



# POWER BULLETIN

*AI can improve efficiency of renewable energy by **20%** using predictive algorithms at wind farms.*



*To achieve Indian National Energy Plan, solar should increase to **36.1%**.*

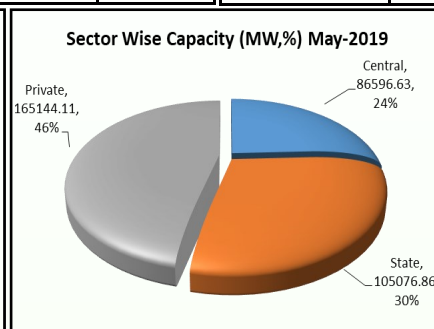
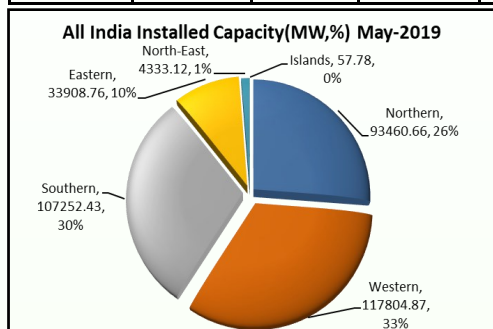
*To achieve Indian National Energy Plan, Wind should increase to **16.8%**.*

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# OVERVIEW OF INDIAN POWER SYSTEM FOR MAY-2019

All India Installed Capacity (MW) as on 31-05-2019						All India Installed Capacity (MW) as on 31-05-2019		Peak Demand of DD & DNH				
Region	Thermal	Nuclear	Hydro	RES	Total	Sector	Generation (MW)	Utility	May-19			
Northern	57721.46	1620.00	19707.77	14411.43	93460.66				Peak Demand (MW)	Peak Met (MW)	Surplus/Deficit (-)	
Western	85155.11	1840.00	7547.50	23262.26	117804.87	Central	86596.63	DD	344	344	0	(0.1)
Southern	53217.26	3320.00	11774.83	38940.34	107252.43	State	105076.86					
Eastern	27563.64	0.00	4942.12	1403.00	33908.76	Private	165144.11	DNH	800	799	(1)	(0.1)
North-Eastern	2581.83	0.00	1427.00	324.29	4333.12	Total	356817.60					
Islands	40.05	0.00	0.00	17.73	57.78							
<b>ALL</b>	<b>226279.35</b>	<b>6780.00</b>	<b>45399.22</b>	<b>78359.04</b>	<b>356817.60</b>							



**All India Plant Load Factor (PLF) in (%)**

Sector	May-18	May-19
Central	74.28	68.45
State	63.61	60.95
Private IPP	56.25	61.09
Private UTL	69.85	64.58
<b>ALL India</b>	<b>64.04</b>	<b>63.24</b>

## Highlights of WR Grid for May-2019

- Maximum Peak Demand Met:** 57093 MW
- Energy Consumption:** Total Energy Consumption in the month of May-2019 was 38103 MUs at an average of 1229 MUs/day & Maximum was 1276 MUs on 23.05.2019.
- Unrestricted Demand:** Maximum Unrestricted demand was 57113 MW and Average Peak Unrestricted demand was 51214 MW.
- Frequency Profile:** System frequency as per IEGC band is 49.90 Hz to 50.05 Hz. Maximum, Minimum & Average Frequencies 50.33 Hz, 49.65 Hz & 50.00 Hz were respectively observed in the month of May-2019.
- Voltage Profile:** All 765 KV nodes of WR were within the IEGC limit except, Tamnar, Durg and Kotra, Wardha which are high voltage node. High Voltage (greater than 420 KV) at 400KV substations were observed at Khandwa, Damoh, Raipur, Raigarh, Wardha, Dehgaon, Parli, Kalwa, Karad, Amreli, Kasor, Mapusa, Magarwada, Hazira & Dhule. Highest of 91.12% of time voltage remained above 420KV at Dhule.
- Hydro Generation:** Total hydro generation of Western Region was 1409.06 MUs at an average of 45.45 MUs/day in the month of May-2019.
- Wind Generation:** Total wind generation was 2692 MUs at an average of 86.90 MUs/day in the month of May-2019.
- Solar Generation:** Total Solar generation was 902 MUs at an average of 29 MUs/day in the month of May-2019.
- Open Access Transaction Details for May-2019:**
  - ⇒ No. of approvals & Energy Approved in Intra-regional & Inter-regional: 323 Nos & 2240.35 MUs.

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**List of Transmission Lines Commissioned/Ready for Commissioning During May-2019**

Sector	Central				Pvt.			State				Total
	800	765	400	220	765	400	220	765	400	230	220	
<b>Voltage Level (KV)</b>	0	0	1	0	0	0	0	0	5	0	7	<b>13</b>
<b>No. of Lines</b>	0	0	1	0	0	0	0	0	5	0	7	<b>13</b>

**List of Substations Commissioned/Ready for Commissioning During May-2019**

Sector	Central				Pvt.			State				Total
	765	400	230	220	765	400	220	765	400	230	220	
<b>Voltage Level (KV)</b>	1	2	0	0	0	0	0	0	9	0	13	<b>23</b>
<b>No. of Substations</b>	1	2	0	0	0	0	0	0	9	0	13	<b>23</b>

**Region-wise Power Supply Position (Demand & Availability) in May-2018 & May-2019**

Region	Energy (MUs)				Deficit / Surplus (%)	
	Demand		Energy Met		May-18	May-19
	May-18	May-19	May-18	May-19		
Northern	35206	37020	34664	36615	(1.5)	(1.1)
Western	35085	36658	35070	36658	0.0	0.0
Southern	27681	31232	27619	31213	(0.2)	(0.1)
Eastern	13210	13391	13063	13391	(1.1)	0.0
North Eastern	1232	1416	1175	1323	(4.6)	(6.6)
<b>All India</b>	<b>112414</b>	<b>119717</b>	<b>111591</b>	<b>119200</b>	<b>(0.7)</b>	<b>(0.4)</b>

