

**MINUTES OF 96th MEETING OF FORUM OF
REGULATORS (FOR)**

Venue : 7th Floor, CERC Conference Hall, New Delhi
Date /Day : 14th July, 2025; Monday
Timings : 10.30 A.M
List of Participants : Appendix-I

1. The Chairperson, FOR/CERC, extended a warm welcome to all members of the Forum. He provided a brief overview of the day's agenda, highlighting references received from DMRC (Delhi Metro Rail Corporation), MNRE, as also the need for harmonization of State Grid Codes with the IEGC. He also touched upon the key agenda items, including the recommendations of the FOR Working Group with respect to the Model Regulations on Captive Generation and the Model MYT regulations. The Chairperson also welcomed Mr. Pradeep Kumar Jena, Chairman of OERC, who was attending the FOR meeting for the first time, while bidding farewell to the Chairpersons of HPERC, GERC and NERC as they were attending their last FOR meeting. Thereafter, the FOR Secretariat took up the agenda items for discussion.

AGENDA ITEM 1: (a) CONFIRMATION OF MINUTES OF THE 95TH FOR MEETING HELD ON 4TH APRIL 2025

2. Joint Chief (RA), CERC apprised the Forum regarding the action taken on major decision points of the 95th FOR meeting held on 4th April 2025.
3. The Forum was also informed of the decision of the Committee of 3 Chairpersons of SERCs (constituted to look into the arrangements for the capacity building program for FOR members to South Africa) who recommended the visit for SERCs to be held in 2 cities instead of 1 in view of the availability of the Regulators and discoms in 2 different cities. While the Chairperson, FOR/CERC had approved the

recommendations of the Committee, the same were placed before the Forum for ratification.

4. With respect to the same program, the Forum was informed that the expenses for the said GRPP had exceeded its budget due to IIFT engaging MICCIA to take care of knowledge support and arranging meetings with the concerned stakeholders in South Africa
5. After discussion, the Forum ratified the additional expenses incurred for the said program and directed that the same be adjusted from the reserves. It also ratified the decision for travel to 2 cities instead of 1 city and stated that, for future programs related to SERCs, while the visit can be planned to 2 cities in 1 country, the duration may be restricted to three nights (excluding travel time) which will enable the Forum to economise on its expenses.
6. The Forum was also apprised of the decision of the FOR WG on Renewable Energy to continue to engage M/s Idam Infrastructure Advisory (previously engaged under the support of USAID) to provide knowledge support to the WG by awarding the assignment through single sourcing(in line with CERC Staff consultants Regulations) at a maximum cost of ₹10,00,000 (excluding taxes). After deliberations, the Forum approved the decision of the WG to continue to engage M/s Idam Infrastructure so as to maintain continuity in the activities and deliverables of the WG
7. The Forum was also informed that the FOR WG on Hydro (currently chaired by the Chairperson, HPERC) still needed to finalise its recommendations on PSP viability, and as Chairperson, HPERC was demitting office soon, the Forum decided that the Chairperson, MERC, would head the Hydro WG.
8. Similarly, as the Chairperson, HPERC was also a Member of the FOR WG on Discom viability, it was decided to induct the Chairperson, KERC and Chairperson, OERC, in the said WG.

9. As the Chairperson, HPERC was also a Member of the FOR WG on RE, it was decided that the Chairperson, TSERC, will be inducted in his place
10. The Forum was also informed that Chairperson, GERC, was a Member of the FOR WG on RE and that he would be demitting office in August 2025. The Forum decided that Chairperson, WBERC would be inducted to the said WG in place of GERC Chairperson.
11. After detailed deliberations, the Forum confirmed the minutes.

(b) CONFIRMATION OF MINUTES OF SPECIAL FOR MEETING HELD ON 28TH FEBRUARY 2025

12. The Forum was apprised of the action taken on the minutes of the Special FOR meeting.
13. Accordingly, the Forum confirmed the minutes of the Special FOR meeting.

AGENDA ITEM 2: AUDITED ACCOUNTS OF FORUM FOR FY 2024-25.

14. . Joint Chief (RA), CERC apprised the Forum of the salient features of the Audited Accounts, after which the Forum approved and adopted the same.

AGENDA ITEM 3: HARMONISATION OF THE STATE GRID CODE WITH IEGC - MINIMUM TURN DOWN LEVEL OF STATE THERMAL GENERATORS AND COMPENSATION FOR PART LOAD OPERATION

15. Representatives of GRID-India apprised the Forum on the framework governing

minimum turn-down levels and the associated compensation for thermal generating stations at both inter-State and intra-State levels (**Annexure-I**). They noted that under the Indian Electricity Grid Code (IEGC), inter-State generating stations are mandated to operate at a minimum turn-down level of 55% to support flexible operations amid increasing renewable energy integration. This is backed by a compensation mechanism addressing increased heat rates, higher auxiliary consumption, and additional oil support. However, it was pointed out that several States are yet to adopt similar provisions for intra-State generating stations. While some States have specified a 55% turn-down threshold, they have not instituted compensation mechanisms to offset operational inefficiencies. It was also highlighted that, in several cases, cheaper pithead inter-State generating stations are being backed down to accommodate renewable generation. In light of India's ambitious renewable energy targets for 2030, the Forum emphasised the need for intra-State generating stations to be similarly enabled to operate flexibly at 55% minimum load, with appropriate compensation frameworks in place.

16. Grid-India also updated the Forum of the meeting held by a sub-group of experts constituted under the Standing Technical Committee for assisting the State Thermal Generators in lowering the minimum turn down level. It was highlighted that NTPC representatives are also facilitating the conduct of a workshop for State thermal generators to evolve standard operating procedures for achieving the minimum turn-down level. In view of the ambitious RE integration targets by 2030, it was emphasised that the intra-state generating stations also need to be enabled to run at a minimum turn-down level of 55% on lines of inter-state thermal generating stations. Further, Grid India also highlighted that the State grid code may also need to be aligned with the IEGC 2023 to enable facilitative frameworks such as Security Constrained Economic Despatch (SCED) and Security Constrained Unit Commitment (SCUC) specified in the IEGGC at the State level for achieving better

flexibility and economic despatch at the State level with reserves requirement.

17. The FOR noted the presentation and emphasized the need to adopt similar norms for minimum turn down level and compensation for part load operation for thermal generators embedded in the State system. The Forum also appreciated the effort of the sub-group of expert groups, including NTPC for handholding the State Thermal generators to operate at the minimum turn down level, and implement the intra-State SCED.

AGENDA ITEM 4: INDIA ENERGY STACK

18. Joint Chief (RA), CERC apprised the Forum that, the Ministry of Power has constituted a Task force for developing a Road Map for India Energy Stack and PoC for Utility Intelligence Platform under the RDSS Scheme to design and develop a unified, secure, and inter-operable digital platform for the energy ecosystem and a plan for a pan India roll out. In this regard, Dr R.S. Sharma, Chairperson of the Task Force, gave a brief Presentation (**Annexure II**) on the same.
19. The major points emanating from the discussion are as follows:
 - a. The general approach to addressing any issue involves identifying the problem, determining the directly affected stakeholders, and formulating an optimal solution.
 - b. The implementation of Aadhaar encountered several challenges, such as ghost identities, duplication, and individuals lacking formal identification.
 - c. Currently, the grid is changing. While the physical system is integrated, the digital system is not integrated, and all systems are connected to the Cloud in silos. As the power grid undergoes a dramatic transformation, from areas with no grid or electricity to the rise of microgrids, there is a growing need to digitally unify these systems.

- d. The India Energy Stack (IES), inspired by the global vision of a Digital Energy Grid (DEG), proposes a unified infrastructure to interconnect diverse digital energy ecosystems.
 - e. Just as UPI revolutionized digital payments, IES is set to transform the energy sector.
20. The Forum appreciated the presentation and looked forward to the deliberations and final report of the IES and the impact it would have on the power sector in general.

AGENDA ITEM 5: REGULATORY FRAMEWORK FOR SIMPLIFYING THE APPROVAL PROCESS FOR THE INSTALLATION OF ROOFTOP SOLAR BY THE RESIDENTIAL CONSUMERS

21. Joint Chief (RA), CERC referred to the MNRE communication dt 8.05.2025 in which FOR has been requested to adopt a common regulatory framework for simplifying the approval process of rooftop solar by residential consumers under PM Surya Ghar: Muft Bijli Yojana (PMSG: MBY). MNRE has referred to the waivers provided by some State ERCs, such as RERC, APERC and GERC, on application fee, meter testing charges, other charges and the requirement of connection agreement, etc, in this regard and requested a common regulatory framework for simplifying the approval process for the installation of solar rooftop by residential consumers. Adoption of such measures by all Members of FOR will encourage participation of residential consumers in the solar rooftop program.
22. The Forum appreciated the need for simplification of the process to encourage the participation of citizens in contributing to the adoption of clean energy. It was also informed that the issues raised in the letter were discussed in the FOR Working Group on RE Policy, and appropriate provisions are being incorporated wherever possible in the Model Regulations on Distributed Renewable Energy (DRE)

Regulations.

23. Thereafter, the Forum also deliberated on various provisions in the RERC Regulations and subsequent amendments for simplification of the approval process for solar rooftop and noted for suitable action by the State Commissions.

