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POWER BULLETIN

FEB
2020

Volume 6, Issue 11

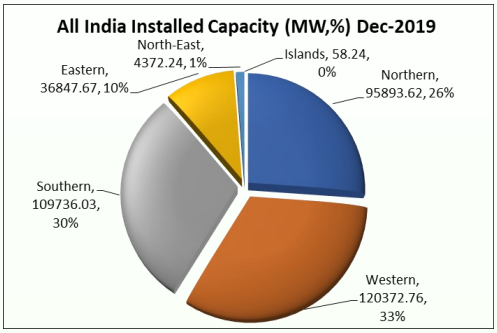
Inside

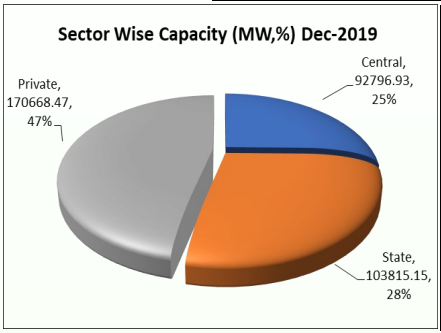
OVERVIEW OF INDIAN POWER SYSTEM FOR DEC-2019

All India Installed Capacity (MW) as on 31-12-2019					
Region	Thermal	Nuclear	Hydro	RES	Total
Northern	58173.23	1620.00	19707.77	16392.62	**95893.62**
Western	85900.11	1840.00	7547.50	25085.15	**120372.76**
Southern	53589.34	3320.00	11774.83	41051.86	**109736.03**
Eastern	30416.87	0.00	4942.12	1488.68	**36847.67**
North-Eastern	2581.83	0.00	1427.00	363.41	**4372.24**
Islands	40.05	0.00	0.00	18.19	**58.24**
ALL	**230701.43**	**6780.00**	**45399.22**	**84399.91**	**367280.56**

All India Installed Capacity (MW) as on 31-12-2019	
Sector	Generation (MW)
Central	92796.93
State	103815.15
Private	170668.47
Total	**367280.55**

Peak Demand of DD & DNH				
Utility	Dec-19			
	Peak Demand (MW)	Peak Met (MW)	Surplus/Deficit (-)	
			(MW)	(%)
DD	338	338	0	0
DNH	821	821	0	0





All India Plant Load Factor (PLF) in (%)		
Sector	Dec-18	Dec-19
Central	72.52	62.60
State	57.42	47.55
Private IPP	51.95	53.99
Private UTL	48.49	53.15
ALL India	59.54	54.40

Highlights of WR Grid for Dec-2019

- **Maximum Peak Demand Met:** 56769 MW
- **Energy Consumption:** Total Energy Consumption in the month of Dec-2019 was 34800 MUs at an average of 1123 MUs/day & Maximum was 1166 MUs on 11.12.2019.
- **Unrestricted Demand:** Maximum Unrestricted demand was 57019 MW and Average Peak Unrestricted demand was 46776 MW.
- **Frequency Profile:** System frequency as per IEGC band is 49.90 Hz to 50.05 Hz. Maximum, Minimum & Average Frequencies 50.34 Hz, 49.65 Hz & 50.00 Hz were respectively observed in the month of Dec-2019.
- **Voltage Profile:** All 765KV nodes except Wardha, Durg Kotra and Gwalior (high voltage node) of WR were within the IEGC limit . High Voltage (greater than 420 KV) at 400KV substations were observed at Khandwa, Damoh, Nagda, Raipur, Raigarh,Wardha, Bhilai, Dhule, Dehgaon, Parli, Kalwa, Karad, Boisar, Kasor, Amreli, Vapi,, Jetpur, Amreli, Vapi, Mapusa, Kala, Magarwada and Hazira. Highest of 95.95% of time above 420KV observed at Raigarh.
- **Hydro Generation:** Total hydro generation of Western Region was 1066.55 MUs at an average of 34.40 MUs/day in the month of Dec-2019.
- **Wind Generation:** Total wind generation was 1323 MUs at an average of 42.7 MUs/day in the month of Dec-2019.
- **Solar Generation:** Total Solar generation was 753 MUs at an average of 24 MUs/day in the month of Dec-2019.
- **Open Access Transaction Details for Dec-2019:**

  ⇒ No. of approvals & Energy Approved in Intra-regional: 142 & 951.55 MUs.

  ⇒ No. of approvals & Energy Approved in Inter-regional: 65 & 985.97 MUs.

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List of Transmission Lines Commissioned/Ready for Commissioning During Dec-2019												
Sector	Central				Pvt.			State				Total
Voltage Level (KV)	800	765	400	220	765	400	220	765	400	230	220	
No. of Lines	0	1	2	0	0	0	0	0	1	1	6	**11**

List of Substations Commissioned/Ready for Commissioning During Dec-2019												
Sector	Central				Pvt.			State				Total
Voltage Level (KV)	800	765	400	220	765	400	220	765	400	230	220	
No. of Sub-stations	0	1	2	0	0	0	0	0	0	0	7	**10**

Region-wise Power Supply Position (Demand & Availability) in Dec-2018 & Dec-2019						
Region	Energy (MUs)				Deficit /Surplus (%)	
	Demand		Energy Met			
	Dec-18	Dec-19	Dec-18	Dec-19	Dec-18	Dec-19
Northern	29320	28487	28896	27977	**(1.4)**	**(1.8)**
Western	32494	33337	32489	33337	**(0.0)**	**0.0**
Southern	27606	27463	27569	27459	**(0.1)**	**(0.0)**
Eastern	10515	10289	10451	10289	**(0.6)**	**0.0**
North Eastern	1347	1233	1323	1219	**(1.8)**	**(1.1)**
All India	**101282**	**100809**	**100728**	**100281**	**(0.5)**	**(0.5)**

Region-wise Peak Demand / Peak Met in Dec-2018 & Dec-2019						
Region	Power (MW)				Deficit /Surplus (%)	
	Peak Demand		Peak Met			
	Dec-18	Dec-19	Dec-18	Dec-19	Dec-18	Dec-19
Northern	45412	52234	44899	51159	(1.1)	(2.1)
Western	53509	57019	53292	56739	(0.4)	(0.5)
Southern	45405	48664	45302	48664	(0.2)	0.0
Eastern	18049	19771	18023	19771	(0.1)	0.0
North Eastern	2541	2544	2511	2530	(1.2)	(0.6)
All India	**163854**	**171796**	**162609**	**170492**	**(0.8)**	**(0.8)**

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POWER TRADING

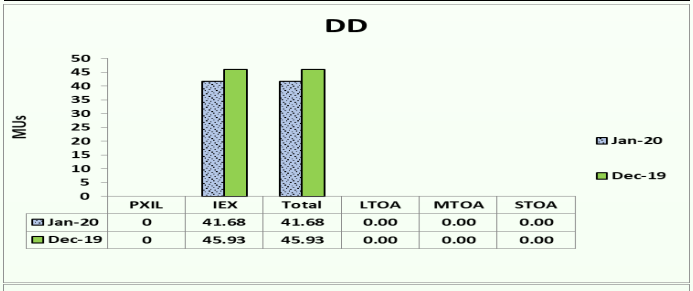
⇒ Emergence of IT has helped to create massive E-Commerce platforms in every walk of life. One such E-Commerce platform for transiting electricity for physical delivery, fine tuning daily requirements, sale of residual generation, optimal utilization of generating resources at marginal cost of production etc. has been made possible through the commencement of Power Exchanges.