**Region-wise Peak Demand / Peak Met in May-2018 & May-2019**

Region	Power (MW)				Deficit / Surplus (%)	
	Peak Demand		Peak Met		May-18	May-19
	May-18	May-19	May-18	May-19		
Northern	56546	60987	56243	60078	(0.5)	(1.5)
Western	53814	57113	52442	57093	(2.6)	0.0
Southern	43234	47477	43234	47465	0.0	0.0
Eastern	21256	23558	21249	23558	0.0	0.0
North Eastern	2709	2758	2611	2674	(3.6)	(3.1)
<b>All India</b>	<b>171973</b>	<b>183513</b>	<b>170765</b>	<b>182533</b>	<b>(0.7)</b>	<b>(0.5)</b>

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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](http://www.iexindia.com)); For more information about PXIL visit ([www.powerexindia.com](http://www.powerexindia.com))



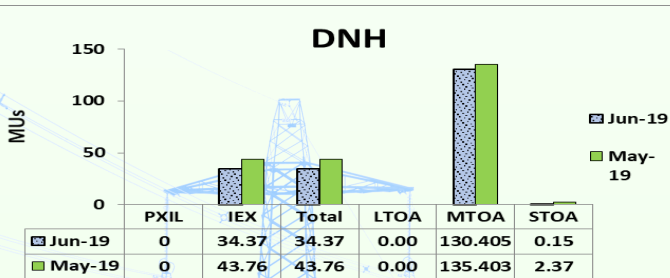
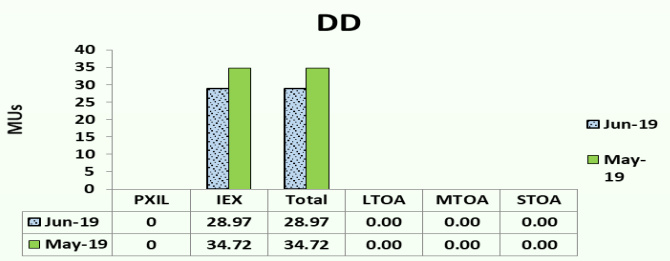
## ⇒ PXIL & IEX Trading summary

JUN-2019	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)
<b>Total</b>	1695.2	30595.2	-	1695.2	1695.2	5257809.8	7982650.5	-	4211586.9	4213541.9
<b>Min</b>	0.0	0.0	0.0	0.0	0.0	2962.7	7300.1	1051.6	2939.7	2939.7
<b>Max</b>	3.7	125.0	3500.0	3.7	3.7	14262.8	18050.3	8886.2	10006.2	10006.2
<b>Avg</b>	1.6	29.0	1555.5	1.6	1.6	7302.5	11087.0	3317.2	5849.4	5852.1

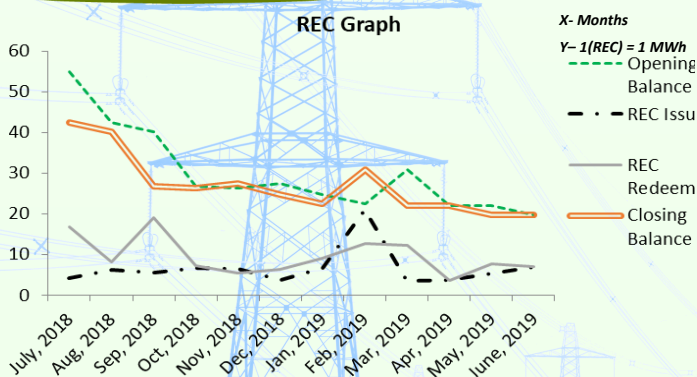
  

MAY-2019	PXIL					IEX				
	Buy Bid (MWh)	Sell Bid (MWh)	MCP (₹/MWh)	Cleared Volume (MWh)	Marginal Clear Volume (MWh)	Buy Bid (MWh)	Sell Bid (MWh)	MCP (₹/MWh)	Cleared Volume (MWh)	Marginal Clear Volume (MWh)
<b>Total</b>	5166.40	32016.40	0.00	4686.40	5166.40	4785172.15	7573595.39	3337.14	3776233.67	3772691.94
<b>Min</b>	0.00	0.00	0.00	0.00	0.00	3003.80	6009.38	1593.19	2929.91	2939.91
<b>Max</b>	10	110	4190	10	10	12990.87	19257.00	7150.81	8709.45	8709.45
<b>Avg</b>	4.4847	27.7920	2227.92	4.0681	4.4847	6431.68	10179.56	3337.14	5070.82	5075.58

### DD & DNH: OPEN ACCESS DETAILS



### RENEWABLE ENERGY CERTIFICATE MECHANISM (REC) FROM JUL-18 TO JUNE-19



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### REC Trading Session May-2019

Trader Company	PXIL		IEX		
	Particular	Non-Solar	Solar	Non-Solar	Solar
<b>Total Sell Bid (REC's)</b>	1,26,519	52,120	3,46,226	1,20,044	
<b>Total Buy Bid (REC's)</b>	3,10,398	2,08,451	11,81,027	5,00,995	
<b>Clearing Price (₹/Certificate)</b>	1,555	2,000	1,600	2,000	
<b>Cleared Volume (REC's)</b>	1,21,679	31,675	3,27,688	92,093	