AGENDA ITEM 6: OPERATIONAL AND FINANCIAL IMPACT OF THE CURRENT TARIFF STRUCTURE AND THE POTENTIAL BENEFITS OF THE PROPOSED REFORMS

24. A reference was received from Delhi Metro Rail Corporation (DMRC), where it has sought various exemptions, such as ToD charges, cross subsidy and additional surcharges, grant of contract demand for any Discom area for all metro rail throughout India.
25. After detailed deliberations, the Forum noted the same for appropriate action by the concerned ERCs in line with the State Regulations.

AGENDA ITEM 7: MODIFICATION TO DSM (DEVIATION SETTLEMENT MECHANISM) FORMULA

26. Joint Chief (RA), CERC apprised the Forum about the communication received from Karnataka ERC requesting to deliberate on the formula provided in the FOR-Model DSM Regulations for Wind and Solar Projects. While the available capacity being used in the formula for computing the deviation was expressed in percentage for wind and solar, it was suggested that all ERCs may adopt a formula for the computation of deviation for wind and solar with schedule generation in the denominator, as in TNERC DSM Regulations. It was also requested that CERC update on the X-factor in the deviation error (in %) formula stipulated in the DSM Regulations 2024.

27. Chief (RA), CERC apprised the Forum that the CERC staff has worked on some data analysis to assess the impact of such transition from available capacity to schedule generation in computing deviation error (in %) for wind and solar power projects.
28. The Forum decided that the issue may be discussed in the FOR Working Group on RE policy, wherein the CERC staff may also present the data analysis carried out in this matter.

AGENDA ITEM 8: PROPOSED ELECTRICITY FUTURES

29. Chief (RA), CERC apprised the Forum that the Hon'ble Supreme Court of India in its Order dated 6th October 2021 settled the jurisdictional matter between SEBI and CERC in terms of the agreement reached between the two regulators that CERC will regulate all the physical delivery contracts, whereas SEBI will regulate the financial contracts. A Joint Working Group (JWG) of SEBI and CERC was constituted in line with the Hon'ble Supreme Court's directions to co-ordinate the regulatory roles of SEBI and CERC for the financial derivatives of electricity. He further informed that based on the recommendations of the JWG, SEBI has recently accorded its approval to both the commodity exchanges namely, MCX and NSE, to launch Electricity Derivatives on their respective platforms. Accordingly, both commodity exchanges have been invited to make a presentation on the electricity derivatives to apprise the Forum on the electricity derivatives products launched on their platform.
30. MCX and NSE in their presentations (**Annexure III**) highlighted the monthly electricity future contract specifications, product design, risk mitigation measures, position limits at client and member levels, and cash settlement mechanism, etc. Representatives of the commodity exchanges highlighted the contributions of the

Joint Working Group (JWG) in examining the market impact and contract design over two and a half years. It was emphasized that the electricity derivatives, being a useful hedging tool against the price risk, can serve as an important avenue for diverse set of participants including Discoms/Generators to optimize their cost of procurement/delivery of electricity. They requested the SERCs to engage with the commodity exchanges to explore the strategic utility of electricity derivatives in their respective jurisdictions.

31. The Forum deliberated on the possible impact of financial derivatives of electricity on the physical market of electricity and emphasized the need for regulatory exchange of information between the two regulators to avoid any gaming. The Exchanges clarified that the financial market has built in required risk mitigation measures such as order size cap, position limit at the client and member level, daily price band, etc.
32. The Forum appreciated the presentations made by both the commodity exchanges and stressed the importance of continuous monitoring, surveillance, and inter-regulatory coordination to ensure market integrity and stability. The Forum also noted the need for model guidelines for States to make suitable provisions in their regulations in this context.

AGENDA ITEM 9: DRAFT FOR MODEL REGULATIONS

33. Chairperson, GERC/ Chair of the FOR WG on Harmonisation of Rules informed the Forum that the WG has finalized two model regulations, namely Model MYT Regulation and Model Regulation on verification of status of generating Plants and captive users, and the same was being presented to the Forum for approval and adoption.

A) MODEL MULTI YEAR TARIFF REGULATION

34. The Forum was informed that the Model MYT regulations were last issued in February 2025 and they were further modified considering the extant Rules issued by MOP and suggested modifications proposed by the WG members with respect to several provisions, including those related to the MYT framework, classification of controllable and uncontrollable factors, depreciation, AT&C losses, operation and maintenance (O&M) expenses, segregation of wheeling and retail supply businesses, etc.
35. After detailed deliberations, the Forum approved and adopted the Model MYT Regulations

B) MODEL REGULATIONS ON VERIFICATION OF STATUS OF GENERATING PLANTS AND CAPTIVE USERS

36. The Forum was informed that the FOR Model regulation on “Verification of status of Generating Plants and Captive Users “which was issued in February 2023, has been modified based on the ruling of the Hon’ble Supreme Court by way of incorporating the illustrations for the unitary method and weighted average method for verification of the status of CGP.
37. After detailed deliberations, the Forum approved and adopted the Model Regulations.

NEXT FOR MEETING

38. Chairperson, KERC, offered to host a Special FOR meeting on “Digital Energy Grid” at Bangalore on August 22nd, 2025
39. Chairperson, CSERC, also proposed to host the next FOR meeting on 12th September 2025 at Chhattisgarh.

CONCLUSION

40. Shri D.K. Sharma, Chairperson, HPERC, in his farewell address, fondly recalled the memorable moments shared during his tenure and expressed that participating in FOR meetings has always been a delightful experience. He humbly noted his efforts to contribute in small but meaningful ways and emphasized that the power sector plays a pivotal role in driving growth and economic development.
41. In his farewell address, Shri Khose Sale, Chairperson, Nagaland ERC, expressed gratitude for the appreciation he received and described his three-and-a-half-year association with the Forum as a valuable learning experience. He praised the Forum's vast expertise and professionalism, and noted that while his contributions were limited, he had learned a great deal.
42. Shri Anil Mukim, Chairperson, GERC, in his farewell talk, conveyed his sincere appreciation to all members, stating that it had been a fantastic experience to be part of the Forum. He reflected on the friendships and connections formed over nearly four years, saying they would always be cherished.

VOTE OF THANKS

43. Chief (RA), CERC expressed his personal satisfaction with the day's meeting, noting it was one of the longest and most substantive in recent times. Topics such as the Energy Stack and electricity derivatives were highlighted as new and complex, with valuable insights gained from industry participants. Feedback was encouraged to help shape these evolving products, and future-focused suggestions, such as exploring options beyond futures, were appreciated. He also extended heartfelt thanks to the three outgoing Chairpersons, praising their dedication. Appreciation was also extended to all members, the CERC team, and particularly to

the Chairperson, FOR/CERC, for skillfully guiding the meeting. The session concluded with anticipation for the upcoming meeting in Bangalore on 22nd August 2025.

LIST OF PARTICIPANTS OF 96TH FOR MEETINGHELD ON 14TH JULY 2025

Sl. No.	Name and Designation	Name of Organization
1	Shri Jishnu Barua Chairperson	CERC/FOR -in Chair
2	Shri Kumar Sanjay Krishna Chairperson	AERC
3	Shri R.K. Joshi Chairperson	APSERC
4	Shri Hemant Verma Chairperson	CSERC
5	Shri Anil Mukim Chairperson	GERC
6	Shri D.K. Sharma Chairperson	HPERC
7	Shri Alok Tandon Chairperson	JERC for State of Goa and UTs
8	Shri P.Ravi Kumar Chairperson	KERC
9	Shri Sanjay Kumar Chairperson	MERC
10	Shri Chandan Kumar Mondal Chairperson	MSERC
11	Shri Benjamin L. Tlumtea Chairperson	MzERC
12	Shri Khose Sale Chairperson	NERC
13	Shri Pradeep K. Jena Chairperson	OERC
14	Shri Viswajeet Khanna Chairperson	PSERC
15	Dr. Rajesh Sharma Chairperson	RERC

16	Shri K.B. Kunwar Chairperson	SSERC
17	Shri R. Manivannan Chairperson	TNERC
18	Dr. (Justice) Devaraju Nagarjun Chairperson	TGERC
19	Shri Arvind Kumar Chairperson	UPERC
20	Shri Madan Lal Prasad Chairperson	UERC
21	Dr. M.V. Rao Chairperson	WBERC
22	Shri Parshuram Singh Yadav Member	BERC
23	Shri Mahendra Prasad Member (Law)	JSERC
24	Shri A.J. Wilson Member	KSERC
25	Shri Prashant Chaturvedi Member	MPERC
26	Shri Harpreet Singh Pruthi Secretary	FOR/CERC
27	Dr. S.K. Chatterjee Chief (Regulatory Affairs)	CERC
SPECIAL INVITEES		
28	Shri Ramesh Babu V Member (Technical)	CERC
293	Shri Harish Dudani Member (Law)	CERC
30	Shri Ravinder Singh Dhillon Member (Fin.)	CERC
31	Shri S.C. Saxena CMD	Grid Controller of India
32	Dr. R.S. Sharma Chairman	India Energy Stack
33	Ms Praveena Rai MD, CEO	MCX

