00*	134027	ANTA-4	400	1	-456.6	-35.2	
137001	ANTA	765.00*	134027	ANTA-4	400	2	-456.6	-35.2	
137001	ANTA	765.00*	134027	ANTA-4	400	3	-456.6	-35.2	
			TOTAL				-461.2	-569.8	
FROM AREA 1003 RAJASTHAN to 1024 NR_ISTS_UP									
134020	SIKAR	400.00	154034	AGRA	400.00*	1	-107.9	193.8	
134020	SIKAR	400.00	154034	AGRA	400.00*	2	-107.9	147.2	
			TOTAL				-215.9	341	
FROM AREA 1003 RAJASTHAN to 1041 NRIST-BB									
132014	KHETRI	220.00	122084	CHARKHIDADRI	220.00*	1	-20.7	-10	
132014	KHETRI	220.00	122084	CHARKHIDADRI	220.00*	2	-20.7	-10	
132090	CHIRAWA	220.00	122081	HISAR-BB	220.00*	1	-20.9	-2.1	
			TOTAL				-62.4	-22.1	
FROM AREA 1003 RAJASTHAN to 1106 SHRE_CEM									
134000	MERTA	400.00*	134031	SHRECEM	400	1	-427.9	23.3	
			TOTAL				-427.9	23.3	
FROM AREA 1003 RAJASTHAN to 1151 ANTA									
132018	BHILWA-2	220.00*	134029	ANTA2	220	1	-52	-15.1	
132018	BHILWA-2	220.00*	134029	ANTA2	220	2	-52	-15.1	
132022	SAKATPUR	220.00*	134029	ANTA2	220	1	38.8	-32.5	
132051	DAHRA	220.00*	134029	ANTA2	220	1	30.4	-75.4	
132052	SAWAIMAD	220.00*	134029	ANTA2	220	1	-106	-20.7	
132125	LALSOT	220.00*	134029	ANTA2	220	1	-62.4	-22.8	
							TOTAL	-203.1	-181.8
FROM AREA 1003 RAJASTHAN to 1155 RAPS-B									

132022	SAKATPUR	220.00*	132146	RAPS_B2	220	1	111.2	7.3
132029	CHITTAUR	220.00*	132146	RAPS_B2	220	1	-114.6	-8.6
132029	CHITTAUR	220.00*	132146	RAPS_B2	220	2	-114.6	-8.6
132091	DEBARI	220.00	132146	RAPS_B2	220.00*	1	-99	2.4
TOTAL							-216.9	-7.7
FROM AREA 1003 RAJASTHAN to 1156 RAPS-C								
134032	CHITTORGARH	400.00*	134030	RAPS_C4	400	1	-360.9	-54.2
134032	CHITTORGARH	400.00	134030	RAPS_C4	400.00*	2	-364.2	-8
TOTAL							-725.1	-62.2
FROM AREA 1003 RAJASTHAN to 3014 MP								
132022	SAKATPUR	220.00	322040	BADOD	220.00*	1	1.5	14
132032	MODAK	220.00	322089	BHANPURA	220.00*	1	92.5	-31.6
TOTAL							94	-17.6
FROM AREA 1003 RAJASTHAN to 3035 WR ISTS MP								
137000	PHAGI	765.00	327003	GWALIOR	765.00*	1	-489.4	55.8
137000	PHAGI	765.00	327003	GWALIOR	765.00*	2	-478.4	65.6
TOTAL							-967.8	121.5
TOTAL FROM AREA 1003 RAJASTHA							-2549.5	-214
FROM AREA 1004 DELHI to 1002 HARYANA								
144006	BAWANA4	400.00	124006	DEEPALPUR	400.00*	1	-209.6	-162.6
TOTAL							-209.6	-162.6
FROM AREA 1004 DELHI to 1003 RAJASTHA								
142045	BADARPR2	220.00	132107	MIA-ALWA	220.00*	1	28.3	17.9
TOTAL							28.3	17.9
FROM AREA 1004 DELHI to 1005 UTTARPRA								
142032	GAZIPUR_DL	220.00*	152005	NOIDA20S	220	1	-13.8	-3.6
142045	BADARPR2	220.00	152005	NOIDA20S	220.00*	1	13.8	2.9
TOTAL							0	-0.7
FROM AREA 1004 DELHI to 1021 NR ISTS HAR								
1503	TUGLAKBAD	400.00*	124014	BALLABHG	400	1	-224.2	-54.4
1503	TUGLAKBAD	400.00*	124014	BALLABHG	400	2	-224.2	-54.4
144000	BAWANA-G	400.00*	124016	BAHADURG	400	1	67.2	-125.1
144000	BAWANA-G	400.00*	124021	BHIWN-PG	400	1	-112.7	8.4
144006	BAWANA4	400.00*	124012	ABDULLAP	400	1	-125.6	-155
TOTAL							-619.6	-380.5
FROM AREA 1004 DELHI to 1023 NR ISTS DEL								
142012	MANDOLA	220.00	144003	MANDOLA	400.00*	1	-211.7	23.3
142012	MANDOLA	220.00	144003	MANDOLA	400.00*	2	-211.7	23.3

142012	MANDOLA	220.00	144003	MANDOLA	400.00*	3	-211.7	23.3
142012	MANDOLA	220.00	144003	MANDOLA	400.00*	4	-211.7	23.3
142033	MAHARANIBAGH	220.00	144002	MAHARANI	400.00*	1	-116.8	-6.2
142033	MAHARANIBAGH	220.00	144002	MAHARANI	400.00*	2	-116.8	-6.2
142033	MAHARANIBAGH	220.00	144002	MAHARANI	400.00*	3	-185.4	-9.8
142033	MAHARANIBAGH	220.00	144002	MAHARANI	400.00*	4	-185.4	-9.8
144006	BAWANA4	400.00*	144003	MANDOLA	400	1	3.9	104.3
144006	BAWANA4	400.00*	144003	MANDOLA	400	2	3.9	104.3
TOTAL							-1443.6	269.6
FROM AREA 1004 DELHI to 1041 NRIST-BB								
142004	NARELA_D	220.00	122078	PANIPAT	220.00*	1	1.1	-34
142004	NARELA_D	220.00	122078	PANIPAT	220.00*	2	1.1	-34
142004	NARELA_D	220.00	122078	PANIPAT	220.00*	3	1.1	-34
142004	NARELA_D	220.00*	142046	NARELA_BB	220	1	59.7	-8.9
TOTAL							63.1	-110.9
FROM AREA 1004 DELHI to 1050 NR ISTS								
1503	TUGLAKBAD	400.00*	144007	BAMNOLI14	400	1	-147.2	38.5
1503	TUGLAKBAD	400.00*	144007	BAMNOLI14	400	2	-147.2	38.5
142002	BAMNOLI2	220.00	144007	BAMNOLI14	400.00*	1	-138.2	1.2
142002	BAMNOLI2	220.00	144007	BAMNOLI14	400.00*	2	-204.6	1.7
142002	BAMNOLI2	220.00	144007	BAMNOLI14	400.00*	3	-204.6	1.7
142002	BAMNOLI2	220.00	144007	BAMNOLI14	400.00*	4	-138.2	1.2
142043	MUNDKA	220.00	144008	MUNDKA	400.00*	1	-151	18.3
142043	MUNDKA	220.00	144008	MUNDKA	400.00*	2	-151	18.3
142043	MUNDKA	220.00	144008	MUNDKA	400.00*	3	-151	18.3
144006	BAWANA4	400.00*	144008	MUNDKA	400	1	-94.8	100.4
144006	BAWANA4	400.00*	144008	MUNDKA	400	2	-94.8	100.4
TOTAL							-1622.7	338.6
FROM AREA 1004 DELHI to 1103 DADR-NCR								
144001	HARSHVIHAR	400.00	154061	DADR-NCR	400.00*	1	-248.4	-17.5
144001	HARSHVIHAR	400.00	154061	DADR-NCR	400.00*	2	-248.4	-17.5
TOTAL							-496.7	-35.1
TOTAL FROM AREA 1004 DELHI							-4300.8	-63.7
FROM AREA 1005 UTTARPRA to 1002 HARYANA								
154062	BARA	400.00	2200	MEJA STPP	400.00*	1	237.9	-14.8
TOTAL							237.9	-14.8
FROM AREA 1005 UTTARPRA to 1003 RAJASTHA								
127000	BHIWN-PG	765.00	137000	PHAGI	765.00*	1	-842.4	-219.9
152049	SIKANDR2	220.00	132011	BHTRATPU	220.00*	1	158	29.1

			TOTAL				-684.3	-190.8
FROM AREA 1005 UTTARPRA to 1004 DELHI								
152005	NOIDA20S	220.00	142032	GAZIPUR_DL	220.00*	1	13.8	3.6
152005	NOIDA20S	220.00*	142045	BADARPR2	220	1	-13.8	-2.9
			TOTAL				0	0.7
FROM AREA 1005 UTTARPRA to 1006 UTTARAKH								
151021	NEHTOR1	132.00*	161030	LAKSAR	132	1	28	6.8
151021	NEHTOR1	132.00*	161031	KALAGARH	132	1	-21.8	24.2
151022	DOHANA1	132.00*	161029	SITARGAN	132	1	7.5	1.1
151030	NAZIBABA	132.00*	161014	KOTDWAR	132	1	54.4	-30.1
151030	NAZIBABA	132.00	161035	CHILLA-H	132.00*	1	-42.9	48
151035	SAHARAN1	132.00*	161033	ROORKEE1	132	1	-26	14.5
151051	RICHA	132.00	161011	KICCHHA	132.00*	1	26.3	22.3
151067	DHAMPR1	132.00*	161031	KALAGARH	132	1	-16.9	30
151067	DHAMPR1	132.00*	161031	KALAGARH	132	2	-16.9	30
151200	SREAMBAL	132.00	161016	BHAGWANN	132.00*	1	17.1	9.2
151205	THAKURWA	132.00*	161032	KASHIPU1	132	1	11	8.2
151249	KIRATPUR	132.00	161015	MANGLORE	132.00*	1	3.1	16
151382	CHANDAK	132.00	161030	LAKSAR	132.00*	1	22.2	18.3
151414	PILIBHI1	132.00*	161013	KHATIMAH	132	1	7.3	21.3
152026	BAKNTPR2	220.00*	162005	PANTNAG2	220	1	157.2	9
152041	SAHARNP2	220.00*	162016	KHODRIHE	220	1	-75.6	23.8
152041	SAHARNP2	220.00*	162016	KHODRIHE	220	2	-73.7	23
152043	NARA2	220.00*	162008	RORKEE2	220	1	-22.7	-30.9
154009	MURADAB4	400.00*	164001	KASHIPU4	400	1	29.4	-44.1
			TOTAL				66.9	200.3
FROM AREA 1005 UTTARPRA to 1020 NR_ISTS_PUN								
5074	MATORE 765	765.00*	187000	MOGA-PG	765	1	112.6	-107.9
127000	BHIWN-PG	765.00	187000	MOGA-PG	765.00*	1	137	-122.2
			TOTAL				249.6	-230.2
FROM AREA 1005 UTTARPRA to 1021 NR_ISTS_HAR								
127000	BHIWN-PG	765.00*	124021	BHIWN-PG	400	1	64.2	-261.8
127000	BHIWN-PG	765.00*	124021	BHIWN-PG	400	2	64.2	-261.8
			TOTAL				128.3	-523.6
FROM AREA 1005 UTTARPRA to 1023 NR_ISTS_DEL								
5075	MATORE 400	400.00*	144003	MANDOLA	400	1	113.5	-105.6
5075	MATORE 400	400.00*	144003	MANDOLA	400	2	113.5	-105.6
127000	BHIWN-PG	765.00*	147000	JHATI-PG	765	1	182.2	-37.4
			TOTAL				409.2	-248.6
FROM AREA 1005 UTTARPRA to 1024 NR_ISTS_UP								
5075	MATORE 400	400.00*	154055	BARELI74	400	1	-6.9	-153.4

5075	MATORE 400	400.00	154070	BAGPAT	400.00*	1	169.1	-126.4
5075	MATORE 400	400.00*	154070	BAGPAT	400	2	169.2	-60
6201	RANIA220	220.00*	152102	KANPU-PG	220	1	-232	-18.2
6203	SIKANDARA DE	220.00	152102	KANPU-PG	220.00*	1	-43.2	22.9
127000	BHIWN-PG	765.00*	157008	MERUT-PG	765	1	172	44.9
151220	RAEBRL_P	132.00	152101	RAEBAREI	220.00*	1	-101	-1.7
151220	RAEBRL_P	132.00	152101	RAEBAREI	220.00*	2	-101	-1.7
151220	RAEBRL_P	132.00	152101	RAEBAREI	220.00*	3	-101	-1.7
152011	CHINHAT2	220.00	152101	RAEBAREI	220.00*	1	-151.5	9.2
152026	BAKNTPR2	220.00*	162018	PITHORGA	220	1	-79.4	18.9
152029	SAROJNI2	220.00	152101	RAEBAREI	220.00*	1	-176.1	16.1
152048	ORAI2	220.00*	152102	KANPU-PG	220	1	-33.3	9.7
152052	MAINPUR2	220.00*	152102	KANPU-PG	220	1	-83.9	17.4
152055	PANKI2	220.00*	152102	KANPU-PG	220	1	-77.5	8.9
152055	PANKI2	220.00*	152102	KANPU-PG	220	2	-54.7	5.8
152056	NAUBSTA2	220.00*	152102	KANPU-PG	220	1	-107.5	-80
152067	CBGANJ2	220.00	162017	SITARGAN	220.00*	1	31.3	12.7
152095	MEERUT	220.00	154024	MEERUT	400.00*	1	-231.8	-50.6
152095	MEERUT	220.00	154024	MEERUT	400.00*	2	-231.8	-50.6
152095	MEERUT	220.00	154024	MEERUT	400.00*	3	-231.8	-50.6
152095	MEERUT	220.00	154024	MEERUT	400.00*	4	-363.2	-68.8
152096	FATEH-PG	220.00	154049	FATEH-PG	400.00*	1	-44.8	-10.1
152096	FATEH-PG	220.00	154049	FATEH-PG	400.00*	2	-44.8	-10.1
152097	LUCKNOW	220.00	154040	LUCK4-PG	400.00*	1	-114.9	-54.2
152097	LUCKNOW	220.00	154040	LUCK4-PG	400.00*	2	-184.5	-80.5
152098	MANPURI2	220.00	154047	MAINPURI	400.00*	1	-220.5	-7.2
152098	MANPURI2	220.00	154047	MAINPURI	400.00*	2	-220.5	-7.2
152099	ALLAHABA	220.00	154053	ALLAHABA	400.00*	1	-184.1	-27.5
152099	ALLAHABA	220.00	154053	ALLAHABA	400.00*	2	-184.1	-27.5
152099	ALLAHABA	220.00	154053	ALLAHABA	400.00*	3	-184.1	-27.5
152100	GORAK-PG	220.00	154036	GORAKHPU	400.00*	1	-150.3	-36
152100	GORAK-PG	220.00	154036	GORAKHPU	400.00*	2	-150.3	-36
152106	SHAHJAHAN4	220.00	154050	SHAHJ-PG	400.00*	1	0	0
152106	SHAHJAHAN4	220.00	154050	SHAHJ-PG	400.00*	2	0	0
152114	BAGPAT-PG	220.00	154070	BAGPAT	400.00*	1	-87.7	2.2
152115	AGRA-PG	220.00	154034	AGRA	400.00*	1	-369.1	-14.2
152117	SAHARANPR-PG	220.00*	154071	SAHARNPUR400	400	1	-78.6	-11.5
152117	SAHARANPR-PG	220.00*	154071	SAHARNPUR400	400	2	-78.6	-11.5
154000	AGRAUP4	400.00*	154034	AGRA	400	1	-543.6	5.3
154000	AGRAUP4	400.00*	154034	AGRA	400	2	-543.6	5.3
154001	UNNAO4	400.00*	154040	LUCK4-PG	400	1	154.7	-112.7

154001	UNNAO4	400.00*	154040	LUCK4-PG	400	2	154.7	-112.7
154002	BARELI4	400.00*	154025	BAREL-PG	400	1	-12.5	-154.8
154002	BARELI4	400.00*	154025	BAREL-PG	400	2	-12.5	-154.8
154005	PARICHHA	400.00*	154047	MAINPURI	400	1	139.5	9.2
154005	PARICHHA	400.00*	154047	MAINPURI	400	2	139.5	9.2
154006	ALIGARH	400.00	154047	MAINPURI	400.00*	1	-210.3	-41.5
154006	ALIGARH	400.00	154047	MAINPURI	400.00*	2	-210.3	-41.5
154007	GORAK_UP	400.00*	154036	GORAKHPU	400	1	-54.6	-88.3
154007	GORAK_UP	400.00*	154036	GORAKHPU	400	2	-54.6	-88.3
154008	LUCKN_UP	400.00*	154025	BAREL-PG	400	1	108.1	-56.1
154008	LUCKN_UP	400.00*	154040	LUCK4-PG	400	1	76.9	-119.4
154009	MURADAB4	400.00*	154025	BAREL-PG	400	1	-213.3	-53
154009	MURADAB4	400.00*	154025	BAREL-PG	400	2	-215.5	-53
154010	MUZAFRN4	400.00*	154024	MEERUT	400	1	-219.3	23.8
154013	PANKI4	400.00*	154037	KANPUR	400	1	74.7	18.1
154013	PANKI4	400.00*	154037	KANPUR	400	2	74.1	17.4
154017	ROSA-TP2	400.00*	154025	BAREL-PG	400	1	312.2	-70
154017	ROSA-TP2	400.00*	154040	LUCK4-PG	400	1	65.7	-77.2
154019	SARNATH4	400.00	154067	VARANASI-PG	400.00*	1	158.1	-35.8
154022	SULTANP4	400.00*	154040	LUCK4-PG	400	1	52.6	-117.3
154023	MAU4	400.00*	154054	BAL74-PG	400	1	39.7	-93.8
154023	MAU4	400.00*	154054	BAL74-PG	400	2	39.7	-93.8
157009	LALITPUR-TPS	765.00	157007	AGRA-PG	765.00*	1	668.6	45.3
157009	LALITPUR-TPS	765.00	157007	AGRA-PG	765.00*	2	668.6	45.3
157011	GR.NOIDA	765.00	157007	AGRA-PG	765.00*	1	-1335.4	-612.4
157011	GR.NOIDA	765.00*	157008	MERUT-PG	765	1	262.3	-28.9
TOTAL							-4599.1	-2882.3
FROM AREA 1005 UTTARPRA to 1025 NR_ISTS_UTT								
154010	MUZAFRN4	400.00	164002	ROORKEE	400.00*	1	195	-78.1
TOTAL							195	-78.1
FROM AREA 1005 UTTARPRA to 1050 NR_ISTS								
152002	GNOIDA2	220.00	154059	GNOIDA4	400.00*	1	-265	-105.4
152002	GNOIDA2	220.00	154059	GNOIDA4	400.00*	2	-150.6	-55
152002	GNOIDA2	220.00	154059	GNOIDA4	400.00*	3	-150.6	-55
152002	GNOIDA2	220.00	154059	GNOIDA4	400.00*	4	-265	-105.4
152107	RASRA	220.00*	151416	RASRA	132	1	0	0
152107	RASRA	220.00*	151416	RASRA	132	2	0	0
TOTAL							-831.1	-320.8
FROM AREA 1005 UTTARPRA to 1100 SINGRAUL								
154008	LUCKN_UP	400.00*	154056	SINGRL4	400	1	-335.1	16.3
154014	ANPARA4	400.00*	154056	SINGRL4	400	1	-341.6	226.5

TOTAL							-676.7	242.9
FROM AREA 1005 UTTARPRA to 1103 DADR-NCR								
154066	MURADNGR NEW400.00*	154061	DADR-NCR	400	1	-232	14.3	
TOTAL							-232	14.3
FROM AREA 1005 UTTARPRA to 1104 UNCHAHR								
152064	FATEHPR2 220.00*	154058	UNCHAHR2	220	1	-154.1	-1.8	
152064	FATEHPR2 220.00*	154058	UNCHAHR2	220	2	-154.1	-1.8	
TOTAL							-308.3	-3.7
FROM AREA 1005 UTTARPRA to 1152 AURAIYA								
152049	SIKANDR2 220.00*	154060	AURYA2	220	1	-126	7.1	
152049	SIKANDR2 220.00*	154060	AURYA2	220	2	-126	7.1	
TOTAL							-251.9	14.2
FROM AREA 1005 UTTARPRA to 1153 NAPS								
152003	ATRAULI2 220.00*	152105	NAPP2	220	1	-18.1	-3.8	
152030	SAMBHAL 220.00	152105	NAPP2	220.00*	1	-46.1	36.7	
152045	KHURJA2 220.00	152105	NAPP2	220.00*	1	-52.2	15.9	
152045	KHURJA2 220.00	152105	NAPP2	220.00*	2	-52.2	15.9	
152121	DEBAI 220.00	152105	NAPP2	220.00*	2	-32.7	-3	
TOTAL							-201.3	61.7
FROM AREA 1005 UTTARPRA to 1205 TANAKPUR								
152067	CBGANJ2 220.00	162019	TANAKPUR2	220.00*	1	-4.7	17.1	
TOTAL							-4.7	17.1
FROM AREA 1005 UTTARPRA to 1208 DHAULIGA								
152026	BAKNTPR2 220.00*	164005	DHAULI2	220	1	-105	19.6	
TOTAL							-105	19.6
FROM AREA 1005 UTTARPRA to 1214 KOTESWAR								
5075	MATORE 400 400.00*	164004	KOTESHWA	400	1	-138.9	-101.1	
TOTAL							-138.9	-101.1
FROM AREA 1005 UTTARPRA to 2051 ER ISTS BIH								
152065	SAHUPU_N 220.00*	212014	PUSAULI2	220	1	113	22.5	
154019	SARNATH4 400.00*	214012	SASARAM_N4	400	1	-256.9	92.4	
TOTAL							-143.9	114.9
TOTAL FROM AREA 1005 UTTARPRA							-6890.3	-3908.3
FROM AREA 1006 UTTARAKH to 1005 UTTARPRA								
161011	KICCHHA 132.00*	151051	RICHA	132	1	-26.3	-22.3	
161013	KHATIMAH 132.00	151414	PILIBHI1	132.00*	1	-7.3	-21.3	
161014	KOTDWAR 132.00	151030	NAZIBABA	132.00*	1	-54.4	30.1	
161015	MANGLORE 132.00*	151249	KIRATPUR	132	1	-3.1	-16	

161016	BHAGWANN	132.00*	151200	SREAMBAL	132	1	-17.1	-9.2
161029	SITARGAN	132.00	151022	DOHANA1	132.00*	1	-7.5	-1.1
161030	LAKSAR	132.00	151021	NEHTOR1	132.00*	1	-28	-6.8
161030	LAKSAR	132.00*	151382	CHANDAK	132	1	-22.2	-18.3
161031	KALAGARH	132.00	151021	NEHTOR1	132.00*	1	21.8	-24.2
161031	KALAGARH	132.00	151067	DHAMPR1	132.00*	1	16.9	-30
161031	KALAGARH	132.00	151067	DHAMPR1	132.00*	2	16.9	-30
161032	KASHIPU1	132.00	151205	THAKURWA	132.00*	1	-11	-8.2
161033	ROORKEE1	132.00	151035	SAHARAN1	132.00*	1	26	-14.5
161035	CHILLA-H	132.00*	151030	NAZIBABA	132	1	42.9	-48
162005	PANTNAG2	220.00	152026	BAKNTPR2	220.00*	1	-157.2	-9
162008	RORKEE2	220.00	152043	NARA2	220.00*	1	22.7	30.9
162016	KHODRIHE	220.00	152041	SAHARNP2	220.00*	1	75.6	-23.8
162016	KHODRIHE	220.00	152041	SAHARNP2	220.00*	2	73.7	-23
164001	KASHIPU4	400.00	154009	MURADAB4	400.00*	1	-29.4	44.1
			TOTAL				-66.9	-200.3
FROM AREA 1006 UTTARAKH to 1007 HIMACHAL								
161037	KULHALHE	132.00*	171009	GIRI1	132	1	-99.2	-14.4
162016	KHODRIHE	220.00*	172011	MAJRI2	220	1	53.2	-9.9
162016	KHODRIHE	220.00*	172011	MAJRI2	220	2	53.2	-9.9
			TOTAL				7.2	-34.2
FROM AREA 1006 UTTARAKH to 1024 NR_ISTS_UP								
161019	PITHORAG	132.00	162018	PITHORGA	220.00*	1	-97.8	11.1
161029	SITARGAN	132.00	162017	SITARGAN	220.00*	1	-60	-2.4
161029	SITARGAN	132.00	162017	SITARGAN	220.00*	2	-60	-2.4
164001	KASHIPU4	400.00	154055	BARELI74	400.00*	1	-300.4	3.3
164001	KASHIPU4	400.00	154055	BARELI74	400.00*	2	-300.4	3.3
			TOTAL				-818.6	12.9
FROM AREA 1006 UTTARAKH to 1025 NR_ISTS_UTT								
164000	RISHIKE4	400.00	164002	ROORKEE	400.00*	1	-63.8	7.7
164001	KASHIPU4	400.00*	164002	ROORKEE	400	1	72.8	33.6
164001	KASHIPU4	400.00*	164002	ROORKEE	400	2	72.8	33.6
			TOTAL				81.9	74.8
FROM AREA 1006 UTTARAKH to 1050 NR_ISTS								
162007	HARIDWA2	220.00	162020	ROORK-PG	220.00*	1	-86.1	-36.2
162008	RORKEE2	220.00	162020	ROORK-PG	220.00*	1	-197.4	-49.7
			TOTAL				-283.6	-85.9

