

पॉवर सिस्टम ऑपरेशन कार्पोरेशन लिमिटेड

(पब्लिसिड की पूर्ण स्वायत्तता प्राप्त सार्वजनिक कंपनी)



उत्तरी क्षेत्रीय भार प्रेषण केंद्र

CIN: U40105DL2009GOI188682

Power Supply Position in Northern Region for 29.08.2015
Date of Reporting : 30.08.2015

I. Regional Availability/Demand:

Evening Peak (20:00 Hrs) MW				Off Peak (03:00 Hrs) MW				Day Energy (Net MU)	
Demand Met	Shortage	Requirement	Freq* (Hz)	Demand Met	Shortage	Requirement	Freq* (Hz)	Demand Met	Shortage
46529	2784	49313	49.87	47066	375	47441	50.06	1100.6	50.67

* Half hourly (two 15 minutes block-one block each before and after the designated time) average frequency

II. A. State's Load Details (At States periphery) in MUs:

State	State's Control Area Generation (Net MU)				Drawal Schedule (Net MU)	Actual Drawal (Net MU)	UI (Net MU)	Consumption (Net MU)	Shortages* (MU)
	Thermal	Hydro	Renewable/others \$	Total					
Punjab	78.05	24.32		102.37	118.95	118.37	-0.57	220.75	0.00
Haryana	50.61	0.43		51.04	127.10	124.82	-2.28	175.86	0.00
Rajasthan	113.99	0.90	16.70	131.59	86.63	86.84	0.21	218.43	0.00
Delhi	13.89			13.89	85.87	84.73	-1.13	98.63	0.10
UP	140.49	12.50		152.99	136.63	131.75	-4.88	284.74	41.47
Uttarakhand		20.53		20.53	12.81	14.60	1.79	35.12	0.58
HP		23.15		23.15	2.29	2.45	0.16	25.60	0.00
J & K		14.74	0.00	14.74	20.01	21.19	1.17	35.92	8.51
Chandigarh				0.00	5.95	5.55	0.27	5.55	0.00
Total	397.04	96.57	16.70	510.30	596.23	590.31	-5.26	1100.61	50.67

* Shortage furnished by the respective constituent. \$ Others include UP Co-generation and JK Diesel

II. B. State's Demand Met in MWs:

State	Evening Peak (20:00 Hrs) MW				Off Peak (03:00 Hrs) MW				# Max(hourly) Demand Met of Day (MW)
	Demand Met	Shortage	UI	STOA/PX transaction	Demand Met	Shortage	UI	STOA/PX transaction	
Punjab	9733	0	-5	1452	8671	0	-88	1550	9733
Haryana	8150	0	-283	1718	7908	0	136	1784	8222
Rajasthan	7878	0	-357	817	9734	0	-100	1408	10011
Delhi	3953	0	-125	449	4550	0	133	881	5095
UP	11895	2265	-588	250	12316	0	159	337	12599
Uttarakhand	1605	35	70	-119	1474	155	169	-248	1605
HP	1118	0	10	-1317	962	0	18	-1496	1221
J&K	1937	484	227	-442	1244	220	80	-906	1937
Chandigarh	260	0	-17	0	207	0	-25	0	260
Total	46529	2784	-1068	2809	47066	375	482	3310	48517

* STOA figures are at sellers boundary & PX figures are at regional boundary. # figures may not be at simultaneous hour.