34	Dr. Harish Ahuja Head, PSD Power Market	NSE
35	Shri Awadhesh Kimar Chief (Engg.)	CERC
36	Shri Rajeev Pushkarana Chief (Finance)	CERC
37	Smt. Yogieta S Mehra Chief (Economics)	CERC
OTHERS/FOR SECRETARIAT		
38	Shri R.K. Porwal Director (SO)	Grid Controller of India
39	Ms. Ruchi Shukla Head Energy	MCX
40	Shri A.K. Bishnoi COO	PXIL
41	Shri Vivek Pandey Chief General Manager	Grid Controller of India
42	Smt. Rashmi S. Nair Joint Chief (Regulatory Affairs)	CERC
43	Shri Gagan Diwan Deputy Chief (Economics)	CERC
44	Shri Saif Rehman Chief Manager	Grid Controller of India
45	Shri Debasish Roy Assistant Chief(RA)	CERC
46	Shri Ravindra Kadam Sr Adv RE	CERC
47	Ms. Jijnasa Behera Research Officer	FOR Sectt
48	Shri M.M.Prasad Sr. Accounts Officer	FOR Sectt
49	Shri Nilesh Diwan Accounts Officer	FOR Sectt
50	Shri Davinder Kumar Sr. Technical Officer (IT)	FOR Sectt

Harmonization on state grid codes with IEGC – Minimum Turn Down level of state thermal generators and compensation for part load operation

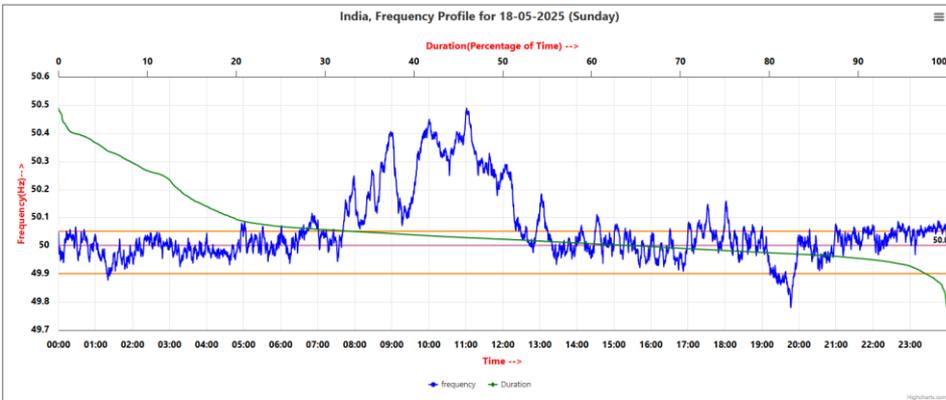
14th July 2025

Background - Frequency Profile

High Frequency observed on several days

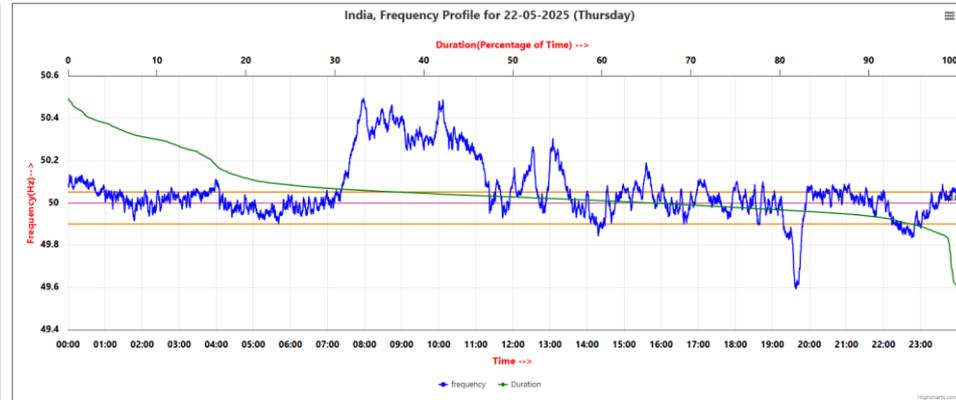
>50.05 Hz for about 33% of the time

18th May 2025



>50.05 Hz for about 37 % of the time

22nd May 2025



- A report on high frequency operation on 04th, 11th & 25th Aug 2024 by GRID-INDIA is available at link below <https://posoco.in/en/download/report-on-high-frequency-operation-for-4th-11th-and-25th-aug-2024/?wpdmdl=59532>
- Hon'ble CERC, through its Order in Suo-Motu Petition No. 2/SM/2025, has directed measures aimed at mitigating high grid frequency and ensuring secure and reliable power system operation (Link: <https://cercind.gov.in/2025/orders/2-SM-2025.pdf>)

Frequency > 50.05% (for more than 20% of time of the day) : May-25

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			1	2	3	4
			31%	37%		27%
5	6	7	8	9	10	11
29%	22%				27%	
12	13	14	15	16	17	18
						33%
19	20	21	22	23	24	25
		27%	37%	24%	27%	30%
26	27	28	29	30	31	
25%	22%	27%	36%	29%	32%	

Highlighted days when frequency remained above the band for 20% of the time of the day.
(The percentage of time frequency remained above the band is indicated against the date)

Frequency > 50.05% (persistently* during solar hours) : May-25

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			1	2	3	4
			03:24	02:44	00:50	03:24
5	6	7	8	9	10	11
00:33	02:04				00:37	
12	13	14	15	16	17	18
				00:35	00:44	04:48
19	20	21	22	23	24	25
		01:19	04:33	01:18	01:11	03:40
26	27	28	29	30	31	
01:30	01:14	03:04	03:22	01:49	02:02	

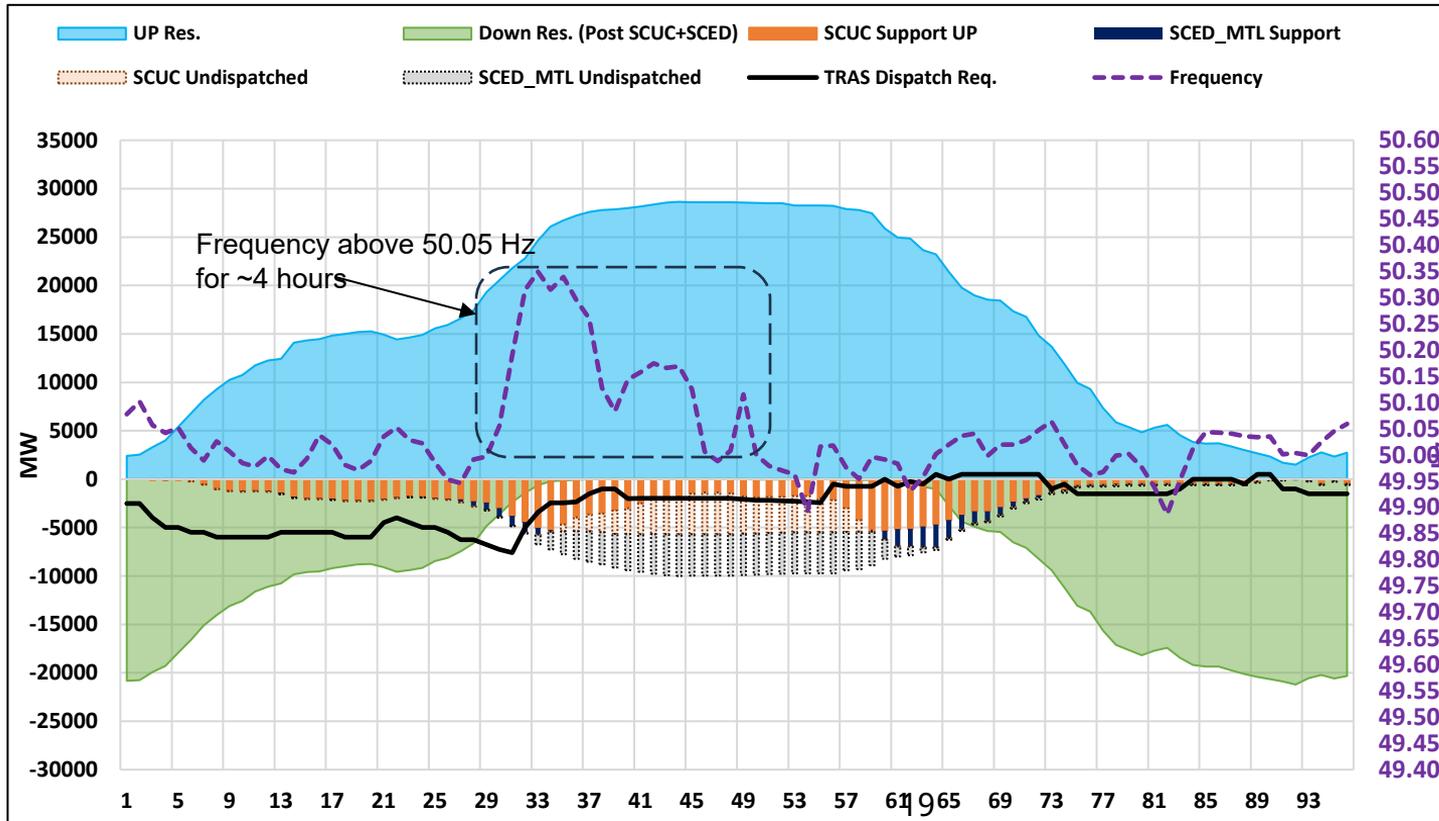
Highlighted days when frequency remained above the band persistently during solar hours (06:00–18:00 hrs).
*Frequency remained above the band continuously for at least 30 minutes.
(The cumulative duration of such spans is indicated against each date.)