⇒ For more information about IEX visit (www.iexindia.com); For more information about PXIL visit (www.powerexindia.com)

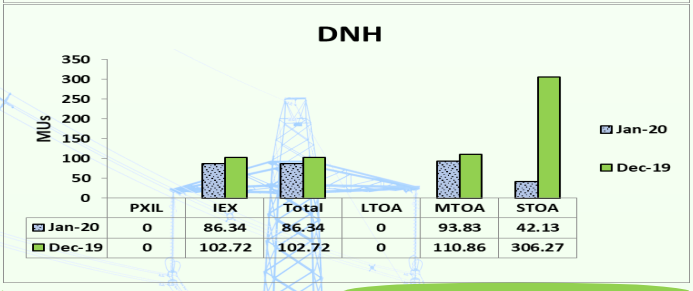
⇒ PXIL & IEX Trading summary

JAN-2020	PXIL					IEX				
	Buy Bid (MWh)	Sell Bid (MWh)	MCP (₹/MWh)	Cleared Volume (MWh)	Marginal Clear Volume (MWh)	Buy Bid (MWh)	Sell Bid (MWh)	MCP (₹/MWh)	Cleared Volume (MWh)	Marginal Clear Volume (MWh)
Total	**16978.2**	**512872.2**	**-**	**3578.2**	**3578.2**	**5715908.1**	**11669784.1**	**-**	**4791993.5**	**4815331.1**
Min	0.0	0.0	--	0.0	0.0	3679.5	9253.7	1000.7	3220.7	3220.7
Max	325.0	1653.4	--	100.0	100.0	15369.1	28338.8	5000.4	11480.2	11451.2
Avg	6.3	190.8	--	1.3	1.3	7682.7	15685.2	2860.3	6440.9	6472.2
DEC-2019	Buy Bid (MWh)	Sell Bid (MWh)	MCP (₹/MWh)	Cleared Volume (MWh)	Marginal Clear Volume (MWh)	Buy Bid (MWh)	Sell Bid (MWh)	MCP (₹/MWh)	Cleared Volume (MWh)	Marginal Clear Volume (MWh)
Total	**1829.7**	**232679.7**	**-**	**1829.7**	**1829.7**	**5259793.0**	**10195341.1**	**0.0**	**4333322.1**	**4345366.1**
Min	0.0	0.0	0.0	0.0	0.0	3930.9	7069.0	1840.2	3187.1	3187.1
Max	4.3	450.0	2960.0	4.3	4.3	13267.3	27630.6	4683.6	10041.0	10014.2
Avg	0.8	101.0	1015.5	0.8	0.8	7069.6	13703.4	2925.7	5824.4	5840.6

DD & DNH: OPEN ACCESS DETAILS



	PXIL	IEX	Total	LTOA	MTOA	STOA
Jan-20	0	41.68	41.68	0.00	0.00	0.00
Dec-19	0	45.93	45.93	0.00	0.00	0.00

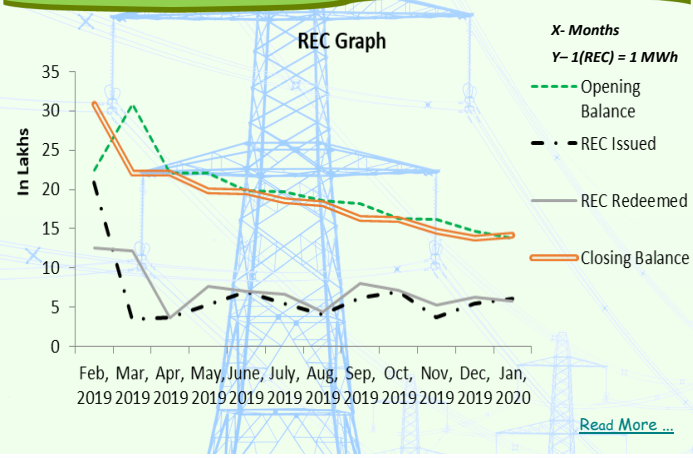


	PXIL	IEX	Total	LTOA	MTOA	STOA
Jan-20	0	86.34	86.34	0	93.83	42.13
Dec-19	0	102.72	102.72	0	110.86	306.27

REC Trading Session January-2020

Trader Company	PXIL		IEX	
Particular	Non-Solar	Solar	Non-Solar	Solar
Total Sell Bid (REC's)	1,83,307	37,028	3,59,639	39,413
Total Buy Bid (REC's)	10,43,459	5,19,403	7,73,557	10,52,954
Clearing Price (₹/Certificate)	2,100	2,400	2,200	2,400
Cleared Volume (REC's)	1,70,837	36,807	3,23,647	39,413

RENEWABLE ENERGY CERTIFICATE MECHANISM (REC) FROM FEB-19 TO JAN-20



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POWER MARKET UPDATE: December 2019

Day Ahead Market Trades 4333 MU in December MCP at Rs. 2.93 per unit

- The day-ahead market traded 4,333 MU with average market clearing price at only Rs.2.93 per unit vs price of Rs. 3.3 in December 2018, a 11% decline in price.
- The electricity market at IEX recorded a total trade of 4768 MU in December 2019. The market observed a 51% Y-on-Y increase in traded volumes demonstrating increased preference by the distribution utilities for the Exchange platform that offers power procurement at the most competitive prices in a flexible and customized way.
- All India peak demand at 170 GW in December-19, rose 5% YoY over demand of 163 GW in December-18 and rose 9.6% MoM over demand of 155 GW in November-19.
- In the DAM market, total monthly sell bids at 10,195 MU while total buy bids were at 5,260 MU.
- One Nation One Price prevailed for 21 days during the month.
- TAM volumes rose 347% YoY on back of growing acceptance for TAM contracts by the distribution utilities for meeting their short-term power requirements.

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DEVIATION CHARGES

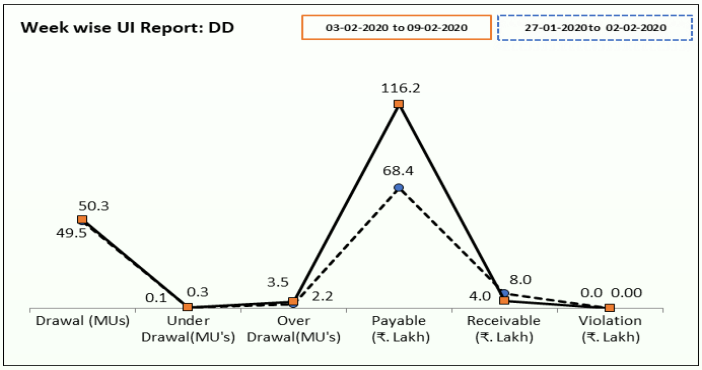
DD User Click to get UI Report
DNH User Click to get UI Report

