

## National Load Despatch Centre राष्ट्रीय भार प्रेषण केंद्र

## POWER SYSTEM OPERATION CORPORATION LIMITED पाँवर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड

(Government of India Enterprise/ भारत सरकार का उद्यम)

B-9, QUTUB INSTITUTIONAL AREA, KATWARIA SARAI, NEW DELHI -110016 बी-9, कृतुब इन्स्टीट्यूशनल एरिया, कटवारिया सराये, न्यू दिल्ली-110016

Ref: POSOCO/NLDC/SO/Daily PSP Report

दिनांक: 19<sup>th</sup> Oct 2018

Τо

- 1. कार्यकारी निदेशक, पू.क्षे.भा.प्रे.के.,14, गोल्फ क्लब रोड, कोलकाता ७०००३३ Executive Director, ERLDC, 14 Golf Club Road, Tolleygunge, Kolkata, 700033
- 2. कार्यकारी निदेशक, ऊ. क्षे. भा. प्रे. के., 18/ ए, शहीद जीत सिंह सनसनवाल मार्ग, नई दिल्ली 110016 Executive Director, NRLDC, 18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi – 110016
- 3. कार्यकारी निदेशक, प .क्षे .भा .प्रे .के., एफ3-, एम आई डी सी क्षेत्र , अंधेरी, मुंबई -400093 Executive Director, WRLDC, F-3, M.I.D.C. Area, Marol, Andheri (East), Mumbai-400093
- 4. कार्यकारी निदेशक, ऊ. पू. क्षे. भा. प्रे. के., डोंगतिएह, लोअर नोंग्रह, लापलंग, शिलोंग ७९३००६ Executive Director, NERLDC, Dongteih, Lower Nongrah, Lapalang, Shillong - 793006, Meghalaya
- 5. कार्यकारी निदेशक , द .क्षे .भा .प्रे .के., २९ , रेस कोर्स क्रॉस रोड, बंगलुरु –५६०००९ Executive Director, SRLDC, 29, Race Course Cross Road, Bangalore-560009

Sub: Daily PSP Report for the date 18.10.2018.

महोदय/Dear Sir.

आई॰ई॰जी॰सी॰-2010 की धारा स.-5.5.1 के प्रावधान के अनुसार, दिनांक 18-अक्टूबर-2018 की अखिल भारतीय प्रणाली की दैनिक ग्रिड निष्पादन रिपोर्ट रा॰भा॰प्रे॰के॰ की वेबसाइट पर उप्लब्ध है ।

As per article 5.5.1 of the Indian Electricity Grid Code, the daily report pertaining power supply position of All India Power System for the date 18<sup>th</sup> October 2018, is available at the NLDC website.

धन्यवाद,

# पॉवर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड राष्ट्रीय भार प्रेषण केंद्र, नई दिल्ली

Report for previous day **Date of Reporting** 19-Oct-18

#### A. Maximum Demand

	NR	WR	SR	ER	NER	Total
Demand Met during Evening Peak hrs(MW) (at 1900 hrs; from RLDCs)	47451	48422	37043	19238	2254	154408
Peak Shortage (MW)	514	0	75	0	29	618
Energy Met (MU)	1023	1215	839	385	41	3503
Hydro Gen (MU)	171	29	68	75	18	361
Wind Gen (MU)	7	18	19			44
Solar Gen (MU)*	21.86	19.81	58.12	0.81	0.03	101
Energy Shortage (MU)	11.3	0.0	0.2	0.0	0.9	12.4
Maximum Demand Met during the day	49112	53960	36640	19645	2365	157080
(MW) & time (from NLDC SCADA)	18:32	10:58	18:38	18:27	17:31	18:39

B. Frequency Profile (%)

Region	FVI	<49.7	49.7-49.8	49.8-49.9	<49.9	49.9-50.05	> 50.05
All India	0.050	0.00	0.21	15.59	15.80	78.50	5.71