Summary of the intra-state RE Curtailment in the month of May-25

	Rajasthan	Gujarat	Maharashtra	MP	AP	Karnataka	Tamil Nadu	Telangana
No. of days of curtailment	2	11					3	
RE Curtailment** (MU)	2.4	49.37					10.58	
Max RE curtailment** (MW)	490	2803					3354	

**includes either wind or solar or both

Deficit in Down Reserves at Inter-state level – 25th May 2025



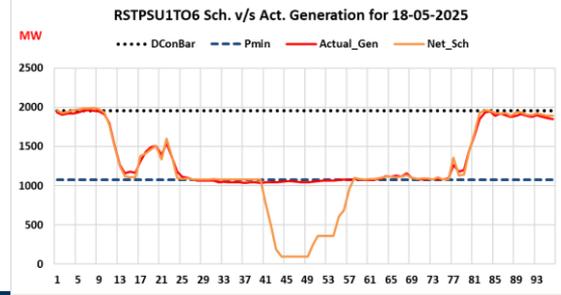
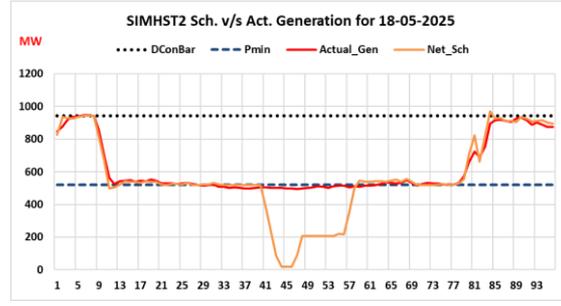
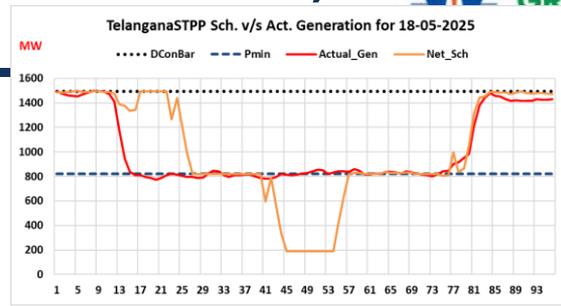
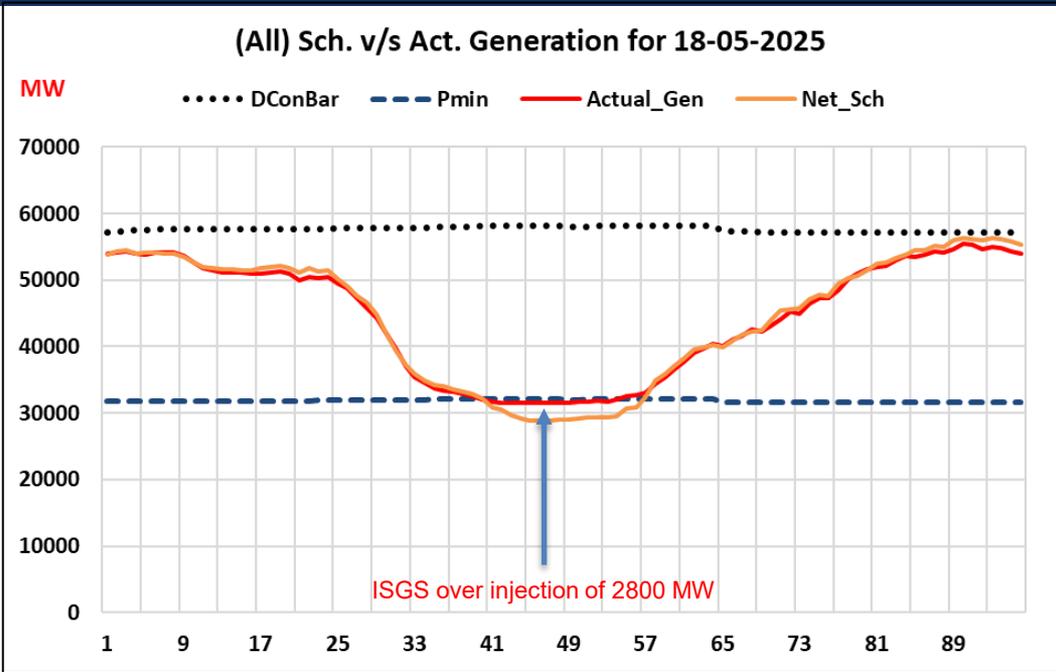
Schedule below MTL
by buyers from Sec 62:
10000 MW

SCUC + SCED_MTL
support provided:
6000 MW

Residual Down
Reserves available:
0 MW

50.60
50.55
50.50
50.45
50.40
50.35
50.30
50.25
50.20
50.15
50.10
50.05
50.00
49.95
49.90
49.85
49.80
49.75
49.70
49.65
49.60
49.55
49.50
49.45
49.40

ISGS Thermal – Over injection (below MTL schedule)



Minimum Generation Level – Performance of ISGS & Regional IPPs – 25th May 2025

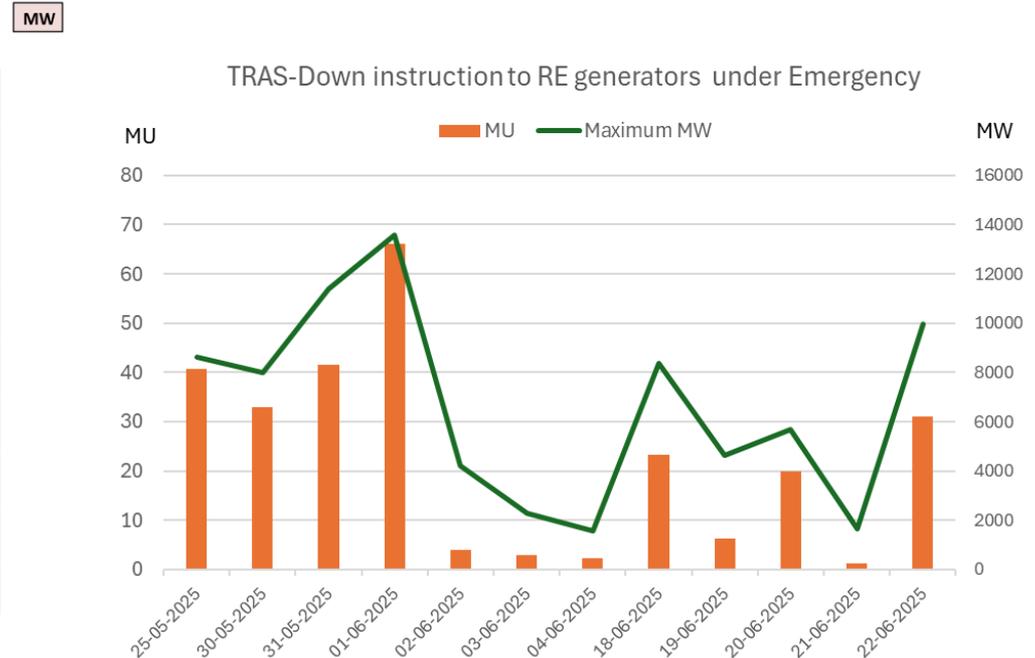
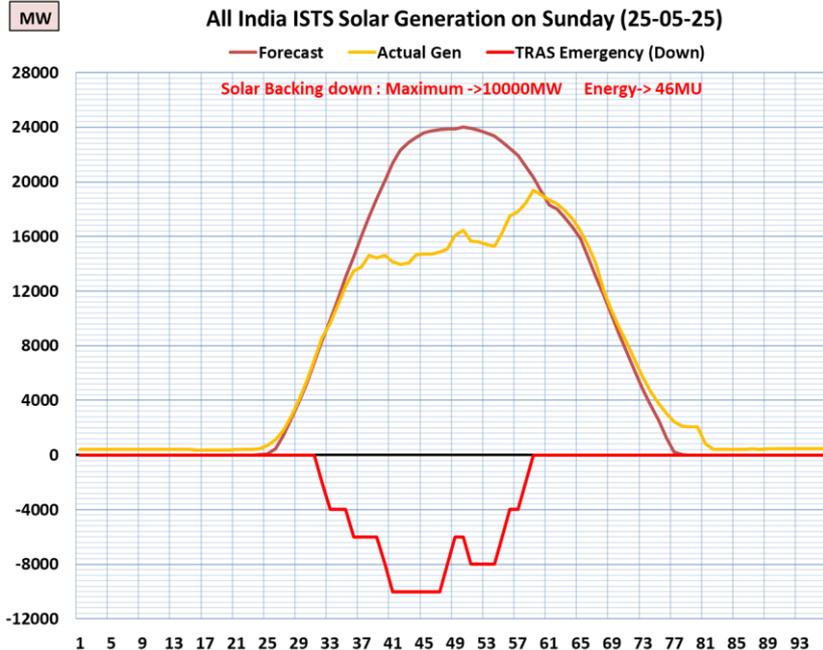