	TOTAL FROM AREA 1006 UTTARAKH						-1080	-232.7

FROM AREA 1007 HIMACHAL to 1001 PUNJAB								
171006	HAMIRP-2	132.00	111015	CHOHAL	132.00*	1	53.5	-7.6
171007	BASSII	132.00*	111089	JOGINDERNAGA	132	1	-6.5	-1.8
171007	BASSII	132.00*	111089	JOGINDERNAGA	132	2	-6.5	-1.8
			TOTAL				40.5	-11.3
FROM AREA 1007 HIMACHAL to 1002 HARYANA								
171009	GIRII	132.00*	121007	ABDULLAPURI	132	1	0.1	-20.8
172004	BADDI2	220.00	122005	MADANPUR	220.00*	1	83.7	23.6
172009	KUNIHAR2	220.00	2115	PINJERI	220.00*	1	36.4	4.3
172009	KUNIHAR2	220.00	2115	PINJERI	220.00*	2	36.4	4.3
			TOTAL				156.5	11.3
FROM AREA 1007 HIMACHAL to 1006 UTTARAKH								
171009	GIRII	132.00	161037	KULHALHE	132.00*	1	99.2	14.4
172011	MAJRI2	220.00	162016	KHODRIHE	220.00*	1	-53.2	9.9
172011	MAJRI2	220.00	162016	KHODRIHE	220.00*	2	-53.2	9.9
			TOTAL				-7.2	34.2
	1020 NR_ISTS_PUN							
1202	NEHRIAN	220.00*	112101	JALAN-PG	220	1	81.9	-13.6
1202	NEHRIAN	220.00*	112101	JALAN-PG	220	2	81.9	-13.6
172001	HAMIRPUR42	220.00	112101	JALAN-PG	220.00*	1	4.9	9.3
172001	HAMIRPUR42	220.00	112101	JALAN-PG	220.00*	2	4.9	9.3
			TOTAL				173.5	-8.6
FROM AREA 1007 HIMACHAL to 1026 NR ISTS HP								
1201	KUNIHAR	400.00*	174003	NALLAGAR	400	1	-82	-16.2
1201	KUNIHAR	400.00*	174003	NALLAGAR	400	2	-82	-16.2
172001	HAMIRPUR42	220.00	174006	HAMIRPUR	400.00*	1	-101.6	-3.3
172001	HAMIRPUR42	220.00	174006	HAMIRPUR	400.00*	2	-101.6	-3.3
172004	BADDI2	220.00*	172013	NALLAGAR	220	1	-114.4	19.2
172004	BADDI2	220.00*	172013	NALLAGAR	220	2	-114.4	19.2
172005	UPARNANG	220.00	172013	NALLAGAR	220.00*	1	-29.9	-10.7
172005	UPARNANG	220.00	172013	NALLAGAR	220.00*	2	-29.9	-10.7
172006	CHHAUR	220.00	172013	NALLAGAR	220.00*	1	120.5	-14.2
			TOTAL				-535.4	-36.2
FROM AREA 1007 HIMACHAL to 1050 NR ISTS								
171017	JASSOR1	132.00	172019	JASSOR2	220.00*	1	-64.4	15
171017	JASSOR1	132.00	172019	JASSOR2	220.00*	2	-55.8	13
			TOTAL				-120.3	27.9
	1202 CHAMER-3							
172000	BUDHIL	220.00*	172020	CHAMER-3	220	1	29.8	-0.7
172000	BUDHIL	220.00*	172020	CHAMER-3	220	2	29.8	-0.7

			TOTAL				59.6	-1.5	
FROM AREA 1007 HIMACHAL to 1216 DEHAR									
171023	KNGO_SPL	132.00*	171029	DEHAR1	132	1	-81.9	12.8	
172003	KANGOO2	220.00	172017	DEHAR	220.00*	1	-351.9	63.9	
			TOTAL				-433.8	76.7	
FROM AREA 1007 HIMACHAL to 1218 ADHYDRO to									
172006	CHHAUR	220.00	172022	ADHYDRO	220.00*	1	-15.2	6.4	
			TOTAL				-15.2	6.4	
FROM AREA 1007 HIMACHAL to 1219 KARCHAMW									
174000	BASPA4	400.00	174010	KARCHAMW	400.00*	1	109	-29.1	
174000	BASPA4	400.00	174010	KARCHAMW	400.00*	2	109	-29.1	
			TOTAL				217.9	-58.2	
FROM AREA 1007 HIMACHAL to 1220 MALAN-II									
171004	CHHAUR	132.00	171028	MALAN-II	132.00*	1	-54.5	2	
171004	CHHAUR	132.00	171028	MALAN-II	132.00*	2	-54.5	2	
			TOTAL				-109	4	
TOTAL FROM AREA 1007 HIMACHAL								-572.9	44.7
FROM AREA 1008 JAMUKASH to 1027 NR_ISTS_JK									
1007	NAGROTA	220.00	182011	KISHENPUR	220.00*	1	-178.8	-18.4	
1007	NAGROTA	220.00	182011	KISHENPUR	220.00*	2	-178.8	-18.4	
182000	ZAINKOTE2	220.00*	182007	WAGOORA	220	1	-185.4	5.7	
182000	ZAINKOTE2	220.00*	182007	WAGOORA	220	2	-185.4	5.7	
182001	RAMBAN	220.00	182011	KISHENPUR	220.00*	1	-81.3	8.3	
182003	BARN2	220.00	182011	KISHENPUR	220.00*	1	-27	0	
182003	BARN2	220.00	182011	KISHENPUR	220.00*	2	-26.9	0	
184000	BAGLIHAR4	400.00*	184002	KISHENPUR	400	1	293	-10.8	
184000	BAGLIHAR4	400.00*	184002	KISHENPUR	400	2	293	-10.8	
			TOTAL				-277.5	-38.6	
FROM AREA 1008 JAMUKASH to 1050 NR_ISTS									
1003	THEIN	220.00*	182004	HIRANAGAR2	220	1	-1.9	8.7	
1003	THEIN	220.00*	182004	HIRANAGAR2	220	2	-1.9	8.7	
181001	MIRBAZAR	132.00*	182006	MIRBAZAR	220	1	-86.3	7.7	
181001	MIRBAZAR	132.00*	182006	MIRBAZAR	220	2	-86.3	7.7	
181008	UDAMPUR1	132.00	182005	UDAMPUR2	220.00*	1	-236.9	-23.5	
181027	PAMPORE1	132.00	182008	PAMPORE2	220.00*	1	-130.6	-4.7	
181027	PAMPORE1	132.00	182008	PAMPORE2	220.00*	2	-130.6	-4.7	
181027	PAMPORE1	132.00	182008	PAMPORE2	220.00*	3	-130.6	-4.7	
181035	GLADINII	132.00	182010	JAMMU2	220.00*	1	-412.4	39.1	
181038	HERANAGAR1	132.00	182004	HIRANAGAR2	220.00*	1	-265.6	-81.3	

182001	RAMBAN	220.00*	182006	MIRBAZAR	220	1	62.1	-5
TOTAL							-1421	-52.1
FROM AREA 1008 JAMUKASH to 1210 SEWA-II								
181000	KATHUA1	132.00*	181045	SEWA-II	132	1	-17.8	-0.6
181010	MAHANPUR	132.00	181045	SEWA-II	132.00*	1	-31.2	12.8
181038	HERANAGARI	132.00	181045	SEWA-II	132.00*	1	24.6	-6.6
181038	HERANAGARI	132.00	181045	SEWA-II	132.00*	2	24.6	-6.6
TOTAL							0.1	-1
TOTAL FROM AREA 1008 JAMUKASH							-1698.4	-91.7
FROM AREA 1009 CHANDIGARH to 1001 PUNJAB								
BUS	NAME	BUS	NAME	BASKV	CKT	MW	MVAR	
190000	CHANDIGA_S3966.000	110048	MOHALI-II	66.000*	1	-25.5	-14.7	
190000	CHANDIGA_S3966.000	110048	MOHALI-II	66.000*	2	-25.5	-14.7	
190010	CHANDIGA_S5666.000	110048	MOHALI-II	66.000*	1	-25.9	-17.3	
190010	CHANDIGA_S5666.000	110048	MOHALI-II	66.000*	2	-25.9	-17.3	
		TOTAL				-102.7	-64	
FROM AREA 1009 CHANDIGARH to 1002 HARYANA								
190004	CHANDIGA_S2866.000	120002	DHULKOTE	66.000*	1	-9.1	0.3	
190004	CHANDIGA_S2866.000	120002	DHULKOTE	66.000*	2	-9.1	0.3	
		TOTAL				-18.1	0.5	
FROM AREA 1009 CHANDIGARH to 1026 NR_ISTS_HP								
192000	KISHANGA_CHA220.00*	172013	NALLAGAR	220	1	-93.2	-30.7	
192000	KISHANGA_CHA220.00*	172013	NALLAGAR	220	2	-93.2	-30.7	
TOTAL							-186.3	-61.5
TOTAL FROM AREA 1009 CHANDIGA							-307.2	-124.9

ANNEXURE-4

(a) Punjab

Annexure - 4. (a).1 Voltage profile

Bus Number	Bus Name	Base kV	Existing case	With recommended Cap bank
			Voltage (pu)	
1315	ABLOWAL	220	new S/S	1.0039
1320	KOTLAJUNGAN	220	new S/S	1.0085
1321	JADLA	220	new S/S	1.0071
1322	BHARI	220	new S/S	1.0105
1323	SCIENCECITY	220	new S/S	1.0112
1324	KANJALI	220	new S/S	1.011
1326	HOSHIARPUR	220	new S/S	1.0134
1328	BHAWANIGARH	220	new S/S	1.0184
1330	LADHOWAL	220	new S/S	1.0089
1331	MAUR	220	new S/S	1.0001
1332	BADHNIKALAN	220	new S/S	1.0067
1334	ALWALPUR	220	new S/S	1.0082
1336	MOHALI-GMADA	220	new S/S	1.0207
1337	SHERPUR	220	new S/S	1.0045
1338	DORAHA-400KV	400	new S/S	1.0432
1339	DORAHA-400KV	220	new S/S	1.0142
111000	UBDCPH-1	132	1.0044	1.0093
111001	GURDASPUR	132	0.9858	0.9884
111002	DHARIWAL	132	0.9833	0.9852
111003	SHRIHARGOBIN	132	1.0126	1.0171
111004	PIMS	132	0.9846	0.9973
111005	ASRON	132	0.9909	0.9922
111006	JADLA	132	0.9747	0.978
111007	BANGA	132	0.9592	0.9673
111008	PHAGWARA	132	0.9639	0.9759
111009	MUKERIAN-4	132	1.0529	1.0542
111010	FEROZPUR21	132	0.9347	0.9843
111011	CHAMKAUR	132	0.9799	0.9847
111012	MAHILPUR21	132	0.9638	0.97
111013	GHULAL	132	0.9753	0.9868
111014	GHOLIA	132	0.982	1.0065
111015	CHOHAL	132	0.9791	0.9795
111016	BHOGPUR	132	0.9979	1.0041

111017	MUKERI-3	132	1.0598	1.0601
111018	PATHANKOT	132	0.9983	1.0033
111019	SARNA21	132	1.0018	1.0077
111020	WADALAGRAN21	132	0.9805	0.9885
111021	KHARAR	132	0.9914	0.9926
111022	MEHMUDAN	132	0.9739	0.9875
111023	VERPAL21	132	0.9625	0.9742
111024	DORAHA	132	0.9732	0.9878
111025	MOGA21	132	0.9826	1.0071
111026	PATTI21	132	0.9628	0.9891
111027	BILASPUR	132	0.97	0.9877
111028	JALANDHAR21	132	0.9914	1.0046
111029	AMRITSAR21	132	0.9635	0.9744
111030	SIHORA	132	0.9704	0.9882
111031	ROPAR21	132	1.0001	1.0007
111032	GORAYA21	132	0.9688	0.9823
111033	SEH	132	0.9719	0.9831
111034	SHAMSPUR	132	0.9726	0.9839
111035	MAUR	132	0.9296	0.9801
111036	MUKATSAR21	132	0.9574	1.0048
111037	SULTANPUR21	132	0.9577	0.9894
111038	BALUANA	132	0.9474	0.9943
111039	GIDDERBAH	132	0.9288	0.9931
111040	BADAL	132	0.9209	0.9933
111041	JAMALPUR21	132	0.9834	0.9984
111042	MALOUT	132	0.9318	1.0086
111043	ABOHAR	132	0.937	1.0058
111044	BHATINDA21	132	0.9573	0.9943
111045	NAWANSHAHAR	132	0.9613	0.9683
111046	ANANDGARH-2	132	0.9858	0.9869
111047	JALALABAD	132	0.9408	1.0045
111048	SADIQ	132	0.9557	1.0033
111049	SARAINANGAL	132	0.9482	0.9896
111050	PANJGARY	132	0.9482	0.9821
111051	KOTAKPUR	132	0.9648	1.0128
111052	KOTAKPUR1	132	0.9612	1.0092
111053	BAGHAPURANA	132	0.9788	1.0093
111054	SAMADHBH	132	0.982	1.0064
111055	MOGA-II	132	0.9825	1.007
111056	FARIDKOT	132	0.9532	1.0039
111057	MANASING	132	0.9284	0.991
111058	FEROZSHAH	132	0.923	0.9974
111059	TALWANDI	132	0.9713	0.9998
111060	SOSAN	132	0.9738	1.0013
111061	BADNIKALAN	132	0.9784	1.0028
111062	DHARAMKOT	132	0.9806	1.0019
111063	SWADIKALAN	132	0.982	1.0008
111064	NURMEHAL	132	0.9613	0.9859

111065	NAKODAR	132	0.9633	0.9898
111066	URBANEST	132	0.9779	0.9959
111067	UBDCPH-3	132	1.0009	1.0059
111068	UBDCPH-2	132	1.0033	1.0082
111069	RCFACTORY	132	0.9814	0.9939
111070	KHERAMAN	132	0.9572	0.992
111071	ALAWALPUR	132	0.9937	1.0033
111072	BEAS	132	0.9835	0.9955
111073	HOSHIARPUR	132	0.9778	0.9793
111074	TANDA	132	1.0095	1.0129
111075	JANDIALA	132	0.97	0.9806
111076	EKALGADA	132	0.9695	0.9821
111077	TARANTAR	132	0.9645	0.9789
111078	BHIKIWIND	132	0.9558	0.9817
111079	NARAINANGAL	132	0.9612	0.9725
111080	HAKIMAGARH	132	0.9565	0.9679
111081	SAKTRIBAD	132	0.9558	0.9672
111082	MALMANDI	132	0.9592	0.969
111083	GTROADAM	132	0.9588	0.9684
111084	VERKA	132	0.9611	0.9709
111085	POWERCOLONY	132	0.962	0.9721
111086	MUKERI-1	132	1.0638	1.0638
111087	MUKERI-2	132	1.06	1.06
111088	MAMUN	132	0.9971	1.0024
111089	JOGINDERNAGA	132	0.99	0.9955
111090	SARNA	132	1.0009	1.0059
111091	TANGRA	132	0.9721	0.9836
111092	ANANDGARH-1	132	0.99	0.99
111093	ANANDPUR	132	0.9888	0.989
111094	KAHANPUR	132	0.9962	1.004
111095	BATALA	132	0.9765	0.9844
111096	BUTARI21	132	0.9743	0.9858
111097	CHILDERNPARK	132	0.9864	0.9993
111098	DHILWAN	132	0.9786	0.9903
111099	GOBI2-21	132	0.9719	0.9831
111100	IGCBHATI	132	0.9528	0.9907
111101	JAYANTI	132	0.962	0.9704
111102	KAPURTHALA	132	0.9817	0.9942
111103	KARTARPUR21	132	0.9938	1.0067
111104	KOTLIS21	132	0.9808	0.9888
111105	KATHUNAN	132	0.9639	0.9727
111106	MOGA-1	132	0.9813	1.0051
111107	MUKATSAR	132	0.9533	1.0017
111108	PHILLLOUR	132	0.9735	0.9876
111109	SCIENCE	132	0.983	0.9956
111110	ROPAR	132	0.9885	0.99
111111	TALWANDISABO	132	0.9711	0.9924
111112	KANGR-PS	132	0.9895	0.9989

112000	BUTARI	220	0.989	1.0011
112001	DANDHARI	220	0.9911	1.0027
112002	SAHNEWAL	220	0.9886	1.0088
112003	GOBINDGARH-1	220	0.9975	1.006
112004	LEHRAMOHABBA	220	1	1
112005	BAHADURGARH	220	1.0141	1.018
112006	NAKODAR	220	0.997	1.0077
112007	KARTARPUR	220	0.9995	1.0089
112008	DERABASSI	220	1.0079	1.0117
112009	HUMBARAN	220	0.9863	1.0072
112010	FEROZPUR	220	0.9686	0.9983
112011	JAGRAON	220	0.9868	0.9988
112012	MAHILPUR	220	1.0023	1.0094
112013	MANSA	220	0.965	0.9981
112014	SUNAM	220	1.0057	1.0077
112015	DHURI	220	1.0027	1.011
112016	FATEHGARH	220	0.9724	0.9958
112017	KHARAR	220	1.0018	1.0016
112018	SARNA	220	0.9851	0.9944
112019	RSD	220	1	1
112020	WADALAGRANTH	220	0.9748	0.9922
112021	BOTIANWALA	220	0.9828	1.0086
112022	VERPAL	220	0.9878	1
112023	KOHARA	220	0.9787	1.0115
112024	MOGA-PS	220	0.9947	1.0072
112025	PATTI	220	0.962	0.9982
112026	RAJPURA	220	1.0121	1.0161
112027	JAMSHER	220	0.9903	1.0047
112028	GORAYA	220	0.9874	1.001
112029	ROPAR	220	1.01	1.01
112030	CIVILINE	220	0.9717	0.9954
112031	HIMMATPURA	220	0.9915	0.9998
112032	GHUBAYA	220	0.9811	1.0089
112033	GOBINDGARH-2	220	0.9962	1
112034	LALTONKA	220	0.9887	1.0081
112035	BAJAKHANA	220	0.9932	1.0001
112036	MUKTSAR	220	0.9727	1.0015
112037	SULTANPUR	220	0.9721	0.9994
112038	PATRAN	220	1.0057	1.0075
112039	PATIALA-PS	220	1.0112	1.0167
112040	MALERKOTL-PS	220	1.0046	1.0132
112041	AMLOH	220	1.0061	1.0145
112042	RAJLA	220	1.006	1.0091
112043	BARNALA-PS	220	0.9927	0.9969
112044	BATHINDA	220	0.98	0.9982
112045	BAGHAPUR	220	0.9936	1.0032
112046	KHASSA	220	0.982	0.9983
112047	MOHALI-1	220	1.0123	1.016

112048	MAJITHA	220	0.9707	0.9969
112049	KOTLISURATMA	220	0.9729	0.9932
112050	TIBBER	220	0.9795	0.9883
112051	AJITWAL	220	0.989	1.001
112052	MOHALI-2	220	1.0049	1.0101
112053	DANDHARIKAL2	220	0.9908	1.0023
112054	AMLOHROAD	220	0.9936	0.9996
112055	SADIQ	220	0.9684	1.001
112056	RASHIANA	220	0.9684	1.0025
112057	MALOUT	220	0.9718	1.0036
112058	PAKHOWAL	220	0.9895	1.0062
112059	FP.NABHA	220	1.0142	1.0189
112060	JHUNIR	220	0.9597	0.9926
112061	LALRU	220	1.0146	1.0166
112062	ALGAON	220	0.9606	1.0007
112063	FEROZPUR_RD	220	0.9872	1.0075
112064	KAPURTHALA	220	1.0012	1.0092
112065	REHANAJATTAN	220	0.9998	1.0106
112066	GOINDWAL	220	1	1.0198
112067	CHOLASHAHIB	220	0.9648	1.0008
112068	MASTEWAL	220	0.9848	1.0084
112069	MEHALKALAN	220	0.9785	1.0046
112070	DORAHA	220	0.9886	1.0109
112071	IKOLOHA	220	1.003	1.0142
112072	PASSIANA	220	1.0094	1.0142
112073	GAUNSGARH	220	0.9799	1.008
112074	BASSIPATHNA	220	0.9997	1.0057
112075	KAKRALA	220	1.0056	1.0077
112076	TALWANDISABO	220	0.9775	0.999
112077	UDHOKE	220	0.9738	0.9955
112078	DHURI4	220	1.0139	1.0179
112079	DEVIGARH	220	1.02	1.022
112080	MAKHU	220	0.9868	1.0094
112081	MOHALI-S	220	1.0007	1.0007
112082	MOHALI-3	220	1.0123	1.016
112084	MUKATSAR	220	0.998	1.0169
112085	NAKODAR42	220	1.0082	1.0152
112086	RAJPURA42	220	1.0235	1.0242
112087	DHANAULA	220	0.9974	1.0058
112088	BADSHAHPUR	220	0.9797	0.9982
112089	BANGAN	220	1.0081	1.0071
112090	CHOGAWAN	220	0.9776	0.9964
112091	BANUR	220	1.007	1.0105
112092	NOORMEHAL	220	1.0055	1.0123
112093	CHAJLI	220	1.0112	1.0123
112094	TALWANDIBHAI	220	0.9866	1.0058
112095	KOTKAPURA	220	1	1.0177
112096	AMRIT-PG	220	0.9891	1.0015

112097	MALER-PG	220	1.0058	1.0144
112098	MOGA-PG	220	0.9951	1.0074
112099	LUDHIANA	220	0.9931	1.0097
112100	PATIA-PG	220	1.0153	1.0209
112102	JALANDHAR-BB	220	0.9917	1.0042
112108	DHARAMKOTE	220	0.9864	1.0072
112109	SANDHAUR	220	1.001	1.01
112110	ABOHAR	220	0.9663	1.0009
112111	BADAL	220	1	1.0008
112112	LLK-1	220	0.9919	1.0091
112114	GHULAL2	220	0.9877	1.0033
112115	MAJRA	220	1.0067	1.0078
112116	NARAINGARH	220	0.9859	0.9982
114000	TALWANDISABO	400	1.0175	1.0246
114001	DHURI	400	1.03	1.0345
114002	MAKHU	400	1.0146	1.0265
114003	MUKATSAR	400	1.0133	1.023
114004	NAKODAR	400	1.0243	1.0371
114005	RAJPURA_TH	400	1.052	1.052
114006	RAJPURA	400	1.0485	1.049