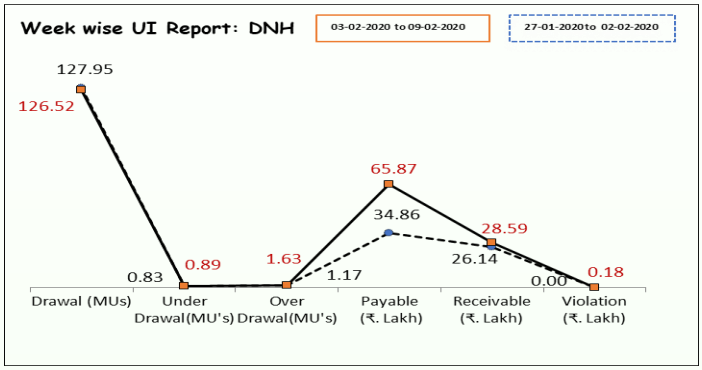
DD-Deviation Charges

FY 2019-20	Drawl (MUs)	Schedule (MUs)	UI Drawl (MUs)		UI Charges(₹. Lakh)		
			Under Drawl	Over Drawl	Payable	Receivable	Violation
Cumulative Total up to Dec-19	2161.27	2045.42	19.31	135.17	4006.01	526.23	115.57
03-02-2020 to 09-02-2020	50.33	46.91	0.12	3.53	116.16	3.95	0.00
03-02-2019 to 09-02-2019	49.96	49.19	0.68	1.46	49.40	11.73	9.86
27-01-2020 to 02-02-2020	49.46	47.59	0.29	2.16	68.38	7.99	0.00
27-01-2019 to 02-02-2019	46.19	45.40	0.69	1.48	51.37	19.47	6.38

DNH-Deviation Charges

FY 2019-20	Drawl (MUs)	Schedule (MUs)	UI Drawl (MUs)		UI Charges (₹. Lakh)		
			Under Drawl	Over Drawl	Payable	Receivable	Violation
Cumulative Total up to Dec-19	5555.97	5558.56	52.62	50.01	1682.07	1347.77	95.07
03-02-2020 to 09-02-2020	126.52	125.79	0.89	1.63	65.87	28.59	0.18
03-02-2019 to 09-02-2019	127.91	126.18	0.72	2.44	74.00	14.19	28.69
27-01-2020 to 02-02-2020	127.95	127.62	0.83	1.17	34.86	26.14	0.00
27-01-2019 to 02-02-2019	124.49	122.45	0.56	2.61	98.74	15.85	39.59





DD

Month	FY 2018-19 (All Freq Hz)			FY 2019-20 (All Freq Hz)		
	Under Drawl in MU's	Over Drawl in MU's	UI Rate in ₹ /Unit	Under Drawl in MU's	Over Drawl in MU's	UI Rate in ₹ /Unit
April	0.30	(19.56)	(2.79)	1.62	(16.55)	(3.28)
May	0.57	(27.91)	(3.43)	2.73	(11.4)	(3.65)
June	0.23	(24.82)	(2.61)	2.91	(7.78)	(3.71)
July	0.16	(31.37)	(2.54)	2.38	(13.25)	(3.17)
Aug	0.10	(28.24)	(2.52)	2.76	(12.06)	(3.35)
Sep	0.14	(33.75)	(2.92)	3.45	(8.9)	(2.67)
Oct	0.37	(25.13)	(2.58)	1.07	(17.66)	(2.56)
Nov	0.65	(19.69)	(2.48)	0.85	(17.1)	(2.54)
Dec	0.20	(23.87)	(2.57)	0.7	(17.54)	(2.93)
Jan	2.25	(6.69)	(4.20)	0.84	(12.93)	(2.99)
Feb	2.46	(7.70)	(3.85)	--	--	--
Mar	2.21	(13.41)	(3.69)	--	--	--
Total	**9.63**	**(262.14)**	**(2.82)**	**19.31**	**(135.17)**	**(3.00)**

DNH

Month	FY 2018-19 (All Freq Hz)			FY 2019-20 (All Freq Hz)		
	Under Drawl in MU's	Over Drawl in MU's	UI Rate in ₹ /Unit	Under Drawl in MU's	Over Drawl in MU's	UI Rate in ₹ /Unit
April	0.39	(22.51)	(2.70)	3.06	(10.9)	(3.62)
May	2.03	(16.76)	(3.40)	5.29	(9.45)	(5.39)
June	1.43	(15.89)	(2.57)	7.51	(5.14)	0.81
July	0.43	(25.32)	(2.37)	6.86	(3.91)	(1.25)
Aug	0.33	(35.64)	(2.35)	5.28	(3.62)	(0.90)
Sep	0.50	(33.89)	(2.73)	4.20	(3.47)	(0.47)
Oct	1.76	(26.70)	(2.64)	7.46	(2.84)	(2.02)
Nov	2.36	(18.13)	(2.67)	4.73	(2.61)	(2.37)
Dec	0.57	(27.12)	(2.56)	3.86	(3.85)	(86.24)
Jan	2.68	(7.65)	(3.84)	4.37	(4.22)	(0.34)
Feb	2.99	(8.68)	(3.68)	--	--	--
Mar	5.37	(8.02)	(5.90)	--	--	--
Total	**20.84**	**(246.31)**	**(2.72)**	**52.62**	**(50.01)**	**(12.81)**

REACTIVE ENERGY CHARGES FOR DD & DNH

FY 2019-20	DD-High Voltage				DD-Low Voltage				DNH-High Voltage			DNH-Low Voltage		
	GUJARAT		ISTS	Total	GUJARAT		ISTS	Total	ISTS		Total	ISTS		Total
	Dok-diu	Una-diu	Mgr-Vap HV		Dok-diu	Una-diu	Mgr-Vap LV		Kpd-Vap HV	Kdl-Vap HV		Kpd-Vap LV	Kdl-Vap LV	
Cumulative Total MVARh till Dec-2019	280.3	1085.0	207710.9	**209076.2**	0.2	-5.2	0.0	**-5.0**	245411.3	112133.2	**357544.5**	1.4	709.0	**710.4**
Cumulative Total Charges in (₹) till Dec-19	-217.5	-91234.0	-24541699.5	**-24633151.0**	29.0	-754.0	0.0	**-725.0**	-35584638.5	-16259314.0	**-51843952.5**	203.0	102805.0	**103008.0**
27-01-2020 to 02-02-2020	-2.0	0.0	5361.7	**5359.7**	0.0	0.0	0.0	**0.0**	6516.3	-2464.5	**4051.8**	0.0	-0.4	**-0.4**
Charges in (₹)	290.0	0.0	-777446.5	**-777156.5**	0.0	0.0	0.0	**0.0**	-944863.5	357352.5	**-587511.0**	0.0	-58.0	**-58.0**
03-02-2020 to 09-02-2020	-0.8	-0.1	5417.1	**5416.2**	0.2	0.0	0.0	**0.2**	7016.5	-3323.6	**3692.9**	0.0	0.0	**0.0**
Charges in (₹)	116.0	14.5	-785479.5	**-785349.0**	29.0	0.0	0.0	**29.0**	-1017392.5	481922.0	**-535470.5**	0.0	0.0	**0.0**

Note: 1. The REC chargers has been revised to 14.5 paisa/KVARh from Apr-2019 as per clause of 6.6 of revised IEGC.
2. Cumulative total of REC is except 1st week of Sep-19 as data not available.

Note: Bracket Value ( ) indicates the negative value(-ve). Note: For REC table -Ve Value indicates Receivable & +Ve Value indicates Payable.

POWER SECTOR ACTIVITIES

* CERC

- Central Electricity Regulatory Commission (Sharing of Revenue Derived from Utilization of Transmission Assets for Other business) Regulations, 2020 .