### POWER MARKET UPDATE: June 2019

- The average MCP at Rs. 3.32 was at par with Rs. 3.33 per unit in May'19 and was 11% lower than Rs. 3.73 per unit in June'18. The average MCP during different time-periods of the month as given below:
  - \* Morning (07:00 to 10:00 Hrs): Rs. 2.41 per unit
  - \* Day (11:00 to 17:00 Hrs): Rs. 3.02 per unit
  - \* Evening peak (18:00 to 23:00 Hrs): Rs. 4.08 per unit
  - \* Night (01-06 Hrs and 24 Hrs): Rs. 3.48 per unit
- The Day Ahead-Market (DAM) and Term Ahead-Market (TAM) combined traded 4,566 MU, 10% decline over 5,053 MU traded in June'18 and 12% increase over 4,090 traded in May'19. On a daily average basis 140 MU were traded in June-2019.
- One Nation, One Price was realized on all 30 days during the month. However, DAM saw volume loss of 6.86 MU due to the real time curtailment.
- On daily average basis 730 participants traded in the power market in June-19.

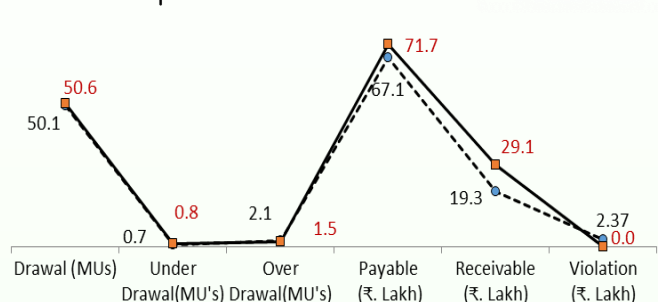
# DEVIATION CHARGES

[DD User Click to get UI Report](#)  
[DNH User Click to get UI Report](#)

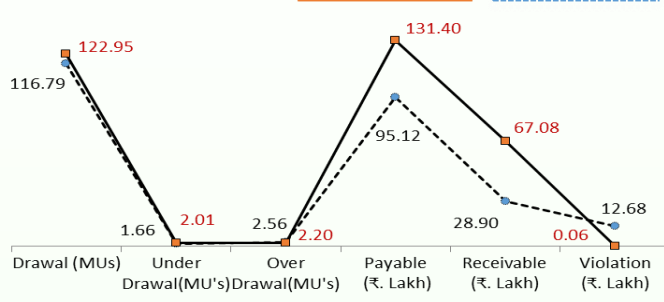
FY 2019-20	DD-Deviation Charges						
	Drawl (MUs)	Schedule (MUs)	UI Drawl (MUs)		UI Charges(₹. Lakh)		
			Under Drawl	Over Drawl	Payable	Receivable	Violation
Cumulative Total up to May-19	436.94	413.34	4.35	27.95	930.63	124.81	114.13
03-06-2019 to 09-06-2019	50.55	49.87	0.83	1.51	71.66	29.06	0.00
03-06-2018 to 09-06-2018	53.27	48.65	0.10	4.71	106.93	1.28	--
27-05-2019 to 02-06-2019	50.12	48.71	0.73	2.14	67.12	19.33	2.37
27-05-2018 to 02-06-2018	51.26	44.64	0.03	6.65	197.35	0.75	--

FY 2019-20	DNH-Deviation Charges						
	Drawl (MUs)	Schedule (MUs)	UI Drawl (MUs)		UI Charges(₹. Lakh)		
			Under Drawl	Over Drawl	Payable	Receivable	Violation
Cumulative Total up to May-19	1108.48	1096.49	8.36	-20.35	700.99	-192.63	94.85
03-06-2019 to 09-06-2019	122.95	122.75	2.01	2.2	131.4	67.08	0.06
03-06-2018 to 09-06-2018	127.33	124.56	0.19	2.95	63.89	3.58	--
27-05-2019 to 02-06-2019	116.79	115.89	1.66	2.56	95.12	28.90	12.68
27-05-2018 to 02-06-2018	123.64	119.91	0.40	4.13	118.21	11.13	--

Week wise UI Report: DD



Week wise UI Report: DNH



Month	DD			DNH		
	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)	(3.27)
May	0.57	(27.91)	(3.43)	2.73	(11.40)	(3.64)
June	0.23	(24.82)	(2.61)	--	--	--
July	0.16	(31.37)	(2.54)	--	--	--
Aug	0.10	(28.24)	(2.52)	--	--	--
Sep	0.14	(33.75)	(2.92)	--	--	--
Oct	0.37	(25.13)	(2.58)	--	--	--
Nov	0.65	(19.69)	(2.48)	--	--	--
Dec	0.20	(23.87)	(2.57)	--	--	--
Jan	2.25	(6.69)	(4.20)	--	--	--
Feb	2.46	(7.70)	(3.85)	--	--	--
Mar	2.21	(13.41)	(3.69)	--	--	--
<b>Total</b>	<b>9.63</b>	<b>(262.14)</b>	<b>(2.82)</b>	<b>4.35</b>	<b>(27.95)</b>	<b>(6.88)</b>

Month	DD			DNH		
	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)	--	--	--
July	0.43	(25.32)	(2.37)	--	--	--
Aug	0.33	(35.64)	(2.35)	--	--	--
Sep	0.50	(33.89)	(2.73)	--	--	--
Oct	1.76	(26.70)	(2.64)	--	--	--
Nov	2.36	(18.13)	(2.67)	--	--	--
Dec	0.57	(27.12)	(2.56)	--	--	--
Jan	2.68	(7.65)	(3.84)	--	--	--
Feb	2.99	(8.68)	(3.68)	--	--	--
Mar	5.37	(8.02)	(5.90)	--	--	--
<b>Total</b>	<b>20.84</b>	<b>(246.31)</b>	<b>(2.72)</b>	<b>8.35</b>	<b>(20.35)</b>	<b>(9.01)</b>