Regional IPP				ISGS				ISGS			
Less than 55%		More than 55%		Less than 55%		More than 55%		Less than 55%		More than 55%	
Plant Name	% of DC	Plant Name	% of DC	Plant Name	% of DC	Plant Name	% of DC				
Shree Cement (IPP) TPS	12%	DCPP	83%	Dadri-II TPS	50%	Barh St.-I	56%	VSTPS III	53%		
KSK Mahanadi	25%	BALCO	80%	ISTPP (Jhajjar)	52%	FSTPP ST-III	57%	Mouda II	53%		
JINDAL POWER LIMITED (Simhapuri Unit)	37%	ACBIL	76%	KUDGI	54%	NNTPS	56%	NTPC-TELANGANA STPP	53%		
Adani Raipur	39%	JITPL	74%	VSTPS II	53%	NKSTPP	56%	Solapur STPS	53%		
SEIL	40%	TRN Energy	70%	FSTPP ST-I & II	54%	Talcher STPS - I	56%	BRBCL	53%		
SKS Power	40%	JPL Stg-II	69%	VSTPS I	55%	NEYVELI TS I EXPN	58%	RAMAGUNDAM - UNIT1to6	53%		
SEIL P2 Unit-1	42%	JP Nigrie	64%	NTPL	53%			Simhadri Stage I	53%		
JSW Utkal	43%	IL&FS	61%	VSTPS IV	53%			Mouda I	53%		
APL Raigarh	43%	Jhabua Power	60%	BGTPP	52%			Sipat II	53%		
MB Power	46%	DB Power	59%	Darlipalli STPP	52%			Singrauli STPS	53%		
COASTAL ENERGEN	51%	JPL Stg-I	58%	VALLUR TPS	52%			RAMAGUNDAM - UNIT7	53%		
MAHAN ENERGEN	53%	ADHUNIK	57%	Dadri-I TPS	52%			TPCL	54%		
Lanco	53%	MEENAKSHI ENERGY LTD	57%	Rihand-I STPS	52%			NSPCL	54%		
GKEL	54%	GMR WARORA	57%	Rihand-III STPS	52%			KhSTPP ST-II	54%		
		MPL	56%	VSTPS V	52%			Lara	54%		
		Dhariwal CTU	56%	GADARWARA	52%			TALCHER ST2	54%		
		RKM Power	55%	KSTPS1&2	54%			SIMHADRI STAGE II	54%		
				KSTPS3	54%			NSTPP(NPGC)	54%		
				Unchahar TPS	54%			Rihand-II STPS	55%		
				KhSTPP ST-I	54%			Barh St-II	55%		
				Unchahar III TPS	55%			KBUNL	55%		
				Unchahar II TPS	55%			Khargone	55%		
				Sasan	55%			SIPAT I	55%		
								NEYVELI TS II - STG2	55%		
								Unchahar IV TPS	54%		

Minimum Generation Level – Intra-state Thermal – 25th May 2025

Less than 55%		More than 55%					
Plant Name	% of DC	Plant Name	% of DC	Plant Name	% of DC	Plant Name	% of DC
UKAI	47%	BLTPS	100%	Barsingar	71%	IEPL	64%
SLPP	55%	BHUSAWAL	92%	Bakreswar TPS	71%	MARWA TPS	64%
PARLI	46%	KORBA(W) CSETCL	92%	GGSTPS Ropar	70%	SANJAY GANDHI TPS	63%
NASIK	48%	AMARKANTAK	91%	Suratgarh	70%	Tuticorin	63%
TATA TROMBAY Th	51%	Kolaghat TPS	91%	Tenughat TPS	70%	KHAPARKHEDA	63%
JPL DHULE (SHIRPUR)	48%	JP BINA	89%	Santaldih TPS	67%	SWPGL	63%
APML TIRODA	55%	HALDIA TPS	86%	JAIGAD	67%	CHANDRAPUR	62%
		KLTPS	84%	Raj West	66%	SINGAJI	62%
		METTUR-Stg1&2	84%	SAGARDIGHI TPS	64%	Kota	62%
		VSLPP	83%	DCRTPP	57%	RGTPS (Khedar)	62%
		PARAS	83%	Anpara A&B	57%	VIJAYAWADA TPS	62%
		DPL TPS	80%	Kalisindh	57%	VADINAR	61%
		Bandel TPS	80%	Surat-SCTPS	57%	Raichur TPS	61%
		KORBA EAST EXT(DSPM)	77%	SATPURA II	56%	WANAKBORI	61%
		HIRANMAYEE TPS	75%	Meja	56%	KHURJA STPP	61%
		IB TPS Stg-1	73%	IB AMARAVATI	56%	KORADI	59%
		Panipat	72%	GHATAMPUR TPS	56%	Kawai	58%
		GANDHINAGAR(GTPS)	72%	DAHANU	56%	APL MUNDRA	58%
		STCMS	71%	Chhabra	57%	Anpara-D	57%
		Lehra MBBTTPS	71%				

RE Backing down under TRAS-Emergency



Note: RE backing down as last resort after backing down all regional IPPs to 55%

- **CERC Grid Code – 4th Amendment, Regulations 2016**

- Reduction of conventional thermal generation (Central Generating Station) to the **55% level**

Following incentivization for the operation of thermal plants at Lower Operational Levels also introduced in the amendment (continued in **IEGC, 2023**)

- Compensation for the Increase in Heat Rate Degradation
- Compensation for Auxiliary Energy Consumption Degradation
- Start-up fuel cost over and above seven (7) start/stop in a year

- **Central Electricity Authority (Flexible Operation of Coal-based Thermal Power Generating Units) Regulations, 2023**

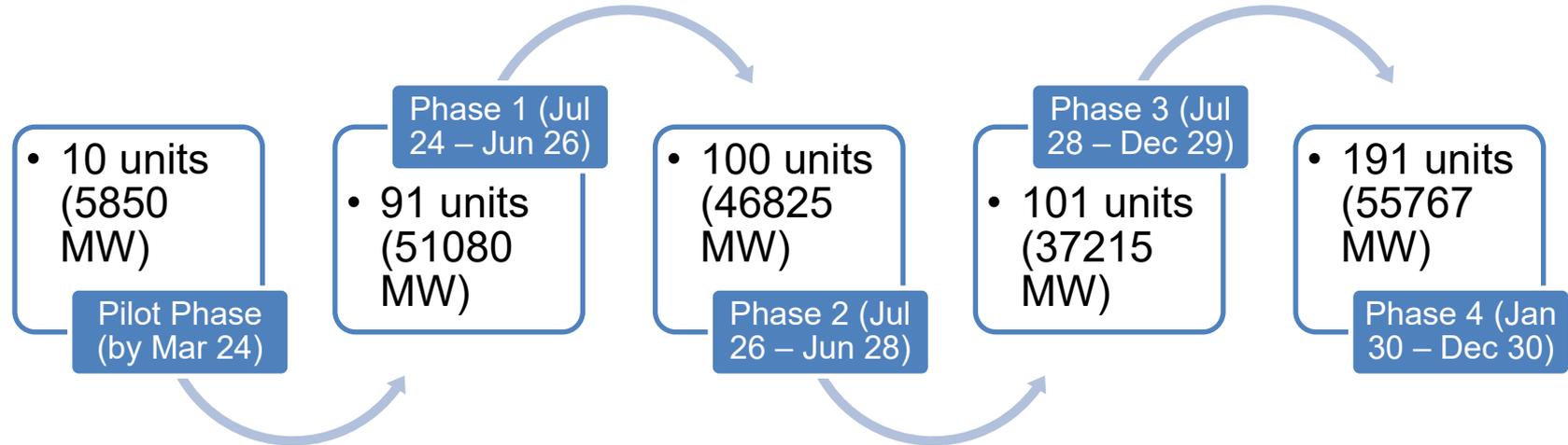
- Specified **Minimum Power Level of 40%** for Thermal Generating Units
- Requires thermal generators to be **capable of providing 1%–3% ramp rate**

- **Central Electricity Authority – Phasing Plan for Implementation of 40% Technical Minimum Level, Dec 2023**

- **CERC (Terms & Conditions of Tariff) (First Amendment) Regulations, 2024**

- Specifies compensation norms for degradation in heat rate and auxiliary energy consumption for operation below NAPAF up to **40% level**

CEA Phasing plan for 40% MTL



30150 MW thermal capacity was targeted for 40% MTL by March 2025

FOR TC Subgroup of Technical Experts to assist State TPS in lowering the minimum turn down level



- Decision to constitute subgroup in 2nd meeting of Standing Technical Committee of FOR on 20th Sep 2024
- Terms of Reference:
 - Assessing feasibility of lowering MTL in state thermal generating stations
 - Suggesting technical upgrades & operational improvements required for flexing such generating stations
 - Making recommendations on implementation pathway (both technical & commercial) for MTL for state thermal generating stations
- Chaired by Director (SO), Grid-India and with representation from
 - SERCs of UP, Haryana, Maharashtra, MP & Karnataka
 - SLDCs of UP, Haryana, Maharashtra, MP & Karnataka
 - NTPC

First meeting of the sub group (21 Apr 2025)



- Deliberation on prevailing high frequency operation scenario, need for flexibilization and present state framework for MTL
 - Flexibility in intra-state thermal capacity still untapped
 - Maintaining sufficient capacity and reserves across all time frames is critical
- Sharing of operational experience of 55% MTL operation by NTPC
 - Development of strong operational capabilities and technical expertise for flexible operation
 - Maintenance, optimization and tuning of control systems resulting in
 - lower stress
 - reduction in incidences of BTL
- Key action points identified:
 - Compilation of state-wise information on MTL norms, present status & compensation mechanism
 - Experience sharing by state generating utilities operating at 55% MTL
 - Workshops/trainings & site visits by NTPC for state TPS operators
 - Preparation of SOP based on NTPC's experience

- Status of Maharashtra state framework for MTL and challenges experienced by MAHAGENCO
 - Difference in compensation rates specified by CERC and SERC and loss due to averaging in compensation calculation
 - Mismatch in scheduling timelines at inter-state & intra-state level and alignment with market timelines
 - Increase in number of blocks with 55% schedule and technical challenges experienced by stations
 - Pilot retrofit for 40% MTL at Parli U8 planned for Sep 2025
- Workshop by NTPC on flexible operation and maintenance practices
- Finalization of survey forms for compilation of state-wise data on MTL and associated issues