* CEA

- Extension of CEA Advisory on sourcing of Supercritical Units.
- Report of 19th Electric Power Survey of India by Econometric Method.
- Report of 19th Electric Power Survey of National Capital Region (NCR).
- Information Regarding installation of Solar irrigation Pumps.
- Submission of monthly plant wise generation of Renewable Energy generating stations - regarding .
- Reduction in electricity generation through Bagasse-reg
- Market Monitoring Report-December,2019 .
- Commissioning details of new RE Projects-reg.
- Notice to invite details from eligible bidders for coal linkage auction by CIL under para B(viii) (a) covering para B(iii) for the Quarter April-June,2020.
- CEA guidelines for allocation of coal under Para B(viii)(a) covering Para B(iii) of SHAKTI Policy.
- Advisory on spare parts management in thermal power plants.
- Advice on FGD Technology Selection for Different Unit Size.
- Methodology formulated by MoP for allocation of coal under Para B(viii)(a) of SHAKTI Policy.

* BEE

- Applications are invited from organizations for empanelmant/ re-empnalment as Energy Service Company with BEE with effect from 25.01.2020.
- 19th National Certification Examination Results- Download e-Provisional Certificate from 22.04.2019 (Click Downloads)
- BEE Retailer Training Programme to be held on 6.03.2020 at Banglore from 9:30 am onwards.
- Presentation on Trading/issuance of ESCerts as discussed in webinar on 17th Feb,2020.

* WRLDC

- Grid Events List Updated_25.02.2020.
- Extension of submitting comments on draft RTM procedures .

* WRPC

- Additional Agenda-2 of 528th OCC meeting to be held on 20.02.2020 at WRPC Mumbai.

* MISCELLANEOUS

- **Tariff impact to be negligible if utilities invest in EV charging infra.**

  ⇒ On regulatory aspects related to increased power procurement during peak-hours for EV charging load, some utilities said that suitable tariffs for EV charging were required to recover investments

- **Smart Grid Control Centre and SGCT training prog inaugurated at IIT-Kanpur.**

  ⇒ The centre has been set up as part of the smart grid pilot project titled 'Development of R&D platform for smart city pilot projects in the Indian context' which was equally funded by the ministry of power (MoP) and IIT-Kanpur.

- **BHEL launches 'Quality First' initiative.**

  ⇒ Mission 'Quality First' focuses on four objectives – empower, educate, engage and encourage employees, and putting in place the latest quality processes and systems to further strengthen the quality mind

- **Power companies' dues to CIL soar 53% since April.**

  ⇒ Coal India executives say NTPC and some power producers have disputed the company's demand for incentives for supplying coal beyond annual quota and revised logistics rates since 2017.

- **Maharashtra: Energy minister Raut's free power plan will cost 8,000cr per year, is unfeasible, say discom officials.**

  ⇒ A senior discom official told TOI on the condition of anonymity that there were 14 lakh consumers in Delhi whose consumption was less than 100 units.

- **EV Motors, BYPL ink pact to set up EV charging stations in Delhi.**

  ⇒ EVM is planning on establishing an e-mobility eco-system in the country including providing a connected network of PlugNgo EV charging stations and a robust software platform that includes a payment system for availing the e-charging facility, as per the release.

- **Delhi's all charged up for green drive.**

  ⇒ While Tata Power, which has 12 charging stations, is planning 50 new ones, the two BSES discoms are trying to add 179 to their existing infrastructure. BSES, which now has 45 stations, expects to get nine more by March 31, taking the count to 54.

- **Australian fusion startup HB11 promises unlimited, safe energy.**

  ⇒ HB11 has secured patents for its ground-breaking, laser-driven technique for fusion energy generation that promises clear, safe energy.

- **France starts closing its oldest nuclear power plant, shuts reactors.**

  ⇒ France started closing its oldest nuclear plant, at Fessenheim, on the border with Germany, by shutting down one of its reactors on 22.02.2020.

- **Maharashtra: Govt wants MIDC to supply power directly to industries.**

  ⇒ A source in MSEDCL said that Desai wanted that Maharashtra Industrial Development Corporation (MIDC) should provide cheaper power to industries located in its estates.

- **Power demand up 7.5 per cent in February.**

  ⇒ Demand for electricity stood at 1,05,289 megawatt (mw) in January against 1,01,570 MW in December 2019. It was also 3.5 % higher than the 1,01,713 MW in January 2019, data available with the Central Electricity Authority showed.

Note: Click on Head lines for More Info

- **Jobs: Renewable energy sector can employ 42 million people globally by 2050.**

  ⇒ Asia could account for 64 per cent of jobs in renewables by 2050.

- **Chandigarh taps private sector for 69MW solar energy target by 2022.**

  ⇒ Under the model, the UT will rope in private companies to install solar plants atop houses. In return, the building owner will be charged lesser tariff for the solar-produced electricity as compared to normal electricity.

- **Rajasthan plans to set up 30,000 MW solar capacity in 5 years.**

  ⇒ Recently, the Centre allocated Rajasthan a 25,000 MW ultra mega renewable energy park. The state government has identified land bank of 125,000 hectares in three districts — Bikaner, Jaisalmer and Jodhpur—for this park.

- **India's cultivable land has the highest potential for wind energy generation: NIWE.**

  ⇒ The report further added that the future land allocation scenario would depend on supportive land policies of different state government and competing demand for land for other sectors .

- **DGVCL targets 25MW rooftop solar power generation by March.**

  ⇒ Official sources said that about 16,700 applications have been received from consumers, mainly from the residential areas, under the solar rooftop scheme of the state government since September 2016.

- **Maharashtra: MSEDCL wants no penalty over renewable energy targets.**

  ⇒ MSEDCL had earlier Commission's proposal to revise the solar target to 13.5 per cent by 2024-25 from the present 2.5 per cent. The discom contended that it was quite stiff and that despite best efforts, it would not be able to achieve it.

- **Solar power projects delayed by coronavirus in China may get relief.**

  ⇒ MNRE will give extra time for the commissioning of power projects that face delays due to squeezing of supply lines from China which is facing deadly spread of coronavirus.

- **India's 18K sq. km reservoir surface area has potential to generate 280 GW solar energy.**

  ⇒ A new report by TERI has found that India's reservoirs have 18,000 sq km of area with the potential to generate 280 GW of solar power through floating solar photovoltaic (PV) plants, TERI said in a statement.

- **India to take initiative towards green economy, focus on renewable energy: PM Modi.**

  ⇒ The Prime Minister continued that the international solar alliance, the coalition for disaster-resilient infrastructure and industries transition leadership have seen encouraging participation from countries worldwide.

- **Uttar Pradesh: Farm sector booster dose through Kusum scheme for solar pumps.**

  ⇒ According to sources, the energy department would be seeking budgetary provision in component B and C under Kusum scheme.

- **MNRE and NTPC to launch Hydrogen Fuel Cell Bus project in Leh: MNRE Secretary.**

  ⇒ Apart from the hydrogen mission, MNRE has already launched a plan for implementation of 23 GW of mega solar and transmission projects in the Leh and Ladakh regions.

- **Round-the-clock power supply by bundling renewable with thermal power: Draft policy.**

  ⇒ Accordingly, a power generating firm will have to supply electricity such that at least 51 % of the annual energy supplied corresponds to renewable energy and the balance is drawn from thermal sources.