III. Regional Entities :

Entity	Station/Constituent	Inst. Capacity (Effective) MW	Declared Capacity(MW)	Peak MW (Gross)	Off Peak MW (Gross)	Energy (Net MU)	Average Sentout(MW)	Schedule Net MU	UI (OG:(+ve), UG: (-ve))
									Net MU
A. NTPC	Singrauli STPS (5*200+2*500)	2000	1865	1966	2047	45.36	1890	44.69	0.67
	Rihand I STPS (2*500)	1000	896	910	983	20.69	862	20.47	0.23
	Rihand II STPS (2*500)	1000	943	959	1022	22.15	923	21.58	0.47
	Rihand III STPS (2*500)	1000	480	501	512	10.84	452	10.93	-0.10
	Dadri I STPS (4*210)	840	600	383	454	10.07	419	10.23	-0.16
	Dadri II STPS (2*490)	980	970	742	715	16.74	698	17.60	-0.85
	Unchahar I TPS (2*210)	420	398	366	419	8.78	366	9.02	-0.24
	Unchahar II TPS (2*210)	420	397	292	384	8.37	349	8.50	-0.13
	Unchahar III TPS (1*220)	210	200	139	220	4.01	167	4.12	-0.11
	ISTPP (Jhajjar) (3*500)	1500	1436	636	636	7.01	292	14.47	-7.47
	Dadri GPS (4*130.19+2*154.51)	830	800	566	169	6.49	270	6.73	-0.25
	Anta GPS (3*88.71+1*153.2)	419	396	225	199	5.55	231	5.49	0.06
	Auraiya GPS (4*111.19+2*109.30)	663	635	311	245	6.98	291	6.99	-0.01
	Dadri Solar	5	1	0	0	0.02	1	0.03	0.00
	Unchahar Solar	10	3	0	0	0.02	1	0.06	-0.04
	Singrauli Solar	15	3	0	0	0.04	2	0.08	-0.03
	Sub Total (A)	12112	10861	8842	8711	191	7939	199	-8
B. NPC	NAPS (2*220)	440	371	408	411	8.85	369	8.90	-0.06
	RAPS- B (2*220)	440	187	209	211	4.41	184	4.49	-0.08
	RAPS- C (2*220)	440	400	426	430	9.25	385	9.60	-0.35
	Sub Total (B)	1320	958	1043	1052	22.50	938	22.99	-0.49
C. NHPC	Chamera I HPS (3*180)	540	534	538	508	12.66	527	12.50	0.16
	Chamera II HPS (3*100)	300	300	303	304	7.25	302	7.20	0.05
	Chamera III HPS (3*77)	231	229	234	233	5.31	221	5.21	0.10
	Bairasuil HPS(3*60)	180	166	122	0	2.13	89	2.00	0.14
	Salal-HPS (6*115)	690	648	672	672	16.18	674	15.55	0.63
	Tanakpur-HPS (3*40)	94	91	95	95	2.25	94	2.19	0.06
	Uri-I HPS (4*120)	480	330	377	268	7.89	329	7.99	-0.09
	Uri-II HPS (4*60)	240	189	203	197	4.65	194	4.53	0.12
	Dhauliganga-HPS (4*70)	280	280	288	287	6.66	278	6.52	0.15
	Dulhasti-HPS (3*130)	390	386	401	399	9.43	393	9.26	0.16
	Sewa-II HPS (3*40)	120	119	124	0	1.05	44	0.85	0.20
	Parbati 3 (4*130)	520	260	132	131	3.42	142	3.74	-0.32
	Sub Total (C)	4065	3532	3489	3093	79	3286	78	1
	D.SJVNL	NJPC (6*250)	1500	1605	1605	1605	38.81	1617	38.52
Rampur HEP (6*68.67)		412	428	428	428	10.36	431	10.27	0.08
Sub Total (D)		1912	2033	2033	2033	49.16	2049	48.79	0.37
E. THDC	Tehri HPS (4*250)	1000	1050	1053	491	10.28	428	10.00	0.28
	Koteshwar HPS (4*100)	400	144	395	80	3.54	147	3.45	0.09
	Sub Total (E)	1400	1194	1448	571	13.81	576	13.45	0.36
F. BBMB	Bhakra HPS (2*108+3*126+5*157)	1379	901	1461	669	21.93	914	21.62	0.30
	Dehar HPS (6*165)	990	582	825	560	13.96	582	13.97	-0.01
	Pong HPS (6*66)	396	241	384	192	5.60	233	5.78	-0.18
	Sub Total (F)	2765	1724	2670	1421	41.49	1729	41.37	0.12
G. IPP(s)/JV(s)	ALLAIN DUHANGAN HPS(IPP) (2*96)	192	0	165	119	2.57	107	2.79	-0.21
	KARCHAM WANGTOO HPS(IPP) (4*250)	1000	0	1150	1150	27.63	1151	27.60	0.03
	Malana Stg-II HPS (2*50)	100	0	111	90	1.95	81	1.83	0.12
	Shree Cement TPS (2*150)	300	0	295	294	29.20	1217	7.01	22.19
	Budhil HPS(IPP) (2*35)	70	0	76	69	1.67	70	1.71	-0.04
Sub Total (G)	1662	0	1797	1723	63.02	2626	40.94	22.08	
H. Total Regional Entities (A-G)	25237	20302	21322	18604	459.40	19141	443.68	15.72	