## REACTIVE ENERGY CHARGES FOR DD & DNH

FY 2019-20	DD-High Voltage				DD-Low Voltage				DNH-High Voltage			DNH-Low Voltage		
	GUJARAT		ISTS		GUJARAT		ISTS		ISTS			ISTS		
	Dok-diu	Una-diu	Mgr-Vap HV	Total	Dok-diu	Una-diu	Mgr-Vap LV	Total	Kpd-Vap HV	Kdl-Vap HV	Total	Kpd-Vap LV	Kdl-Vap LV	Total
Cumulative Total MVARh till Jun-2019	239.6	240.4	42325.6	42805.6	0.0	-5.1	0.0	-5.1	44773.9	27933.3	72707.2	1.4	711.1	712.5
Cumulative Total Charges in (₹) till Jun 19	5684.0	31233.0	-560831.0	-523914.0	0.0	-739.5	0.0	-739.5	-6492215.5	-4050328.5	10542544.0	203.0	103109.5	103312.5
17-06-2019 to 23-06-2019	59.5	107.3	4429.2	4596.0	0.0	0.0	0.0	0.0	3797.0	1743.0	5540.0	0.0	0.0	0.0
Charges in (₹)	-8627.5	-15558.5	-642234.0	-666420.0	0.0	0.0	0.0	0.0	-550565.0	-252735.0	-803300.0	0.0	0.0	0.0
24-06-2019 to 30-06-2019	-44.3	37.6	6275.0	6268.3	0.0	0.0	0.0	0.0	5376.5	2589.1	7965.6	0.0	0.0	0.0
Charges in (₹)	6423.5	-5452.0	-909875.0	-908903.5	0.0	0.0	0.0	0.0	-779592.5	-375419.5	-1155012.0	0.0	0.0	0.0

Note: The

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



## POWER SECTOR ACTIVITIES



### \* MNRE

- Notice related misleading advertisement of Solar Panel
- Gazette notification for BIS extension for Inverters under MNRE Quality Control Order for SPV Systems, Components and Devices Order 2017

### \* CEA

- Draft Amendment to Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 - Invitation of Public comments

### \* SECI

- Selection of Wind Power Developers for Setting up of 1800MW ISTS Connected Wind Power Project under Global Competitive Bidding (TRANCHE-VIII)

### \* CERC

- Report of the Committee on "Issues involved in Uttarakhand Integrated Transmission Project (UITP)" in Petition No. 80/TT/ 2016

### • MISCELLANEOUS

- Karnataka Extends Generic Tariff of ₹7.08/kWh for Waste to Energy Projects Until 2020
  - ⇒ The state has extended the applicability of the tariff set in 2016 which was valid only until March 2018.
- REIL Issues Tender to Install 20,000 Solar Streetlights Across India
  - ⇒ At least 10% of the streetlights sanctioned should have a remote monitoring system.
- PPA for 12 MW Waste Gas-Based Captive Project Approved in West Bengal
  - ⇒ Procurement will help the state DISCOM meet its non-solar RPO.
- Silk Road Fund Gets 49% Stake in Saudi Arabia's ACWA Power
  - ⇒ Silk Road Fund is a medium-to-long term development and investment fund established in Beijing under the framework of the Belt and Road Initiative.
- Himachal Pradesh Sets Tariff for Kinnaur's 300 MW Hydro Project
  - ⇒ Tariffs set for control period FY 2019-20 to 2023-24.
- Land is Still the Biggest Impediment for Large-Scale Solar Development
  - ⇒ Land acquisition is still the biggest concern for developers.
- Tariff Caps are Slowing Down Solar Auction Activity
  - ⇒ Tariff Caps are Slowing Down Solar Auction Activity.
- India's Top Rooftop Solar Installers in 2018
  - ⇒ The top 10 rooftop solar installers accounted for over 30% of the total installed capacity.
- Kerala Automobiles to Manufacture 8,000 Indigenous Electric Autorickshaws
  - ⇒ The battery for the autorickshaws will be manufactured locally with German technology.
- NSEFI Cautions MNRE Against Anti-Dumping Duty on Solar Mounting Structure Products
  - ⇒ The federation has requested the exclusion of zinc and aluminum-coated products that are used in module mounting structure.

### • Ola Electric Raises \$250 Million from SoftBank

⇒ The recent funding values the company at over \$1 billion.

### • World's Largest Single-Site Solar Project Commissioned at Sweihan, Abu Dhabi

⇒ The project has been completed with a whopping \$871.2 million investment.

### • Power Finance Corporation Raises \$300 Million Through Syndicated Loan

⇒ Power Finance Corporation has raised around \$1.3 billion since acquiring 52.3% stake in REC.

### • BHEL Seeks Module Cleaning System Supplier for 129 MW of Solar Projects in Telangana

⇒ Projects located at four locations of Singareni Collieries.

### • MNRE Details Roles and Responsibilities of DISCOMS Under the 12 GW Solar CPSU Program

⇒ SECI is the implementing agency of this program.

### • Important News Snippets from India's Renewable Industry in June 2019

⇒ After the culmination of the Lok Sabha elections in May, the domestic renewable industry appears to be gathering momentum again.

### • Tirupati Joins the Club of Solar-Powered Airports

⇒ Fourth Partner Energy has installed a 1 MW solar project at the airport facility.

### • Oxford PV Sets New Record for Perovskite Solar Cells with Efficiency of 27.3%

⇒ This exceeds the 26.7 percent efficiency world record for a single-junction silicon solar cell.

### • Promising Budget 2019 Instills Hope in India's Renewable Industry and E-Mobility Segment

⇒ PM Modi terms it "Green Budget" for its focus on the environment and e-mobility.