Survey Form 01: Data collection format for regulatory framework and scheduling mechanism at state level



Name of state/SLDC			
Thermal installed capacity in intra-state system (MW)		SGS:	
		IPP:	
Minimum turndown level as per State Grid Code (in%)			
Exemption or special dispensation for MTL for specific units, if any			
Details of scheduling mechanism	Minimum scheduling level (in %) if MTL not specified		
	Maximum scheduling limit (as % of MCR, Please specify separately if different for different categories of thermal plants)		
	Ramp rate considered for scheduling (in %/min):		
	Gate closure for schedule revision (minutes/time blocks before delivery block for freezing schedules)		
	Availability of scheduling software (Web-based/Excel-based/other, Developed in-house/outsourced)		
	Periodicity of schedule updation/revision by SLDC (every 15 min/every 30 min etc.)		
	Scheduling done unit-wise or station-wise		
	Settlement of generators - at scheduled or actual generation?		
Other details of scheduling mechanism in state (Please describe)			
Relevant regulation for MTL in the state			
Availability of compensation mechanism for heat rate degradation & auxiliary energy consumption in the regulation			
If yes, details: (to be specified for different categories of generators)		Generation band	Compensation rate

Survey Form 02: Data collection format for flexibility attributes of state thermal generating stations



Station Name	
Capacity details	
Vintage	
Boiler type	
OEM of BTG sets and make/design	
Fuel source	
Design main steam temperature and pressure	
Reheat temperature and pressure	
Specific heat rate (kCal/kWh)	
ECR (Rs/kWh)	
Auxiliary consumption (%)	
Minimum turndown level (MTL %)	
Maximum generation level (%)	
Ramp rate (%/min)	
Startup time (hours)	Cold
	Warm
	Hot
Startup cost (Rs)	Cold
	Warm
	Hot
Minimum up time (hours)	
Minimum down time (hours)	

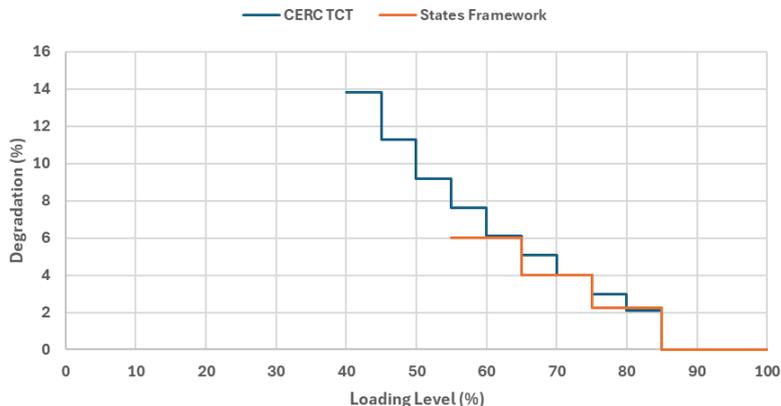
55% MTL achieved?		
If not, present minimum generation level and constraints experienced in achieving 55%		
Target date for 40% MTL specified as per CEA Phasing plan		
Actions envisaged / undertaken to comply to CEA flexible operation Regulations 2023 and Phasing plan		
Heat rate degradation at different loading levels / Heat rate curve	Generation band	Degradation (%)
Degradation in auxiliary consumption at different loading levels	Generation band	Degradation (%)
Adequacy of compensation mechanism for part load operation existing at present		

MTL & Compensation Mechanism at Intra-state level

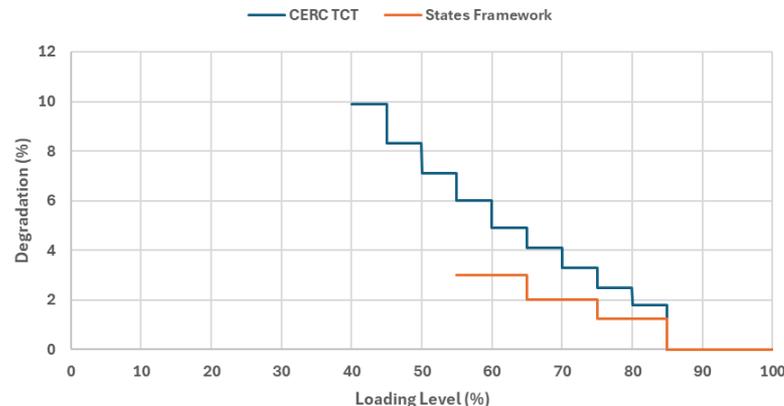
State	MTL guideline	Source	Remarks
Uttar Pradesh	55%	UPERC MOD Regulations, 2021	
Haryana	55%	HERC TCT Regulations, 2024	Includes compensation mechanism for part load operation and additional start/stop
Maharashtra	55%	MERC Grid Code, 2020	Includes compensation mechanism for part load operation and additional start/stop
Madhya Pradesh	55%	MPERC Grid Code, 2024	Includes compensation mechanism for part load operation and additional start/stop
Karnataka	55%	KERC MOD Regulations, 2024	Includes compensation mechanism for part load operation
Telangana	In line with IEGC	TSERC Grid Code, 2018	
Andhra Pradesh	In line with IEGC	APERC RSD Procedure 2023	
Tamil Nadu	60-80%	Minutes of 210 th OCC meeting of SR	55% as per draft state grid code.
West Bengal	70%	Minutes of 214 th OCC meeting of ER	
Odisha	55-60%		

Compensation mechanism – at Central & State levels

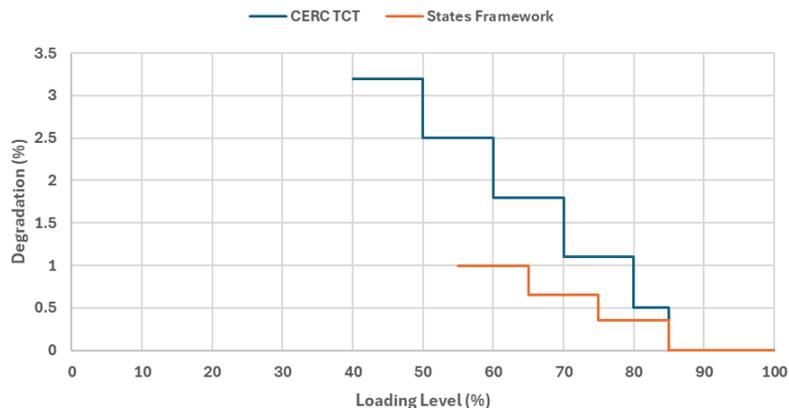
Increase in SHR - Subcritical units



Increase in SHR - Supercritical units



Degradation in AEC



Ref:
 CERC (Terms & Conditions of Tariff), 1st Amendment Regulations, 2024
 HERC Terms & Conditions for determination of Tariff Regulations, 2024
 MERC State Grid Code Regulations, 2020
 MP Electricity Grid Code (Revision-III), 2024

Minimum Turndown Level - Way Forward

- **Need for alignment of state grid codes with IEGC 2023**
- Implementation of 55% minimum turndown level for all state thermal generating stations
 - Including compensation mechanism for degradation in station heat rate and auxiliary energy consumption
- Implementation plan for 40% MTL as per CEA Phasing Plan
 - Regulatory order for pilot implementation for selected units followed by full scale implementation
 - Extension of part load compensation provisions till 40%
 - Additional capital/R&M expenditure for required retrofit
 - Incremental O&M costs due to higher wear & tear
- Ensuring reserves within the state through SCUC by SLDCs, as being done at National level
 - At present, revival of units from RSD left to discoms/procurers
 - Despatch optimization close to real time with intra-state SCED
- Pilots on two-shift operation of existing thermal generating units as per the grid requirement
 - Design of new thermal units to allow 2-shift operation on a regular basis
 - Specifying metrics for Minimum Up/Down Time, Startup Time etc.
 - Compensation for incremental secondary fuel oil consumption due to increase in start/stops and higher wear & tear

- **Further alignment between inter-state & intra-state regulatory and compliance framework needed on the following aspects**
 - Interconnection studies and verification of compliance by intra-state connected VRE to CEA (Technical standards for connectivity to the grid) Regulations
 - Operation Planning and Resource Adequacy assessment as per IEGC 2023
 - Estimation of reserve requirement, monitoring of reserve availability in real-time
 - Workforce adequacy at SLDCs as per the guidelines issued by MoP
 - Cyber Security provisions

Interconnection studies & compliance verification for VRE

Technical requirements specified for Wind and Solar Generating Stations in CEA Connectivity Standards:

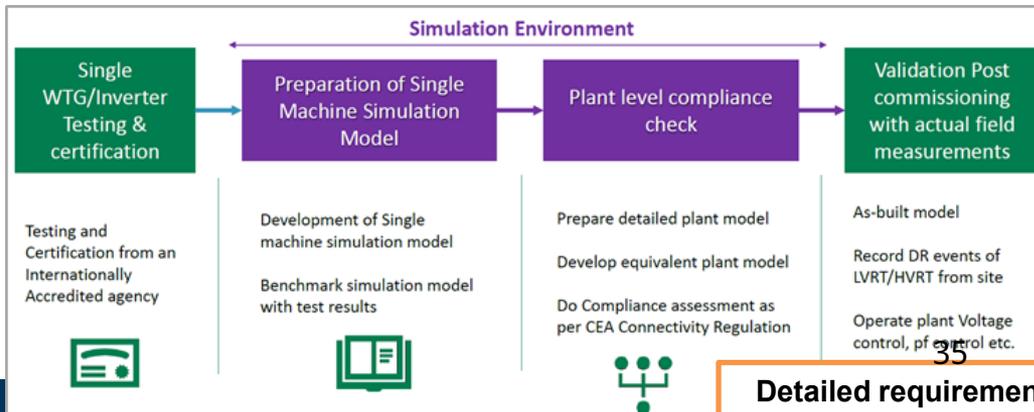
- Compliance at Point of Interconnection
- Reactive Capability test
- Voltage Ride Through Requirement (Low/High)
- Frequency Response
- Active and Reactive Power - Set Point Control
- Design Requirement – Weather, Temperature Extremes etc.
- Ramping Capability
- Power Quality Requirements

Requirements as per IEGC Ch 5 (Commissioning and commercial operation code):

- Submission of all technical data for necessary technical studies
- Ensuring data & communication facilities
- Certificate of compliance with CEA Technical standards & type test reports
- Provisions for trial run of wind/solar/ESS/hybrid
 - Demonstration of rated capacity
 - Flow of power & communication signals with metering, PPC, telemetry & protection system in service
 - Frequency response tests
 - Reactive capability tests

Requirements as per IEGC Ch 6 (Operating code):

- Primary response to be provided with droop of 3-6% as per CEA Technical standards
- Periodic testing



Detailed requirements specified in procedure for “First-Time Energization of New and Modified Elements”

Resource Adequacy Assessment, Operation Planning & Reserve Monitoring

As per Clause 5(1)-(3) of Chapter 2 (Resource Planning Code) in IEGC-2023, every DISCOM must conduct *Integrated Resource Planning* comprising demand forecasting and generation resource adequacy assessments across long-, medium- and short-term horizons. Following demand assessment, DISCOMs must

- (i) evaluate their existing generation capacity
- (ii) determine additional resource needs, and
- (iii) prepare a generation resource procurement plan, including planning reserve margins.

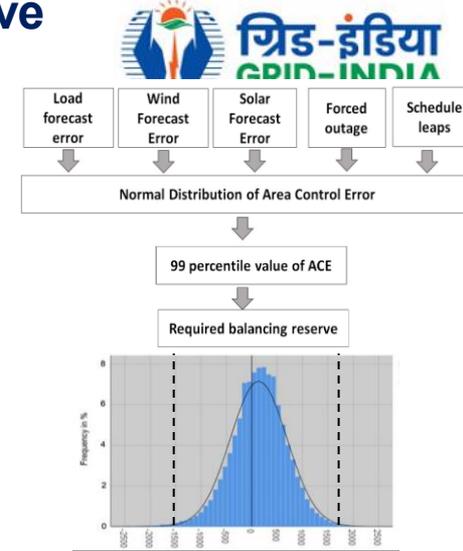
This ensures demonstrable resource adequacy in alignment with SERC targets and enables reliable, cost-effective power supply

As per Clause 31(1)–(4) of Chapter 4 (Operational Planning Code) in IEGC-2023, every SLDC must undertake demand forecasting and assess resource adequacy within the operational planning horizon, spanning week-ahead to day-ahead and intra-day timeframes. SLDCs are required to

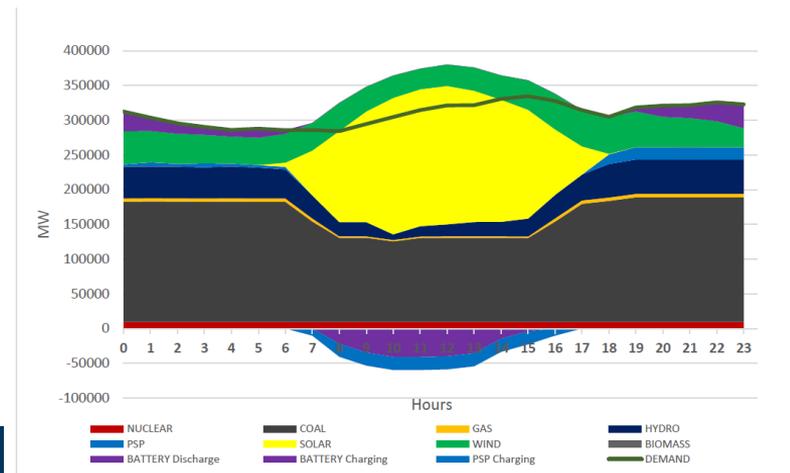
- (i) prepare demand forecasts at various temporal resolutions,
- (ii) assess the availability of generation and other resources to meet the forecasted demand,
- (iii) identify potential gaps or contingencies, and
- (iv) coordinate with DISCOMs, generators, and RLDCs to ensure operational reliability.

This enables real-time visibility into resource sufficiency, supports secure grid operations, and ensures adherence to regulatory adequacy standards.³⁶

Basis of Reserves Estimation (IEGC Annexure-3)



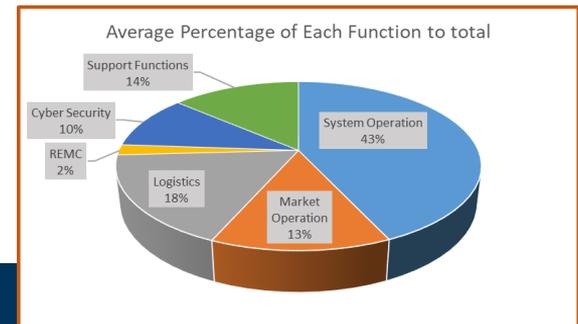
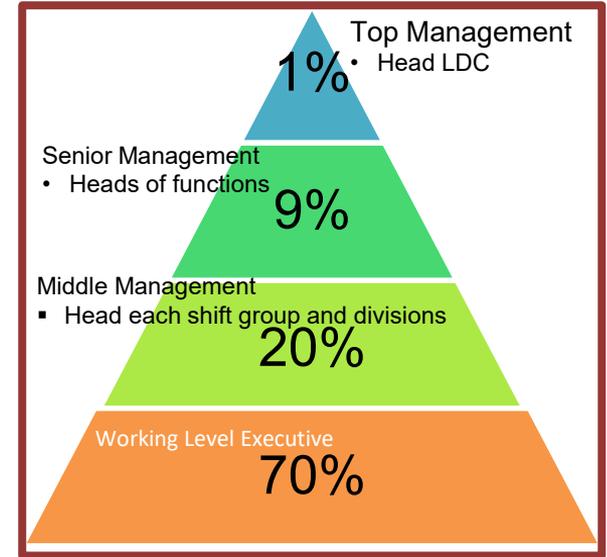
Reserve Assessment is being done at NLDC and shared with all the stakeholders (published on the website)



Manpower Requirement - as per MoP OM dated 30th October 2024 - Workforce Adequacy Guidelines for LDCs



SN	Function	NLDC	RLDC	Large SLDC	Medium SLDC	Emerging SLDC
System Operation						
1	System Operation - Operational Planning	18	18	18	16	9
2	Real Time Grid Operation (For SO only)	31	31	31	26	18
3	Post Despatch	10	10	10	10	4
Market Operation						
4	Open Access Administration	5	4	4	1	1
5	Market Coordination	4	4	4	3	1
6	Inter-face Energy Metering, Accounting and Settlement	10	8	8	4	1
7	Regulatory Affairs, Market Operation Planning and Coordination	7	5	5	1	1
Logistics						
8	Logistics Operation technology	15	14	14	8	3
9	IT Logistics	9	9	9	6	3
10	Communication Logistics	4	4	4	2	2
11	REMC	3	3	3	2	1
12	Cyber Security	17	8	14	13	10
Support Functions						
13	Contract Services	3	3	3	2	2
14	Finance and Accounts	9	9	9	5	3
15	HR & Admin	8	8	8	4	3
Subtotal -Support Functions		20	20	20	11	8
Grand-Total		153	138	144	103	62



Cyber Security requirements as per IEGC

Chapter 8



GENERAL

- All concerned utilities and other statutory agencies shall have in place a cyber security framework in accordance with IT Act, 2000; CEA Regulations, 2007; CEA Guidelines, 2021, so as to support reliable operation of the grid.

CYBER SECURITY AUDIT

- All Users, concerned utilities and other statutory agencies shall conduct Cyber Security Audit as per the guidelines issued by an appropriate authority.

MECHANISM OF REPORTING

- All entities shall immediately report to the appropriate government agencies, NLDC, RLDCs, RPCs in accordance with the IT Act, 2000, as amended from time to time, and CEA Guidelines, 2021, in case of any cyberattack.

CYBER SECURITY COORDINATION FORUM

- The sectoral CERT shall form a Cyber Security Coordination Forum with members from all concerned utilities and other statutory agencies to coordinate and deliberate on the cyber security challenges and gaps at appropriate level. A sub-committee of the same shall be formed at the regional level.

Thank You !!