I. State Entities	Station	Effective Installed Capacity (MW)	Peak MW	Off Peak MW	Energy(MU)	Average(Sent out MW)	
Punjab	Guru Gobind Singh TPS (Ropar) (6*210)	1260	1040	724	21.29	887	
	Guru Nanak Dev TPS(Bhatinda) (2*110+2*120)	460	370	260	7.19	299	
	Guru Hargobind Singh TPS(L.mbt) (2*210+2*250)	920	878	820	18.83	784	
	Goindwal(GVK)		0	0	0.00	0	
	Rajpura (2*700)	1400	1358	1379	30.75	1281	
	Talwandi Saboo (1*660)	660	0	0	0.00	0	
	Thermal (Total)	4700	3646	3183	78.05	3252	
	Total Hydro	1000	1033	984	24.32	1013	
	Total Punjab	5700	4679	4167	102.37	4266	
	Haryana	Panipat TPS (4*110+2*210+2*250)	1367	452	444	10.16	423
DCRTPP (Yamuna nagar) (2*300)		600	542	554	12.09	504	
Faridabad GPS (NTPC)		432	0	0	0.00	0	
RGTPP (khedar) (IPP) (2*600)		1200	1125	757	19.36	807	
Magnum Diesel (IPP)		25	0	0	0.00	0	
Jhajjar(CLP) (2*660)		1320	372	372	9.00	375	
Thermal (Total)		4944	2491	2127	50.61	2109	
Total Hydro		62	27	9	0.43	18	
Total Haryana		5006	2518	2136	51.04	2127	
Rajasthan		kota TPS (2*110+2*195+3*210)	1240	1040	955	24.81	1034
		suratgarh TPS (6*250)	1500	732	812	18.14	756
		Chabra TPS (4*250)	1000	176	198	4.12	172
		Dholpur GPS (3*110)	330	80	80	1.94	81
	Ramgarh GPS (1*37.5 + 1*35.5 +2*37.5 +1*110 +1*50)	271	206	212	5.12	213	
	RAPS A (NPC) (1*100+1*200)	300	160	162	3.96	165	
	Barsingsar (NLC) (2*125)	250	69	71	1.58	66	
	Giral LTPS (2*125)	250	0	0	0.00	0	
	Rajwest LTPS (IPP) (8*135)	1080	506	915	19.33	805	
	V/S LIGNITE LTPS (IPP) (1*135)	135	0	0	0.00	0	
	Kalisindh Thermal(2*600)	1200	410	450	10.32	430	
	Kawai(Adani) (2*660)	1320	870	1180	24.68	1028	
	Thermal (Total)	8876	4249	5035	114	4750	
	Total Hydro	550	25	66	0.90	38	
	Wind power	3214	497	544	13.32	555	
	Biomass	99	26	26	0.62	26	
	Solar	730	0	0	2.76	115	
	Renewable/Others (Total)	4043	523	570	16.70	696	
	Total Rajasthan	13469	4797	5671	131.59	5483	
	UP	Anpara TPS (3*210+2*500)	1630	1221	1274	29.40	1225
Obra TPS (2*50+2*94+5*200)		1194	459	414	10.20	425	
Panicha TPS (2*110+2*220+2*250)		1140	788	785	18.70	779	
Panki TPS (2*105)		210	0	0	0.00	0	
Harduaganj TPS (1*60+1*105+2*250)		665	421	408	9.80	408	
Tanda TPS (NTPC) (4*110)		440	185	180	4.49	187	
Roza TPS (IPP) (4*300)		1200	1071	1089	26.00	1083	
Anpara-C (IPP) (2*600)		1200	1083	1089	25.80	1075	
Bajaj Energy Pvt.Ltd(IPP) TPS (10*45)		450	365	365	8.30	346	
Anpara-D(1*500)		500	0	0	0.00	0	
Lalitpur TPS(1*660)		660	345	330	6.60	275	
Thermal (Total)		9289	5938	5934	139	5804	
Vishnuparyag HPS (IPP)(4*110)		440	0	0	0.00	0	
Alakananda(4*82.5)		330	332	333	7.90	329	
Other Hydro		527	101	247	4.60	192	
Cogeneration		981	50	50	1.20	50	
Total UP	11567	6421	6564	153	6375		
Uttarakhand	Total Hydro	1398	826	885	20.53	855	
	Total Uttarakhand	1398	826	885	20.53	855	
Delhi	Rajghat TPS (2*67.5)	135	0	0	0.00	0	
	Delhi Gas Turbine (6x30 + 3x34)	282	32	32	0.79	33	
	Pragati Gas Turbine (2x104+ 1x122)	330	259	266	6.40	266	
	Riithala GPS (3*36)	95	0	0	0.00	0	
	Bawana GPS (4*216+2*253)	1370	0	0	0.00	0	
	Badarpur TPS (NTPC) (3*95+2*210)	705	313	313	6.71	280	
	Thermal (Total)	2917	604	611	13.89	579	
	Total Delhi	2917	604	611	13.89	579	
HP	Baspa HPS (IPP) (3*100)	300	306	306	7.54	314	
	Malana HPS (IPP) (2*43)	86	87	86	1.90	79	
	Other Hydro	878	574	574	13.71	571	
	Total HP	1264	967	966	23.15	965	
J & K	Baglihar HPS (IPP) (3*150)	450	450	450	10.80	450	
	Other Hydro/IPP	560	166	159	3.94	164	
	Gas/Diesel/Others	190	0	0	0.00	0	
	Total J & K	1200	616	609	14.74	614	
Total State Control Area Generation		42521	21428	21609	510.30	21263	
J. Net Inter Regional Exchange [Import (+ve)/Export (-ve)]			6027	8389	176.01	7334	
Total Regional Availability(Gross)		67758	48777	48602	1145.70	47738	