### • India Was the Largest Cash Market for Off-Grid Solar Products in Second Half of 2018: GOGLA

⇒ This follows an earlier report by GOGLA for the first half of 2018 in which India had claimed the top spot too.

### • Tender for 3.5 MW of Solar Projects Announced in Maharashtra

⇒ Tender floated by STEM Water Distribution and Infrastructure Company.

### • SECI Issues Tenders for Setting Up 2.4 GW of Solar Projects Connected to ISTS Network

⇒ The upper tariff ceiling is set at ₹2.65 (~\$0.038)/kWh.

### • Punjab Calls for Proposals to Set Up Rooftop Solar Projects Between 1-500 kW

⇒ The last date for bid submissions is July 25, 2019.

⇒ While 119 MW is for Singareni Collieries, another 1.7 MW tender is for the Indian Railways.

### • NTPC Wins Uttar Pradesh's 500 MW Solar Auction with Lowest Tariff of ₹3.02/kWh

⇒ Only 72 MW solar PV capacity has been awarded.

### • Gujarat Invites Bids for 950 MW of Projects to be Devel-

Note: Click on Head lines for More Info



### oped Across Two of its Solar Parks

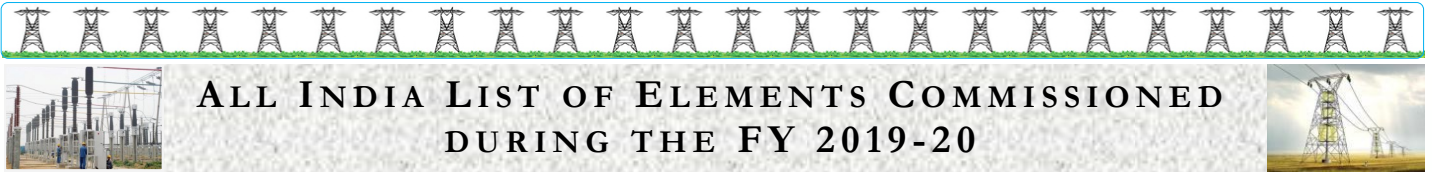
- ⇒ GUVNL has tendered a 750 MW and 200 MW of projects to be developed in the Dholera Solar Park and Raghnesda Solar Park respectively.
- **Gujarat Asks Winners of its 1 GW Wind Auction to Match the Lowest Tariff**
  - ⇒ The projects were auctioned in May 2019 with the lowest bid of ₹2.80/kWh.
- **Deadline for BIS Certification of Solar Inverters Extended to September 2019**
  - ⇒ The previous deadline lapsed on June 30, 2019.
- **Is Group Captive the Next Attractive Solar Market in 2019?**
  - ⇒ Solar project developers believe that group captive projects, when compared to projects under third party sale, are more viable due to reduced transmission charges and off-takers' equity interest in the project.
- **Heavy Rains Wreak Havoc in Madhya Pradesh, Damage a 250 MW Solar Project**
  - ⇒ Power generation reduced to 92.5 MW, restoration underway.
- **Solar EPC Company Sterling and Wilson Solar Receives SEBI's Approval for its IPO**
  - ⇒ The company is estimated to raise ₹45 billion through its IPO.
- **NTPC Gets Category I License for Inter-State Trading of Electricity**
  - ⇒ The NTPC will not trade electricity generated by it based on this license, but it can purchase and sell power involving other entities.
- **Budgetary Allocation for Solar Increases by 1% While Coal Gets a 48% Boost in 2019-20**
  - ⇒ More funds granted towards strengthening infrastructure.
- **Easy Access to Finance in India's Solar Off-Grid Market: PAYGo Report**
  - ⇒ The country scores lower on operational considerations, as rural access is less developed and solar yield is lower in some parts.
- **GAIL Issues Tender for Operation and Maintenance of a 5 MW Solar Project in Jaisalmer**
  - ⇒ The bid submission deadline for this tender is July 27, 2019.
- **Choking India gets first fully-fledged electric car**
  - ⇒ The Kona Electric SUV will cost \$36,000 -- more than three times the price of the cheapest combustion-engine SUV and more than eight times dearer than a regular saloon car.
- **Railways plans to add 4 lakh berths by leaving power cars**
  - ⇒ The official said with the HOG technology, the power to provide electric supply to the AC units, fans, lights from the overhead power lines and then is distributed to train coaches.
- **Sembcorp to infuse equity worth Rs 516.9 cr in SEIL to push renewables biz**
  - ⇒ SEIL, which has operating assets across seven states in India, owns 100 per cent of Sembcorp Green Infra. It has a wind and solar power portfolio of more than 1,700 MW.
- **Gautam Adani doubles down on controversial Carmichael coal mine**

⇒ Adani bought the mine in 2010 as Indian cos rushed for overseas energy supplies amid forecasts of booming demand.

- **We are working on Rs 50,000 cr projects for Electric Vehicles: Nitin Gadkari**
  - ⇒ Nitin Gadkari speaks about the lofty infrastructure targets of the government, the immediate agenda to revive stalled highway projects.
- **India's first super-efficient AC launched at Rs 41,300**
  - ⇒ This price is 30 percent less than the retail prices of BEE 5-Star ACs, and comparable to the BEE 3-star ACs.
- **Environment Ministry panel on hydropower projects violating SC order: TN CM**
- **96,376 Solar Pumps for Farmers Have Been Approved in 2 Years**
  - ⇒ Over 10 GW of solar capacity to be added through the solarization of agriculture.
- **Haryana Retenders 300 MW of Solar Projects Amid Tepid Response**
  - ⇒ Tariff cap pegged at ₹3/kWh for 25 years of the PPA.
- **Renewable Project Developer Greenko Receives \$329 Million in Equity**
  - ⇒ General Insurance Corporation and Abu Dhabi Investment Authority.
- **Former President of Tata Motors Backs E-Scooter Startup BattRE**
  - ⇒ The funding amount has not been disclosed by the company.
- **IIT Hyderabad-Incubated Electric Vehicle Startup PURE EV Raises Funding**
  - ⇒ The amount of funding raised remains undisclosed.
- **BHEL Seeks BoS Vendors for 5 MW of Floating Solar Projects in West Bengal**
  - ⇒ The bid submission deadline is July 22, 2019.
- **Total Eren and EDF Renewables Sign PPA for 716 MW of Solar Projects in India**
  - ⇒ The four solar projects are located in the states of Rajasthan and Uttar Pradesh.
- **Central Electronics Limited Floats Tender for 50 MW of Solar Projects in Maharashtra**