- **After Trump's India visit, Oil and gas imports from United States set to increase.**

  ⇒ In 2019, India increased its intake of oil from the US to about 1,84,000 barrels per day, four times more than in 2018.

- **Oil minister Pradhan says India not responsible for global warming, will continue to use coal.**

  ⇒ Pradhan added that countries which are preaching reduction in coal consumption are primarily responsible for global warming, by insensitive use of coal during their time.

- **Railways targets transportation of automobiles in five years after revenue from coal transport declines.**

  ⇒ With the railways witnessing significant decline in transport of coal, which has impacted its revenue from the freight segment, the state-run transporter is targeting a five-fold increase in its share of transporting automobiles by 2025.

- **INNOVATION: Novel device can generate electricity from air using bacterial protein,says study.**

  ⇒ According to the researchers from the University of Massachusetts (UMass) Amherst in the US, Air-gen connects electrodes to the tiny protein wires in such a way that it generates electrical current from water vapour naturally present in the atmosphere.

- **INNOVATION: Researcher work on battery power sharing tool, swap stations to make EVs affordable.**

  ⇒ The two solutions can make EVs economical as customers would not need to buy expensive heavy batteries which account for around 25-30 % of the total cost of an EV currently.

- **INNOVATION: Solar power can now be stored for decades.**

  ⇒ The innovations consist of three parts: An energy-trapping molecule, a storage system, and an energy-storing laminate coating that can be applied on different materials — the coating collects solar energy and releases heat.

List of Abbreviations

- **BEE** :Bureau of Energy Efficiency
- **BHEL** :Bharat Heavy Electric Limited
- **BSES** :Bombay Suburban Electric Supply
- **BYPL** :BSES Yamuna Power Limited
- **CEA** :Central Electricity Authority
- **CERC** :Central Electricity Regulatory Commission
- **CIL** :Cola India Limited
- **DISCOM** :Distribution Company
- **DGVCL** :Dakshin Gujarat Vij Corporation Limited
- **EScert** :Energy Saving Certificate
- **EV** :Electric Vehicle
- **EVM** :Electric Vehicle Motor
- **FGD** :Flue Gas Desufurization
- **GW** :Giga Watt
- **HB11** :Hydrogen and Boron –11
- **IIT** :Indian Institute of Technology
- **MNRE** :Ministry of New & Renewable energy
- **MOP** :Ministry of Power
- **MW** :Megawatt
- **MSEDCL** :Maharashtra State Electrcity Distribution Company Limited
- **NIWE** :National Institute of Wind Energy
- **NTPC** :National Thermal Power Corporation
- **OCC** :Operation Coordination and Sub-committee
- **R & D** :Research and Development
- **RE** :Renewable Energy
- **RTM** :Real Time Market
- **SGCT** :Smart Grid Component and Technology
- **TERI** :The Energy and Research Institute
- **TOI** :Times of India
- **US** :United Nation
- **UT** :Union Territory
- **WRLDC** :Westren Region Load Dispatch Centre
- **WRPC** :Western Region Power Corporation

ALL INDIA LIST OF ELEMENTS COMMISSIONED DURING THE FY 2019-20

All India List of Substations, Transmission Lines & Generators Commissioned during Dec-2019

♦ Substations

* 765/400 KV Aligarh (PG) 765 kV GIS (Creation of 400 kV level) (1500 MVA)
* 400/220 KV Kadarpur (ICT No. I&II) (500 MVA) (each)
* 400/132 KV Extn. at Banka s/s (315 MVA) (each)
* 400/132 KV Extn. at Lakhisarai s/s (315 MVA)
* 220/66 KV Prayagraj Cantt (Aug.) T/F-II (200-160) (40 MVA)
* 220/66 KV Sector 52A Gurugram (160 MVA)
* 220/132 KV Saharanpur (Aug.) (200-160) (40 MVA)
* 220/132 KV Sarojininagar Lucknow (Aug) T/F-II (200-160) (40 MVA)
* 220/132 KV Gudgaon (GEC-I) (160 MVA)
* 220/132 KV Sailana (GEC-I) (160 MVA)
* 220/132 KV Pilibhit T/F-I (Aug.)(160 -100) (60 MVA)
* 220/132 KV Tanakpur (100 MVA)
* 132/33 KV Mawlyndep (ICT No. I&II) (20 MVA)
* 132/33 KV Dhemaji (50 MVA)

♦ Transmission Lines

* 400 KV Edaomon (KSEB) - Muvattupuzha (PG) (Quad) line (2nd Ckt.)
* 400 KV Madhugiri - Yelhanka line (Quad) line (1st Ckt.)
* 400 KV LILO of Raita - Jagdalpur at Kurud
* 400 KV Prithala-Kadarpur D/C (Ckt. No. I&II)
* 400 KV Tumkur - Yelahanka (Ckt. No. I)
* 400 KV Nirmal - Dichpally D/C (Ckt. No. I&II)
* 230 KV TPS-II - Neyveli 230kV S/S
* 220 KV Re-conductoring of New Purnea - Purnea line
* 220 KV 2nd Ckt. of 220 kV Tilwani - Miraj line (From loc no 4 to 43)
* 220 KV DCDS Barsoor - Jagdalpur line
* 220 KV Hatia (JUSNL) - Namkum (PGCIL)
* 220 KV Kavanoor - Karaikudi (Existing)
* 220 KV LILO of 220 kV KTS- Lower Sileru-I line at 220/11kV VK Ramavaram LI SS
* 220 KV LILO of both ckt. Fatehabad - Rania line at 220kV Mehna Khera

♦ Generator

Thermal

* Neyvelli New TPP -Unit1, Thermal-Lignite, Central, NPCIL , Tamil Nadu, 500 MW was commissioned on 20.12.2019
* Darliapalli STPP, TPP -Unit1, Thermal-Coal , Central, NTPC , Odisha, 800 MW was commissioned on 30.12.2019
* Khargone/MP,Unit-2, NTPC, 660 MW was commissioned on 31.12.2019

Hydro

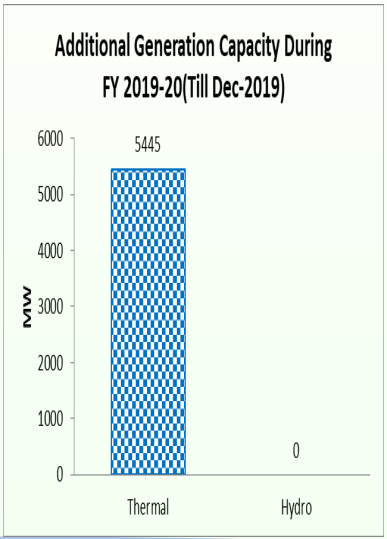
* Nil

Nuclear

* Nil

All India No. of Generators Commissioned during FY 2019-20 (till Dec-2019)

Month	Thermal					Hydro					Nuclear				
	WR	NR	NER	ER	S R	WR	NR	NER	ER	SR	WR	NR	NER	ER	SR
Apr-19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun-19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
Sep-19	1	1	0	0	1	0	1	1	1	0	0	0	0	0	0
Oct-19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec-19	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Total	**6**	**1**	**0**	**4**	**2**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**



All India No. of Line Reactors (LR), Transmission Lines (T/L), Substations (S/S) and Bus Reactors (BR) FY 2019-20 (till Dec-2019)