Annexure-4.(a).2: Existing Capacitor Bank Ratings

Existing capacitor banks		
Bus Number	Bus Name	Cap.Bank Rating (MVA _r)
111001	GURDASPUR 132.00	5.79
111002	DHARIWAL 132.00	5.86
111003	SHRIHARGOBIN132.00	13.2
111005	ASRON 132.00	1.99
111006	JADLA 132.00	10.28
111007	BANGA 132.00	14
111008	PHAGWARA 132.00	6.7
111010	FEROZPUR21 132.00	33.27
111011	CHAMKAUR 132.00	2.32
111012	MAHILPUR21 132.00	7.62
111013	GHULAL 132.00	12.57
111014	GHOLIA 132.00	1.69
111015	CHOHAL 132.00	2.03
111016	BHOGPUR 132.00	11.66
111018	PATHANKOT 132.00	4.63
111020	WADALAGRAN21132.00	5.54
111021	KHARAR 132.00	17.69
111023	VERPAL21 132.00	4.27
111024	DORAHA 132.00	9.26
111026	PATTI21 132.00	6.05
111027	BILASPUR 132.00	1.16
111028	JALANDHAR21 132.00	9.33
111029	AMRITSAR21 132.00	8.3

111030	SIHORA 132.00	1.07
111034	SHAMSPUR 132.00	0.71
111035	MAUR 132.00	6.24
111036	MUKATSAR21 132.00	14.59
111037	SULTANPUR21 132.00	1.58
111038	BALUANA 132.00	1.16
111039	GIDDERBAH 132.00	0.71
111040	BADAL 132.00	2.56
111041	JAMALPUR21 132.00	17.05
111042	MALOUT 132.00	3.2
111043	ABOHAR 132.00	6.69
111045	NAWANSHAHAHAR 132.00	12.23
111047	JALALABAD 132.00	5.63
111048	SADIQ 132.00	16.04
111049	SARAINANGAL 132.00	2.32
111050	PANJGARY 132.00	0.71
111051	KOTAKPUR 132.00	20.06
111052	KOTAKPUR1 132.00	2.43
111053	BAGHAPURANA 132.00	13.57
111054	SAMADHBH 132.00	8.46
111055	MOGA-II 132.00	0.36
111056	FARIDKOT 132.00	2.32
111057	MANASING 132.00	0.71
111058	FEROZSHAH 132.00	10.37
111059	TALWANDI 132.00	9.23
111060	SOSAN 132.00	1.16
111061	BADNIKALAN 132.00	3.63
111062	DHARAMKOT 132.00	4.99
111063	SWADIKALAN 132.00	2.11
111064	NURMEHAL 132.00	8.69
111065	NAKODAR 132.00	13.48
111066	URBANEST 132.00	1.43
111068	UBDCPH-2 132.00	5.69
111070	KHERAMAN 132.00	3.8
111071	ALAWALPUR 132.00	2.9
111072	BEAS 132.00	1.16
111073	HOSHIARPUR 132.00	11.96
111074	TANDA 132.00	2.54
111075	JANDIALA 132.00	2.76
111076	EKALGADA 132.00	0.71
111077	TARANTAR 132.00	9.26
111078	BHIKIWIND 132.00	9.26
111079	NARAINANGAL 132.00	9.41
111080	HAKIMAGARH 132.00	4.64
111081	SAKTRIBAD 132.00	2.9
111082	MALMANDI 132.00	2.67
111083	GTROADAM 132.00	4.59
111084	VERKA 132.00	5.47

111085	POWERCOLONY 132.00	2.85
111088	MAMUN 132.00	0.36
111091	TANGRA 132.00	1.43
111093	ANANDPUR 132.00	1.07
111094	KAHANPUR 132.00	1.43
111095	BATALA 132.00	7.5
111097	CHILDERNPARK132.00	2.85
111098	DHILWAN 132.00	2.9
111100	IGCBHATI 132.00	9.97
111101	JAYANTI 132.00	0.86
111102	KAPURTHALA 132.00	8.5
111105	KATHUNAN 132.00	6.55
111106	MOGA-1 132.00	8.62
111107	MUKATSAR 132.00	8.01
111108	PHILLLOUR 132.00	1.75
111109	SCIENCE 132.00	0.71
111110	ROPAR 132.00	2.38
111112	KANGR-PS 132.00	1.43
112000	BUTARI 220.00	16.39
112001	DANDHAR1 220.00	56.52
112002	SAHNEWAL 220.00	56.52
112003	GOBINDGARH-1220.00	19.31
112004	LEHRAMOHABBA220.00	10.2
112005	BAHADURGARH 220.00	27.48
112006	NAKODAR 220.00	5.79
112007	KARTARPUR 220.00	29.44
112008	DERABASSI 220.00	15.75
112009	HUMBARAN 220.00	11.37
112010	FEROZPUR 220.00	7.74
112011	JAGRAON 220.00	19.11
112012	MAHILPUR 220.00	11.39
112013	MANSA 220.00	23.46
112014	SUNAM 220.00	29.19
112015	DHURI 220.00	36.3
112016	FATEHGARH 220.00	29.75
112018	SARNA 220.00	5.69
112020	WADALAGRANTH220.00	5.79
112021	BOTIANWALA 220.00	5.72
112022	VERPAL 220.00	5.79
112023	KOHARA 220.00	7.83
112024	MOGA-PS 220.00	19.57
112025	PATTI 220.00	5.79
112026	RAJPURA 220.00	24.64
112027	JAMSHER 220.00	20.41
112028	GORAYA 220.00	10.13
112029	ROPAR 220.00	2.05
112030	CIVILINE 220.00	5.79
112031	HIMMATPURA 220.00	9.26

112032	GHUBAYA 220.00	2.79
112033	GOBINDGARH-2220.00	5.69
112034	LALTONKA 220.00	25.05
112035	BAJAKHANA 220.00	1.42
112036	MUKTSAR 220.00	23.72
112037	SULTANPUR 220.00	22.1
112038	PATRAN 220.00	32.5
112039	PATIALA-PS 220.00	24.39
112040	MALERKOTL-PS220.00	58.73
112041	AMLOH 220.00	28.99
112042	RAJLA 220.00	19.95
112043	BARNALA-PS 220.00	24.18
112045	BAGHAPUR 220.00	13.57
112046	KHASSA 220.00	19.41
112047	MOHALI-1 220.00	28.53
112048	MAJITHA 220.00	7.83
112049	KOTLISURATMA220.00	13.5
112050	TIBBER 220.00	2.72
112051	AJITWAL 220.00	6.97
112052	MOHALI-2 220.00	22.36
112054	AMLOHROAD 220.00	5.69
112056	RASHIANA 220.00	11.13
112057	MALOUT 220.00	4.11
112059	FP.NABHA 220.00	9.72
112060	JHUNIR 220.00	2.1
112061	LALRU 220.00	18.51
112062	ALGAON 220.00	9.41
112063	FEROZPUR_RD 220.00	11.42
112065	REHANAJATTAN220.00	14.09
112067	CHOLASHAHIB 220.00	4.42
112069	MEHALKALAN 220.00	3.57
112102	JALANDHAR-BB220.00	11.57
114002	MAKHU 400.00	-72.56
114003	MUKATSAR 400.00	-72.56
114004	NAKODAR 400.00	-72.56

Annexure-4.(a).3. Recommended Ratings of Capacitor Banks.

Recommended Capacitor Banks		
Bus Number	Bus Name	Cap.Bank Rating (MVA _r)
110006	GOBINDGARH1 66.000	50
110014	CIVILINE 66.000	50
110016	GHUBAYA 66.000	50
110017	MANSA 66.000	50
110024	BOTIANWALA 66.000	50
110032	LALTONKA 66.000	50
110040	BHATINDA 66.000	50
110044	MAJITHA6 66.000	50

110048	MOHALI-II 66.000	50
110050	SADIQ 66.000	50
110052	MALOUT 66.000	50
110077	LEHRAMOHABBT66.000	50
111042	MALOUT 132.00	50
1315	ABLOWAL 220.00	12
1320	KOTLAJUNGAN 220.00	12
1323	SCIENCECITY 220.00	9
1324	KANJALI 220.00	9
1332	BADHNIKALAN 220.00	32
112013	MANSA 220.00	32
112066	GOINDWAL 220.00	32.7
112067	CHOLASHAHIB 220.00	32
112077	UDHOKE 220.00	32
111035	MAUR 132.00	5.59
111038	BALUANA 132.00	1.16
111039	GIDDERBAH 132.00	0.71
111043	ABOHAR 132.00	6.69
111047	JALALABAD 132.00	5.62
111056	FARIDKOT 132.00	2.32
111057	MANASING 132.00	0.71
111058	FEROZSHAH 132.00	10.37
111065	NAKODAR 132.00	13.48
111070	KHERAMAN 132.00	3.8
111035	MAUR 132.00	6.24
111038	BALUANA 132.00	2.72
111039	GIDDERBAH 132.00	2.72
111042	MALOUT 132.00	3.2
111043	ABOHAR 132.00	5.36
111044	BHATINDA21 132.00	2.72
111047	JALALABAD 132.00	15.27
111051	KOTAKPUR 132.00	20.06
111056	FARIDKOT 132.00	5.44
111057	MANASING 132.00	2.72
111058	FEROZSHAH 132.00	21.72
111059	TALWANDI 132.00	9.23
111064	NURMEHAL 132.00	8.69
111065	NAKODAR 132.00	9.53
111070	KHERAMAN 132.00	7.17
111112	KANGR-PS 132.00	11
111049	SARAINANGAL 132.00	2.32

**Annexure:4-(b).1. Voltage Profile
(b)Haryana**

Bus Number	Bus Name	Base kV	Existing case Voltage (pu)	with recommended cap bank Voltage (pu)
2001	SONTA 220	220	new S/S	0.9967
2002	NEEMWALA 220	220	new S/S	0.9945
2004	SECTOR6	220	new S/S	1.0168
2114	NAGGAL	220	new S/S	1.0136
2115	PINJERI	220	new S/S	1.0141
2117	BHADSON220	220	new S/S	0.999
2123	HUKMAWALI220	220	new S/S	1.0152
2125	MEHNA KHERA2	220	new S/S	1.0145
2130	MEERPUR KURA	220	new S/S	0.991
2131	SECTOR46 FAR	220	new S/S	0.9872
2132	SECTOR-58220	220	new S/S	0.9909
2140	SECTOR 95	220	new S/S	1.0013
2141	SECTOR107	220	new S/S	1.0015
2143	TSS DFCCIL	220	new S/S	0.9925
2200	MEJA STPP	400	new S/S	1
121000	BHIWANIBB	132	0.958	1.0025
121001	PINJORE	132	0.9841	0.9853
121002	KAIRU	132	0.94	0.9962
121003	JIND	132	0.9482	1.0035
121004	SAFIDON	132	0.9449	1.0091
121005	SAMALKHA	132	0.9298	1.0297
121006	NISSING	132	0.9429	1.0096
121007	ABDULLAPUR1	132	0.9385	1.0033
121008	BHUNNA	132	0.9019	1.0259
121009	SONEPAT	132	0.9395	1.0059
121010	KURUKSHETRA1	132	0.9491	0.9837
121011	KIRORI	132	0.9335	1.0247
121012	ISHRANA	132	0.9391	1.0289
121013	REWARI	132	0.9476	0.9974
121014	NARNAUL	132	0.937	1.0081
121015	NARWANA	132	0.9659	1.0051
121016	SEWAH	132	0.9405	1.0315
121017	HANSI	132	0.9517	0.9977
121018	MOHINDERGARH	132	0.9426	1.0041
121019	PANIPAT	132	0.9354	1.0353
121020	DIWANA	132	0.9349	1.0368
121021	HISAR	132	0.9686	1.0057
121022	IA-BHIWANI	132	0.9453	0.9917
121023	SIRSA	132	0.9467	1.008
121024	BAPORA	132	0.9522	0.9996
121025	JINDALSTEEL	132	0.9773	1.0082
121026	FATEHABAD21	132	0.9379	1.0114
121027	RANIA	132	0.9361	1.0398

121028	PTPS	132	0.94	1.0337
121029	ROHTAK	132	0.9422	1.004
121030	KARNAL	132	0.9423	1.0138
121031	BHUSTHAL	132	0.9463	0.984
121032	ADHOUN	132	0.9485	0.9851
121033	IA-HISAR	132	0.9604	0.997
121034	UNISPUR	132	0.9433	1.0123
121035	LUKHI	132	0.948	0.9854
121036	PEHOWA	132	0.9474	0.9862
121037	CHEEKA21	132	0.9455	0.9924
121038	KAITHAL	132	0.94	0.9896
121039	KIRMICH	132	0.9372	1.0144
121040	ISHERWAL	132	0.9536	1.0003
121041	MASUDPUR	132	0.975	1.0088
121042	BHIWANI	132	0.9519	0.9987
121043	NAUTCH	132	0.9362	0.9889
121044	BODHNI	132	0.9434	0.9828
121045	DHAND	132	0.9445	0.9874
121046	ISMAILABAD	132	0.9424	0.9829
121047	MALIKPUR	132	0.9434	0.9822
121048	BHORE	132	0.9473	0.9829
121049	NARWANA-OLD	132	0.8451	1.0328
121050	KURUNGWALI	132	0.9564	1.0048
121051	BASTARA	132	0.9413	1.0218
121052	INDRI	132	0.9359	1.0108
121053	AMIN	132	0.9382	1.0145
121054	SAGGA	132	0.9373	1.0129
121055	JUNDLA	132	0.9364	1.0106
121056	ASSANDH	132	0.9331	0.9977
121057	JALMANA	132	0.9333	0.9982
121058	MUNAK	132	0.9308	1.0458
121059	GHARAUND	132	0.9392	1.0249
121060	MADHUBAN	132	0.9392	1.0234
121061	NEWAL	132	0.9399	1.0106
121062	BHADSON	132	0.942	1.0104
121063	NAGLAMEGHA	132	0.94	1.0218
121064	NIDANA	132	0.9393	1.009
121065	RAJOUND	132	0.9314	0.9882
121066	PAI	132	0.9262	0.9797
121067	RASINA	132	0.9371	1.0179
121068	KAUL	132	0.9447	0.9884
121069	PADLA	132	0.9316	0.9885
121070	PUNDRI	132	0.9308	0.9806
121071	SAMALKHA21	132	0.945	1.0203
121072	BHAGAL	132	0.9393	0.9918
121073	CHAKULAD	132	0.9418	0.9907
121074	KHERI-GU	132	0.9335	0.9913
121075	THANA	132	0.9385	0.9864

121076	KABULPUR	132	0.9636	1.0044
121077	HABRI	132	0.9344	1.02
121078	MOHANA	132	0.9829	1.011
121079	HSIIDC-R	132	0.9375	1.0046
121080	RAI	132	0.9377	1.0053
121081	KUNDLI	132	0.9444	1.0033
121082	MURTHAL	132	0.9303	1.0122
121083	GANNUAR	132	0.9262	1.0149
121084	HARSANA	132	0.9335	1.005
121085	DEEPALPUR	132	1	1
121086	KHARKHOD	132	0.9324	1.0038
121087	NARWANA-NEW	132	0.8473	1.0327
121088	DHAMTAN	132	0.8448	1.0409
121089	GARHI	132	0.826	1.0313
121090	DHANOURI	132	0.8225	1.0313
121091	UCHANA	132	0.9567	0.9993
121092	GHOGHARI	132	0.9518	1
121093	DURALAI	132	0.9499	0.9867
121094	NUHIYANWALI	132	0.967	1.0121
121095	SITAMAI	132	0.9436	0.9878
121096	BEGA	132	0.9433	1.0207
121097	GANGAICHA	132	0.951	1.0003
121098	HSIIDC-BAWAL	132	0.9296	0.9939
121099	NANGL MOHANP	132	0.9647	1.0098
121100	SEKA	132	0.9349	1.0092
121101	PALI	132	0.9638	1.0091
121102	GARNAWATI	132	0.9574	1.0014
121103	KALANAUR	132	0.9493	0.9981
121104	BHADANA	132	0.9842	1.0063
121105	BADLI	132	0.9831	1.0051
121106	ASSAUDHA	132	0.9648	1.0019
121107	KANGTHALI	132	0.9395	0.9863
121108	MELAGROUND	132	0.9402	1.0097
121109	NILOKHERI	132	0.9426	1.0116
121110	PIPLI	132	0.9475	0.9819
121111	KKTRA_TAP	132	0.9491	0.9837
121112	RAMNAGARIA	132	0.9358	1.0396
121113	MUNDIAKH_TAP	132	0.938	1.0037
121114	NAGURAN	132	0.9401	1.0042
121115	ALEWA	132	0.9366	1.002
121116	KHERI-TA	132	0.9353	0.9998
121117	JIND-OLD	132	0.9463	1.0024
121118	JULANA	132	0.9117	0.9799
121119	JIND-NEW	132	0.9464	1.0024
121120	DABLAIN	132	0.8602	1.0301
121121	MADLODA	132	0.9378	1.0189
121122	CHHAJPUR	132	0.9447	1.0254
121123	CHANDOLI	132	0.9385	1.0286

121124	BEHOLI	132	0.9438	1.0216
121125	NAULTHA	132	0.9401	1.0256
121126	MDU-ROHTAK	132	0.9684	0.9927
121127	SE-3-ROHTAK	132	0.9375	1.0003
121128	HSIIDC-ROHTA	132	0.9492	0.9985
121129	SAMPLA	132	0.9764	1.0024
121130	JHAJJAR	132	0.9554	0.993
121131	BERI	132	0.9593	0.9989
121132	MIE	132	0.9699	1.0008
121133	GOHANA	132	0.9168	1.0415
121134	CHORMAR	132	0.9605	1.0089
121135	MUDLANA	132	0.9292	1.0235
121136	JASSIA	132	0.9264	1.0302
121137	MAHAM	132	0.9318	0.9996
121138	GOTHRRA-P	132	0.941	1.0019
121139	BAWAL	132	0.9285	0.9943
121140	DHANONDA	132	0.9657	1.0111
121141	KOSLI	132	0.9448	0.9954
121142	BUROLI	132	0.9421	0.9993
121143	DAHINA	132	0.9419	0.9999
121144	SATNALI	132	0.9386	0.9985
121145	KANINA	132	0.9397	1.0102
121146	N-CHOUDHURY	132	0.935	1.0162
121147	ATELI-MA	132	0.9307	1.0083
121148	BATTA	132	1	1
121149	DUDHIAN	132	0.9609	1.0085
121150	JUI	132	0.9332	0.9956
121151	DIGHAWA	132	0.9321	0.9903
121152	STAUNDI	132	0.9384	1.0159
121153	BEHAL	132	0.9423	0.9938
121154	LOHARU	132	0.9076	1.0048
121155	DADRI-HS	132	0.9471	0.9998
121156	ATELA-KA	132	0.9426	0.9966
121157	MATANHAI	132	0.9429	1.0111
121158	BAHU	132	0.9576	1.0052
121159	JHOJHUKALAN	132	0.9425	0.9965
121160	BIBIPUR	132	0.9444	1.0004
121161	KHANPUR_HR	132	0.9335	0.9951
121162	BEGU	132	0.9404	1.0095
121163	KABRI	132	0.9377	1.0343
121164	SAGWAN	132	0.9793	1.003
121165	ODHAN	132	0.9626	1.0087
121166	DABWALI	132	0.95	1.002
121167	ASSAKHERA	132	0.9451	1.0027
121168	JEEWANAGAR	132	0.9232	1.0404
121169	KARIWALA	132	0.918	1.0424
121170	ELLENABAD	132	0.9234	1.0381
121171	MADHOSIN	132	0.9312	1.0386

121172	NARNAUND	132	0.9426	0.9998
121173	MIRAN	132	0.951	0.9974
121174	TOSHAM	132	0.9511	0.9981
121175	DADHIBANA	132	0.9774	1.0074
121176	LULAAHIR	132	0.9561	1.0045
121177	KHANAK	132	0.9788	1.0017
121178	BEER	132	0.9477	0.9899
121179	ADAMPUR	132	0.9275	1.0175
121180	TOHANA	132	0.8608	1.0284
121181	UKLANA	132	0.8934	1.0224
121182	RATIA	132	0.8874	1.0073
121183	AHERWAN	132	0.8953	1.0046
121184	DHARSUL	132	0.8947	1.0239
121185	JAKHAL	132	0.8926	1.0311
121186	BHATTU	132	0.9296	1.0138
121187	BHUTHAN	132	0.8949	1.0251
121188	ARYA-NANGAL	132	0.9474	0.9941
121189	BARWALA	132	0.9197	1.0222
121190	TELIWARA	132	0.8891	1.014
121191	KHEDAR	132	0.9311	1.0246
121192	BERLA	132	0.9752	1.0105
121193	KHAIREKAN	132	0.9512	1.0072
121194	SIKANDERPUR	132	0.9404	1.0032
121195	DING	132	0.9333	0.9999
121196	HALLUWAS	132	0.9431	1.0063
121197	KAIT-CIT	132	0.9336	0.9841
121198	CHEEKAI	132	0.9439	0.9907
121199	RAMBA	132	0.9415	1.0118
121200	FAZILPUR	132	0.9391	1.0056
121201	ROHTAK-C	132	0.9412	1.0027
121202	DADR2-HS	132	0.9476	1.0015
121203	NUNAMAJR	132	0.9729	1.0038
121204	BHADRA	132	0.9124	1.0021
121205	FATEHABAD1	132	0.9331	1.0103
121206	SIWAN	132	0.9279	0.9949
121207	NFL	132	0.9354	1.0369
121208	BIANA	132	0.9424	1.0118
121209	DABRI	132	0.94	1.0103
121210	BALLAH	132	1	1
121211	PANIPAT S-29	132	0.9378	1.0306
121212	IOC	132	0.9332	1.0474
121213	KHURANA	132	0.9314	0.9946
121214	NARELA_BB	132	0.9474	1.0039
121215	BAHADURG	132	0.9735	1.0043
122000	FATEHABAD	220	0.9787	1.0145
122001	JIND	220	0.9671	1.0044
122002	BADSHAHPUR	220	0.9733	0.993
122003	SAFIDON	220	0.9669	1.0036

122004	TEPLA	220	0.9966	1.006
122005	MADANPUR	220	1.0043	1.0132
122006	SHAHBAD	220	0.9846	1
122007	NISSING	220	0.9699	1.0017
122008	BHUNA	220	0.9677	1.0107
122009	SONEPAT	220	0.9696	1.0096
122010	PANIPAT_OLD	220	0.9736	1.012
122011	REWARI	220	0.9685	0.9971
122012	NARNAUL	220	0.9518	1.0036
122013	NARWANA	220	0.9708	1.0055
122014	KAITHAL	220	0.9693	1.0005
122015	MAHINDERGARH	220	0.9558	1.0038
122016	PALLA	220	0.9732	0.9871
122017	PALWAL	220	0.9733	0.9903
122018	SIRSA	220	0.9675	1.0102
122019	PALI	220	0.9717	0.9887
122020	FATEHABAD	220	0.976	1.0139
122021	GURGAON_SE52	220	0.9695	0.9886
122022	ANIA	220	0.973	1.0157
122023	PANIPAT_NEW	220	0.97	1.0025
122024	ROHTAK	220	0.9784	1.006
122025	KARNAL	220	0.9649	1.004
122026	NUNAMAJRA	220	0.9837	1.006
122027	JORIAN	220	1.0056	1.0097
122028	IA-HISAR	220	0.9806	1.0114
122029	YAMUNA2	220	1.01	1.01
122030	SALEMPUR	220	0.9859	1.002
122031	UNISPUR	220	0.9758	1.0048
122032	DAULTABAD	220	0.9797	1.0014
122033	MANESAR	220	0.9737	0.9942
122034	REWARI_SPLIT	220	0.9685	0.9971
122035	CHEEKA	220	0.9692	0.9976
122036	KIRORI	220	0.9811	1.012
122037	GURGAON-SE56	220	0.9711	0.9885
122038	GURGAON-72	220	0.973	0.9906
122039	ISHERWAL	220	0.9729	1.0085
122040	MASUDPUR	220	0.9806	1.0116
122041	BAPORA	220	0.9704	1.0066
122042	JINDALSTEEL	220	0.9799	1.0109
122043	JAGA-RAI	220	1.0125	1.0177
122044	BASTARA	220	0.9614	1.0014
122045	KAUL	220	0.9628	0.9974
122046	MOHANA	220	0.9896	1.0156
122047	SAMPLA	220	0.9829	1.0074
122048	SAMALKHA	220	0.9759	1.0129
122049	MAU_HR	220	0.9758	0.9982
122050	CHHAJPUR	220	0.9736	1.0123
122051	CHORMAR	220	0.9795	1.0147

122052	DEEPALPUR	220	0.9917	1.0168
122053	KABULPUR	220	0.9917	1.0141
122054	DHANONDA	220	0.988	1.0073
122055	DADHIBANA	220	0.9865	1.0046
122056	LULAAHIR	220	0.9786	1.004
122057	NUHIYANWALI	220	0.9803	1.0151
122058	BATTA	220	0.9699	1.0021
122059	SAGWAN	220	0.9816	1.0111
122060	SAMAIN	220	1	1.0118
122061	REWALI	220	1.0116	1.0187
122062	RAMPR KAMBOY	220	1.0072	1.01
122063	NAWADA	220	0.9742	0.9925
122064	A5FARIDABAD	220	0.972	0.9904
122065	BARHI	220	0.9813	1.0128
122066	BHADANA	220	0.9905	1.0128
122067	RANGALA_RAJP	220	0.971	0.9877
122068	PEHOWA	220	0.9661	0.9977
122069	DURALA	220	0.972	0.9967
122070	ABDULLAP	220	1.0124	1.0177
122071	KAITH-PG	220	0.9768	1.0025
122072	BAHDURG2	220	0.9851	1.0064
122073	FARIDAB2	220	0.9826	0.99
122074	SONEP-PG	220	0.991	1.0165
122086	GURGAON_PG2	220	0.9731	0.9907
122087	GURGAON_SE33	220	0.9731	0.9907
122088	JIND-PG	220	1	1
122089	MANESAR-PG	220	0.9793	0.9992
124000	JIND	400	1	1.0024
124001	KHEDAR	400	1.01	1.01
124002	DAULATABAD4	400	0.9976	1.0086
124003	KIRORI	400	1.0085	1.0093
124004	JHAJAR_N	400	1.0131	1.02
124005	NAWADA	400	0.9927	1.0029
124006	DEEPALPUR	400	1.0101	1.0191
124007	KABULPUR	400	1.0112	1.0197
124008	DHANONDA	400	1.0053	1.0135
124009	NUHIYANWALI	400	0.9993	1.0153
124024	PANIPAT	400	0.9996	1.0177

Annexure-4.(b).2: Existing Rating of Capacitor Bank.