Region	States	Max. Demand Met during the day (MW)	Shortage during maximum Demand (MW)	Energy Met (MU)	Drawal Schedule (MU)	OD(+)/UD(-) (MU)	Max OD (MW)	Energy Shortage (MU
	Punjab	6038	0	137.2	32.1	-0.1	103	0.0
	Haryana	6697	0	146.3	99.4	1.4	267	1.7
	Rajasthan	10686	0	219.6	38.0	3.1	463	0.0
	Delhi	3986	0	80.4	63.1	-0.3	133	0.0
NR	UP	16612	20	333.4	123.7	1.8	441	0.0
	Uttarakhand	1759	0	35.6	13.7	-0.2	156	0.0
	HP	1454	0	27.0	12.8	1.0	120	0.0
	J&K	2001	500	40.2	36.1	-4.9	46	9.6
	Chandigarh	186	0	3.4	3.5	0.0	21	0.0
	Chhattisgarh	4394	0	101.5	28.4	-0.9	792	0.0
	Gujarat	15709	0	358.3	134.4	7.6	587	0.0
	MP	11510	0	252.1	139.9	-2.5	904	0.0
WR	Maharashtra	21380	0	463.4	184.3	-3.6	576	0.0
WK	Goa	470	0	9.7	10.0	-0.7	70	0.0
	DD	283	0	6.1	5.4	0.6	68	0.0
	DNH	712	0	15.8	15.0	0.8	108	0.0
	Essar steel	421	0	8.0	7.6	0.3	325	0.0
	Andhra Pradesh	7604	0	172.6	74.2	1.1	617	0.0
	Telangana	8895	0	192.0	84.0	-0.1	470	0.0
SR	Karnataka	7839	0	151.5	37.5	-0.4	650	0.0
3N	Kerala	3232	75	63.1	41.3	0.3	265	0.2
	Tamil Nadu	11636	0	254.1	120.6	0.0	439	0.0
	Pondy	287	0	6.1	6.5	-0.4	20	0.0
	Bihar	4421	0	82.2	81.3	-1.7	0	0.0
	DVC	2853	0	61.4	-22.0	2.5	350	0.0
ER	Jharkhand	999	0	24.5	14.4	-0.4	0	0.0
LIN	Odisha	4729	0	99.8	41.2	2.4	300	0.0
	West Bengal	6816	0	116.1	-2.6	1.6	100	0.0
	Sikkim	76	0	1.0	1.3	-0.4	0	0.0
	Arunachal Pradesh	105	1	2.2	2.2	0.0	161	0.0
	Assam	1384	21	22.5	15.8	1.2	164	0.8
	Manipur	162	2	2.2	2.5	-0.3	46	0.0
NER	Meghalaya	263	1	4.9	2.7	-0.1	79	0.0
	Mizoram	81	1	1.8	0.8	0.3	7	0.0
	Nagaland	99	2	2.6	1.9	0.2	15	0.0
	Tripura	251	0	5.0	3.2	-0.7	19	0.1

 $\textbf{D. Transnational Exchanges} \ \ (\textbf{MU}) \textbf{-} \textbf{Import} (+\textbf{ve}) / \textbf{Export} (-\textbf{ve})$ 

	Bhutan	Nepal	Bangladesh
Actual(MU)	10.0	-1.1	-20.6
Day peak (MW)	770.0	-136.0	-904.0

### $E.\ Import/export\ By\ Regions(in\ MU)\ -\ Import(+ve)/Export(-ve);\ OD(+)/UD(-)$

	NR	WR	SR	ER	NER	TOTAL
Schedule(MU)	151.9	-126.7	78.7	-98.5	-4.3	1.3
Actual(MU)	142.9	-130.3	77.5	-88.2	-6.9	-5.1
O/D/U/D(MU)	-9.1	-3.7	-1.3	10.2	-2.6	-6.3

F. Generation Outage(MW)

	NR	WR	SR	ER	NER	Total
Central Sector	5715	11583	7262	1010	56	25626
State Sector	8530	13459	7930	5085	50	35054
Total	14245	25042	15192	6095	106	60680

G. Sourcewise generation (MU)

	NR	WR	SR	ER	NER	All India
Thermal (Coal & Lignite)	613	1216	529	425	7	2789
Hydro	171	29	68	75	18	361
Nuclear	24	27	23	0	0	74
Gas, Naptha & Diesel	41	44	25	0	27	137
RES (Wind, Solar, Biomass & Others)	54	39	123	1	0	216
Total	903	1355	767	501	52	3578