### List of Abbreviations

• <b>AC</b> : Air Conditioner	• <b>System</b>
• <b>BIS</b> : Bureau of Indian Standards	• <b>IPO</b> : Initial Public Offer
• <b>BoS</b> : Breakup Operating System	• <b>IIT</b> : Indian Institute of Tech.
• <b>BHEL</b> : Bharat Heavy Electricals Ltd	• <b>KW</b> : Kilo Watt
• <b>CEA</b> : Central Electricity Authority	• <b>KWh</b> : kilo Watt Hour
• <b>CPSU</b> : Central Public Sector utility	• <b>MW</b> : Megawatt
• <b>CM</b> : Chief Minister	• <b>MNRE</b> : Ministry of New & Renewable energy
• <b>CERC</b> : Central Electricity Regulatory Commission	• <b>NSCFI</b> : Navy Supply Corps Foundation,
• <b>DISCOM</b> : Distribution Companies	• <b>NTPC</b> : National Thermal Power Corp.
• <b>EDF</b> : Export Declaration Form	• <b>PAYGo</b> : Pay-As-You-Go
• <b>EESL</b> : Energy Efficiency Services Limited	• <b>PV</b> : Photovoltaic
• <b>EV</b> : Electric Vehicle	• <b>PVSOL</b> : Photovoltaic Solutions.
• <b>EPC</b> : Engineering Procurement & Construction	• <b>PPA</b> : Power Purchase Agreement
• <b>GAIL</b> : Gas Authority of India Ltd	• <b>REC</b> : Rural Electrification Corp.
• <b>GOGLA</b> : Global Off-grid Lighting Association	• <b>SEBI</b> : Securities & Exchange Board of India
• <b>GW</b> : Giga Watt	• <b>SECI</b> : Solar Energy Corporation of India Limited
• <b>HOG</b> : Head on Generation	• <b>SEIL</b> : Sembcorp Energy India
• <b>ISTS</b> : Inter State Transmission	• <b>TN</b> : Tamil Nadu



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

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

### ◆ Substations

- \* 400/220 KV Bhadla PGCIL(1000 MVA)
- \* 400/220 KV Moradabad UPPTCL (240 MVA)
- \* 400/132 KV Masauli Prayagraj UPPTCL (200 MVA)
- \* 400/220 KV Talaricheruvu S/s AP-TRANSCO (945 MVA)
- \* 400/11 kV Medaram S/s TSTRANSCO (150 MVA)
- \* 400/220 kV Kalikiri S/s APTRANSCO (315 MVA)
- \* 400/220 KV Uravakonda APTRANSCO (500 MVA)
- \* 400/220 KV Jangaon TSTRANSCO (500 MVA)
- \* 220/132 KV Chinhat UPPTCL (40 MVA)
- \* 220/132 KV Hathras UPPTCL (40 MVA)
- \* 220/132 KV Jaunpur UPPTCL (160 MVA)
- \* 220/132/33 KV Laukahi BSPTCL (320 MVA)
- \* 220/66 KV Alawalpur PSTCL (100 MVA)
- \* 220/33 KV Sector-95 Gurgaon HVPNL (100MVA)
- \* 400 KV Barmer – Bhinmal (RVPNL)
- \* 400 KV Chandalpur-Thippapur (TSTRANSCO)
- \* 400 KV Jangaon - Tippapur (TSTRANSCO)
- \* 400 kV Bhupalapalli - Chandalpur (TSTRANSCO)
- \* 400 KV Gajwel to Chandalpur (TSTRANSCO)
- \* 400 kV Kayathar to Thenampatti (TNTRANSCO)
- \* 400 KV Rajvest to Jodhpur LILO (RRVPNL)
- \* 220 KV Barielly - Pilibhit Ckt - II (UPPTCL)
- \* 220 KV Bhanjanagar - Aska (OPTCL)
- \* 220 KV Mobha - Mangrol (LILO) (GETCO)
- \* 220 KV Gr.Noida - Noida Sec-148 (UPPTCL)
- \* 220 KV Hathras - Gokul (UPPTCL)
- \* 220 KV Sohawal - Tanda (UPPTCL)

### ◆ Transmission Lines

### ◆ Generators

#### ◆ Thermal

\* Nil

#### ◆ Hydro

\* Nil

#### ◆ Nuclear

\* Nil

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

Month	Thermal					Hydro					Nuclear				
	WR	NR	NER	ER	S R	WR	NR	NER	ER	SR	WR	NR	NER	ER	SR
Apr-19	0	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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## All India No. of Line Reactors (LR), Transmission Lines (T/L), Substations (S/S) and Bus Reactors (BR) FY 2019-20 (till May-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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>35</b>	<b>0</b>

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

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 Pvt. Ltd." 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®**  
(An ISO 9001:2015 Company)  
**More Power to You**

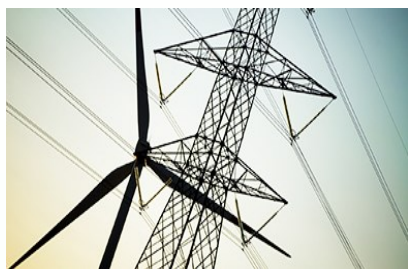
### Panacean Enterprise Pvt. Ltd.