Month	800 KV		765 KV				400 KV				230 KV				220 KV				Total			
	T/L	S/S	LR	T/L	S/S	BR	LR	T/L	S/S	BR	LR	T/L	S/S	BR	LR	T/L	S/S	BR	LR	T/L	S/S	BR
Apr-19	0	0	0	0	1	0	0	2	9	0	0	0	0	0	0	7	13	0	0	9	23	0
May-19	0	0	0	0	0	0	0	7	8	0	0	0	0	0	0	6	6	0	0	8	12	0
Jun-19	0	0	0	0	0	0	0	2	5	0	0	1	1	0	0	7	12	0	0	10	18	0
Jul-19	0	0	0	1	1	0	0	6	1	0	0	0	2	0	0	6	10	0	0	13	14	0
Aug-19	0	0	0	1	3	0	0	0	5	0	0	2	1	0	0	10	10	0	0	13	19	0
Sep-19	1	0	0	1	1	0	0	5	2	0	0	0	1	0	0	10	16	0	0	17	20	0
Oct-19	0	0	0	0	1	0	0	4	9	0	0	0	1	0	0	11	11	0	0	15	22	0
Nov-19	0	1	0	0	1	0	0	8	16	0	0	1	1	0	0	8	22	0	0	17	41	0
Dec-19	0	0	0	0	1	0	0	6	3	0	0	1	0	0	0	7	8	0	0	14	12	0
Total	**1**	**1**	**0**	**3**	**9**	**0**	**0**	**40**	**58**	**0**	**0**	**5**	**7**	**0**	**0**	**72**	**108**	**0**	**0**	**121**	**183**	**0**

Note 1: Data is taken from CEA and NLDC websites.

Note 2: No data for Branch Reactors (BR) & Line Reactors (LR) for the month of Dec-2019.

CEA : Read more...
NLDC: Read more...

POWER SYSTEM SOLUTIONS THAT WORK FOR YOUR BUSINESS

Can You Imagine a World Without Power?

…Because, we can't.

We, at Panacean Enterprise are committed to our core values integrity, excellence, enriched innovation and stand committed to nurture our talented work force and continually enhance our local insights and global perspective to bring about paradigm shift in the Indian Power Sector, through providing real solution.

We assist you to understand impact of Electricity Regulations applicable to you by providing tailor made gist of the new regulatory developments on case to case basis. With nation-wide experience of our team, and also with the valuable experience of handling overseas projects, we can assist you in planning and operations of your system.

Why Panacean?

Because….We Can Energize Your Business

We're extremely serious about being your power solution advocate. We envision an Indian Power Sector enriched with solutions to enhance its capability to ensure quality power to end consumers with reliability, efficiency and economy on ethical grounds through providing "IT and network" solutions to different segments of Indian Power Sector. Maximize long-term return to Owner.

Our Clients Prefer Working Directly With Us

Because we arm them with valuable resources for contract negotiation. We help them manage the minutest detail behind their big business decisions.

Panacean Enterprise Pvt. Ltd.

PanaCean®

(An ISO 9001:2015 Company)

More Power to You

Area of Services

Power Services

- Power System Studies
- Utility Load Forecast
- Transmission and distribution planning
- Reactive Power Optimization
- Fault MVA calculation and improvements
- GPS/GIS Asset Mapping
- Load survey
- Street light survey
- Policy making
- Implementation of Electricity Act 2003 and State Regulations
- Operation and maintenance of substation
- Power System Training
- PSS®E Training
- Power Procurement under Case-I and Case-II bidding
- Tender Preparation and Management
- Project Management Consultant
- DSM Management
- Drawl and Generation schedule optimization
- Regulatory Support
- DPR preparation for submission to JERC / CEA.
- IPDS Scheme
- UDAY Scheme
- Smart city Implementation
- Techno commercial feasibility of substation
- Techno-commercial feasibility of transmission line
- T&D CAPEX optimization
- Distribution business optimization
- Transmission business optimization
- Optimal power scheduling for system operators
- Open Access implementation, operation and management
- Resources optimization in transmission and distribution business
- Training in system operation
- Support in Regulatory matters
- Energy Accounting

Renewable Energy

- Detailed Project Report preparation
- Feasibility Study for Renewable Power Generation
- EPC of Solar Power
- O&M of Renewable Power Plant Operation

Energy Efficiency

- Energy Audit
- Development of State Designated Agency
- Development of State Nodal Agency
- Power Quality Management

IT Services

- Software for Transmission and Distribution Companies
- Regulatory Information Management System
- Complaint Management System
- Customer Care Centre
- Standard of Performance
- Document Management System
- ERP for Power Company
- Energy management system
- Optimal Power Schedule

Area of Clients

Distribution Sector

- Electricity Department of Daman and Diu
- DNH Power Distribution Corporation Ltd.

Transmission Sector

- Maharashtra State Electricity Transmission Company Ltd.
- Reliance Infrastructure Ltd.
- Electricity Department of Dadra and Nagar Haveli
- Uganda Electricity Transmission Company Ltd.
- Power Grid Company of Bangladesh Limited (PGCB)

Generation Sector

- Essar M.P. Power Ltd.
- Ind-Barath Power

Others

- Indian Institute of Technology, Bombay
- Alok Industries
- Abhijeet Ferrotech Ltd.
- Reliance Industries Ltd.
- Macquarie Infrastructure
- IXORA Construction
- ICRA Management and Consultancy Services
- CLP India Pvt. Ltd., Mumbai
- Essar Bulk Power Terminal Limited

Reach us at

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Daman

A2-603, Fortune DP Nanp-1, Somnath Kachigam Road, Nr. Vidyut Bhavan, Daman – 396210.

IT SUPPORT TO YOUR POWER SOLUTIONS

- INFRASTRUCTUTR MANAGEMENT (MAPS)
- COMPLAINT MANAGEMENT SYSTEM (CMS)
- REGULATORY INFORMATION MANAGEMENT SYSTEM(RIMS)
- MAINTENANCE MANAGEMENT SYSTEM(MMS)
- INVENTORY MANAGEMENT(STORE)
- OPTIMAL POWER SCHEDULE

ONLINE ACCESS BROWSER COMPATIBILITY

INDEPENDENT OF DATABASE

The software is compatible with Oracle, Microsoft SQL, and MySQL database.

FLEXIBLE SOLUTIONS FOR YOUR POWER NEEDS

PANACEAN AT WORK FOR YOU

CONNECTING YOUR POWER NEEDS TO THE PANACEAN RESOURCES

Introduction

Power UI (Power System User Interface) is a cloud-based application specifically designed for power sectors organizations mainly, Transmission Utilities and Distribution Utilities. Presently, Power UI integrates various power system utilities such as Infrastructure management (MAPS), Complaint Management (CMS), Maintenance Management System (MMS), Regulatory Information Management system (RIMS), Inventory Management (Store).

Simple and Intuitive UI

We have kept in mind simplest ever user interface while designing the software. The user interface is so intuitive that, anyone having basic knowledge of operating computer will be able to handle various applications with ease. The technical modules only require basic training for successful operation. The software will have inbuilt guiding system for assuring hassle free completion of almost all activities.

Cloud Based:

The software run from cloud and is accessible over internet / intranet. This avoids installation of copies of software in each system. Management and upgradation of this cloud based application can become easier than ever.