IV. Total Hydro Generation:

Regional Entities Hydro	12234	11912	9184	232.92	9705
State Control Area Hydro	6581	3927	4099	97	4024
Total Regional Hydro	18815	15839	13283	329.49	13729

V(A). Inter Regional Exchange [Import (+ve)/Export (-ve)] [Linkwise]

Element	Peak(20:00 Hrs)	Off Peak(03:00 Hrs)	Maximum Interchange (MW)		Energy (MU)		Net Energy MU
	MW	MW	Import	Export	Import	Export	
Vindhychal(HVDC B/B)	50	-50	250	150	0.87	1.66	-0.80
765 KV Gwalior-Agra (D/C)	1475	2196	2196	0	42.14	0.00	42.14
400 KV Zerda-Kankroli	-82	-39	0	219	0.00	2.76	-2.76
400 KV Zerda-Bhimmal	-32	5	51	196	0.00	1.34	-1.34
220 KV Auraiya-Malanpur	-95	-55	0	99	0.00	1.71	-1.71
220 KV Badod-Kota/Morak	-11	15	22	89	0.00	0.53	-0.53
Mundra-Mohinderqarh(HVDC Bipole)	2304	2498	2533	0	59.77	0.00	59.77
400 KV Vindhychal - Rihand	375	515	515	0	10.91	0.00	10.91
765 kV Phagi-Gwalior (D/C)	892	1129	1192	0	24.72	0.00	24.72
Sub Total WR	4876	6214			138.41	8.00	130.41
Pusauli Bypass/HVDC	400	200	400	0	6.27	0.00	6.27
400 KV MZP- GKP (D/C)	180	546	660	0	11.20	0.00	11.20
400 KV Patna-Balia(D/C) X 2	214	256	368	0	6.67	0.00	6.67
400 KV B'Sharif-Balia (D/C)	26	200	257	0	4.04	0.00	4.04
765 KV Pusauli-Balia	16	81	159	0	1.02	0.00	1.02
765 KV Gaya-Fatehpur	109	316	316	0	5.41	0.00	5.41
220 KV Pusauli-Sahupuri	142	173	186	0	3.35	0.00	3.35
132 KV K'nasa-Sahupuri	0	0	0	0	0.96	0.00	0.96
132 KV Son Ngr-Rihand	-42	-40	0	46	0.00	0.91	-0.91
132 KV Garhwa-Rihand	0	0	0	0	0.00	0.00	0.00
765 KV Sasaram - Fatehpur	-58	218	220	99	2.70	0.00	2.70
400 KV Barh -GKP (D/C)	164	225	256	0	4.89	0.00	4.89
Sub Total ER	1151	2175			46.51	0.91	45.60
Total IR Exch	6027	8389			184.92	8.91	176.01