Bus Number	Bus Name	Cap bank rating Q (MVar)
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121004	SAFIDON	132.00	19.9
121119	JIND-NEW	132.00	19.9
121215	BAHADURG	132.00	19.9
non-operational			
121005	SAMALKHA	132.00	19.9
121056	ASSANDH	132.00	19.9
121083	GANNUAR	132.00	19.9
121141	KOSLI	132.00	24
121150	JUI	132.00	24
121198	CHEEKA1	132.00	19.9
121201	ROHTAK-C	132.00	19.9
121206	SIWAN	132.00	19.9

Annexure-4.(b).3.: Recommended Capacitor Bank Ratings.

Recommended capacitor banks		
Bus Number	Bus Name	Rating of Cap. Bank Q (MVar)
121004	SAFIDON 132.00	7.86
121119	JIND-NEW 132.00	7.86
121215	BAHADURG 132.00	7.86
121007	ABDULLAPUR1 132.00	20
121011	KIRORI 132.00	20
121012	ISHRANA 132.00	20
121023	SIRSA 132.00	20
121027	RANIA 132.00	20
121039	KIRMICH 132.00	20
121046	ISMAILABAD 132.00	20
121049	NARWANA-OLD 132.00	20
121052	INDRI 132.00	20
121053	AMIN 132.00	20
121054	SAGGA 132.00	20
121065	RAJOUND 132.00	20
121067	RASINA 132.00	20
121069	PADLA 132.00	20
121077	HABRI 132.00	20
121087	NARWANA-NEW 132.00	20
121088	DHAMTAAN 132.00	20
121089	GARHI 132.00	20
121090	DHANOURI 132.00	20
121096	BEGA 132.00	20
121098	HSI IDC- BAWAL 132.00	20
121100	SEKA 132.00	20
121108	MELAGROUND 132.00	20

121112	RAMNAGARIA 132.00	0
121114	NAGURAN 132.00	20
121118	JULANA 132.00	20
121120	DABLAIN 132.00	20
121133	GOHANA 132.00	20
121135	MUDLANA 132.00	20
121138	GOTHRAP 132.00	20
121139	BAWAL 132.00	20
121144	SATNALI 132.00	0
121145	KANINA 132.00	20
121146	N-CHOUDHURY 132.00	20
121147	ATELI-MA 132.00	20
121154	LOHARU 132.00	20
121157	MATANHAI 132.00	20
121161	KHANPUR_HR 132.00	20
121162	BEGU 132.00	20
121168	JEEWANAGAR 132.00	20
121169	KARIWALA 132.00	20
121170	ELLENABAD 132.00	20
121171	MADHOSIN 132.00	20
121172	NARNAUND 132.00	20
121176	LULAAHIR 132.00	20
121179	ADAMPUR 132.00	20
121180	TOHANA 132.00	20
121182	RATIA 132.00	20
121183	AHERWAN 132.00	20
121184	DHARSUL 132.00	20
121185	JAKHAL 132.00	20
121186	BHATTU 132.00	20
121187	BHUTHAN 132.00	20
121190	TELIWARA 132.00	20
121192	BERLA 132.00	20
121196	HALLUWAS 132.00	20
121204	BHADRA 132.00	20
121206	SIWAN 132.00	20
121213	KHURANA 132.00	20
120003	BALABGR1 66.000	50
120004	PALLA 66.000	50
120028	BADSHAHPUR1 66.000	50
120031	GURGAON 66.000	50
121005	SAMALKHA 132.00	50
121019	PANIPAT 132.00	50
121020	DIWANA 132.00	50
121028	PTPS 132.00	50
121058	MUNAK 132.00	50

121059	GHARAUND	132.00	50
121060	MADHUBAN	132.00	50
121080	RAI	132.00	50
121082	MURTHAL	132.00	50
121123	CHANDOLI	132.00	50
121133	GOHANA	132.00	50
121136	JASSIA	132.00	50
121163	KABRI	132.00	50
121207	NFL	132.00	50
121211	PANIPAT S-29	132.00	50
121212	IOC	132.00	50

**Annexure-4.(c).1; Voltage profile
C Rajasthan**

Bus Number	Bus Name	Base kV	Existing case Voltage (pu)	with recommended cap bank Voltage (pu)
7000	KANASA 220	220	new S/S	1.0358
7003	BANSUR 220	220	new S/S	0.9811
7004	MANDALGARH	220	new S/S	0.9959
7005	GONER 220	220	new S/S	1.0033
7006	GONER 132	132	new S/S	1.0152
7007	AMBERI 220	220	new S/S	0.9663
7009	BABAI 400	400	new S/S	1.0305
7010	BABAI 220	220	new S/S	1.0053
7011	RAMGARH 400	400	new S/S	1.05
7012	NIMBHERA 22	220	new S/S	1.0061
7013	PRATAPGHAR	220	new S/S	0.993
7014	BHERUNDA	220	new S/S	0.9821
7015	KOLAYAT	220	new S/S	1.0157
7016	CHATRAL	220	new S/S	1.0512
7017	POKRAN 220	220	new S/S	1.0087
7018	UNDO	220	new S/S	1.0015
7019	BAJU	220	new S/S	1.0353
7020	SHEO 220	220	new S/S	1.0031
131000	AAU	132	0.8806	0.9775
131001	ABUROAD	132	0.8475	1.0365
131002	AJITGARH	132	0.8764	0.9489
131003	AJOTILA	132	0.8906	0.9579
131004	AKLERA	132	0.9359	0.937
131005	AMET	132	0.8509	0.9485
131006	AMRAPURA	132	0.9693	0.9791
131007	DAUSA1	132	0.9076	0.9614
131008	ANDHII	132	0.8547	0.9382
131009	ANTA	132	0.9744	0.971
131010	ANTROLII	132	0.9121	0.9365
131011	ANUPGARH	132	0.897	1.0269
131012	ASIND	132	0.884	0.9553
131013	ASPUR-21	132	0.8215	0.9726

131014	ATRU1	132	0.9713	0.9636
131015	BABAI1	132	0.8158	0.9696
131016	BADAGAON	132	0.8517	1.0511
131017	BADESAR1	132	0.888	0.9563
131018	BADISADAR	132	0.7099	0.9035
131019	BADNU1	132	0.9932	1.013
131020	BADRA-21	132	0.9612	0.9884
131021	BAGGER	132	0.8994	0.9474
131022	BAGIDRA	132	0.9424	0.9946
131023	BAGORA1	132	0.9292	1.0069
131024	BAGOT1	132	0.8849	1.0244
131025	BAGRA1	132	0.8702	1.0283
131026	BAGRUI	132	0.9108	0.9691
131027	BAJU	132	0.8694	1.0236
131028	BAKANI1	132	0.9555	0.9514
131029	BALAWALA	132	0.931	0.9679
131030	BALESAR	132	0.7803	0.9617
131031	BANAR1	132	0.7713	0.9194
131032	BANDIKUI	132	0.8881	0.9417
131033	BANSUR	132	0.8282	0.9629
131034	BAORI1	132	0.759	0.9405
131035	BAPI	132	0.9212	1.0193
131036	BARLI-21	132	0.7865	0.9602
131037	BARMER1	132	0.9706	1.0204
131038	BAROLI	132	0.7213	0.9467
131039	BASERI1	132	0.8032	0.9712
131040	BASSI-CH	132	0.8883	0.9556
131041	BASSI1	132	0.8919	0.9587
131042	BAYANA	132	0.6574	0.9293
131043	BEGOD	132	0.8725	0.9645
131044	BEGUN	132	0.8502	0.9696
131045	BEHRORE	132	0.9498	0.9749
131046	BHADLA	132	1	1
131047	BHADOTI1	132	0.9576	0.9686
131048	BHADRA	132	0.9637	0.9905
131049	BHADWASI	132	1	1
131050	BHANKROT	132	0.9103	0.9687
131051	BHARATPURI	132	0.7491	0.9524
131052	BHATEWAR	132	0.8072	0.9251
131053	BHAWAMAN	132	0.9097	0.9609
131054	BHADROONA	132	0.9335	1.0101
131055	BHERUNDA	132	0.897	0.945
131056	BHERUNDA	132	0.812	0.9583
131057	BHINASAR	132	0.9266	0.993
131058	BHINDER1	132	0.783	0.9056
131059	BHIWADI1	132	0.8944	0.9355
131060	BHOPALGARH	132	0.9685	0.995
131061	BHUSAWAR	132	0.6647	0.9389

131062	BIDASARI	132	0.9882	1.0045
131063	BIDIYADI	132	0.8893	1.0206
131064	BIJOLIA	132	0.8647	0.9687
131065	BISSAU	132	0.8994	0.9474
131066	BORUNDAI	132	0.8647	0.9986
131067	BUHANA1	132	0.8383	0.9328
131068	BUNDI	132	0.9454	0.9773
131069	BUNDI-21	132	0.9521	0.9821
131070	CHAKSU	132	0.9551	0.986
131071	CHAMBALI	132	0.9319	0.9688
131072	CHAMPAPUR	132	1	1
131073	CHAMU	132	0.7733	0.9544
131074	CHANDGOT	132	0.9268	0.9704
131075	CHANDNI	132	0.9494	0.9949
131076	CHIPABAD	132	0.971	0.9632
131077	CHIRAWA	132	0.938	0.9818
131078	CHITAWA	132	0.9225	0.9783
131079	CHOPANKI	132	0.9076	0.949
131080	CHOPASAN	132	0.7905	0.9322
131081	CHOTISADAR	132	0.7318	0.9079
131082	CHURU	132	0.9258	0.9508
131083	DAKANKOT	132	0.8117	0.9298
131084	DALOT	132	0.9199	0.992
131085	DANTA	132	0.8925	0.9927
131086	DANT-BHI	132	0.8911	0.966
131087	DARIBA	132	0.8084	0.9221
131088	DASPAN	132	0.9218	0.9997
131089	DEBARI	132	0.831	0.9414
131090	DECHU-21	132	0.8587	1
131091	DECHU1	132	0.8566	0.9981
131092	DEEDWANA	132	0.9056	0.9612
131093	DEEG	132	0.7294	0.9554
131094	DEOGARHI	132	0.8841	0.9591
131095	DEOLI	132	0.8858	0.9517
131096	DEOLIKOT	132	1.0042	1.004
131097	DESHNOK1	132	0.9884	0.9998
131098	DHAULAKU	132	0.8334	0.9417
131099	MERTA	132	0.958	0.9946
131100	BHIWADI-2	132	0.9119	0.9535
131101	NAGAURI	132	0.9883	1.003
131102	BHINMALI	132	0.9325	1.0101
131103	DHURIYAWA	132	0.8116	0.989
131104	KUKAS1	132	0.9144	0.9624
131105	DUDU	132	0.9054	0.9726
131106	DUG	132	0.8917	0.9307
131107	RATANGARH	132	0.9605	0.9871
131108	ALWARI	132	0.901	0.9583
131109	JAISALMER	132	0.9739	1.0016

131110	JAIPUR1	132	0.9314	0.9683
131111	REENGUS1	132	0.902	0.9415
131112	KHETRI1	132	0.8643	0.9546
131113	AJMER1	132	0.8389	0.9627
131114	PHULERA1	132	0.9084	0.9756
131115	BHILWARA	132	0.8955	0.9704
131116	RAMGARH21	132	1.05	1.05
131117	BEAWAR1	132	0.897	0.9681
131118	BHARATPUR-21	132	0.7564	0.9585
131119	KOTA-IA1	132	1.002	1.0045
131120	DHOLPUR1	132	0.8234	0.9635
131121	RPS1	132	1.051	1.051
131122	MANIYA	132	0.8124	0.9583
131123	UDAIPURI	132	1	1
131124	BARME-21	132	0.9714	1.0212
131125	KOTPUTLI	132	0.9348	0.9702
131126	NIMBHERI	132	0.7927	0.9194
131127	JHUNJHUN	132	0.9083	0.9565
131128	CHITTORG	132	0.8955	0.9609
131129	TINWARI1	132	0.7958	0.9576
131130	SIROHI1	132	0.8835	1.021
131131	JODHP-21	132	0.8055	0.9441
131132	BALOTRA1	132	0.9046	0.9923
131133	SANGANER	132	0.9326	0.9695
131134	MODAK1	132	0.9429	0.9655
131135	NEEMRANA	132	0.9576	0.983
131136	PALI-21	132	0.7508	0.9627
131137	AMARSAGA	132	0.977	1.0033
131138	PHALODI	132	0.8935	1.0007
131139	BHOPA-21	132	0.9711	0.9977
131140	KHINVSAR	132	0.9764	0.9983
131141	KUCHAMAN	132	0.9251	0.9809
131142	DHAURIMA	132	0.9011	0.9861
131143	JALOR-21	132	0.8732	1.0387
131144	PINDWARA	132	0.8611	1.0121
131145	SUJNGA-2	132	1.0037	1.021
131146	MANDAWAR	132	0.8626	0.9556
131147	UDYOGVIH	132	0.968	0.968
131148	JHALAWAR	132	0.962	0.9585
131149	DAHRA1	132	0.9854	0.9829
131150	DULCHASA	132	0.9848	1.0043
131151	SAWAIMAD	132	0.9604	0.9715
131152	HINDAUN1	132	0.7529	0.9499
131153	BILARA1	132	0.8771	0.993
131154	SIKAR1	132	0.9324	0.9665
131155	BIKANERI	132	0.9634	1.0009
131156	SURATGAR	132	0.9714	1.007
131157	SRIDU-21	132	0.9879	1.0076

131158	HANUMANG	132	0.9762	0.9865
131159	MAHI-I	132	0.9382	1
131160	BANSWAR1	132	0.933	0.9953
131161	KISHA-21	132	0.8519	0.9576
131162	CHOMU1	132	0.9007	0.9548
131163	DULNIYA1	132	0.9329	0.9767
131164	KANKR-21	132	0.8831	0.963
131165	BALI1	132	0.8799	0.9851
131166	MAKRANA1	132	0.898	1.0129
131167	DUNGRPR	132	0.8289	0.9653
131168	DUNI1	132	0.916	0.9459
131169	VKIA_21	132	0.8929	0.9304
131170	BARA-21	132	0.9785	0.9563
131171	ENGGCOLL	132	0.7866	0.9308
131172	BARAN	132	0.9758	0.9511
131173	DHOD	132	0.9582	1.0029
131174	BORNDA	132	0.8265	0.9314
131175	BAGRU-21	132	0.9131	0.9715
131176	GULABPUR	132	0.9082	0.9587
131177	FALNA	132	0.8768	0.9855
131178	FATEHPUR	132	0.9228	0.9477
131179	GADRAROA	132	0.9682	1.0181
131180	GAJNER	132	0.9146	1.0054
131181	GAJNER	132	0.9143	1.005
131182	GALIFA	132	0.9341	1.0096
131183	GANGA-BH	132	0.8963	0.9713
131184	GANGAC21	132	0.7052	0.9391
131185	GANGCITY	132	0.7038	0.9383
131186	GHARSANA	132	0.8872	1.0269
131187	GOGUNDA1	132	0.8103	0.9687
131188	GOPAL-MI	132	0.9642	0.9599
131189	GOTAN	132	0.9656	0.9919
131190	GOVINDGA	132	0.8884	0.9424
131191	GSGR-MP	132	1.051	1.0509
131192	GUDAMALN	132	0.8889	0.9743
131193	GUDHAGOR	132	0.8064	0.9206
131194	GULUWALA	132	0.9549	0.9636
131195	HAMIRGAR	132	0.8884	0.9623
131196	LALAMDESAR	132	0.9921	1.0107
131197	RIICO ABU RD	132	0.8474	1.0372
131198	HEMDA1	132	0.8984	0.9495
131199	HESABA1	132	0.9686	0.9902
131200	HINDOLI1	132	0.911	0.9598
131201	HINGONIA	132	0.9046	0.9983
131202	AJOLIYA KHER	132	0.8921	0.965
131203	ITAWA	132	0.9502	0.9554
131204	JADOLI	132	0.8047	0.9789
131205	JAGATPUR	132	0.9188	0.9562

131206	JAHAJPUR	132	1	1
131207	JAITARAN	132	0.8657	0.9984
131208	JAKHARAN	132	0.9469	0.9719
131209	JALAMAND	132	0.7972	0.944
131210	JALOREI	132	0.8714	1.0381
131211	JAMWA-RA	132	0.8862	0.9433
131212	JASRASAR	132	0.9923	1.0098
131213	JAWAR-NA	132	0.9143	0.9516
131214	JAYAL-1	132	0.9802	0.9943
131215	JEEWANA	132	0.9108	0.9889
131216	JHOKHASA	132	0.963	0.9982
131217	JHOTWARA	132	0.8885	0.9258
131218	JJN1	132	0.9022	0.9503
131219	JOBNER	132	0.9061	0.9732
131220	JODHP-41	132	1	1
131221	JOJAWARI	132	0.7468	0.9981
131222	JSI	132	1.04	1.04
131223	JUNAMEET	132	0.8859	0.9743
131224	KACHAWA1	132	0.9563	1.0009
131225	KACHOLA1	132	0.8682	0.9603
131226	KAILADEV	132	1	1
131227	KALADERA	132	0.8849	0.9388
131228	KALAU	132	0.8495	0.9916
131229	KAMA1	132	0.7201	0.9537
131230	KAMINPUR	132	0.8964	0.9526
131231	KANDELA	132	1	1
131232	KANKROL1	132	0.8615	0.9477
131233	KANWARI	132	0.9567	0.9528
131234	KAPASN	132	0.8813	0.9543
131235	KARAULI1	132	0.7084	0.9396
131236	KARERA-1	132	0.8879	0.9629
131237	KARWAR-2	132	0.7644	0.9418
131238	KEKRI	132	0.8617	0.9382
131239	KELWARA	132	0.9672	0.9321
131240	KESHWANA	132	0.9298	0.965
131241	KEWAI	132	0.9749	0.9675
131242	KHACHRI	132	0.8978	0.993
131243	KHAJUWAL	132	0.8743	1.0159
131244	KHANDAR	132	0.9593	0.9703
131245	KHANPUR1	132	0.9441	0.9298
131246	KHARCHI	132	0.7453	0.9749
131247	KHARWA1	132	0.8804	0.9528
131248	KHERLI	132	1	1
131249	KHOOD1	132	0.9571	1.0018
131250	KHUTUSHY	132	0.8958	0.9352
131251	KISH-BAS	132	0.9135	0.9555
131252	KISHANG1	132	0.8481	0.954
131253	KOLAYATI	132	0.8932	1.0109

131254	KOODAN	132	0.9166	0.9501
131255	DAYALPURA	132	0.9564	1.001
131256	SAWAR	132	0.872	0.9455
131257	SAWALPUR	132	1	1
131258	BILWADI	132	1	1
131259	KOTKASIM	132	0.9334	0.9605
131260	KUCHARA	132	0.9182	0.9595
131261	KUCHERA	132	0.9156	0.9572
131262	KUMAWAS	132	0.905	0.9532
131263	KUMHER	132	0.7391	0.9494
131264	KUNDAKI	132	0.915	0.9625
131265	KURI	132	1	1
131266	KUSHKHER	132	0.9605	0.9717
131267	LADNU	132	0.9704	0.9839
131268	LAKHERI	132	0.9525	0.9579
131269	LALSOTI	132	0.9122	0.9585
131270	LAMBAJAT	132	0.9541	0.9906
131271	LAXMALWR	132	0.8905	0.9464
131272	LAXMAN-S	132	0.9151	0.9485
131273	LOHAWAT1	132	0.8813	0.9893
131274	LOONKANS	132	0.9392	0.9759
131275	LOSALI	132	0.9568	1.0014
131276	MADRI	132	0.817	0.9338
131277	MAHAVIR	132	1.0063	1.0075
131278	MAHI-II	132	0.9535	1
131279	MAHUWA	132	0.8471	0.9458
131280	MALAKHER	132	0.8764	0.9374
131281	MALPURA1	132	0.8404	0.9472
131282	MALSISAR	132	0.9024	0.9504
131283	MANDALGA	132	0.8579	0.9768
131284	MANDAN	132	0.9487	0.9738
131285	MANDANA	132	0.9319	0.9539
131286	MANDAWA	132	0.8995	0.9475
131287	MANDAWAL	132	0.864	1.0345
131288	MANDERLA	132	0.8974	0.9454
131289	MANDRAYW	132	1	0.946
131290	MANGLWAR	132	0.779	0.906
131291	MANGROL1	132	1	1
131292	MANOHARP	132	0.8524	0.9118
131293	MANSAROV	132	0.9333	0.9701
131294	MAPLAWAS	132	0.827	0.9243
131295	MARKHI	132	0.88	0.9472
131296	MATHAN-1	132	0.9258	0.9313
131297	MATHANIA	132	0.7814	0.9448
131298	MATORA	132	0.8744	0.9827
131299	MAVLI	132	0.8215	0.9323
131300	MAYRAMG	132	0.9375	0.9598
131301	MDSUIAJ	132	0.8211	0.9548

131302	MEHLOO1	132	0.9662	1.0159
131303	MERTACIT	132	0.9568	0.9933
131304	MERTA_RO	132	0.9504	0.9868
131305	MIALWAR	132	0.9009	0.9569
131306	MNIT-JAI	132	0.9189	0.9562
131307	MOKHMPUR	132	0.8597	0.9481
131308	MOLASAR1	132	0.9119	0.9676
131309	MOMASAR1	132	0.9069	0.9374
131310	MUNDWA1	132	0.9848	0.9993
131311	MUNDWAR	132	0.9058	0.9476
131312	NADBAI	132	0.7185	0.9455
131313	NAGAR1	132	0.7212	0.9448
131314	NAINWA1	132	0.9496	0.96
131315	NANGALI	132	0.7181	0.9342
131316	NANGLI	132	0.8301	0.9341
131317	NAPASAR	132	0.9476	0.9846
131318	NARWA	132	0.9675	0.989
131319	NASIRABA	132	0.8705	0.9441
131320	NATHDWAR	132	0.8344	0.935
131321	NAWA	132	0.9046	0.9718
131322	NAWAL-21	132	0.9063	0.9394
131323	NAWALGAR	132	0.9035	0.9365
131324	NEEMKATH	132	0.784	0.9447
131325	NEWAI	132	0.9556	0.9664
131326	NOHAR	132	0.9509	0.9771
131327	NOKHA	132	0.9939	1.0098
131328	NPH-JODH	132	0.7917	0.9339
131329	NPH1	132	0.9239	0.9605
131330	OPH-JODH	132	0.7764	0.9236
131331	OSIAN	132	0.7741	0.923
131332	PSNO8	132	1	1
131333	PADAMPUR	132	0.9115	0.952
131334	PADROO1	132	0.8533	1.0325
131335	PALADAR	132	0.9355	1.011
131336	PALII	132	0.6848	0.9214
131337	PALODA	132	0.9283	0.9907
131338	PAOTA	132	0.8931	0.9394
131339	PAREWARA	132	0.9993	1.0162
131340	PARTAPUR	132	0.8907	0.984
131341	PATAN_S	132	0.9277	0.9628
131342	PATLISAR	132	0.9004	0.9329
131343	PHAGI	132	1	1
131344	PILANI	132	0.9285	0.9721
131345	PILIBANG	132	0.9586	0.9676
131346	PINAN	132	0.863	0.956
131347	PIPALIYA	132	0.8738	0.9899
131348	PIPAR1	132	0.8686	0.985
131349	PIPRALI	132	0.9161	0.9495