Share of RES in total generation (%)	5.95	2.87	16.00	0.17	0.06	6.04
Share of Non-fossil fuel (Hydro, Nuclear and	27.54	7.02	27.84	15.19	34.96	18.22
RES) in total generation (%)	27.54	7.02	27.04	15.19	34.90	10.22

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H. Diversity Factor
All India Demand Diversity Factor
Diversity factor = Sum of regional maximum demands / All India maximum demand

 $<sup>\</sup>textbf{*Source:} \ RLDCs \ for \ solar \ connected \ to \ ISTS; \ SLDCs \ for \ embedded \ solar. \ Limited \ visibility \ of \ embedded \ solar \ data.$ 

						Date of I	Reporting :	19-Oct-
								Import=(+ve) /Export =(-ve) for NET (MU)
Sl No	Voltage Level	Line Details	Circuit	Max Import (MW)	Max Export (MW)	Import (MU)	Export (MU)	NET (MU)
	Export of	ER (With NR)	D/C		1 0	0.0		60
2	765kV	GAYA-VARANASI SASARAM-FATEHPUR	D/C S/C	0	0	0.0 3.0	0.0	-6.8 3.0
3	70011	GAYA-BALIA	S/C	0	0	0.0	4.7	-4.7
4	HVDC	ALIPURDUAR-AGRA	-	0	0	0.0	11.9	-11.9
5	IIVDC	PUSAULI B/B	S/C	0	0	0.0	9.7	-9.7
6		PUSAULI-VARANASI	S/C	0	0	0.0	5.7	-5.7
7 8	1	PUSAULI -ALLAHABAD	S/C D/C	0	0	0.0	9.1	-3.7 -9.1
9	400 kV	MUZAFFARPUR-GORAKHPUR PATNA-BALIA	O/C	0	0	0.0	16.0	-16.0
10	100 K	BIHARSHARIFF-BALIA	D/C	0	0	0.0	4.6	-4.6
11	1	MOTIHARI-GORAKHPUR	D/C	0	0	0.0	7.7	-7.7
12	Ī	BIHARSHARIFF-VARANASI	D/C	0	0	0.0	2.0	-2.0
13	220 kV	PUSAULI-SAHUPURI	S/C	0	0	0.0	3.2	-3.2
14		SONE NAGAR-RIHAND	S/C	0	0	0.0	0.0	0.0
15	132 kV	GARWAH-RIHAND	S/C	0	0	0.0	0.0	0.0
16	1 KY	KARMANASA-SAHUPURI	S/C	0	0	0.0	0.0	0.0
17		KARMANASA-CHANDAULI	S/C	0	0	0.0	0.0	0.0
port/I	Export of	ER (With WR)			ER-NR	3.0	85.1	-82.1
18	765 kV	JHARSUGUDA-DHARAMJAIGARH S/C	D/C	0	0	11.4	0.0	11.4
19		NEW RANCHI-DHARAMJAIGARH	D/C	0	0	0.0	0.1	-0.1
20	400 kV	JHARSUGUDA-RAIGARH	Q/C	0	0	6.6	0.0	6.6
21	<b> </b>	RANCHI-SIPAT	D/C	0	0	0.0	0.0	0.0
23	220 kV	BUDHIPADAR-RAIGARH BUDHIPADAR-KORBA	S/C D/C	0	0	3.3	0.0	3.3
23		BUDHIPADAR-KUKBA	D/C	U	ER-WR	23.4	0.0	23.4
		ER (With SR)		0.0	1 00	0.0	40.0	10.0
24	765 kV	ANGUL-SRIKAKULAM JEYPORE-GAZUWAKA B/B	D/C D/C	0.0	0.0	0.0	18.8	-18.8
26	HVDC LINK	TALCHER-KOLAR BIPOLE	D/C	0.0	0.0	0.0	14.6 29.4	-14.6 -29.4
27	400 kV	TALCHER-I/C	D/C	0.0	0.0	3.0	0.0	3.0
28	220 kV	BALIMELA-UPPER-SILERRU	S/C	0.0	0.0	0.0	0.0	0.0
		•			ER-SR	0.0	62.8	-62.8
	Export of	ER (With NER)	D/C		1 0	0.0		1 7
29 30	400 kV	BINAGURI-BONGAIGAON	D/C D/C	0	0	0.0	6.6 1.4	-7 -1
31	220 kV	ALIPURDUAR-BONGAIGAON ALIPURDUAR-SALAKATI	D/C	0	0	0.0	1.3	-1
J.		The one of the state of the sta	D/ C		ER-NER	0.0	9.2	-9.2
port/E		NER (With NR)		0	702	0.0	17.1	17.1
32	пурс	BISWANATH CHARIALI-AGRA		0	703 NER-NR	0.0	17.1 17.1	-17.1 -17.1
iport/I	Export of	WR (With NR)						
33		CITAL ON A TELEPROPERTY AND A		_		0.0	10.7	-10.7
		CHAMPA-KURUKSHETRA	D/C	0	451	0.0		
34	HVDC	V'CHAL B/B	D/C D/C	241	451 0	6.1	0.0	6.1
34 35	HVDC	V'CHAL B/B APL -MHG	D/C D/C	241		6.1 0.0	0.0 14.6	-14.6
34 35 36	HVDC	V'CHAL B/B APL -MHG GWALIOR-AGRA	D/C D/C D/C	241 0 0	0 595 673	6.1 0.0 0.0	0.0 14.6 22.8	-14.6 -22.8
34 35 36 37		V'CHAL B/B APL -MHG GWALIOR-AGRA PHAGI-GWALIOR	D/C D/C D/C D/C	241 0 0 0	0 595 673 1046	6.1 0.0 0.0 0.0	0.0 14.6 22.8 16.6	-14.6 -22.8 -16.6
34 35 36 37 38	HVDC 765 kV	V'CHAL B/B APL -MHG GWALIOR-AGRA PHAGI-GWALIOR JABALPUR-ORAI	D/C D/C D/C D/C D/C	241 0 0 0 0 88	0 595 673 1046 267	6.1 0.0 0.0 0.0 0.0	0.0 14.6 22.8 16.6 3.1	-14.6 -22.8 -16.6 -3.1