V(B). Inter Regional Schedule & Actual Exchanges [Import (+ve)/Export (-ve)] [Corridor wise]

ER	ISGS/LT Schedule (MU)		Bilateral Schedule (MU)		Power Exchange Shdl (MU)		Wheeling (MU)	
	Bhutan	Total	Through ER	Through WR	Through ER	Through WR	Through ER	Through WR
26.06	3.96	30.02	23.84	9.80	17.69	0.00	3.74	-3.74
Total IR Schedule (MU)								
Through ER	Through WR Incids Mndra	Total	Through ER	Through WR	Total	Through ER	Through WR	Total
75.28	99.65	174.94	45.60	130.41	176.01	-29.69	30.75	1.07

V(C). Inter National Exchange with Nepal [Import (+ve)/Export (-ve)] [Linkwise]

Element	Peak(20:00 Hrs)	Off Peak(03:00 Hrs)	Maximum Interchange (MW)		Energy (MU)		Net Energy MU
	MW	MW	Import	Export	Import	Export	
132 KV Tanakpur - Mahendarnagar	0	-9	0	26	0	0	-0.17

VI. Frequency Profile <----- % of Time Frequency ----->

<49.2	<49.7	<49.8	<49.9	<50.0	49.9-50.05	50.05-50.10	50.10-50.20	>50.20	>50.50
0.000	0.000	2.790	23.010	70.980	66.550	8.240	2.220	0.000	0.000

<----- Frequency (Hz) ----->				Average Frequency Hz	Frequency Variation Index	Std. Dev.	Frequency in 15 Min Block	
Maximum		Minimum					MAX (Hz)	MIN (Hz)
50.190	6.03	49.700	1.10	49.950	0.082	0.078	50.150	49.870

VII. Voltage profile 400 kV

Station	Voltage Level (kV)	Maximum		Minimum		Voltage (in % of Time)			
		Voltage(KV)	Time	Voltage (KV)	Time	<380 kV	<390 kV	>420 kV	>430 kV
Rihand	400	406	18:40	399	00:03	0.0	0.0	0.0	0.0
Gorakhpur	400	421	18:34	400	23:15	0.0	0.0	0.0	0.0
Bareilly	400	394	00:00	394	00:00	0.0	0.0	0.0	0.0
Kanpur	400	418	18:33	401	23:13	0.0	0.0	0.0	0.0
Dadri	400	414	18:01	400	00:07	0.0	0.0	0.0	0.0
Ballabgarh	400	419	18:01	401	23:06	0.0	0.0	0.0	0.0
Bawana	400	415	18:01	400	00:19	0.0	0.0	0.0	0.0
Bassi	400	426	18:04	399	23:14	0.0	0.0	8.3	0.0
Hissar	400	410	18:01	395	23:09	0.0	0.0	0.0	0.0
Moga	400	407	06:03	394	19:14	0.0	0.0	0.0	0.0
Abdullapur	400	406	18:02	389	22:09	0.0	0.1	0.0	0.0
Nalagarh	400	412	06:02	399	19:13	0.0	0.0	0.0	0.0
Kishenpur	400	412	03:50	400	19:32	0.0	0.0	0.0	0.0
Wagoora	400	407	03:45	382	20:12	0.0	11.8	0.0	0.0
Amritsar	400	407	06:06	389	19:21	0.0	0.9	0.0	0.0
Kashipur	400	420	18:31	411	00:14	0.0	0.0	0.0	0.0
Hamirpur	400	0	00:00	9999	00:00	0.0	0.0	0.0	0.0
Rishikesh	400	408	18:01	390	00:15	0.0	0.0	0.0	0.0