131350	POKRANI	132	0.9414	1.0044
131351	POONSA	132	0.9301	1.0077
131352	PRATA-UD	132	0.8075	0.9317
131353	PRATAPGA	132	0.9115	0.9999
131354	PRATA-JO	132	1	1
131355	PS-5	132	0.8816	0.9983
131356	PS2-1	132	1	1
131357	PS2-21	132	0.8834	1.0239
131358	PS3-1	132	0.8829	1.0114
131359	PSNO1	132	0.865	1.0234
131360	PUGALROA	132	0.9281	0.9927
131361	PURANAGH	132	0.9167	0.9541
131362	PUSHKARO	132	0.814	0.9543
131363	PUSKA-RO	132	0.8274	0.9559
131364	PWD	132	0.9233	0.9599
131365	RAISINGH	132	0.9028	0.943
131366	RAJAKHER	132	0.8032	0.95
131367	RAJGARH	132	0.9402	0.9711
131368	RAJGARH1	132	0.8607	0.9257
131369	RAJIASR	132	1	1
131370	RAMGAR-A	132	0.8931	0.9503
131371	RAMPURA	132	0.896	0.9501
131372	RAMSEEN	132	0.8714	1.0099
131373	RANASARI	132	0.8783	0.9692
131374	RANI	132	0.8764	0.9817
131375	RANIWARA	132	0.9255	1.0033
131376	RANOLI	132	0.9256	0.9561
131377	RAPPI	132	1.0491	1.0489
131378	RASHMI	132	0.888	0.9586
131379	RAWATBHA	132	1.0496	1.0495
131380	RAWATSAR	132	1	1
131381	RAYLA	132	0.8841	0.9342
131382	RENWAL1	132	0.9095	0.996
131383	REODAR	132	0.8512	1.0319
131384	RICO_BHI	132	0.8915	0.9644
131385	RIRI	132	0.9839	1.0033
131386	RISHDEO	132	0.8181	0.9535
131387	ROONI	132	0.9503	0.9867
131388	ROOPWAS	132	0.8021	0.9444
131389	RUPNGARH	132	0.8473	0.9533
131390	SADULSHA	132	0.9622	0.9617
131391	SAGWARA1	132	0.8526	0.9738
131392	SAKATPUR	132	1.0122	1.0126
131393	SALASAR	132	1.0024	1.0195
131394	SALUMBR1	132	0.8193	0.9683
131395	SAMDARI1	132	0.8953	0.9833
131396	SANCHOR1	132	0.9351	1.0106
131397	SANCHO21	132	0.9372	1.0126

131398	SANGOD	132	0.9731	0.9503
131399	SANGRIA	132	0.973	0.9831
131400	SANJOO	132	0.9049	0.9495
131401	SANKADI	132	0.9226	1.0004
131402	SANWADI	132	0.8105	0.9253
131403	SANWREEJ	132	0.8509	0.9928
131404	SAPOL	132	0.8713	0.9514
131405	SARADHNA	132	0.8333	0.9588
131406	SARDARSH	132	1	1
131407	SARMATHU	132	1	1
131408	SARNADUN	132	1	1
131409	SATA	132	0.8464	0.9548
131410	SAWA(B)1	132	0.8593	0.9563
131411	SAWA-CH1	132	0.89	0.9582
131412	SAYLA1	132	0.9137	0.9917
131413	SEDWA	132	0.8508	0.9554
131414	SENTHI	132	0.7859	0.9145
131415	SEZ-KAPA	132	0.859	0.9765
131416	SEZ_1	132	0.8754	0.922
131417	SEZ1_21	132	0.8766	0.9231
131418	SHAHJANP	132	0.951	0.9762
131419	SHAHPURA	132	0.8617	0.9173
131420	SHAHP-BH	132	0.8816	0.9317
131421	SHEO1	132	0.9578	1.0077
131422	SHEOPUR1	132	0.9605	0.9715
131423	SIKANDRA	132	0.8287	0.9319
131424	SIKRAI	132	0.8372	0.9401
131425	SILORA_1	132	0.8447	0.951
131426	SINDRA1	132	0.8896	0.9779
131427	SIRSII	132	0.9016	0.9688
131428	SISARMA1	132	0.7931	0.9421
131429	SITAPU-1	132	0.9209	0.9582
131430	SITAP-21	132	0.9222	0.9594
131431	SIWANA	132	0.8933	0.9814
131432	SMS-STAI	132	0.9317	0.9685
131433	SOJAT1	132	0.7307	0.9498
131434	SOORSAGA	132	0.777	0.9519
131435	SOYLA1	132	0.9611	0.9822
131436	SPOTRA-1	132	0.7013	0.9351
131437	SRIDUNG1	132	0.985	1.0042
131438	SRIGANGA	132	0.9545	0.9534
131439	SRIKARNP	132	0.9019	0.9497
131440	SRIMADHO	132	0.8945	0.9338
131441	SRIMAHAV	132	0.7268	0.9386
131442	SRIVIJAY	132	0.9286	1.0096
131443	SUJANGARH1	132	0.998	1.0149
131444	SUKHER1	132	0.8054	0.9354
131445	SULTANA	132	0.9403	0.9844

131446	SUMERPUR	132	0.8738	0.9777
131447	SURAJGAR	132	0.935	0.9788
131448	SURPURA1	132	1	1
131449	SUWANA	132	0.8845	0.9691
131450	T_VKIA1	132	1	1
131451	TAGOREN	132	0.6797	0.9181
131452	TALERA	132	0.9785	0.999
131453	TARANAGA	132	0.9303	0.9608
131454	TEHANDESAR	132	0.9809	0.9967
131455	TELEWARA	132	0.9477	0.946
131456	TEMDRIA	132	1	1
131457	THADOLII	132	0.8986	0.9277
131458	THANAGAZ	132	0.812	0.9482
131459	THOI_1	132	0.888	0.9271
131460	TIZARA	132	0.9068	0.9486
131461	TODABHIM	132	0.8369	0.9406
131462	TODARASI	132	0.8964	0.9254
131463	TONK	132	0.9527	0.957
131464	TOONGA1	132	0.898	0.9517
131465	UDAIPURW	132	0.9063	0.9394
131466	UMAIDPUR	132	0.8702	0.9743
131467	UNDOO	132	0.95	1.0046
131468	UNIARA1	132	0.953	0.9636
131469	UPANI_1	132	0.9825	1.0019
131470	VAISHALI	132	0.9186	0.955
131471	VIJAYMAN	132	0.8601	0.9572
131472	VKIA1	132	0.8896	0.927
131473	WEIR1	132	0.67	0.936
131474	Z_MINES	132	0.8091	0.9425
131475	BAMANTUKDA	132	1	1
131476	MOONDSAR	132	1	1
131477	MASUDA	132	1	1
131478	SUBHASNAGAR	132	1	1
131479	KUSHALGARH	132	1	1
131480	BIJAIPUR	132	1	0.9227
131481	MEHARA	132	1	1
131482	AAU2	132	1	1
131483	BADISID	132	1	1
131484	BAITHWASIA	132	1	1
131485	BHAWAD	132	1	1
131486	DEEDWANA4	132	1.0189	1.0327
132000	DAUSA	220	0.9268	0.9795
132001	MERTA-42	220	0.9824	1.0176
132002	BHIWA-RS	220	0.9626	0.9926
132003	NAGAUR	220	1.0004	1.0178
132004	JK-LAXMI	220	1	1
132005	RAPS_A2	220	1	1
132006	KUKAS	220	0.9383	0.98

132007	KANKR-PG	220	0.9449	0.9977
132008	HINDAU-4	220	0.9539	1.0056
132009	RATANGAR	220	0.9956	1.024
132010	ALWAR	220	0.9355	0.9807
132011	BHTRATPU	220	0.8435	0.9766
132012	HIRAPURA	220	0.949	0.9868
132013	REENGUS	220	0.9471	0.9878
132014	KHETRI	220	0.9392	0.9935
132015	AJMER	220	0.8792	0.9872
132016	PHULERA	220	0.9212	0.9881
132017	BARMER	220	0.983	1.0381
132018	BHILWA-2	220	0.941	0.9989
132019	GIRALTPS	220	0.9924	1.0464
132020	BEAWAR	220	0.9202	0.9892
132021	DHOLPU-4	220	0.8816	0.988
132022	SAKATPUR	220	1.0096	1.0097
132023	KUCHAMAN	220	0.9383	0.9941
132024	JHUNJHUN	220	0.9362	0.9847
132025	KOTPU-RS	220	0.9643	0.9936
132026	MADRI	220	0.8615	0.9507
132027	MADA-SUZ	220	1.0211	1.0383
132028	NIMBHERA	220	0.8488	0.9379
132029	CHITTAUR	220	0.908	0.9684
132030	SIROHI	220	0.9099	1.0141
132031	BALOTRA	220	0.9254	1.0119
132032	MODAK	220	0.9827	0.9897
132033	JODHPU-2	220	0.8715	0.9752
132034	SANGANER	220	0.9489	0.9856
132035	PALI	220	0.8412	0.9706
132036	NEEMR-RS	220	0.9794	1.006
132037	AMARSAGA	220	1.0113	1.0293
132038	TINWARI	220	0.8602	0.9769
132039	PHALODI	220	0.9182	1.0141
132040	BHOPALGA	220	0.9823	1.0094
132041	KHINVSAR	220	0.9883	1.01
132042	BARSINGS	220	1.0239	1.0325
132043	DHAURIMA	220	0.9528	1.0223
132044	JALORE	220	0.9055	1.0181
132045	PINDWARA	220	0.8918	1.0049
132046	SUJANGAR	220	1.0106	1.0285
132047	MANDAWAR	220	0.8976	0.9761
132048	MAKRANA	220	0.9363	0.9978
132049	JHALAWAR	220	0.9874	0.9867
132050	KISHANGA	220	0.8876	0.9901
132051	DAHRA	220	1.004	1.0032
132052	SAWAIMAD	220	0.9675	0.9852
132053	BIKANE-4	220	1.0149	1.0307
132054	SRIDUNGA	220	0.9994	1.0211

132055	SIKAR-RS	220	0.9661	1.0034
132056	BIKANE-2	220	1.0102	1.0278
132057	SURATH-2	220	1.035	1.035
132058	UDYOGVIH	220	0.9944	0.9968
132059	HANUMANG	220	0.9967	1.0008
132060	BANSWARA	220	0.8996	0.981
132061	KTPS	220	1.01	1.01
132062	CHOMU	220	0.9348	0.9773
132063	BILARA	220	0.8967	0.99
132064	KANKR-RS	220	0.9407	0.9957
132065	BALI	220	0.9096	1.0051
132066	BARAN2	220	0.9935	0.986
132067	DHOLPU-2	220	0.8728	0.9839
132068	RENWAL	220	0.9392	0.9879
132069	VKIA	220	0.9387	0.9775
132070	CHABRA-2	220	1.0022	0.9997
132071	KAWAI	220	0.9924	0.9867
132072	HINDAU-2	220	0.805	0.9455
132073	DHOD	220	0.9559	1.0001
132074	BORANADA	220	0.8727	0.9746
132075	BAGRU	220	0.9277	0.9861
132076	GULABPUR	220	0.9341	0.9848
132077	RAJWEST	220	0.9793	1.0355
132078	BAITOO	220	1	1
132079	AKAL-2	220	1.023	1.04
132080	ASPUR	220	1	1
132081	BAP_2	220	0.9343	1.027
132082	BHU-ENER	220	1.0132	1.0308
132083	BARLI_2	220	1	1
132084	BHADLA	220	0.9358	1.0375
132085	BHADRA	220	0.9876	1.008
132086	BHADWASI	220	1	1
132087	BHILWA-4	220	0.9406	1.001
132088	BHINM-RS	220	0.9439	1.0211
132089	BUNDI	220	0.9746	0.9984
132090	CHIRAWA	220	0.9537	0.9976
132091	DEBARI	220	0.8781	0.9558
132092	DECHU	220	1	1.0059
132093	DUNI	220	0.9688	0.986
132094	GAJNER	220	1.0164	1.0252
132095	GANGAPUR	220	1	1
132096	INDIRAGN	220	0.9503	0.9888
132097	JALAMAND	220	1	1
132098	JODHPU-4	220	0.904	0.9936
132099	KALISIND	220	0.9911	0.989
132100	KARWAR	220	1	1
132101	KETUKALA	220	1	1
132102	KISH-BAS	220	0.9402	0.98

132103	KUCHERA	220	0.9926	1.019
132104	KUNDAKID	220	0.9399	0.9815
132105	MANOHARP	220	1	1
132106	MANSAROV	220	0.9484	0.986
132107	MIA-ALWA	220	0.9358	0.9828
132108	NAWALGAR	220	1	1
132109	NOKHA	220	1.0045	1.0207
132110	NPH	220	1	1
132111	PADAMPUR	220	1	1
132112	PS_2	220	1	1.0239
132113	RAMGARH	220	1.05	1.05
132114	RAS_2	220	0.9465	1.0018
132115	RATANGAR	220	0.9888	1.0166
132116	SANCHORE	220	0.9468	1.0211
132117	SAWA	220	0.8931	0.9603
132118	SITAPURA	220	1	1
132119	SURATGAR	220	1.0166	1.02
132120	VSLP	220	1.0123	1.0299
132121	SEZJAIP	220	0.9446	0.9816
132122	SIKRAI	220	0.8588	0.9563
132123	BADNU	220	1.001	1.0228
132124	BAMANTUKDA	220	0.9251	1.0014
132125	LALSOT	220	0.9386	0.9824
132126	TEHANDESAR	220	1	1
132127	CHAKSU	220	0.973	1.0024
132128	AJMER42	220	1	0.9983
132130	ALWAR_GSS	220	0.9363	0.9843
132131	AAU	220	1	1
132132	BADISID	220	1	1
132133	BAITHWASIA	220	1	1
132134	BHAWAD	220	1	1
132135	CHANDAN	220	1	1
132136	DEEDWANA	220	1.0189	1.0327
132137	KUSHKHER	220	0.9704	0.997
132138	BHINM-PG	220	0.9446	1.0221
132139	KOTA	220	1.0085	1.0093
132148	CHITTORGARH	220	1	1.0116
132149	OSIAN	220	1	1
134000	MERTA	400	1.0127	1.0391
134001	AKAL-4	400	1.013	1.0444
134002	BARMER-4	400	0.985	1.0356
134003	HERAPU-4	400	0.9765	1.0057
134004	RATANGAR	400	1.0163	1.0429
134005	HINDAU-4	400	0.9743	1.0105
134006	BHILWA-4	400	0.9493	1.0175
134007	CHABRA-4	400	1.01	1.01
134008	KALISI-4	400	1	1
134009	RAJWEST	400	0.98	1.0308

134010	KAWAI	400	1.02	1.02
134011	DEEDWANA	400	1.0349	1.0381
134012	AJMER	400	1	1.0186
134013	ALWAR_GSS	400	0.9691	1.009
134014	BHADLA	400	1	1.0417
134015	JODHPU-4	400	0.9808	1.0286
134016	JAIPUR_RS	400	0.9898	1.001
134017	BIKANE-4	400	1.0351	1.047
134018	SURATG-4	400	1.05	1.05
134019	KOTPUT	400	0.987	1.0121
134020	SIKAR	400	1.0121	1.0463
134032	CHITTORGARH	400	1	1.0219
137000	PHAGI	765	1.0011	0.9985
137001	ANTA	765	1.0064	1.0056

Annexure-4.(c).2: Existing Capacitor Bank Ratings.

Existing capacitor banks			
Bus Number	Bus Name		Cap Bank rating Q (MVA _r)
131007	DAUSA1	132.00	15.9
131059	BHIWADI1	132.00	20.1
131071	CHAMBAL1	132.00	29
131079	CHOPANKI	132.00	5.4
131100	BHIWADI-2	132.00	10.9
131118	BHARATPUR-21	132.00	10.9
131173	DHOD	132.00	16.3
131184	GANGAC21	132.00	5.4
131266	KUSHKHER	132.00	5.4
131329	NPH1	132.00	18.3
131419	SHAHPURA	132.00	25.5
131445	SULTANA	132.00	16.3
131473	WEIR1	132.00	10.75
134013	ALWAR_GSS	400.00	45.35
non-operational			
131000	AAU	132.00	5.43
131001	ABUROAD	132.00	10.75
131002	AJITGARH	132.00	10.86
131003	AJOTILA	132.00	5.43
131004	AKLERA	132.00	5.43
131005	AMET	132.00	5.43
131006	AMRAPURA	132.00	10.86
131007	DAUSA1	132.00	15.86
131008	ANDHI1	132.00	5.43
131009	ANTA	132.00	10.86
131010	ANTROLI1	132.00	5.43
131011	ANUPGARH	132.00	5.43
131012	ASIND	132.00	5.43
131013	ASPUR-21	132.00	5.43

131014	ATRU1	132.00	5.43
131015	BABAI1	132.00	5.43
131016	BADAGAON	132.00	5.43
131017	BADESARI	132.00	5.43
131018	BADISADAR	132.00	10.86
131019	BADNU1	132.00	16.29
131021	BAGGER	132.00	5.43
131022	BAGIDRA	132.00	10.86
131023	BAGORA1	132.00	5.43
131024	BAGOT1	132.00	5.43
131025	BAGRA1	132.00	5.43
131026	BAGRU1	132.00	14.78
131028	BAKANI1	132.00	5.43
131029	BALAWALA	132.00	5.43
131030	BALESAR	132.00	5.43
131031	BANAR1	132.00	17.49
131032	BANDIKUI	132.00	16.18
131033	BANSUR	132.00	21.72
131034	BAORI1	132.00	27.15
131035	BAP1	132.00	5.43
131036	BARLI-21	132.00	5.43
131037	BARMER1	132.00	10.86
131038	BAROLI	132.00	5.43
131039	BASERI1	132.00	5.43
131040	BASSI-CH	132.00	5.43
131041	BASSI1	132.00	21.72
131042	BAYANA	132.00	10.86
131043	BEGOD	132.00	5.43
131044	BEGUN	132.00	10.86
131045	BEHRORE	132.00	14.65
131047	BHADOTI1	132.00	5.43
131048	BHADRA	132.00	5.43
131049	BHADWASI	132.00	5.43
131050	BHANKROT	132.00	10.86
131051	BHARATPUR1	132.00	15.09
131052	BHATEWAR	132.00	16.29
131053	BHAWAMAN	132.00	10.86
131054	BHADROONA	132.00	5.43
131055	BHERUNDA	132.00	5.43
131056	BHERUNDA	132.00	21.61
131057	BHINASAR	132.00	5.43
131058	BHINDER1	132.00	5
131059	BHIWADI1	132.00	20.09
131060	BHOPALGARH	132.00	5.43
131061	BHUSAWAR	132.00	10.86
131062	BIDASAR1	132.00	10.86
131063	BIDIYAD1	132.00	10.86
131064	BIJOLIA	132.00	5.43

131065	BISSAU	132.00	5.43
131066	BORUNDA1	132.00	14.46
131067	BUHANA1	132.00	16.29
131068	BUNDI	132.00	10.86
131069	BUNDI-21	132.00	5.43
131070	CHAKSU	132.00	5.43
131071	CHAMBAL1	132.00	29.01
131072	CHAMPAPUR	132.00	5.43
131073	CHAMU	132.00	5.43
131074	CHANDGOT	132.00	10.86
131075	CHANDN1	132.00	5.43
131076	CHIPABAD	132.00	5.43
131077	CHIRAWA	132.00	20.32
131078	CHITAWA	132.00	5.43
131079	CHOPANKI	132.00	5.43
131080	CHOPASAN	132.00	16.29
131081	CHOTISADAR	132.00	5.43
131082	CHURU	132.00	10.75
131083	DAKANKOT	132.00	5.43
131084	DALOT	132.00	5.43
131085	DANTA	132.00	10
131086	DANT-BHI	132.00	5.43
131087	DARIBA	132.00	5.43
131088	DASPAN	132.00	5.43
131089	DEBARI1	132.00	12.26
131091	DECHU1	132.00	16.29
131092	DEEDWANA	132.00	18.15
131093	DEEG	132.00	5.43
131094	DEOGARH1	132.00	5.43
131095	DEOLI	132.00	10.86
131096	DEOLIKOT	132.00	5.43
131097	DESHNOK1	132.00	10.86
131098	DHAULAKU	132.00	5.43
131100	BHIWADI-2	132.00	10.86
131101	NAGAURI	132.00	21.29
131102	BHINMAL1	132.00	15.43
131103	DHURIYAWA	132.00	5.43
131105	DUDU	132.00	5.43
131106	DUG	132.00	5.43
131107	RATANGARH	132.00	5.43
131108	ALWAR1	132.00	23.05
131109	JAISALMER	132.00	5.43
131111	REENGUS1	132.00	25.79
131112	KHETRI1	132.00	11.15
131113	AJMER1	132.00	23.04
131114	PHULERA1	132.00	10.04
131115	BHILWARA	132.00	10.86
131117	BEAWAR1	132.00	10.47

131118	BHARATPUR-21	132.00	10.86
131119	KOTA-IA1	132.00	10.86
131120	DHOLPUR1	132.00	15.86
131125	KOTPUTLI	132.00	15.43
131126	NIMBHER1	132.00	16.29
131127	JHUNJHUN	132.00	5.43
131128	CHITTORG	132.00	10.86
131129	TINWARI1	132.00	25.41
131130	SIROHI1	132.00	16.29
131132	BALOTRA1	132.00	10.75
131133	SANGANER	132.00	21.29
131134	MODAK1	132.00	5.43
131135	NEEMRANA	132.00	5.43
131138	PHALODI	132.00	10.86
131139	BHOPA-21	132.00	19.89
131140	KHINVSAR	132.00	12.63
131141	KUCHAMAN	132.00	23.29
131142	DHAURIMA	132.00	10.86
131144	PINDWARA	132.00	10.86
131146	MANDAWAR	132.00	15.86
131147	UDYOGVIH	132.00	5.43
131148	JHALAWAR	132.00	10.86
131150	DULCHASA	132.00	5.43
131151	SAWAIMAD	132.00	15.09
131152	HINDAUN1	132.00	10.43
131153	BILARA1	132.00	15.43
131154	SIKARI	132.00	36.97
131155	BIKANER1	132.00	23.04
131156	SURATGAR	132.00	5
131157	SRIDU-21	132.00	5.43
131158	HANUMANG	132.00	31.36
131160	BANSWARI	132.00	10.86
131161	KISHA-21	132.00	5.43
131162	CHOMU1	132.00	20.79
131163	DULNIYA1	132.00	5.43
131166	MAKRANA1	132.00	20.79
131167	DUNGRPR	132.00	10.86
131171	ENGGCOLL	132.00	5.43
131172	BARAN	132.00	10.86
131173	DHOD	132.00	16.29
131174	BORNDA	132.00	5.43
131176	GULABPUR	132.00	10.86
131177	FALNA	132.00	5.43
131178	FATEHPUR	132.00	10.86
131179	GADRAROA	132.00	5.43
131180	GAJNER	132.00	5.43
131181	GAJNER	132.00	5.43
131182	GALIFA	132.00	5.43