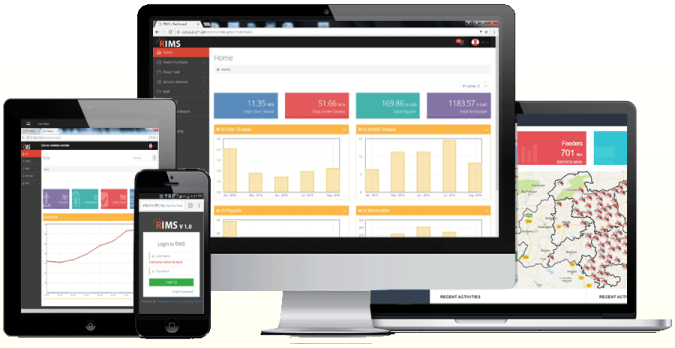
Auto Backup:

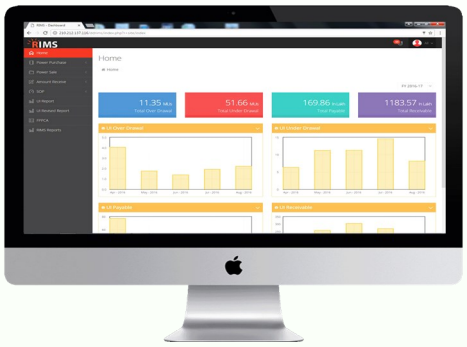
The data of all enterprise applications is of utmost importance. Power UI comes with Auto Backup facility where an authorized person can schedule auto backup of full / partial data of the software. In case of data lost or hardware failure, no or minimal data is lost.

Event Notification:

The user and/or administrator will not be unaware of activities and events being carried out by the members. All activity updates will be delivered to the concerned person via appropriate notification. Apart from inbuilt notification system, such alerts can also be combined with Email and SMS notification.

LAPTOP, Tablet & Mobile friendly



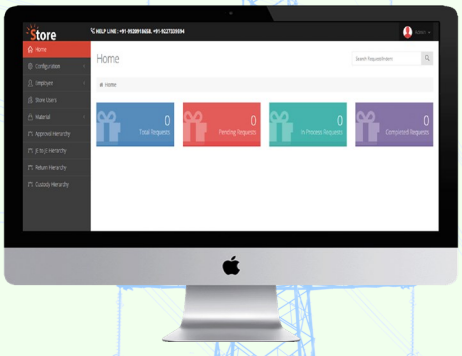


Regulatory Information Management System
RIMS

RIMS keeps track of power purchase, power sale, trading, DSM (formerly known as “UI”), SEM data, Reliability Indices etc. It translates every bit of information for successful derivation various reports as intended by State Electricity Regulatory Commission.

Complaint Management System
CMS

CMS enables utility to get in touch with its consumers. At one end it provides feedback and complaints of consumers, and on the other end it provides analytical tools for identifying time-bound resolving consumer complaints and improving consumer satisfaction.

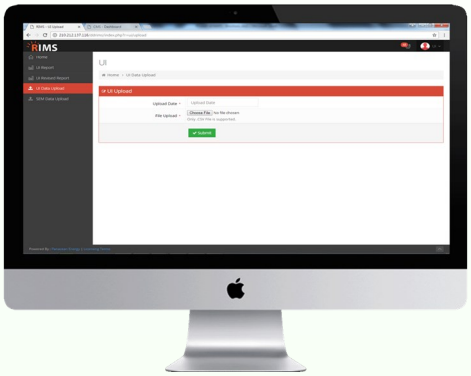


Inventory Management System (Store):

Full proof inventory management is ensured by Store. With self-auditing feature of the software, it is ensured that no material is lost unknowingly. It ensures accountability at every step right from receipt of the material to usage of the material. It also provides handful information for material usage pattern, consumption of various material and its category, material expenses many more at micro level as well as macro level. This helps in improving our planning procedures and material management. Readily available audit reports enhances applicability of the module for financial compliances.

Maintenance Management System (MMS)

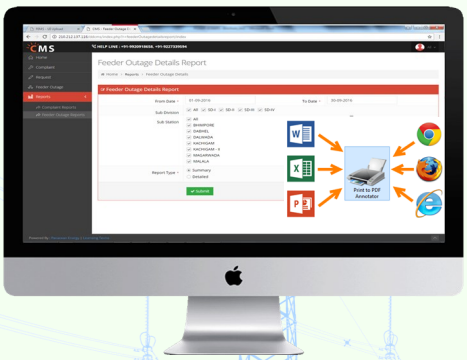
MMS it designed to improve inbuilt maintenance management facilities and hence reduce the failure rates of equipment. With equipment being part of MMS, the concerned person is reminded for inspection and taking corrective actions. The module supports maintenance routines in various categories such as preventive maintenance, breakdown maintenance, event based maintenance, and routine maintenance. The software will ensure accountability of maintenance team and improves reliability of equipment in service.



This module contains all functionalities involved in maintenance management of a utility. Specific provisions for this objective are provided in this module as given below;

- Preventive & Routine Maintenance Operations
- Breakdown and Event based Operations

Data Handling:



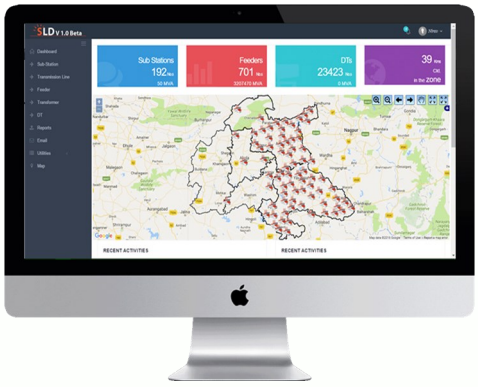
The software shall have a provision to handle huge volumes of data. Features such as import of excel files and import of data from databases shall be provided to facilitate bulk data entry and its corresponding map location display. Given below is a sample bulk data entry feature in POWERUI.

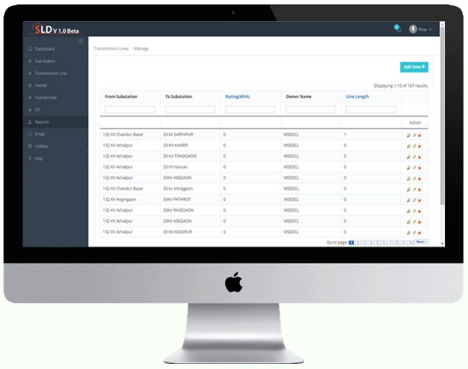
Data / Report Export and Printing Facilities:

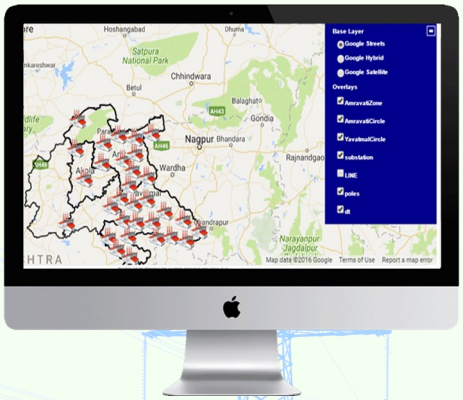


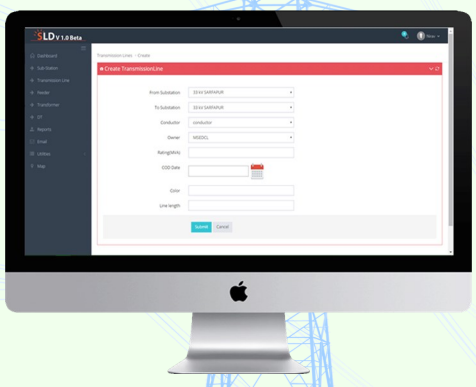
Online Complaint and Feedback Reporting

We are always listening to your feedback in terms of feature request, bug reporting, complaint, suggestion or any such thing for improving our service for your satisfaction. All such activities are only click away. User can report feedback online or by calling us on our helpline numbers.