## 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.

#### 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

### Reach us at

#### Registered Office

203, Antartica – D, Lodha Aqua CHS Ltd., Opp. to Thakur Mall, Mahajanwadi, Mira Road (E) Thane – 401107, Maharashtra.

#### Corporate Office

##### Mumbai

Gala No. 209, 2<sup>nd</sup> Floor, Nikisha Ind. Estate, Premises No 2, Pandurang Wadi, Mira Road (East), Thane- 401107.

##### Silvassa

Flat No:A1/8, 2<sup>nd</sup> Floor, above Om Sai medical store, Opp Jalaram Temple, Kilvani naka, Silvassa - 396230.

##### Daman

1/320, Bhidbhan Mahadev Chawl, Wadi Falia, New Vegetable Market, Nani Daman, Daman – 396210.

##### Surat

206, Santiniketan Flora Business Hub, Nr. Sanskirtirih Gyanpith School, Abrama Road, Mota Varachha, Surat – 394105.



## PANACEAN AT WORK FOR YOU

CONNECTING YOUR POWER NEEDS TO THE PANACEAN RESOURCES

### IT SUPPORT TO YOUR POWER SOLUTIONS

- INFRASTRUCTURE 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.

### SECURITY



### FLEXIBLE SOLUTIONS FOR YOUR POWER NEEDS

### 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:

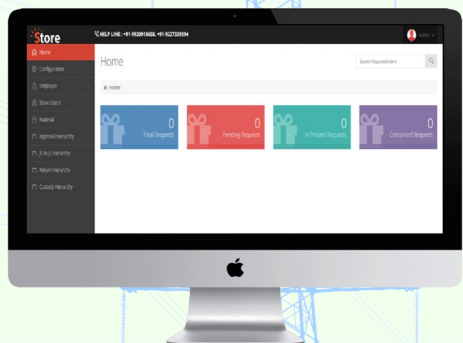
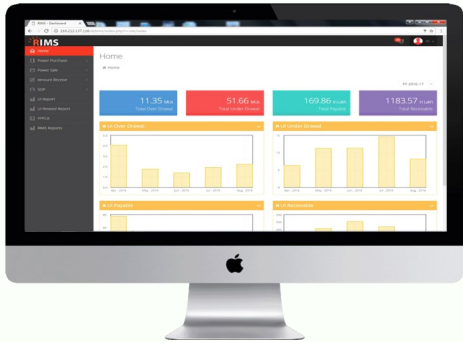
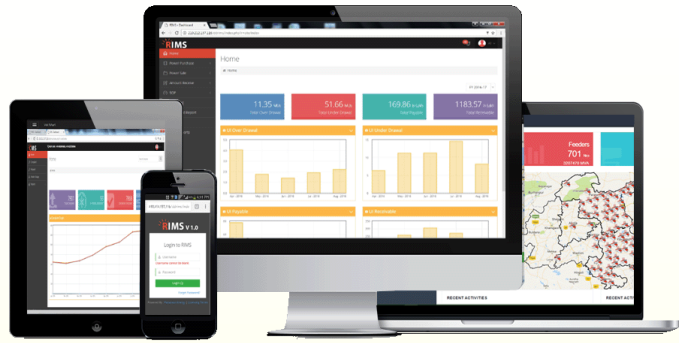
The data of all enterprise applications is of utmost importance. Power UI comes with Auto Backup facility where an authorized person can schedule auto backup of full / partial data of the software. In case of data lost or hardware failure, no or minimal data is lost.

### 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.

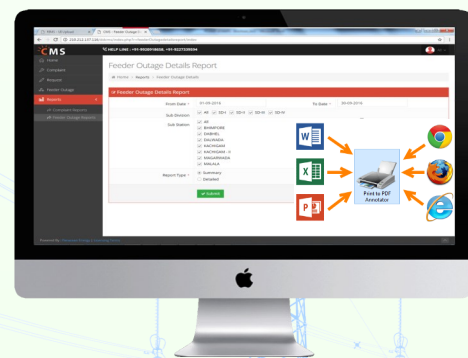
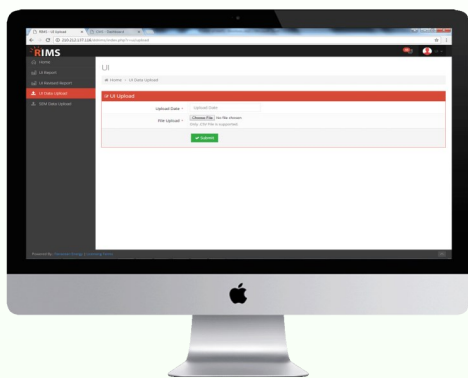


Transmission

Best Suitable Utilities

Distribution





## M AINTENANCE MANAGEMENT SYSTEM (MMS)

MMS is 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

## D ATA HANDLING:

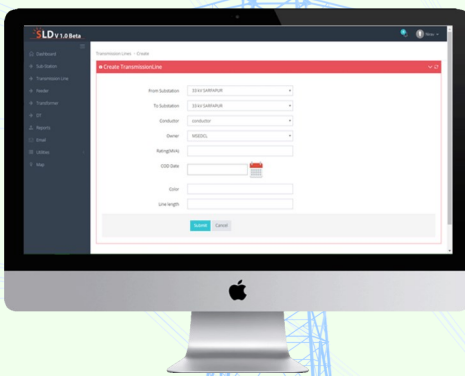
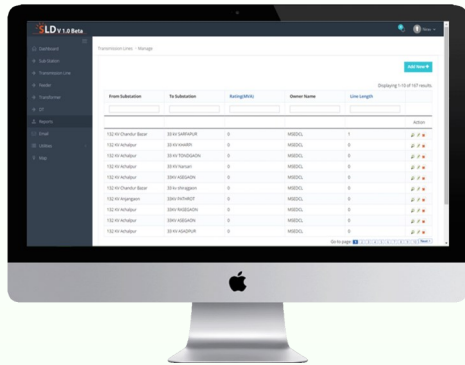
The software shall have a provision to handle huge volumes of data. Features such as import of excel files and import of data from databases shall be provided to facilitate bulk data entry and its corresponding map location display. Given below is a sample bulk data entry feature in POWERUI.