131183	GANGA-BH	132.00	5.43
131184	GANGAC21	132.00	5.43
131185	GANGCITY	132.00	10.43
131186	GHARSANA	132.00	5.43
131187	GOGUNDA1	132.00	5.43
131188	GOPAL-MI	132.00	5.43
131189	GOTAN	132.00	7.43
131190	GOVINDGA	132.00	16.29
131192	GUDAMALN	132.00	5.43
131193	GUDHAGOR	132.00	16.29
131194	GULUWALA	132.00	5.43
131195	HAMIRGAR	132.00	10.86
131198	HEMDA1	132.00	2.71
131199	HESABA1	132.00	5.43
131200	HINDOLI1	132.00	5.43
131201	HINGONIA	132.00	16.29
131203	ITAWA	132.00	10.86
131204	JADOL1	132.00	5.43
131206	JAHAJPUR	132.00	5.43
131207	JAITARAN	132.00	10.86
131208	JAKHARAN	132.00	5.43
131209	JALAMAND	132.00	5.43
131210	JALORE1	132.00	15.43
131211	JAMWA-RA	132.00	10.86
131212	JASRASAR	132.00	5.43
131213	JAWAR-NA	132.00	12.86
131214	JAYAL-1	132.00	5.43
131215	JEEWANA	132.00	5.43
131216	JHOKHASA	132.00	5.43
131217	JHOTWARA	132.00	5.43
131218	JJN1	132.00	15.43
131219	JOBNER	132.00	10.86
131221	JOJAWARI	132.00	5.43
131223	JUNAMEET	132.00	5.43
131224	KACHAWA1	132.00	5.43
131225	KACHOLA1	132.00	5.43
131226	KAILADEV	132.00	5.43
131227	KALADERA	132.00	5.43
131228	KALAU	132.00	5.43
131229	KAMA1	132.00	5.43
131230	KAMINPUR	132.00	5.43
131231	KANDELA	132.00	5.43
131232	KANKROL1	132.00	15.86
131233	KANWARI	132.00	5.43
131234	KAPASN	132.00	5.43
131235	KARAULI1	132.00	10.86
131236	KARERA-1	132.00	5.43
131237	KARWAR-2	132.00	5.43

131238	KEKRI	132.00	5.43
131239	KELWARA	132.00	10.86
131240	KESHWANA	132.00	5.43
131241	KEWAI	132.00	10.86
131242	KHACHRI	132.00	10.86
131243	KHAJUWAL	132.00	5.43
131244	KHANDAR	132.00	5.43
131245	KHANPURI	132.00	5.43
131246	KHARCHI	132.00	5.43
131247	KHARWA1	132.00	5.43
131248	KHERLI	132.00	10.86
131249	KHOOD1	132.00	10.86
131250	KHUTUSHY	132.00	10.86
131251	KISH-BAS	132.00	20.86
131252	KISHANG1	132.00	12.86
131253	KOLAYAT1	132.00	5.43
131254	KOODAN	132.00	5.43
131259	KOTKASIM	132.00	5.43
131260	KUCHARA	132.00	16.29
131261	KUCHERA	132.00	5.43
131262	KUMAWAS	132.00	5.43
131263	KUMHER	132.00	5.43
131264	KUNDAKI	132.00	15.75
131265	KURI	132.00	5.43
131266	KUSHKHER	132.00	5.43
131267	LADNU	132.00	10.86
131268	LAKHERI	132.00	10.86
131269	LALSOT1	132.00	21.72
131270	LAMBAJAT	132.00	10.86
131271	LAXMALWR	132.00	10.86
131272	LAXMAN-S	132.00	10.86
131273	LOHAWAT1	132.00	5.43
131274	LOONKANS	132.00	10.86
131275	LOSAL1	132.00	10.86
131276	MADRI	132.00	21.72
131277	MAHAVIR	132.00	5.43
131279	MAHUWA	132.00	5.43
131280	MALAKHER	132.00	10.86
131281	MALPURA1	132.00	5.43
131282	MALSISAR	132.00	5.43
131283	MANDALGA	132.00	10.86
131284	MANDAN	132.00	5.43
131285	MANDANA	132.00	5.43
131286	MANDAWA	132.00	5.43
131287	MANDAWAL	132.00	5.43
131288	MANDERLA	132.00	5.43
131289	MANDRAYW	132.00	5.43
131290	MANGLWAR	132.00	10.86

131291	MANGROL1	132.00	5.43
131292	MANOHARP	132.00	10.86
131293	MANSAROV	132.00	10
131294	MAPLAWAS	132.00	5.43
131295	MARKHI	132.00	10.86
131296	MATHAN-1	132.00	5.43
131297	MATHANIA	132.00	16.29
131298	MATORA	132.00	5.43
131299	MAVLI	132.00	5.43
131300	MAYRAMG	132.00	5.43
131301	MDSUIAJ	132.00	10.86
131302	MEHLOO1	132.00	5.43
131303	MERTACIT	132.00	23.29
131304	MERTA_RO	132.00	5.43
131305	MIALWAR	132.00	12.06
131307	MOKHMPUR	132.00	10.86
131308	MOLASARI	132.00	10.86
131309	MOMASARI	132.00	5.43
131310	MUNDWA1	132.00	5.43
131311	MUNDWAR	132.00	16.29
131312	NADBAI	132.00	5.43
131313	NAGAR1	132.00	5.43
131314	NAINWA1	132.00	5.43
131315	NANGALI	132.00	5.43
131316	NANGLI	132.00	5.43
131317	NAPASAR	132.00	10.86
131318	NARWA	132.00	5.43
131319	NASIRABA	132.00	5.43
131320	NATHDWAR	132.00	10.86
131321	NAWA	132.00	10.86
131323	NAWALGAR	132.00	16.18
131324	NEEMKATH	132.00	15.43
131325	NEWAI	132.00	10.86
131326	NOHAR	132.00	5.43
131327	NOKHA	132.00	10.43
131328	NPH-JODH	132.00	29.71
131329	NPH1	132.00	18.29
131330	OPH-JODH	132.00	5.43
131331	OSIAN	132.00	16.29
131332	PSNO8	132.00	5.43
131333	PADAMPUR	132.00	15.43
131334	PADROO1	132.00	5.43
131335	PALADAR	132.00	5.43
131336	PALII	132.00	12.09
131337	PALODA	132.00	5.43
131338	PAOTA	132.00	5.43
131339	PAREWARA	132.00	5.43
131340	PARTAPUR	132.00	5.43

131341	PATAN_S	132.00	5.43
131342	PATLISAR	132.00	5.43
131343	PHAGI	132.00	5.43
131344	PILANI	132.00	14.89
131345	PILIBANG	132.00	5.43
131346	PINAN	132.00	5.43
131347	PIPALIYA	132.00	5.43
131348	PIPAR1	132.00	10.86
131349	PIPRALI	132.00	5.43
131350	POKRANI	132.00	5.43
131351	POONSA	132.00	5.43
131352	PRATA-UD	132.00	5.43
131353	PRATAPGA	132.00	10.86
131354	PRATA-JO	132.00	5.43
131355	PS-5	132.00	10.86
131359	PSNO1	132.00	5.43
131360	PUGALROA	132.00	10.86
131361	PURANAGH	132.00	12.75
131362	PUSHKARO	132.00	5.43
131363	PUSKA-RO	132.00	5.43
131365	RAISINGH	132.00	5.43
131366	RAJAKHER	132.00	5.43
131367	RAJGARH	132.00	10.43
131368	RAJGARH1	132.00	16.18
131369	RAJIASR	132.00	10
131370	RAMGAR-A	132.00	10.86
131371	RAMPURA	132.00	16.29
131372	RAMSEEN	132.00	5.43
131373	RANASARI	132.00	5.43
131374	RANI	132.00	5.43
131375	RANIWARA	132.00	10.86
131376	RANOLI	132.00	10.86
131378	RASHMI	132.00	5.43
131379	RAWATBHA	132.00	5.43
131380	RAWATSAR	132.00	5.43
131381	RAYLA	132.00	10.86
131382	RENWAL1	132.00	16.29
131383	REODAR	132.00	10.86
131384	RICO_BHI	132.00	5.43
131385	RIRI	132.00	5.43
131386	RISHDEO	132.00	5.43
131387	ROON1	132.00	5.43
131388	ROOPWAS	132.00	5.43
131389	RUPNGARH	132.00	5.43
131390	SADULSHA	132.00	10.86
131391	SAGWARA1	132.00	5.43
131393	SALASAR	132.00	5.43
131394	SALUMBR1	132.00	5.43

131395	SAMDARI1	132.00	5.43
131396	SANCHOR1	132.00	10.86
131398	SANGOD	132.00	10.86
131399	SANGRIA	132.00	5.43
131400	SANJOO	132.00	5.43
131401	SANKAD1	132.00	5.43
131402	SANWAD1	132.00	5.43
131403	SANWREEJ	132.00	5.43
131404	SAPOL	132.00	5.43
131405	SARADHNA	132.00	10.86
131406	SARDARSH	132.00	10.86
131407	SARMATHU	132.00	5.43
131408	SARNADUN	132.00	5.43
131409	SATA	132.00	5.43
131410	SAWA(B)1	132.00	10.86
131411	SAWA-CH1	132.00	5.43
131412	SAYLA1	132.00	10
131413	SEDWA	132.00	5.43
131414	SENTHI	132.00	5.43
131415	SEZ-KAPA	132.00	5.43
131416	SEZ_1	132.00	5.43
131417	SEZ1_21	132.00	5.43
131418	SHAHJANP	132.00	10.86
131419	SHAHPURA	132.00	25.45
131420	SHAHP-BH	132.00	5.43
131421	SHEO1	132.00	10.86
131423	SIKANDRA	132.00	5.43
131424	SIKRAI	132.00	5.43
131425	SILORA_1	132.00	5.43
131426	SINDRA1	132.00	10.86
131427	SIRSI1	132.00	12.88
131428	SISARMA1	132.00	10.86
131429	SITAPU-1	132.00	10.86
131431	SIWANA	132.00	5.43
131432	SMS-STA1	132.00	5.43
131433	SOJAT1	132.00	10.86
131434	SOORSAGA	132.00	5.43
131435	SOYLA1	132.00	16.29
131436	SPOTRA-1	132.00	5.43
131437	SRIDUNG1	132.00	16.29
131438	SRIGANGA	132.00	21.42
131439	SRIKARNP	132.00	5.43
131440	SRIMADHO	132.00	16.29
131441	SRIMAHAV	132.00	10.86
131442	SRIVIJAY	132.00	5.43
131443	SUJANGARHI	132.00	16.29
131444	SUKHERI	132.00	10.86
131445	SULTANA	132.00	16.29

131446	SUMERPUR	132.00	10.75
131447	SURAJGAR	132.00	10.86
131448	SURPURA1	132.00	5.43
131449	SUWANA	132.00	5.43
131451	TAGOREN	132.00	5.43
131452	TALERA	132.00	5.43
131453	TARANAGA	132.00	5.43
131454	TEHANDESAR	132.00	16.29
131455	TELEWARA	132.00	5.43
131458	THANAGAZ	132.00	10.86
131459	THOI_1	132.00	5.43
131460	TIZARA	132.00	16.29
131461	TODABHIM	132.00	10.86
131462	TODARASI	132.00	5.43
131463	TONK	132.00	10.86
131464	TOONGA1	132.00	5.43
131465	UDAIPURW	132.00	10.86
131466	UMAIDPUR	132.00	5.43
131467	UNDOO	132.00	5.43
131468	UNIARA1	132.00	5.43
131469	UPANI_1	132.00	5.43
131471	VIJAYMAN	132.00	5.43
131472	VKIA1	132.00	25.09
131474	Z_MINES	132.00	5.43

Annexure-4.(c).3 Recommended Capacitor Bank Ratings.

Recommended capacitor banks		
Bus Code	Bus Name	Cap. Bank rating (MVAr)
131001	ABUROAD 132.00	25
131002	AJITGARH 132.00	25
131005	AMET 132.00	25
131008	ANDHI1 132.00	25
131011	ANUPGARH 132.00	25
131013	ASPUR-21 132.00	25
131016	BADAGAON 132.00	25
131018	BADISADAR 132.00	25
131024	BAGOT1 132.00	25
131025	BAGRA1 132.00	25
131030	BALESAR 132.00	25
131034	BAORII 132.00	25
131036	BARLI-21 132.00	25
131038	BAROLI 132.00	25
131039	BASERII 132.00	25
131061	BHUSAWAR 132.00	25
131063	BIDIYAD1 132.00	25
131066	BORUNDA1 132.00	25
131073	CHAMU 132.00	25
131081	CHOTISADAR 132.00	25

131085	DANTA	132.00	15.98
131093	DEEG	132.00	15.98
131095	DEOLI	132.00	15.98
131098	DHAULAKU	132.00	15.98
131103	DHURIYAWA	132.00	15.98
131122	MANIYA	132.00	15.98
131136	PALI-21	132.00	15.98
131143	JALOR-21	132.00	15.98
131167	DUNGRPR	132.00	15.98
131168	DUNI1	132.00	15.98
131177	FALNA	132.00	15.98
131184	GANGAC21	132.00	15.98
131185	GANGCITY	132.00	15.98
131186	GHARSANA	132.00	15.98
131193	GUDHAGOR	132.00	15.98
131197	RIICO ABU RD	132.00	15.98
131201	HINGONIA	132.00	15.98
131202	AJOLIYA KHER	132.00	15.98
131204	JADOL1	132.00	15.98
131207	JAITARAN	132.00	15.98
131210	JALORE1	132.00	15.98
131221	JOJAWAR1	132.00	15.98
131229	KAMA1	132.00	15.98
131230	KAMINPUR	132.00	15.98
131234	KAPASN	132.00	15.98
131235	KARAULI1	132.00	15.98
131237	KARWAR-2	132.00	6.63
131238	KEKRI	132.00	6.54
131242	KHACHRI	132.00	5.01
131243	KHAJUWAL	132.00	6.33
131246	KHARCHI	132.00	6.51
131256	SAWAR	132.00	6.26
131287	MANDAWAL	132.00	6.28
131289	MANDRAYW	132.00	5.6
131292	MANOHARP	132.00	5.59
131313	NAGAR1	132.00	6.04
131315	NANGALI	132.00	6.71
131324	NEEMKATH	132.00	5.06
131331	OSIAN	132.00	5.33
131333	PADAMPUR	132.00	6.8
131334	PADROO1	132.00	7.89
131336	PALI1	132.00	6.88
131340	PARTAPUR	132.00	5.57
131342	PATLISAR	132.00	7.46
131018	BADISADAR	132.00	5.57
131031	BANAR1	132.00	4.98
131034	BAORI1	132.00	7.25
131042	BAYANA	132.00	7.7

131052	BHATEWAR	132.00	5.35
131058	BHINDER1	132.00	6.15
131061	BHUSAWAR	132.00	4
131067	BUHANA1	132.00	5.41
131080	CHOPASAN	132.00	6.68
131081	CHOTISADAR	132.00	2.61
131083	DAKANKOT	132.00	4.48
131087	DARIBA	132.00	4.11
131126	NIMBHER1	132.00	5.9
131131	JODHP-21	132.00	7.87
131171	ENGGCOLL	132.00	5.95
131193	GUDHAGOR	132.00	2.74
131209	JALAMAND	132.00	3.51
131229	KAMA1	132.00	5.28
131237	KARWAR-2	132.00	3.21
131276	MADRI	132.00	7.55
131290	MANGLWAR	132.00	7.24
131292	MANOHARP	132.00	7.08
131294	MAPLAWAS	132.00	5.01
131296	MATHAN-1	132.00	6.64
131299	MAVLI	132.00	4.92
131312	NADBAI	132.00	3.92
131313	NAGAR1	132.00	4.74
131316	NANGLI	132.00	7.68
131320	NATHDWAR	132.00	5.96
131328	NPH-JODH	132.00	6.23
131330	OPH-JODH	132.00	6.67
131336	PALI1	132.00	3.75
131338	PAOTA	132.00	4.4
131352	PRATA-UD	132.00	7.77
131368	RAJGARH1	132.00	7.58
131402	SANWAD1	132.00	7.65
131409	SATA	132.00	6.35
131413	SEDWA	132.00	6.66
131414	SENTHI	132.00	3.96
131416	SEZ_1	132.00	7.35
131417	SEZ1_21	132.00	4.37
131419	SHAH PURA	132.00	5.18
131433	SOJAT1	132.00	5.03
131444	SUKHER1	132.00	6.24
131451	TAGOREN	132.00	4.01
131473	WEIR1	132.00	5.64
131480	BIJAIPUR	132.00	6.99
132028	NIMBHERA	220.00	5.76

**Annexure-4.(d).1 Voltage profile
D- Uttar Pradesh**

			Existing case	with recommended cap bank
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Bus Number	Bus Name	Base kV	Voltage (pu)	Voltage (pu)
1401	HAPUR 400	400	new S/S	1.0197
5004	BARABANKI 22	220	new S/S	1.0062
5005	BAIKUNTHAPUR	220	new S/S	1
5006	PILIBHIT 220	220	new S/S	1
5007	BAHRAICH 220	220	new S/S	0.9956
5010	SPN 220	220	new S/S	0.9993
5020	SARANGAPUR	220	new S/S	1.0025
5021	SANGIPUR 220	220	new S/S	1.0079
5027	RASARA 220	220	new S/S	1.0275
5028	ATTOR 220	220	new S/S	0.9863
5032	PRATAPVIHAR	220	new S/S	0.9858
5033	BAPUDHAM 220	220	new S/S	0.9854
5051	RAJA KA TALA	220	new S/S	0.9926
5052	AURAI	220	new S/S	0.9928
5054	GOLA GORAKHP	220	new S/S	1.0328
5056	BANSI	220	new S/S	1.0272
5057	HAPUR 765	765	new S/S	0.9632
5058	HAPUR 400	400	new S/S	0.9699
5059	HAPUR	220	new S/S	0.9755
5060	ATTOR400	400	new S/S	0.9713
5061	MORTI 220	220	new S/S	0.9872
5062	MANDOLA	220	new S/S	0.9872
5063	DASNA 400	400	new S/S	0.9671
5064	DASNA 220	220	new S/S	0.9854
5065	INDRAPURAM	400	new S/S	0.973
5066	INDRAPURAM	220	new S/S	0.9769
5069	CHARLA 220	220	new S/S	0.9798
5070	JANSETH 220	220	new S/S	0.972
5074	MATORE 765	765	new S/S	0.9714
5075	MATORE 400	400	new S/S	0.9977
5077	AMROHA 220	220	new S/S	0.9938
5078	MORADABAD 22	220	new S/S	0.9976
5082	SIKADRA RAO	220	new S/S	0.986
5084	NIDHAULI KHA	132	new S/S	0.9932
5085	PAHADI 220	220	new S/S	0.9784
5089	BANDA 400	400	new S/S	0.9975
6200	SIRSAGANJ220	220	new S/S	1.0165
6201	RANIA220	220	new S/S	1.0045
6203	SIKANDARA DE	220	new S/S	1.0088
6205	MORTI132	132	new S/S	1.0298
6206	SIKINDARA DE	132	new S/S	1.0088
6207	MORADABAD132	132	new S/S	1.0135
6300	NIBKAROR 220	220	new S/S	1.0144
151000	NOIDA_UP	132	0.9052	0.9293
151001	GOKUL	132	0.7434	1.0401
151002	GNOIDA1	132	0.9161	0.9333
151003	ATRAULI1	132	0.8738	0.9717

151004	BARAUT1	132	0.8335	0.9867
151005	AGRAN1	132	0.7535	1.0259
151006	AGRACANT	132	0.7371	1.015
151007	UNNAO1	132	0.9875	1.002
151008	AGRAFN	132	0.6955	1.03
151009	BANDA1	132	0.9585	0.9871
151010	HATHRAS1	132	0.7434	0.9844
151011	CHIBRMAU	132	0.9226	1.0176
151012	ORAI1	132	0.9667	0.9861
151013	CHINHAT	132	0.9325	0.9685
151014	PHULPUR1	132	0.9275	0.9883
151015	SHATABD	132	0.818	0.9469
151016	SIMBOLI	132	0.9031	0.9791
151017	GAJRAULA	132	0.8857	0.9771
151018	SAMBHAL	132	0.8875	0.9954
151019	SAHIBAD	132	0.887	0.9743
151020	HARDROAD	132	0.9306	0.9604
151021	NEHTOR1	132	0.8527	1.0112
151022	DOHANA1	132	0.9105	1.0141
151023	NIGHASAN	132	1	0.9755
151024	SHAJANP1	132	0.977	0.982
151025	CBGANJ	132	0.9244	1.0178
151026	AGRATAJ	132	0.6658	0.9971
151027	MAU1	132	0.9621	0.9959
151028	SITAPUR1	132	0.9582	0.9951
151029	LUCKNOW1	132	0.9416	0.974
151030	NAZIBABA	132	0.8262	1.0291
151031	MURABAD1	132	0.881	0.9978
151032	MERUT1	132	0.8255	0.937
151033	MURADNG1	132	0.9189	1.0033
151034	SHAMLI1	132	0.8375	0.9766
151035	SAHARAN1	132	0.8088	0.9826
151036	AZAMGAR1	132	0.9364	0.9847
151037	NARA	132	0.8475	0.9453
151038	KHURJA1	132	0.9198	0.9972
151039	HARDUGN1	132	0.8741	0.9733
151040	AGRA1	132	0.7925	1.0221
151041	DEORIA1	132	0.9355	1.0255
151042	MAINPUR	132	0.9411	1.023
151043	HARDOI1	132	0.9519	0.9945
151044	PANKI1	132	0.9295	0.9677
151045	FEROZBD1	132	0.9141	1.0274
151046	NAUBSTA	132	0.9264	0.9584
151047	BAH	132	0.8768	1.0278
151048	AKBARPUR	132	0.7476	1.0088
151049	OBRA1	132	1.0041	1.0103
151050	OBRAH1	132	1.0037	1.01
151051	RICHA	132	0.8905	1.0293

151052	ALAHBAD1	132	0.9434	0.9802
151053	GAZIPR2	132	0.92	0.9798
151054	FATEHPR1	132	0.979	0.9937
151055	SAHUPR1	132	0.9518	0.9811
151056	SARNATH1	132	0.9471	0.9754
151057	BADAUN1	132	0.9204	0.9931
151058	GORAKPR1	132	0.9365	1.002
151059	SULTANP1	132	0.9153	1.0164
151060	JAUNPUR1	132	0.9287	1.0117
151061	GONDA1	132	0.9792	1.0021
151062	CANT_AL	132	0.9565	0.9848
151063	BASTII	132	0.9641	1.0059
151064	ALIGARH2	132	0.8149	0.9642
151065	RIHND1	132	1.01	1.0125
151066	ROBERTG1	132	0.9656	0.9874
151067	DHAMPR1	132	0.8635	1.0175
151068	SARSAUL	132	0.8544	0.9614
151069	ANPARA1	132	1.0253	1.0238
151070	JHANSI2	132	0.9923	1.0041
151071	ALIGARH3	132	0.7748	0.9746
151072	AMROHA	132	0.8703	0.9918
151073	ANANDNAG	132	0.9027	1.0072
151074	AONLA	132	0.9019	1.0015
151075	IFFCOAON	132	0.8905	0.9905
151076	AMRAPUR	132	0.9285	0.9666
151077	AURAI	132	0.8921	0.9959
151078	AZADNGR	132	0.9233	0.9612
151079	AZAMGH13	132	0.9354	0.9827
151080	B.BNGR	132	0.8915	0.9711
151081	BABRALA	132	0.8568	1.004
151082	BACHRANW	132	0.969	0.9943
151083	BAGPAT	132	0.8338	0.9723
151084	BAHRALCH	132	0.9227	1.013
151085	BALIA_UP	132	0.9467	0.9843
151086	BALRAMPU	132	0.9874	0.9936
151087	BANDA132	132	0.9585	0.9871
151088	BANGERMA	132	0.9115	0.9771
151089	BANSI	132	0.9287	1.0016
151090	BARABANK	132	0.9244	0.9752
151091	BARELYII	132	0.966	0.9703
151092	BARELY-1	132	0.9039	1.0112
151093	BADHALGA	132	0.9323	0.9884
151094	NOIDA129	132	0.9626	0.9748
151095	BAHADOHI	132	0.8903	1.0004
151096	BARTHANA	132	0.9076	0.995
151097	SUMERPUR	132	0.9339	0.9725
151098	BHIMNAGR	132	0.7724	1.034
151099	BHOOR	132	0.9201	1.0028