VIII. Voltage profile 765 kV

Station	Voltage Level (kV)	Maximum		Minimum		Voltage (in % of Time)			
		Voltage(KV)	Time	Voltage (KV)	Time	<728 kV	<742 kV	>800 kV	>820 kV
Fatehpur	765	779	18:33	745	22:12	0.0	0.0	0.0	0.0
Balia	765	775	18:34	742	22:12	0.0	0.0	0.0	0.0
Moga	765	781	18:01	757	19:23	0.0	0.0	0.0	0.0
Agra	765	796	18:02	757	23:14	0.0	0.0	0.0	0.0
Bhiwani	765	794	18:01	763	23:15	0.0	0.0	0.0	0.0
Unnao	765	764	18:33	733	19:23	0.0	20.0	0.0	0.0
Lucknow	765	782	18:33	747	22:12	0.0	0.0	0.0	0.0
Meerut	765	800	18:03	766	22:15	0.0	0.0	0.0	0.0
Jhatikara	765	793	18:00	759	22:13	0.0	0.0	0.0	0.0
Bareilly	765	794	18:33	758	00:18	0.0	0.0	0.0	0.0
Anta	765	792	17:33	770	00:29	0.0	0.0	0.0	0.0
Phagi	765	796	18:00	764	23:05	0.0	0.0	0.0	0.0

IX. Reservoir Parameters:

Name of Reservoir	Parameters		Present Parameters		Last Year		Last day	
	FRL (m)	MDDL (m)	Level (m)	Energy (MU)	Level (m)	Energy (MU)	Inflow (m ³ /s)	Usage (m ³ /s)
Bhakra	513.59	445.62	510.86	1590.18	509.82	1545.02	886.00	654.54
Pong	426.72	384.05	422.75	1020.81	416.24	730.66	391.00	315.17
Tehri	829.79	740.04	815.25	945.25	814.15	883.26	410.97	233.00
Koteshwar	612.50	598.50	610.22	4.69	410.46	4.95	233.00	232.99
Chamera-I	760.00	748.75	752.97	0.00	0.00	0.00	261.11	342.91
Rihand	268.22	252.98	852.30	292.90	854.90	336.80	0.00	0.00
RPS	352.80	343.81	0.00	0.00	0.00	0.00	0.00	0.00
Jawahar Sagar	298.70	295.78	0.00	0.00	0.00	0.00	0.00	0.00
RSD	527.91	487.91	520.38	13.36	514.38	11.56	338.73	555.67

* NA: Not Available

X(A). Short-Term Open Access Details:

State	Off- Peak Hours (03:00 Hrs)			Peak Hours (20:00 Hrs)			Day Energy (MU)		
	Bilateral (MW)	IEX (MW)	PXIL (MW)	Bilateral (MW)	IEX (MW)	PXIL (MW)	Bilateral (MU)	IEX / PXIL (MU)	Total (MU)
Punjab	1366	184	0	1364	88	0	32.78	3.84	36.62
Delhi	512	370	0	482	-33	0	11.77	3.82	15.59
Haryana	1573	211	0	1575	143	0	38.30	0.60	38.90
HP	-1109	-386	0	-908	-409	0	-22.83	-9.69	-32.52
J&K	-592	-313	0	-491	50	0	-12.84	-1.51	-14.35
CHD	0	0	0	0	0	0	0.24	0.00	0.24
Rajasthan	-460	1866	1	-460	1276	1	-8.81	36.16	27.35
UP	337	0	0	250	0	0	7.26	0.00	7.26
Uttarakhand	-188	-60	0	-147	28	0	-3.68	0.04	-3.64
Total	1438	1871	1	1665	1142	1	42.18	33.26	75.44

X(B). Short-Term Open Access Details:

State	Bilateral (MW)		IEX (MW)		PXIL (MW)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
Punjab	1366	1364	227	88	0	0
Delhi	824	233	455	-40	0	0
Haryana	1653	1539	215	-630	0	0
HP	-841	-1162	-365	-434	0	0
J&K	-491	-592	50	-313	0	0
CHD	29	0	0	0	0	0
Rajasthan	-254	-481	2127	597	1	1
UP	389	236	0	0	0	0
Uttarakhand	-136	-188	49	-60	0	0

XI. System Constraints:

XII. Grid Disturbance / Any Other Significant Event:

XIII. Weather Conditions For 29.08.2015 :

Normal

XIV. Synchronisation of new generating units :

XV. Synchronisation of new 220 / 400 / 765 KV lines and energising of bus / /substation :

765/400 kV Bareilly ICT-2 first time synchronized on load at 15:10 hrs date 29-08-2015

XVI. Tripping of lines in pooling stations :

XVII. Complete generation loss in a generating station :