34 35 36 37 38 39		V'CHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI	D/C D/C D/C D/C D/C S/C	241 0 0 0 0 88 471	0 595 673 1046 267	6.1 0.0 0.0 0.0 0.0 0.0 8.6	0.0 14.6 22.8 16.6 3.1 0.0	-14.6 -22.8 -16.6 -3.1 8.6
34 35 36 37 38 39 40		V'CHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI	D/C D/C D/C D/C D/C S/C S/C	241 0 0 0 0 88 471 0	0 595 673 1046 267 0 1551	6.1 0.0 0.0 0.0 0.0 0.0 8.6 0.0	0.0 14.6 22.8 16.6 3.1 0.0 34.4	-14.6 -22.8 -16.6 -3.1 8.6 -34.4
34 35 36 37 38 39 40 41	765 kV	V'CHAL B/B APL -MHG GWALIOR-AGRA PHAGI-GWALIOR JABALPUR-ORAI GWALIOR-ORAI SATNA-ORAI ZERDA-KANKROLI	D/C D/C D/C D/C D/C S/C S/C S/C	241 0 0 0 88 471 0 378	0 595 673 1046 267 0 1551	6.1 0.0 0.0 0.0 0.0 0.0 8.6 0.0 7.1	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0	-14.6 -22.8 -16.6 -3.1 8.6 -34.4 7.1
34 35 36 37 38 39 40		V'CHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI	D/C D/C D/C D/C D/C S/C S/C	241 0 0 0 0 88 471	0 595 673 1046 267 0 1551	6.1 0.0 0.0 0.0 0.0 0.0 8.6 0.0	0.0 14.6 22.8 16.6 3.1 0.0 34.4	-14.6 -22.8 -16.6 -3.1 8.6 -34.4
34 35 36 37 38 39 40 41 42	765 kV	V'CHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL	D/C D/C D/C D/C D/C S/C S/C S/C S/C	241 0 0 0 88 471 0 378 303	0 595 673 1046 267 0 1551 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0	-14.6 -22.8 -16.6 -3.1 8.6 -34.4 7.1 4.7
34 35 36 37 38 39 40 41 42 43	765 kV	V'CHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL  V'CHAL -RIHAND	D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C	241 0 0 0 88 471 0 378 303 488	0 595 673 1046 267 0 1551 0 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0	-14.6 -22.8 -16.6 -3.1 8.6 -34.4 7.1 4.7
34 35 36 37 38 39 40 41 42 43 44	765 kV	V'CHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL  V'CHAL -RIHAND  RAPP-SHUJALPUR	D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C D/C	241 0 0 0 88 471 0 378 303 488 197	0 595 673 1046 267 0 1551 0 0	6.1 0.0 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 8.6 -34.4 7.1 4.7 11.0
34 35 36 37 38 39 40 41 42 43 44 45	765 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA	D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104	0 595 673 1046 267 0 1551 0 0 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 3	-14.6 -22.8 -16.6 -3.1 8.6 -34.4 7.1 4.7 11.0 -3 2.3
34 35 36 37 38 39 40 41 42 43 44 45	765 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK	D/C D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99	0 595 673 1046 267 0 1551 0 0 0 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 3 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -4.7 -3 -3 -3.8 -3.8 -3.8
34 35 36 37 38 39 40 41 42 43 44 45 46 47	765 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL-RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99 126	0 595 673 1046 267 0 1551 0 0 0 0 0 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8 2.2 1.3	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 3 0.0 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -4.7 -3 -3 -1.8 -2.3 -1.8 -2.2 -1.3 -0.0