151100	BHOPAROA	132	0.8432	0.9346
151101	BIJNOUR	132	0.8318	1.0093
151102	BILARI	132	0.8739	0.9972
151103	BILHOUR	132	0.9228	0.9768
151104	BILASPUR	132	0.8373	1.0034
151105	SOHAWAL	132	0.9549	0.9967
151106	BISALI	132	0.885	0.9894
151107	BODLA	132	0.7872	1.0177
151108	BUDHANA	132	0.8182	0.9745
151109	CHANDOLI	132	0.9439	0.9728
151110	CHANDAS	132	0.8624	0.9941
151111	CHANDPUR	132	0.8318	1.0093
151112	CHHAPRAU	132	0.8259	0.9937
151113	CHUNNAR	132	0.9523	0.9838
151114	CHUTMALP	132	0.766	0.9736
151115	DADANGR	132	0.9253	0.9619
151116	FARIDNAGAR	132	0.9156	0.9896
151117	ROBERTSGANJ2	132	0.9862	0.9997
151118	DARSHANN	132	0.9373	0.9776
151119	DASNA	132	0.9145	1.0108
151120	DEBAI	132	0.9251	0.9732
151121	DEOBAND	132	0.768	0.9913
151122	DEORIA_1	132	0.9266	1.0295
151123	DIBIYAPU	132	0.8645	0.9424
151124	DIGHAR	132	0.9474	0.9848
151125	DOHRIGHA	132	0.9373	0.9826
151126	DUMERIAG	132	0.9735	0.9926
151127	ETAH	132	0.8914	0.9934
151128	ETAWAH	132	0.9053	0.993
151129	ETMADPUR	132	0.6977	1.0147
151130	FARIDPUR	132	0.901	1.0129
151131	FATEHGAR	132	0.8973	1.0164
151132	FATEHABA	132	0.8094	1.0322
151133	GANGOH	132	0.7678	1.0001
151134	GAURIGAN	132	0.8879	1.0113
151135	GAZIPUR1	132	0.9187	0.981
151136	GAJOKHAR	132	0.9382	0.9774
151137	GHATAMPU	132	0.9061	0.953
151138	GIDA	132	0.9364	1.0076
151139	FCI_GORA	132	0.924	0.996
151140	GOLA	132	0.9446	0.9717
151141	GOMTINAG	132	0.9329	0.966
151142	GOPIGANJ	132	0.886	1
151143	GULAUTI	132	0.9119	1.0133
151144	GYANPUR	132	0.9252	0.9721
151145	BULANDSA	132	0.9071	1.0025
151146	IND_A_GZ	132	0.872	0.9659
151147	MOHANNAG	132	0.878	0.969

151148	MEERUTRO	132	0.913	1.0043
151149	HALDARPU	132	0.9564	0.9862
151150	HANDIA	132	0.9255	0.9725
151151	HAPUR	132	0.9071	0.9815
151152	HAPURROA	132	0.7953	0.9428
151153	HARDUG-A	132	0.872	0.9731
151154	HARRIAYA	132	0.946	0.98
151155	INDOGULF	132	0.9198	1.0207
151156	JAGDISHP	132	0.9208	1.0169
151157	JAHANGIR	132	0.9302	0.9998
151158	JAHANABA	132	0.9374	0.9661
151159	JAINPUR	132	0.9231	0.9769
151160	JALESAR	132	0.8697	0.9856
151161	JANSETH	132	0.8167	0.9362
151162	JASALA	132	0.8192	0.9734
151163	JASRANA	132	0.9108	1.0304
151164	JAUNPURI	132	0.9228	1.0135
151165	JHANSI	132	0.9858	0.9981
151166	JHINGANA	132	0.8183	0.9679
151167	JHUSI	132	0.9387	0.9859
151168	PURKAZI	132	0.8519	0.9378
151169	RCGREEN	132	0.9195	0.9358
151170	BINA	132	1	1
151171	RAEBAREL	132	0.9719	1.004
151172	RAJAPAKA	132	0.8943	1.0193
151173	RAJAKATA	132	0.916	0.9571
151174	RAMPUR	132	0.8529	0.99
151175	RAMSENGH	132	0.9291	0.9844
151176	RASRA	132	0.9424	0.9836
151177	RATH	132	0.9244	1.0006
151178	SADABAD	132	0.7345	0.9933
151179	SAIDPUR	132	0.8852	0.9653
151180	SALEMPUR	132	0.9118	1.0304
151181	SANDILA	132	0.9281	0.9784
151182	SARAON	132	0.9272	0.9865
151183	SARDHANA	132	0.8006	0.9204
151184	SEFAI	132	0.93	1.0063
151185	SEMRIJAM	132	0.9518	0.9893
151186	SHAHGANJ	132	0.9052	1.02
151187	SHAMSABA	132	0.8744	1.042
151188	SHANKARG	132	0.9389	0.9756
151189	SHATRUGH	132	0.92	1.015
151190	SHIKARPU	132	0.9201	1.0108
151191	SHIKOHAB	132	0.8909	1.0247
151192	SIDHAULI	132	0.9418	0.9759
151193	SIKNDARA	132	0.8133	0.9805
151194	SIKANDRA	132	0.9177	0.979
151195	SIKANDAR	132	0.9238	0.9847

151196	SINGHAVE	132	0.8183	0.9843
151197	SIRATHU	132	0.9387	0.9711
151198	SIYANA	132	0.8936	0.9811
151199	SONEPUMP	132	0.9658	0.9876
151200	SREAMBAL	132	0.807	0.9789
151201	SURAJPUR	132	0.9078	0.9261
151202	TAJPUR	132	0.8372	1.0023
151203	TANDA	132	0.7146	0.9918
151204	TELCO	132	0.9316	0.9675
151205	THAKURWA	132	0.877	0.9909
151206	THANABHA	132	0.8464	0.9996
151207	TRIGLASS	132	0.9435	0.9802
151208	TRT	132	0.9331	0.9641
151209	KUNDANRO	132	0.8962	0.9544
151210	SONIK	132	0.9854	0.9981
151211	USWAN	132	0.9177	0.9904
151212	VARANASI	132	0.9258	0.957
151213	VAISHALI	132	0.9015	0.929
151214	VRINDAVA	132	0.7313	1.0516
151215	ZAMNIA	132	0.9132	0.9769
151216	SAMBHAL	132	0.8858	0.9979
151217	MATHURA2	132	0.7353	1.0487
151218	LALGANJ	132	0.9213	1.0056
151219	DADRI_13	132	0.9098	1.0026
151220	RAEBRL_P	132	0.978	1.009
151221	MATH_132	132	0.7364	1.0256
151222	LEEDOPUR	132	0.9486	0.9772
151223	YAMUNAPU	132	0.939	0.9756
151224	BABUGARH	132	0.8997	0.9779
151225	INDRAVAL	132	0.756	1.0454
151226	RAIBAR-N	132	0.974	1.0062
151227	JIGNA	132	0.9174	0.9849
151228	KADIPUR	132	0.9026	1.02
151229	KAYAMGAN	132	0.8793	1.0219
151230	BITHOOR	132	0.9851	1.0021
151231	KAMLAPUR	132	0.9546	0.9913
151232	KANNAUJ	132	0.8801	1.015
151233	KANKANKH	132	0.8144	0.9393
151234	KARCHANA	132	0.9373	0.9739
151235	KARVI	132	0.9295	0.9607
151236	KASGANJ	132	0.8401	0.9866
151237	KHAMBAKH	132	0.9311	1
151238	KASIA	132	0.9063	1.0148
151239	KASIMABA	132	0.9303	0.9836
151240	KAURIRAM	132	0.9331	0.9865
151241	KAJARHAA	132	0.9523	0.9838
151242	KERAKAT	132	0.9237	1.0248
151243	KHAGA	132	0.9672	0.9935

151244	KHAIR	132	0.8363	0.9697
151245	KHALILAB	132	0.9358	1.0035
151246	KHATOLI	132	0.8313	0.9351
151247	KHARAD	132	0.8294	0.9803
151248	KHURAMNA	132	0.9106	0.9541
151249	KIRATPUR	132	0.8335	1.0084
151250	KOLLSA	132	0.9312	0.9926
151251	KOSIKALA	132	0.6663	1.0493
151252	KRISHNAN	132	0.9176	0.9493
151253	KUNDA	132	0.8953	0.9985
151254	UTRAULA	132	1	1
151255	KUNDESHW	132	0.9057	0.9894
151256	LAKHIMPU	132	0.9278	0.998
151257	LAKHAOTI	132	0.9138	0.9957
151258	LALGANJ	132	0.9014	1.0014
151259	LALITPUR	132	0.9674	0.9962
151260	LALUKHER	132	0.836	0.9492
151261	LML	132	0.9264	0.9584
151262	LONI	132	0.875	0.9694
151263	SGPGI	132	0.9307	0.9651
151264	MACHLISH	132	0.919	1.0213
151265	MAHOBA	132	0.924	0.9761
151266	MALWA	132	0.9485	0.9704
151267	MANDUADI	132	0.9268	0.9597
151268	MANJHANP	132	0.9471	0.9761
151269	MANKAPUR	132	0.9677	0.9968
151270	MANAURI	132	0.9491	0.9781
151271	MARLAHU	132	0.9064	1.0088
151272	MARTINPU	132	0.9182	0.9619
151273	MATHURA	132	0.7313	1.0527
151274	MAU_NEW	132	0.9493	0.9864
151275	MAU_OLD	132	0.9432	0.9829
151276	MAU_RANI	132	0.9964	1.0049
151277	MAWANA	132	0.8234	0.9362
151278	MEDICALC	132	0.8065	0.9295
151279	MEJAROAD	132	0.9181	0.9824
151280	MAHARAJG	132	0.9034	1.0068
151281	MILKIPUR	132	0.9036	1.0348
151282	MINTOPAR	132	0.9331	0.9695
151283	MIRZAPUR	132	0.9136	0.9805
151284	MODISTEE	132	0.7878	0.9416
151285	MOHADDIP	132	0.9226	0.9956
151286	MOHAMMAD	132	0.9383	0.9818
151287	MOHAMMAD	132	0.9557	0.9713
151288	GULABARI	132	0.8927	1.0222
151289	MURADABA	132	0.878	0.995
151290	MAQSUDPR	132	1	1
151291	MOTH	132	0.9685	0.9773

151292	MUZAFARN	132	0.8547	0.9405
151293	BARKHER	132	0.8392	0.9916
151294	NAGALIKI	132	0.8896	0.9739
151295	KUNDARK	132	0.988	1.0011
151296	NAINI	132	0.9321	0.9748
151297	NAKUR	132	0.772	0.9911
151298	NANAUTA	132	0.8541	1.0057
151299	NANAPARA	132	0.9021	1.0093
151300	SHAHJAHA	132	0.9758	0.9806
151301	NARAINPU	132	0.9523	0.9835
151302	NASEERPU	132	0.8838	1.0272
151303	NEBODPAR	132	0.9251	0.9546
151304	NEWARIRO	132	0.806	0.9431
151305	NIBKAROR	132	0.9112	1.0212
151306	NIRPURA	132	0.8127	0.9673
151307	NKN	132	0.9244	0.9571
151308	NOIDA_II	132	0.886	0.9162
151309	NOIDA_IV	132	0.8833	0.9144
151310	MIRZAPUR22	132	0.9342	0.9916
151311	NOIDA_VI	132	0.9025	0.9237
151312	NOIDA62	132	0.9055	0.9311
151313	NOIDA62	132	0.9122	0.9365
151314	ORAI_132	132	0.9594	0.9784
151315	PALLIA	132	0.8797	0.9507
151316	PARTAPGA	132	0.9205	1.0027
151317	PARICHHA	132	1.0035	1.0126
151318	PARTAPPU	132	0.8133	0.9429
151319	PATTI	132	0.9451	0.9741
151320	PHOOLPUR	132	0.8967	0.9627
151321	IFFCOPHU	132	0.9245	0.9881
151322	PINHAT	132	0.8895	1.0297
151323	PUVAYAN	132	0.9937	0.9947
151324	PURKAYAN	132	0.9311	0.9766
151325	AKBCHIN	132	1	1
151326	BALRCHIN	132	1	1
151327	DCM01	132	1	1
151328	HAIDER01	132	1	1.011
151329	LHSUGAR0	132	1	1
151330	MANCHIN	132	1	1
151331	RAUCHIN	132	1	1
151332	TRIVEN01	132	1	1
151333	TRIVEN02	132	1	1
151334	KUMBH	132	1	1
151335	GULARI01	132	1	1
151336	JKSUGAR	132	1	1
151337	MAWANA01	132	1	1
151338	MAWANA02	132	1	1
151339	MAWANA03	132	1	1

151340	SBECBIO	132	0.8264	0.9833
151341	SIMBHO01	132	1	1
151342	SIMBHO02	132	1	1
151343	AUGASSI	132	0.9505	0.9787
151344	ODUH	132	1	1
151345	DALMI01	132	1	1
151346	DALMI02	132	1	1
151347	DALMI03	132	1	1
151348	KMSAGA	132	1	1
151349	DWARIK01	132	1	1
151350	DWARIK02	132	1	1
151351	SUKHBI	132	1	1
151352	BAJAJ02	132	1	1
151353	BAJAJ03	132	1	1
151354	BAJAJ04	132	1	1
151355	BDLAPUR	132	0.927	1.0258
151356	BAJAJ06	132	1	1
151357	BAJAJ07	132	1	1
151358	BAJAJ08	132	1	1
151359	BAJAJ09	132	1	1
151360	BAJAJ10	132	1	1
151361	DCM02	132	1	1
151362	DCM03	132	1	1
151363	UTTAM01	132	1	1
151364	UTTAM02	132	1	1
151365	DHAMPU01	132	1	1
151366	DHAMPU02	132	1	1
151367	DHAMPU03	132	1	1
151368	UPPERG	132	1	1
151369	CHADA	132	1	1
151370	DAURAL	132	1	1
151371	PARLE01	132	1	1
151372	NEWIND	132	1	1
151373	PARLE02	132	1	1
151374	LHSUGAR0	132	1	1
151375	GULARI02	132	1	1
151376	HAIDER02	132	1	1.0327
151377	DCM04	132	1	1
151378	BIDHUNA	132	0.9028	0.9904
151379	BIGHAPU	132	0.9843	0.9978
151380	CHAKALV	132	0.9006	0.9844
151381	CHAKIA	132	0.9548	0.9813
151382	CHANDAK	132	0.8432	1.0088
151383	DALA1	132	1.002	1.0082
151384	DALMAU	132	0.956	0.9875
151385	DHAURHRA	132	0.9233	1.0174
151386	DYALBAGH	132	1	1
151387	GARWARA	132	0.9166	1.0134

151388	HATHRS1	132	0.7377	0.981
151389	JALAUN1	132	0.9586	0.9713
151390	JATTARI	132	0.8299	0.9842
151391	JOLLYROD	132	0.8539	0.9397
151392	JWAHRPUR	132	0.9274	0.9673
151393	KANHUPWN	132	0.8754	0.9686
151394	KHEKRA	132	0.8556	0.9664
151395	KHURJAI1	132	0.9139	1.0022
151396	MEHRBANS	132	0.9264	0.9636
151397	MEHDAWAL	132	0.9585	1.0001
151398	MEHNAGAR	132	0.9324	0.9902
151399	NAUGARH	132	0.9243	1.0109
151400	RHIMABAD	132	0.9335	0.9739
151401	RAMPURMANIHA	132	0.8526	1.0117
151402	SAHARACI	132	0.9268	0.9587
151403	SAIDNGLI	132	0.8769	1.0042
151404	SALAWA	132	0.8252	0.935
151405	SASNI1	132	0.7268	1.0018
151406	SHAHABAD	132	0.9451	0.9973
151407	SINGHOLI	132	0.8199	0.98
151408	TANDARAM	132	0.8756	0.9985
151409	TELIARGA	132	0.9195	0.99
151410	UJJHANI	132	0.9173	1.0006
151411	UPSIDCMA	132	0.9072	1.0089
151412	KURSIROAD	132	0.9459	0.9808
151413	BEHAT	132	0.8966	0.9927
151414	PILIBHI1	132	0.8392	0.9909
151415	SIRATHU	132	0.991	1.0022
151417	LALITPUR UP	132	0.9674	0.9962
151418	DHAMPUR	132	0.9251	0.9732
152000	NOIDA-20	220	0.9359	0.9516
152001	GOKUL	220	0.8049	0.995
152002	GNOIDA2	220	0.9649	0.9772
152003	ATRAULI2	220	0.9251	0.9794
152004	AGRAN2	220	0.8718	1.0028
152005	NOIDA20S	220	0.9778	0.9985
152006	UNNAO2	220	0.9916	1.0089
152007	BANDA2	220	0.9792	0.9924
152008	PHULPUR2	220	0.9361	0.9998
152009	RPHKANPR	220	0.9837	1.0007
152010	HATHRAS2	220	0.8172	0.9857
152011	CHINHAT2	220	0.9701	0.9904
152012	ETAH	220	0.9341	0.9904
152013	GAJRAULA	220	0.905	0.9848
152014	NOIDA-62	220	0.9421	0.9573
152015	NOID62-S	220	0.944	0.9589
152016	SHAMSHAB	220	0.9305	1.0173
152017	SAHIBAD2	220	0.9145	0.9819

152018	KANPU_SO	220	0.9931	1.0058
152019	NEHTOR2	220	0.8822	0.9924
152020	SOHAWAL	220	0.9677	1.0009
152021	ROSA-TP1	220	1.01	1.01
152022	HARDOI2	220	0.9855	0.9973
152023	SHJNP2	220	0.9932	1.0025
152024	BITHOOR	220	0.9893	1.0066
152025	GOMTINGR	220	0.9684	0.989
152026	BAKNTPR2	220	0.9645	1.0156
152027	SITAPR2	220	0.9746	0.9971
152028	HARDROAD	220	0.962	0.9827
152029	SAROJNI2	220	0.9788	0.998
152030	SAMBHAL	220	0.9132	0.9927
152031	MURADBD2	220	0.9253	1.0063
152032	SHATABDI	220	0.8964	0.9643
152033	SIMBOLI2	220	0.9043	0.9746
152034	MODIPRM2	220	0.9129	0.9733
152035	MUZAFN2	220	0.9176	0.9795
152036	MURADNG2	220	0.9257	0.9875
152037	JAHANGRB	220	0.9286	0.985
152038	KHARA2	220	0.9057	0.983
152039	SHAMLI2	220	0.8934	0.9818
152040	LONI2	220	0.9107	0.9855
152041	SAHARNP2	220	0.8866	0.9755
152042	NOIDA129	220	0.9646	0.9769
152043	NARA2	220	0.9067	0.9734
152044	SIKANBAD	220	0.9267	0.9813
152045	KHURJA2	220	0.9317	0.9816
152046	CHIBRMAU	220	0.947	1.0103
152047	HARDUGN2	220	0.9425	0.9773
152048	ORAI2	220	0.9982	1.0111
152049	SIKANDR2	220	0.8651	1.001
152050	SAFAI2	220	0.9453	1.0076
152051	FEROZBD2	220	0.9344	1.0174
152052	MAINPUR2	220	0.9595	1.0145
152053	PARICHA2	220	1.03	1.03
152054	BHARTHNA	220	0.951	1.0049
152055	PANKI2	220	0.9877	1.005
152056	NAUBSTA2	220	0.9767	0.9933
152057	MURADNG2	220	0.9231	0.988
152058	GORAKP2	220	0.9914	1.024
152059	DEORIA	220	0.9684	1.0234
152060	DOHNA2	220	0.9538	1.0111
152061	OBRA2	220	1.0022	1.0114
152062	ALAHBAD2	220	0.9814	0.9964
152063	GHAZPR2	220	0.9485	0.9848
152064	FATEHPR2	220	0.9965	1.0045
152065	SAHUPU_N	220	0.9703	0.9892

152066	SARNATH2	220	0.9794	0.9987
152067	CBGANJ2	220	0.9494	1.0103
152068	AZAMGAR2	220	0.9785	1.0059
152069	BADAUN2	220	0.9541	1
152070	JAUNPUR2	220	0.9538	0.9982
152071	SULTANP2	220	0.9812	1.0137
152072	GONDA2	220	0.9677	1.0009
152073	TANDA2	220	1.0195	1.02
152074	BASTI2	220	0.9929	1.0199
152075	GORAKPR2	220	0.9964	1.0301
152076	CANT_AL	220	0.9778	0.9939
152077	JHUSI	220	0.9639	0.9867
152078	GAJOKHA	220	0.9603	0.9918
152079	MIRZAPU	220	0.9551	0.9917
152080	JHANSI2	220	1.0182	1.026
152081	PARTAPGA	220	0.9458	1.0048
152082	RCGREEN	220	0.963	0.9754
152083	FARIDNAGAR	220	0.921	0.9776
152084	NIGHASAN	220	1	1
152085	BHELUPUR	220	1	1
152086	ALIGARH	220	0.9198	0.9869
152087	BEHAT	220	0.8966	0.9822
152088	KURSIROAD	220	0.9614	0.9809
152089	ROBERTSGANJ2	220	0.9862	0.9997
152090	CHURK	220	0.9862	0.9997
152091	KHAIR	220	0.8368	0.9795
152092	NANAUTA	220	0.8952	0.9803
152093	BARAUT2	220	0.8817	0.9865
152094	DADRIUP	220	0.9215	0.9888
152095	MEERUT	220	0.9301	0.9832
152096	FATEH-PG	220	0.9982	1.0057
152097	LUCKNOW	220	0.9992	1.0185
152098	MANPURI2	220	0.9701	1.0173
152099	ALLAHABA	220	0.9829	0.9973
152100	GORAK-PG	220	1.0046	1.0318
152106	SHAHJAHAN4	220	1.0255	1.0503
152107	RASRA	220	0.9504	0.9868
152108	SIRATHU	220	0.991	1.0013
152109	LALITPUR-TPS	220	0.9624	1.0144
152110	MURADNGR NEW	220	0.9333	0.9972
152111	REWAROAD	220	0.9823	0.9969
152112	BONAR	220	0.935	0.9797
152113	SIKANDARABAD	220	1	1
152114	BAGPAT-PG	220	0.9763	1.002
152115	AGRA-PG	220	0.9335	1.0175
152116	BAGPAT-UP	220	0.929	0.9917
152117	SAHARANPR-PG	220	0.8958	0.9799
152119	HARAU	220	0.98	1.0033

152120	LALITPURUP	220	0.962	1.0077
152121	DEBAI	220	0.9298	0.978
152123	NEW TANDA	220	0.9812	1.0137
154000	AGRAUP4	400	0.9638	1.0101
154001	UNNAO4	400	1.0109	1.0286
154002	BARELI4	400	1.0031	1.033
154003	UNNAFSC1	400	0.9785	0.9858
154004	UNNAFSC2	400	0.9785	0.9858
154005	PARICHA	400	1.0419	1.0419
154006	ALIGARH	400	0.9449	1.005
154007	GORAK_UP	400	1.0214	1.0395
154008	LUCKN_UP	400	1.0105	1.0284
154009	MURADAB4	400	0.9816	1.0282
154010	MUZAFRN4	400	0.9708	1.0045
154011	MURADNG4	400	0.9561	1.0065
154012	VISHNU4	400	1.0225	1.0225
154013	PANKI4	400	1.0015	1.0146
154014	ANPARA4	400	1.04	1.04
154015	ANPARA-D	400	1.0395	1.0394
154016	ANPARAC	400	1.0398	1.0398
154017	ROSA-TP2	400	1.033	1.033
154018	OBRA4	400	1.0315	1.0315
154019	SARNATH4	400	1.007	1.0152
154020	MURD_FSC	400	0.9282	0.9969
154021	AZAMGAR4	400	1.0096	1.0234
154022	SULTANP4	400	1.0036	1.0174
154023	MAU4	400	1.0186	1.0275
154062	BARA	400	1	1
154063	REWAROAD	400	0.9997	1.001
154065	SRINAGAR4	400	1.02	1.02
154066	MURADNGR NEW	400	0.9844	1.008
154068	GR. NOIDA74	400	0.9714	0.9831
154069	SIKANDRABAD	400	0.9698	0.9858
157000	ANPARAC	765	1.03	1.03
157001	ANPARA-D	765	1.03	1.03
157002	UNNAO7	765	1.0078	1.0262
157009	LALITPUR-TPS	765	1	1
157011	GR.NOIDA	765	0.9798	0.9663

Annexure-4.(d).2: Existing Capacitor Bank Ratings.