MAPS includes infrastructure mapping of various assets of a utility. All assets with geotag (Longitude and Latitude) can be displayed and managed with ease.

POWERUI – MAPS

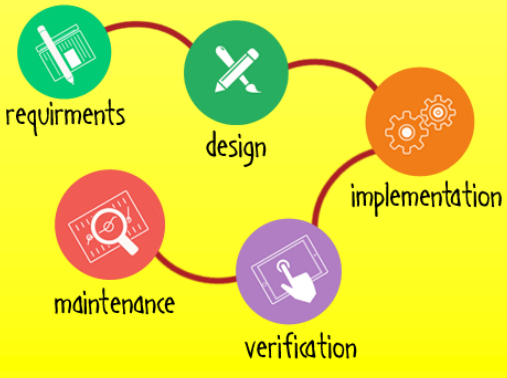
POWERUI MAPS is a map based application where all important assets and infrastructure of a Distribution company and transmission company are displayed on maps using their exact geographic coordinates. Display of all mapped distribution equipment on google maps, along with establishment of comprehensive database maintaining dynamic data of all attributes of major equipment in the distribution network is the core objective of this application. The map will be loaded with several customized user interactive features which aid in day to day monitoring and supervision of operations of the distribution network. Along with this, features facilitating operations such as assignment of O & M tasks to personnel based on equipment monitoring on map, tracking work status and review of operations on a large scale are provided in this application.

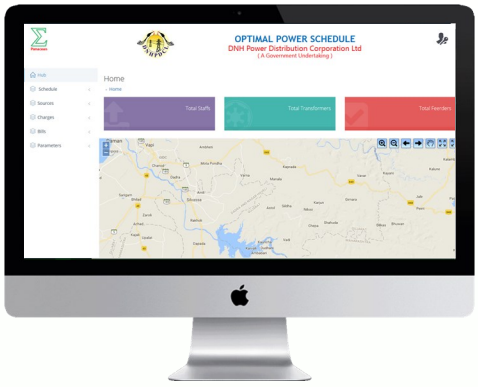
LAYER FACILITY:

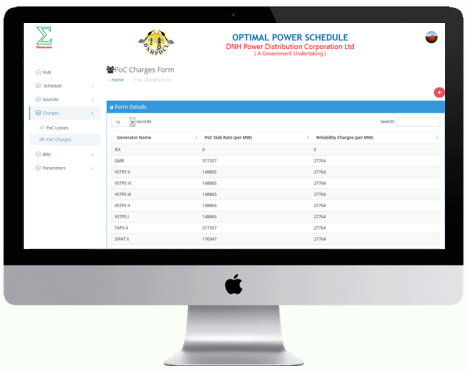
Given a large and a highly dense network as that of MSEDCL, selective viewing of different components of maps is required. The Layer facility enables the user to turn ON/OFF display of certain elements on the map. This feature provides greater clarity of viewing and ease of operation of the software.

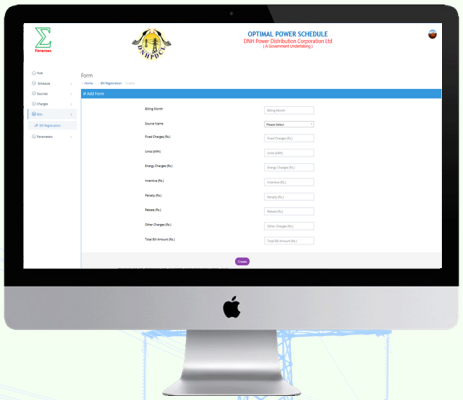
DATABASE – MAP COMMUNICATION:

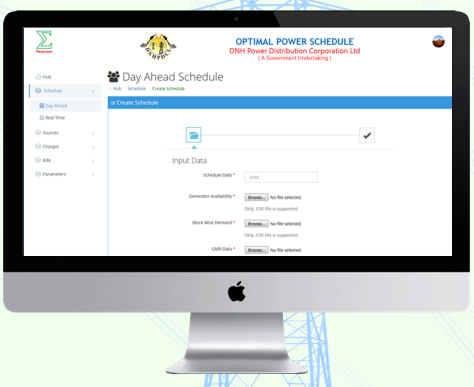
Provision for any element to be inserted into the database or updation of any element in the database can be done through both map means and database means.







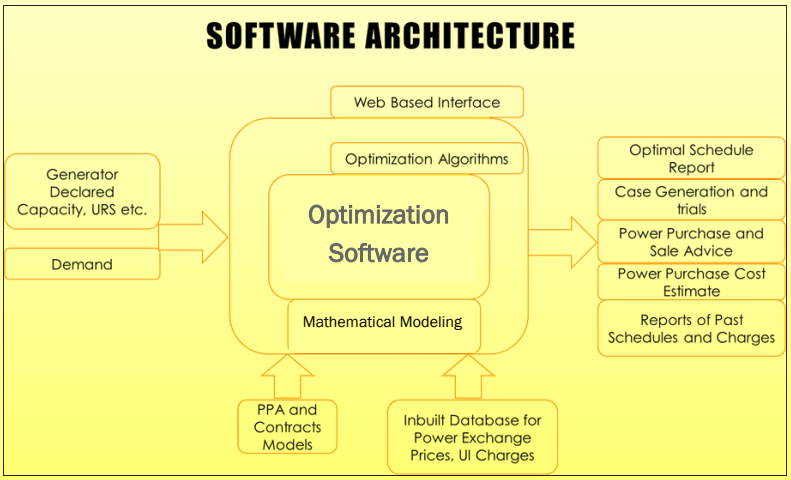




OPTIMAL POWER SCHEDULING SOFTWARE

The primary objective of this software shall be to provide Cost optimal generator wise day ahead schedule (MW) based on block wise demand of the utility and declared capacity of the generator; subject to all major constraints, with an account of all possible factors in determining the merit order of generators for each block.

Introduction: Optimal Power Scheduling is a custom made software for Power Distribution companies and load dispatch centres. Based on the principles of optimization, this software models complex issues of power purchase such as Power purchase agreements (PPA), Power Exchange, Unscheduled Interchange (UI), and Un-requisitioned Surplus (URS) etc. into a single integrated platform using a industrial popular software to get an optimal power purchase solution. The schematic diagram of Optimal Power Scheduling Software is shown below,



FEATURES

- Day ahead and Intra-day optimal solutions for bidding.
- PPA Modelling concept, governing all PPA terms and Conditions.
- Analysis of Power Exchange and DSM prices based on Historical data.
- Indicative Power Purchase and Sale Solutions to bid optimally at the Power Market.
- Block wise Power Purchase cost estimation to explore all possible options to limit power purchase expenditure.
- Reports to analyse and summarize power scheduling over a period of time.