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49	765 kV - 400 kV - 220 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99 126 84	0 595 673 1046 267 0 1551 0 0 0 0 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8 2.2	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 3 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -4.7 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49	765 kV  400 kV  220 kV  132kV  Export of HVDC	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99 126 84	0 595 673 1046 267 0 1551 0 0 0 0 0 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 3 0.0 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -4.7 -3 -3 -1.8 -2.3 -1.8 -2.2 -1.3 -0.0
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49	765 kV 400 kV 220 kV 132kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA -BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-L.SILERU	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 WR-NR	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 0.0 0.0 0.0 105.2	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 <b>port/I</b> 50 51 51	765 kV  400 kV  220 kV  132kV  Export of HVDC	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-L.SILERU  SOLAPUR-RAICHUR	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 WR-NR	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 0.0 0.0 0.0 105.2	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -3 -3 -3.3 -3.8 -3.0 -3.0 -3.1 -3.0 -3.0 -3.0 -3.0 -3.0 -3.0 -3.0 -3.0
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 **Papert/F** 50 51 52 53	765 kV  400 kV  220 kV  132kV  Export of HVDC LINK  765 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-L.SILERU  SOLAPUR-RAICHUR  WARDHA-NIZAMABAD	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 WR-NR	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 0.0 0.0 0.0 105.2 20.7 0.0 10.5 30.9	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -3 -3 -3.8 -3.1 -3.0 -3.1 -3.1 -3.1 -3.1 -3.1 -3.1 -3.1 -3.1
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 <b>Solution</b> 50 51 52 53 54	765 kV  400 kV  220 kV  132kV  Export of HVDC LINK	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL-RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-L-SILERU  SOLAPUR-RAICHUR  WARDHA-NIZAMABAD  KOLHAPUR-KUDGI	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C D/C S/C S/C D/C S/C S/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 WR-NR	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 0.0 0.0 0.0 105.2 20.7 0.0 10.5 30.9 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -3 -3 -1.8 -2.2 -1.3 -60.3 -20.7 -0.0 -10.5 -30.9 -15.6
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 <b>Au</b> 55 51 52 53 54 55	765 kV  400 kV  220 kV  132kV  Export of HVDC LINK 765 kV  400 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL-RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-LSILERU  SOLAPUR-RAICHUR  WARDHA-NIZAMABAD  KOLHAPUR-KUDGI  KOLHAPUR-CHIKODI	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C D/C S/C S/C D/C S/C S/C D/C S/C S/C D/C S/C S/C S/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 WR-NR	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 4.7 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9 0.0 0.0 0.0	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 0.0 0.0 0.0 0.0 105.2 20.7 0.0 10.5 30.9 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -3 -3 -3.8 -3.9 -60.3 -20.7 -10.5 -30.9 -15.6 -0.0