Existing capacitor banks			
Bus Number	Bus Name		Cap Bank rating Q (MVA _r)
151004	BARAUT1	132.00	66.3
151005	AGRAN1	132.00	66.3
151009	BANDA1	132.00	33.1

151015	SHATABD	132.00	66.3
151016	SIMBOLI	132.00	66.3
151019	SAHIBAD	132.00	66.3
151021	NEHTOR1	132.00	66.3
151025	CBGANJ	132.00	66.3
151028	SITAPUR1	132.00	33.1
151029	LUCKNOW1	132.00	33.1
151032	MERUT1	132.00	66.3
151033	MURADNG1	132.00	66.3
151035	SAHARAN1	132.00	66.3
151037	NARA	132.00	33.1
151038	KHURJA1	132.00	66.3
151042	MAINPUR	132.00	66.3
151045	FEROZBD1	132.00	33.1
151055	SAHUPR1	132.00	33.1
151057	BADAUN1	132.00	49.7
151157	JAHANGIR	132.00	66.3
151187	SHAMSABA	132.00	66.3
151273	MATHURA	132.00	33.1
151288	GULABARI	132.00	66.3
151312	NOIDA62	132.00	25
151313	NOIDA62	132.00	66.3

Annexure-4.(d).3.Recommended Capacitor Bank Ratings

Recommended capacitor banks			
Bus Number	Bus Name	Cap Bank rating Q (MVar)	
6205	MORTI132	132.00	33.1
6207	MORADABAD132	132.00	33.1
151006	AGRACANT	132.00	66.3
151008	AGRAFN	132.00	66.3
151030	NAZIBABA	132.00	66.3
151047	BAH	132.00	15
151048	AKBARPUR	132.00	66.3
151051	RICHA	132.00	66.3
151067	DHAMPR1	132.00	66.3
151072	AMROHA	132.00	66.3
151073	ANANDNAG	132.00	33.1
151074	AONLA	132.00	33.1
151077	AURAI	132.00	33.1
151081	BABRALA	132.00	33.1
151084	BAHRALCH	132.00	33.1
151089	BANSI	132.00	33.1
151090	BARABANK	132.00	33.1
151095	BAHADOHI	132.00	33.1
151096	BARTHANA	132.00	33.1

151098	BHIMNAGR	132.00	33.1
151099	BHOOR	132.00	33.1
151101	BIJNOUR	132.00	33.1
151103	BILHOUR	132.00	33.1
151104	BILASPUR	132.00	33.1
151107	BODLA	132.00	33.1
151108	BUDHANA	132.00	33.1
151110	CHAND AUS	132.00	33.1
151111	CHANDPUR	132.00	33.1
151112	CHHAPRAU	132.00	33.1
151114	CHUTMALP	132.00	33.1
151119	DASNA	132.00	33.1
151121	DEOBAND	132.00	33.1
151122	DEORIA_1	132.00	33.1
151123	DIBIYAPU	132.00	25
151128	ETAWAH	132.00	25
151129	ETMADPUR	132.00	25
151130	FARIDPUR	132.00	25
151131	FATEHGAR	132.00	25
151132	FATEHABA	132.00	25
151133	GANGOH	132.00	25
151134	GAURIGAN	132.00	25
151137	GHATAMPU	132.00	25
151138	GIDA	132.00	25
151142	GOPIGANJ	132.00	25
151143	GULAUTI	132.00	25
151145	BULANDSA	132.00	25
151146	IND_A_GZ	132.00	25
151148	MEERUTRO	132.00	25
151152	HAPURROA	132.00	25
151155	INDOGULF	132.00	25
151156	JAGDISHP	132.00	25
151162	JASALA	132.00	25
151163	JASRANA	132.00	25
151164	JAUNPURI	132.00	25
151166	JHINGANA	132.00	25
151172	RAJAPAKA	132.00	25
151175	RAMSENGH	132.00	25
151177	RATH	132.00	25
151180	SALEMPUR	132.00	25
151183	SARDHANA	132.00	25
151186	SHAHGANJ	132.00	25
151189	SHATRUGH	132.00	25
151190	SHIKARPU	132.00	25
151191	SHIKOHAB	132.00	25
151193	SIKNDARA	132.00	25
151195	SIKANDAR	132.00	25
151196	SINGHAVE	132.00	25

151198	SIYANA	132.00	25
151202	TAJPUR	132.00	25
151203	TANDA	132.00	25
151206	THANABHA	132.00	25
151209	KUNDANRO	132.00	25
151213	VAISHALI	132.00	25
151214	VRINDAVA	132.00	25
151216	SAMBHAL	132.00	25
151217	MATHURA2	132.00	25
151218	LALGANJ	132.00	25
151219	DADRI_13	132.00	25
151221	MATH_132	132.00	25
151225	INDRAVAL	132.00	25
151227	JIGNA	132.00	25
151228	KADIPUR	132.00	25
151229	KAYAMGAN	132.00	25
151232	KANNAUJ	132.00	25
151236	KASGANJ	132.00	25
151237	KHAMBAKH	132.00	25
151238	KASIA	132.00	25
151242	KERAKAT	132.00	25
151245	KHALILAB	132.00	25
151247	KHARAD	132.00	25
151248	KHURAMNA	132.00	25
151249	KIRATPUR	132.00	25
151250	KOLLSA	132.00	25
151251	KOSIKALA	132.00	25
151253	KUNDA	132.00	25
151255	KUNDESHW	132.00	25
151256	LAKHIMPU	132.00	25
151257	LAKHAOTI	132.00	25
151258	LALGANJ	132.00	25
151264	MACHLISH	132.00	25
151265	MAHOBA	132.00	25
151271	MARLAHU	132.00	25
151272	MARTINPU	132.00	25
151273	MATHURA	132.00	25
151279	MEJAROAD	132.00	25
151280	MAHARAJG	132.00	25
151281	MILKIPUR	132.00	25
151284	MODISTEE	132.00	25
151288	GULABARI	132.00	25
151293	BARKHER	132.00	25
151294	NAGALIKI	132.00	25
151297	NAKUR	132.00	25
151298	NANAUTA	132.00	25
151299	NANAPARA	132.00	25
151302	NASEERPU	132.00	25

151304	NEWARIRO	132.00	25
151308	NOIDA_II	132.00	25
151309	NOIDA_IV	132.00	25
151320	PHOOLPUR	132.00	25
151321	IFFCOPHU	132.00	25
151322	PINHAT	132.00	25
151355	BDLAPUR	132.00	25
151376	HAIDER02	132.00	25
151382	CHANDAK	132.00	25
151385	DHAURHRA	132.00	25
151387	GARWARA	132.00	25
151390	JATTARI	132.00	25
151395	KHURJAI	132.00	25
151399	NAUGARH	132.00	25
151401	RAMPURMANIHA	132.00	25
151403	SAIDNGLI	132.00	25
151405	SASNI1	132.00	25
151406	SHAHABAD	132.00	25
151408	TANDARAM	132.00	25
151409	TELIARGA	132.00	25
151410	UJJHANI	132.00	25
151411	UPSIDCMA	132.00	25
151413	BEHAT	132.00	25
151414	PILIBHI1	132.00	25
151001	GOKUL	132.00	25
151005	AGRAN1	132.00	25
151006	AGRACANT	132.00	25
151008	AGRAFN	132.00	25
151010	HATHRAS1	132.00	25
151026	AGRATAJ	132.00	25
151040	AGRA1	132.00	25
151071	ALIGARH3	132.00	25
151107	BODLA	132.00	25
151114	CHUTMALP	132.00	25
151121	DEOBAND	132.00	25
151129	ETMADPUR	132.00	25
151160	JALESAR	132.00	25
151178	SADABAD	132.00	25
151214	VRINDAVA	132.00	25
151217	MATHURA2	132.00	25
151221	MATH_132	132.00	25
151225	INDRAVAL	132.00	25
151236	KASGANJ	132.00	25
151251	KOSIKALA	132.00	25
151388	HATHRS1	132.00	25
151405	SASNI1	132.00	25
151026	AGRATAJ	132.00	25

**Annexure-4.(e).1; Voltage profile
e- uttrakhand**

			Existing case	with recommended cap bank
Bus Number	Bus Name	Base kV	Voltage (pu)	Voltage (pu)
1603	PIRANKALIYAR	220	New S/S	0.9815
1604	PUHANA	220	New S/S	0.9816
1605	VYASI	220	New S/S	0.9786
1606	JHAJRA	220	New S/S	0.9779
1607	JAFFARPUR	220	New S/S	0.9961
1608	IIP DEHRADUN	220	New S/S	0.9795
161000	CPP	132	0.8665	0.9908
161001	IGL	132	0.8837	0.9849
161002	KVS	132	0.8847	0.9858
161003	SITARGANJ	132	0.8933	0.9981
161004	T-POINT	132	0.869	0.9858
161005	KATHGODAM	132	0.8668	0.9826
161006	KASHIUR-OLD	132	0.885	0.9861
161007	DHAKRANI	132	0.9077	0.9679
161008	RISHIKE1	132	0.8714	0.9866
161009	BHOWALI	132	0.8681	0.987
161010	ALMORA	132	0.8747	1.0079
161011	KICCHHA	132	0.8673	0.9914
161012	HALDWAN1	132	0.8705	0.9843
161013	KHATIMAH	132	0.8383	0.9682
161014	KOTDWAR	132	0.8029	1.0337
161015	MANGLORE	132	0.8232	0.9795
161016	BHAGWANN	132	0.8041	0.9733
161017	BINDAL	132	0.8562	0.9753
161018	PANTNAG1	132	0.8631	0.9779
161019	PITHORAG	132	0.9393	1.0096
161020	PURKULGA	132	0.8696	0.9761
161021	SRINAGAR	132	0.8124	1.0505
161022	RUDRAPUR	132	0.8595	0.9813
161023	BHUPATWA	132	0.8649	0.9835
161024	RAMNAGAR	132	0.8757	0.9862
161025	JASPUR	132	0.8649	0.9755
161026	RANIKHET	132	0.8697	1.0137
161027	HARIDWA1	132	0.8613	0.9786
161028	BAZPUR	132	0.8718	0.9785
161029	SITARGAN	132	0.8965	1.0001
161030	LAKSAR	132	0.8357	0.9994
161031	KALAGARH	132	0.88	0.9912

161032	KASHIPU1	132	0.8823	0.9865
161033	ROORKEE1	132	0.8311	0.9799
161034	JWALAPUR	132	0.8587	0.9802
161035	CHILLA-H	132	0.8708	0.9888
161036	MAZRA	132	0.864	0.973
161037	KULHALHE	132	0.9088	0.9724
161038	KHODRI	132	0.9077	0.9679
161039	DHALIPUR	132	0.9087	0.97
161040	AIRLIQU	132	0.8222	0.9817
161041	ASIGLS	132	0.8222	0.9816
161042	BHEL	132	0.8587	0.9802
161043	HEHONDA	132	0.8611	0.9784
161044	MAHUAKHE	132	0.8902	0.9881
161045	PLYFLEX	132	0.8713	0.978
161046	RBNS	132	0.8357	1.0013
161047	SATPULI	132	0.8079	1.0527
161048	DEHRADUN	132	0.9183	0.9717
162000	MANERI_1	220	0.948	0.9726
162001	KASHIPU2	220	0.9334	1.0036
162002	RISHIKE2	220	0.9269	0.9822
162003	CHAMBA	220	0.9385	0.9766
162004	HALDWAN2	220	0.8883	0.9867
162005	PANTNAG2	220	0.9056	0.9936
162006	BHILANGA	220	0.94	0.9761
162007	HARIDWA2	220	0.9098	0.9812
162008	RORKEE2	220	0.9173	0.9881
162009	GHANSAL	220	1	1
162010	MAHUAKHE	220	0.9273	1.0007
162011	SHRAVANT	220	0.9273	1.0007
162012	TATA	220	0.9054	0.9935
162013	MANERI_2	220	0.948	0.9726
162014	CHIBRO-H	220	0.926	0.9658
162015	DEHRADUN	220	0.9242	0.9775
162016	KHODRIHE	220	0.9225	0.967
164000	RISHIKE4	400	0.967	1.0146
164001	KASHIPU4	400	0.9866	1.0303

Annexure-4.(e).2: Existing Capacitor Bank Ratings.

Existing capacitor banks		
Bus Number	Bus Name	Q (MVar)
0	0	0

Annexure-4.(e).3.Recommended ratings of capacitor Banks.

Recommended capacitor banks		
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Bus Number	Bus Name	Cap bank ratingQ (MVAr)
161003	SITARGANJ 132.00	10
161009	BHOWALI 132.00	5
161010	ALMORA 132.00	10
161011	KICCHHA 132.00	20
161014	KOTDWAR 132.00	10
161017	BINDAL 132.00	25
161019	PITHORAG 132.00	10
161020	PURKULGA 132.00	25
161021	SRINAGAR 132.00	25
161022	RUDRAPUR 132.00	10
161023	BHUPATWA 132.00	10
161024	RAMNAGAR 132.00	10
161025	JASPUR 132.00	10
161026	RANIKHET 132.00	10
161028	BAZPUR 132.00	10
161032	KASHIPU1 132.00	20
161034	JWALAPUR 132.00	25
161036	MAZRA 132.00	33
161010	ALMORA 132.00	20
161014	KOTDWAR 132.00	20
161016	BHAGWANN 132.00	25
161017	BINDAL 132.00	20
161020	PURKULGA 132.00	20
161021	SRINAGAR 132.00	20
161022	RUDRAPUR 132.00	20
161026	RANIKHET 132.00	20
161040	AIRLIQU 132.00	20
161041	ASIGLS 132.00	20
161046	RBNS 132.00	20
161047	SATPULI 132.00	20

**Annexure-4.(f).1;Voltage profile
f-JK**

Bus Number	Bus Name	Base kV	Existing case Voltage (pu)	with recommended cap bank Voltage (pu)
1002	BISHNAH	220	new S/S	0.9758
1003	THEIN	220	new S/S	0.9541
1007	NAGROTA	220	new S/S	0.9789
1101	LASSIPORA	220	new S/S	1

1102	TAILBAL	220	new S/S	1
1103	DELINA	220	new S/S	1
1111	BADGAM	220	Voltage (pu)	1
181000	KATHUA1	132	0.8796	0.9744
181001	MIRBAZAR	132	0.8939	0.9753
181002	RAMBAN	132	1	0.9747
181003	SHREE	132	0.8373	1.0039
181004	LOWERJHELM1	132	0.85	1.0072
181005	PATTAN1	132	0.846	0.9906
181006	ZAINAKOT	132	0.8871	0.9741
181007	CHAMASHEHI	132	0.8921	0.9692
181008	UDAMPUR1	132	0.9088	0.9718
181009	ARAMGARH	132	0.8292	0.9961
181010	MAHANPUR	132	0.8843	0.9801
181011	AULSTENG	132	1	1
181012	MATTAN	132	0.8854	0.9751
181013	KATRA1	132	0.8947	0.9713
181014	JOURIAN1	132	0.894	0.969
181015	TETHAR	132	0.8885	0.9726
181016	KULGAM	132	0.887	0.9739
181017	WANGANPURA1	132	0.885	0.9697
181018	BEMINA1	132	0.8854	0.971
181019	UPPERSIND	132	0.8942	0.9686
181020	RAWALPURA1	132	0.8929	0.9708
181021	AWANTIPURA	132	0.8818	0.9698
181022	LASSIPORA	132	0.8606	0.9799
181023	BARN1	132	0.8974	0.9723
181024	SHOPIAN	132	0.8594	0.9851
181025	KHANMOH	132	0.8984	0.9718
181026	HABBAK	132	0.883	0.9674
181027	PAMPURE1	132	0.9065	0.975
181028	WANPOH1	132	0.8917	0.9743
181029	KALAKOTE	132	0.7879	1.0036
181030	JHAJARKOTL1	132	0.8913	0.97
181031	JANIPUR1	132	0.8888	0.9682
181032	NEWCANAL1	132	0.8819	0.9686
181033	MERANSAHIB	132	0.8741	0.9646
181034	BARIBRAHMINA	132	0.8745	0.9657
181035	GLADINI1	132	0.88	0.9627
181036	BADAMPUR	132	0.8803	0.9648
181037	SAMBA	132	0.8854	0.9691
181038	HERANAGAR1	132	0.8935	0.9741
181039	RAJOURI1	132	0.7762	1.0109
181040	DRABA1	132	0.7745	1.0265
181041	CHANDAK1	132	0.7712	1.0308
181042	BATOT1	132	0.9054	0.9731
181043	SIDHRA1	132	0.8931	0.9701
181044	MAGAM	132	0.8455	0.9923

182000	ZAINKOTE2	220	0.9139	0.9668
182001	RAMBAN	220	0.9462	0.9754
182002	AULSTENG	220	1	1
182003	BARN2	220	0.9377	0.9777
184000	BAGLIHAR4	400	1.01	1.01

Annexure-4.(f).2: Existing Capacitor Bank Ratings.
nil

Annexure-4.(f).3.Recommended ratings of capacitor Banks.

Recommended capacitor banks		
Bus Number	Bus Name	Q (MVAr)
1003	THEIN 220.00	20
181003	SHREE 132.00	7
181004	LOWERJHELM1132.00	7
181005	PATTAN1 132.00	7
181006	ZAINAKOT 132.00	7
181007	CHAMASHEHI 132.00	7
181009	ARAMGARH 132.00	7
181013	KATRA1 132.00	7
181015	TETHAR 132.00	7
181017	WANGANPURA1 132.00	7
181018	BEMINA1 132.00	7
181019	UPPERSIND 132.00	7
181020	RAWALPURA1 132.00	7
181021	AWANTIPURA 132.00	7
181022	LASSIPORA 132.00	7
181025	KHANMOH 132.00	7
181026	HABBAK 132.00	7
181030	JHAJJARKOTL1132.00	7
181031	JANIPUR1 132.00	7
181032	NEWCANAL1 132.00	7
181033	MERANSAHIB 132.00	7
181034	BARIBRAHMINA132.00	7
181035	GLADINI1 132.00	7
181036	BADAMPUR 132.00	7
181037	SAMBA 132.00	7
181042	BATOT1 132.00	7
181044	MAGAM 132.00	7
182000	ZAINKOTE2 220.00	7
181012	MATTAN 132.00	20
181015	TETHAR 132.00	20
181016	KULGAM 132.00	20
181022	LASSIPORA 132.00	20
181032	NEWCANAL1 132.00	20
181033	MERANSAHIB 132.00	20
181034	BARIBRAHMINA132.00	20
181035	GLADINI1 132.00	20

181000	KATHUA1	132.00	50
181003	SHREE	132.00	20
181004	LOWERJHEMUM1	132.00	20
181009	ARAMGARH	132.00	50
181010	MAHANPUR	132.00	20
181012	MATTAN	132.00	10
181021	AWANTIPURA	132.00	10
181022	LASSIPORA	132.00	20
181024	SHOPIAN	132.00	20
181029	KALAKOTE	132.00	20
181036	BADAMPUR	132.00	10
181039	RAJOURI1	132.00	20
181040	DRABA1	132.00	20
181041	CHANDAK1	132.00	20
181044	MAGAM	132.00	20
181002	RAMBAN	132.00	5
181005	PATTAN1	132.00	10
181006	ZAINAKOT	132.00	20
181007	CHAMASHEHI	132.00	10
181008	UDAMPUR1	132.00	10
181009	ARAMGARH	132.00	20
181017	WANGANPURA1	132.00	50
181018	BEMINA1	132.00	60
181026	HABBAK	132.00	40
181027	PAMPORE1	132.00	60
181028	WANPOH1	132.00	10
181030	JHAJJARKOTL1	132.00	20
181032	NEWCANAL1	132.00	28.8
181034	BARIBRAHMINA1	132.00	30
181035	GLADINI1	132.00	30

**Annexure-4.(g).1; Voltage profile
g- HP**

Bus Number	Bus Name	Base kV	Existing case Voltage (pu)	with recommended cap bank Voltage (pu)
1201	KUNIHAR	400	new S/S	1.0272
1202	NEHRAN	220	new S/S	1.0114
1212	TRILOKPUR	220	new S/S	1.0271
1213	ARAINDWALA	220	new S/S	1.0271
1220	BAGGA	220	new S/S	1.0151
171000	DARLAGHA	132	1.0007	1.0136
171001	BAJAURA1	132	1.003	1.0104
171002	MALANA1	132	1.009	1.009
171003	KANGRA1	132	0.979	0.979

171004	CHHAUR	132	1.0117	1.0119
171005	KUNIHAR1	132	0.9916	1.0122
171006	HAMIRP-2	132	1.0062	1.0021
171007	BASSI1	132	0.9893	0.9948
171008	HAMIRP-1	132	1.008	1.0044
171009	GIRI1	132	0.9384	0.9959
171010	BAROTIWA	132	0.9969	1.0174
171011	KALAAMB1	132	0.9691	1.0263
171012	PALAMPUR	132	0.972	0.993
171013	PAONTA1	132	0.941	0.9998
171014	AMB1	132	1.005	1.006
171015	UNA1	132	1.011	1.0104
171016	LARJI1	132	1.0141	1.0175
171017	JASSOR1	132	1.0255	1.0225
171018	JUTOG1	132	0.9762	1.0023
171019	SOLAN1	132	0.973	1.0033
171020	DEHRA1	132	1.0045	1.0056
171021	KANGO1	132	1.0176	1.0191
171022	ACC1	132	1.0176	1.0191
171023	KNGO_SPL	132	1.0176	1.0191
171024	BAGHA	132	1.0065	1.0151
171025	BATHRI1	132	1.0204	1.0165
171026	BIJNI1	132	1.0123	1.0137
171027	KANDRI1	132	1.0267	1.0231
172000	BUDHIL	220	1.043	1.043
172001	HAMIRPUR42	220	1.0122	1.0118
172002	KOTLA2	220	1.0138	1.0161
172003	KANGOO2	220	1.0074	1.0108
172004	BADDI2	220	1.0119	1.0192
172005	UPARNANG	220	1.0129	1.0188
172006	CHHAUR	220	1.0245	1.0259
172007	RAURIAMB	220	1.0062	1.0141
172008	KASHANG	220	1	1
172009	KUNIHAR2	220	1.0052	1.0167
172010	HAMIRPUR	220	1.0108	1.0104
172011	MAJRI2	220	0.9205	0.9671
172012	BHABA2	220	1.02	1.02
174000	BASPA4	400	1.0489	1.0489

Annexure-4.(g).2: Existing Capacitor Bank Ratings

Existing capacitor banks

Bus Number	Bus Name	Q (MVAr)
170001	BADDI6 66.000	122.2
171001	BAJAURA1 132.00	14
171003	KANGRA1 132.00	16.2
171005	KUNIHAR1 132.00	6.2
171007	BASSI1 132.00	1.2
171008	HAMIRP-1 132.00	20.2
171009	GIRI1 132.00	13
171010	BAROTIWA 132.00	74.2
171011	KALAAMB1 132.00	86
171012	PALAMPUR 132.00	16.4
171013	PAONTA1 132.00	53.7
171014	AMB1 132.00	8
171015	UNA1 132.00	20.7
171017	JASSOR1 132.00	11.64
171019	SOLAN1 132.00	31.9
171020	DEHRA1 132.00	12.8
171021	KANGO1 132.00	61.3
171025	BATHRI1 132.00	9.8
171026	BIJNI1 132.00	11.8
171027	KANDRI1 132.00	17.9
non-operational		
170000	KOTLA6 66.000	39.8
170000	KOTLA6 66.000	39.8
170001	BADDI6 66.000	122.19
171001	BAJAURA1 132.00	14
171003	KANGRA1 132.00	16.2
171005	KUNIHAR1 132.00	6.2
171008	HAMIRP-1 132.00	20.18
171009	GIRI1 132.00	13
171010	BAROTIWA 132.00	74.19
171011	KALAAMB1 132.00	85.99
171012	PALAMPUR 132.00	16.4
171013	PAONTA1 132.00	53.71
171014	AMB1 132.00	8
171015	UNA1 132.00	20.71
171017	JASSOR1 132.00	11.64
171019	SOLAN1 132.00	31.87
171020	DEHRA1 132.00	12.8
171021	KANGO1 132.00	61.25
171025	BATHRI1 132.00	9.8

171026	BIJNI1	132.00	11.82
171027	KANDRI1	132.00	17.93

Annexure-4.(g).3.Recommended ratings of capacitor Banks.

Recommended capacitor banks		
Bus Number	Bus Name	Q (MVAr)
0	0	0