## D ATA / REPORT EXPORT AND PRINTING FACILITIES:



## O NLINE 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.



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

**P**OWERUI - MAPS

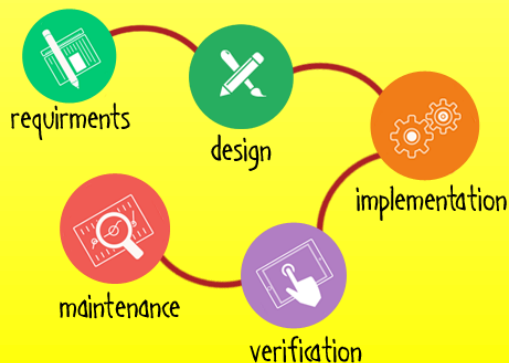
POWERUI MAPS is a map based application where all important assets and infrastructure of a Distribution company and transmission company are displayed on maps using their exact geographic coordinates. Display of all mapped distribution equipment on google maps, along with establishment of comprehensive 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.

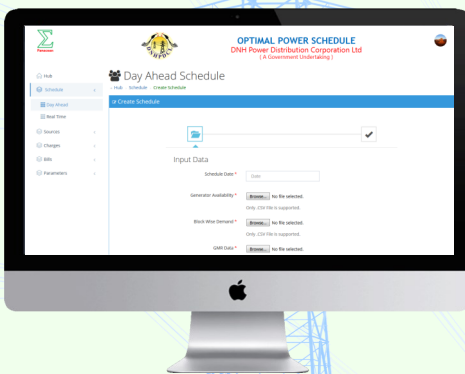
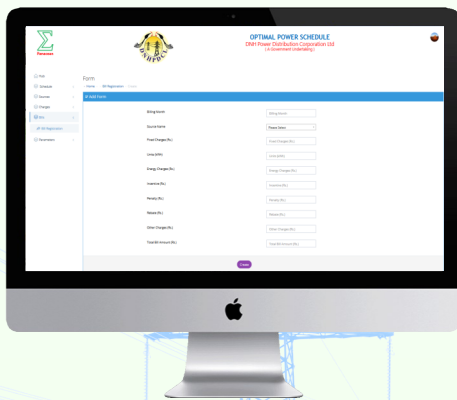
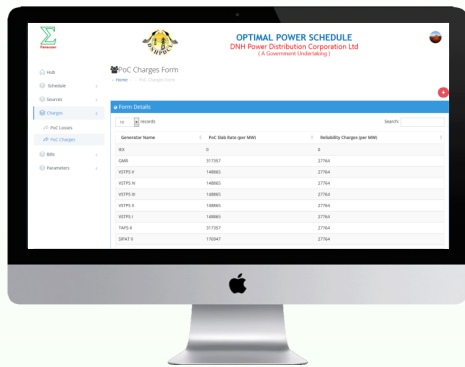
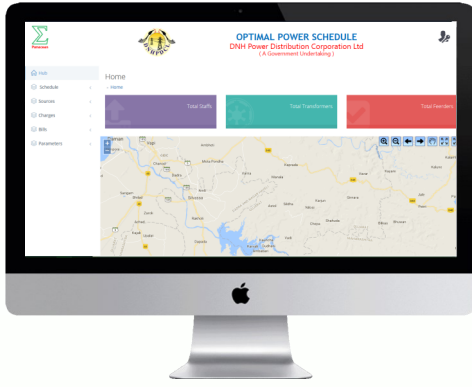
**L**AYER FACILITY:

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.

**D**ATABASE - 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.

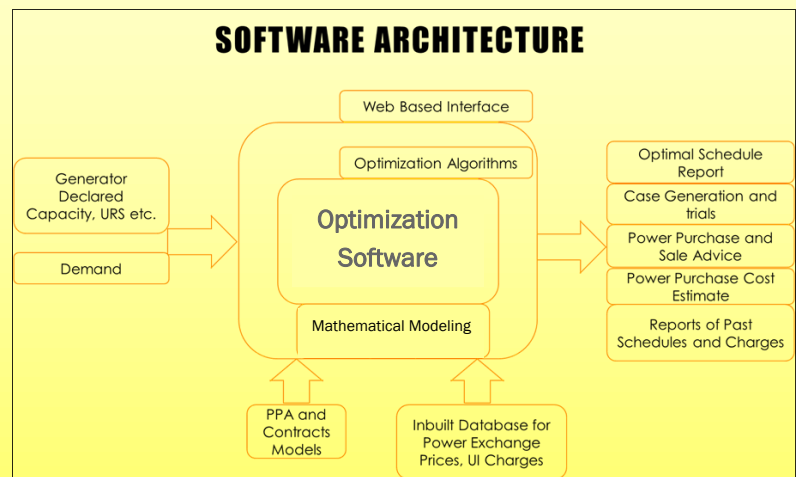




## OPTIMAL POWER SCHEDULING SOFTWARE

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, Un-scheduled 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.