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 49 15 15 15 15 15 15 15 15 15 15	765 kV  400 kV  220 kV  132kV  Export of HVDC LINK 765 kV  400 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  GWALIOR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-L.SILERU  SOLAPUR-RAICHUR  WARDHA-NIZAMABAD  KOLHAPUR-KUDGI  KOLHAPUR-CHIKODI  PONDA-AMBEWADI	D/C D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C D/C S/C S/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0 0 0 0 0 0 0 0 0 0 0 0 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 WR-NR  995 0 1015 1785 0 0 0 0 0 0	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9 0.0 0.0 0.0 0.0	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 3 0.0 0.0 0.0 0.0 105.2 20.7 0.0 10.5 30.9 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -4.7 -11.0 -3 -2.3 -1.8 -2.2 -1.3 -60.3 -20.7 -0.0 -10.5 -30.9 -15.6 -0.0 -0.0
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 <b>Exercise 1</b> 51 52 53 54 55	765 kV  400 kV  220 kV  132kV  Export of HVDC LINK 765 kV  400 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL-RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-LSILERU  SOLAPUR-RAICHUR  WARDHA-NIZAMABAD  KOLHAPUR-KUDGI  KOLHAPUR-CHIKODI	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C S/C D/C S/C S/C D/C S/C S/C D/C S/C S/C D/C S/C S/C S/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 0 WR-NR  995 0 1015 1785 0 0 0 0 57	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 3 0.0 0.0 0.0 0.0 105.2 20.7 0.0 10.5 30.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 PPOT/II 52 53 54 55 56	765 kV  400 kV  220 kV  132kV  Export of HVDC LINK 765 kV  400 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-L.SILERU  SOLAPUR-RAICHUR  WARDHA-NIZAMABAD  KOLHAPUR-KUDGI  KOLHAPUR-CHIKODI  PONDA-AMBEWADI  XELDEM-AMBEWADI	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0 0 0 0 22 0 814 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 0 0 WR-NR  995 0 1015 1785 0 0 0 0 0 WR-SR	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9 0.0 0.0 0.0 0.0	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 3 0.0 0.0 0.0 0.0 105.2 20.7 0.0 10.5 30.9 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -4.7 -11.0 -3 -3 -2.3 -1.8 -2.2 -1.3 -0.0 -60.3 -20.7 -0.0 -10.5 -30.9 -15.6 -0.0 -0.0
34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 Port/I 52 53 54 55 56	765 kV  400 kV  220 kV  132kV  Export of HVDC LINK 765 kV  400 kV	VCHAL B/B  APL -MHG  GWALIOR-AGRA  PHAGI-GWALIOR  JABALPUR-ORAI  SATNA-ORAI  ZERDA-KANKROLI  ZERDA-BHINMAL  VCHAL -RIHAND  RAPP-SHUJALPUR  BADOD-KOTA  BADOD-MORAK  MEHGAON-AURAIYA  MALANPUR-AURAIYA  GWALIOR-SAWAI MADHOPUR  WR (With SR)  BHADRAWATI B/B  BARSUR-L.SILERU  SOLAPUR-RAICHUR  WARDHA-NIZAMABAD  KOLHAPUR-KUDGI  KOLHAPUR-CHIKODI  PONDA-AMBEWADI  XELDEM-AMBEWADI	D/C D/C D/C D/C D/C D/C S/C S/C S/C S/C S/C S/C D/C S/C S/C S/C S/C S/C S/C S/C S/C S/C S	241 0 0 0 0 88 471 0 378 303 488 197 104 99 126 84 0 0 0 0 0 0 0 0 0 0 0 0 0	0 595 673 1046 267 0 1551 0 0 0 0 0 0 0 0 0 WR-NR  995 0 1015 1785 0 0 0 0 0 WR-SR	6.1 0.0 0.0 0.0 0.0 8.6 0.0 7.1 11.0 0 2.3 1.8 2.2 1.3 0.0 44.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 14.6 22.8 16.6 3.1 0.0 34.4 0.0 0.0 3 0.0 0.0 0.0 0.0 105.2 20.7 0.0 10.5 30.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-14.6 -22.8 -16.6 -3.1 -3.6 -34.4 -7.1 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3