<https://grid-india.in/>



Likely increase in tariff considering capital investment of Rs. 30 crores, increase of O&M cost, variable cost and EFOR cost

Unit Size (MW)	Loading (%)	Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	Fixed Tariff increase (Paisa/kWh)		EFOR compensation (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Proposed total tariff (fixed & variable) increase (Paisa/kWh)
		Variable Tariff increase (Paisa/kWh)	Variable Tariff increase (Paisa/kWh)	due to increased O&M cost	due to increased capital cost		Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	
200	<55 to 50	13.68	22.57	6.70	7.68	1	29.06	37.95	33.51
	<50 to 45	17.78	29.34	10.42	7.68	1	36.88	48.44	42.66
	<45 to 40	21.89	36.11	14.88	7.68	1	45.45	59.67	52.56
500	<55 to 50	14.66	24.20	4.57	3.07	1	23.30	32.84	28.07
	<50 to 45	18.30	30.19	7.11	3.07	1	29.48	41.37	35.43
	<45 to 40	21.53	35.52	10.16	3.07	1	35.76	49.75	42.76
660	<55 to 50	11.17	18.42	4.12	2.56	1	18.85	26.10	22.48
	<50 to 45	15.27	25.20	6.40	2.56	1	25.23	35.16	30.20
	<45 to 40	18.74	30.92	9.14	2.56	1	31.44	43.62	37.53
800	<55 to 50	10.65	17.57	3.70	1.92	1	17.27	24.19	20.73
	<50 to 45	14.86	24.52	5.76	1.92	1	23.54	33.20	28.37
	<45 to 40	18.58	30.65	8.23	40 1.92	1	29.73	41.80	35.77

Source: CEA (https://cea.nic.in/wp-content/uploads/tprm/2023/03/Report_21022023.pdf)

ADDITIONAL FIXED COST DUE TO INCREASE CAPEX

Source: CEA

- a) **Capital Expenditure for retrofit:** One-time expenditure to be incurred in retrofitting of various measures to make the plant capable of low load operation.
- In case of old units (commissioned before 01.01.2004) which have not upgraded their plant control and instrumentation system previously, capex requirement may be around Rs 30 crores for each unit.
 - An estimated capital investment of around Rs 10 crores will be required for each unit commissioned on or after 01.01.2004 and except units covered under para (iii).
 - As per the OEM few measures are required to be implemented for regular 40% load operation of subcritical units though the same (40%) was demonstrated during PG test. Considering above it is proposed a capital investment of Rs.6 crores may be allowed to the subcritical generating units where investment approval received on or after 01.01.2011
 - Unit will be eligible for increased fixed tariff irrespective of actual operation once measures are implemented and exhibits desired low load operation. Considering five (5) years payback period the impact has been estimated.
 - Power plant may be penalized proportionally (Fixed cost) for not exhibiting low load operation at least 85% of time when asked for.

Unit Size (MW)	Recovery period (years)	Capital cost (Rs Cr)	Increased in fixed charge per annum (Rs. Cr.)	Capital cost (Rs Cr)	Increased in fixed charge per annum (Rs. Cr.)
200	5	30	7.65	10	2.55
500	5	30	7.65	10	2.55
660	5	30	7.65	10	4.5
800	5	30	7.65	10	2.55

Unit Size (MW)	Recovery period (years)	Capital cost (Rs Cr)	Increased in fixed charge per annum (Rs. Cr.)
200/250	5	6	1.53
500	5	6	1.53
600	5	6	1.53

ADDITIONAL FIXED COST DUE TO INCREASE IN O&M COST

b) O&M cost due to increased Life Consumption: Flexible operation also leads to a higher rate of deterioration of plant's components

- i. As flexible operation is new in India no reliable data is available regarding actual life consumption or damaged. In other country also no such assessment has been done as cost of flexible power is being kept under ancillary services and price is market based which may be high or less compared to actual.
- ii. USAID-Intertek Study: An estimate of the increase in O&M Cost due to reduction in life of components at Ramagundam, Jhajjar TPS of NTPC and Ukai of GSECL. The study was based on the five to ten-year historical cost data of the units (all the costs are at 2017 levels for NTPC & 2018 for GSECL Units). No two units have the same costs due to variation in factors affecting the costs like coal, age of plant, operating practices, operator's skill and design.
- iii. Engie Lab estimates: the capital expenditures and additional maintenance result in a 0.3% to 4.3% cost impact versus the total costs of a unit. The absolute non-fuel costs over a 10-year period are approximately But this estimate is based on the current level of flexibilization,(55% and above).
- iv. Considering above the increase in annual O&M cost has been proposed as 9%, 14% and 20% at 50%, 45%, 40% loading respectively as increase in O&M costs shall depend on level of flexibilisation.

Capacity (MW)	Loading (%)	O&M cost Increase (%)
200	<55 to 50	9.00
	<50 to 45	14.00
	<45 to 40	20.00
500	<55 to 50	9.00
	<50 to 45	14.00
	<45 to 40	20.00
660	<55 to 50	9.00
	<50 to 45	14.00
	<45 to 40	20.00
800	<55 to 50	9.00
	<50 to 45	14.00
	<45 to 40	20.00

Source: CEA

INCREASE OPERATIONAL COST

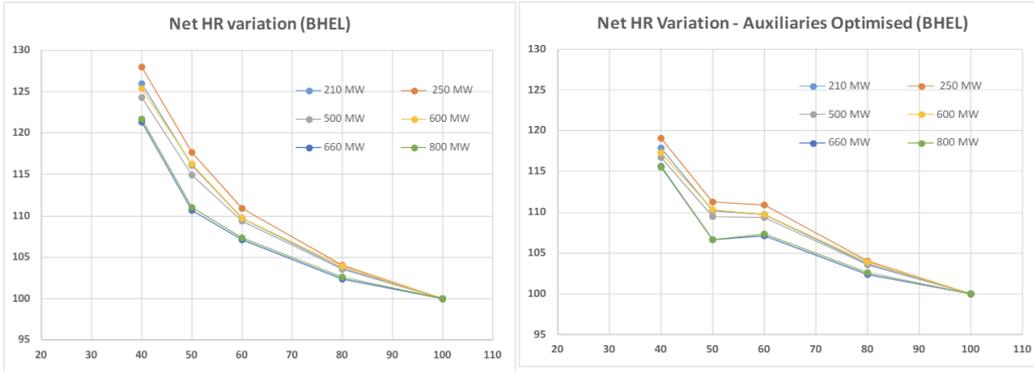
Operational Expenditure (OPEX):

- i. Cost due to increase in Net Heat Rate
- ii. Cost due to Increased Life Consumption (damage costs)- considered under fixed part
- iii. Cost due to additional oil consumption for additional EFOR

2. OPERATIONAL EXPENDITURE (OPEX)

i. INCREASE HEAT RATE

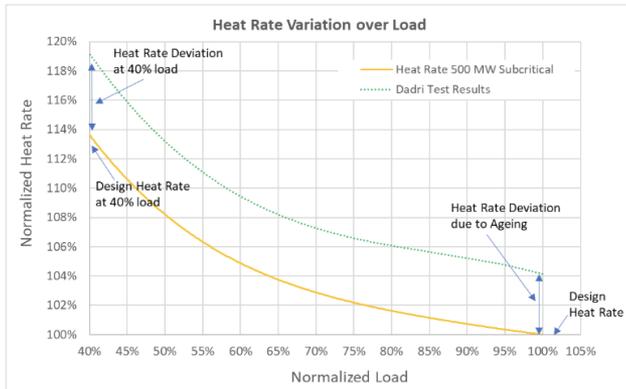
Heat Balance study



After analyzing the HBD report of major OEMs (BHEL/GE/Siemens) and actual test report of low load operation unit size wise NHR degradation is given in table.

The study conducted by CEA indicates the impact of low load operation at 40% on variable part of tariff is around 16% for subcritical units (200/500MW) and around 15% for supercritical units(660/800MW).

Efficiency captured during flexibilisation test



Capacity (MW)	Loading (%)	Net Heat Rate Increase (%)
200	<55 to 50	10.00
	<50 to 45	13.00
	<45 to 40	16.00
500	<55 to 50	10.90
	<50 to 45	13.60
	<45 to 40	16.00
660	<55 to 50	8.70
	<50 to 45	11.90
	<45 to 40	14.60
800	<55 to 50	8.60
	<50 to 45	12.00
	<45 to 40	15.00

2. OPERATIONAL EXPENDITURE (OPEX)

iii. ADDITIONAL OIL CONSUMPTION

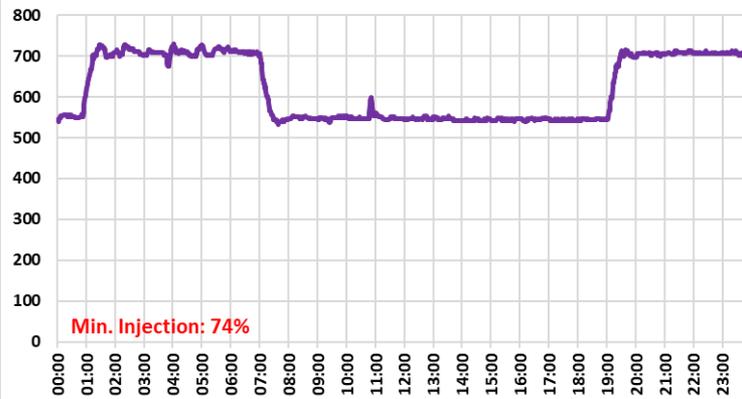
Based on the increased EFOR the norms for specific oil consumption and increased compensation may be allowed as per the Table.

S. No.	Specific Oil Consumption	Increased ECR (p/kWh)
1	CERC Norms (Present): 0.5 ml/kWh	2.5
2	At 0.7 ml/kWh (40-50% load)	3.5
3	At 0.8 ml/kWh (30-40% load)	4.0

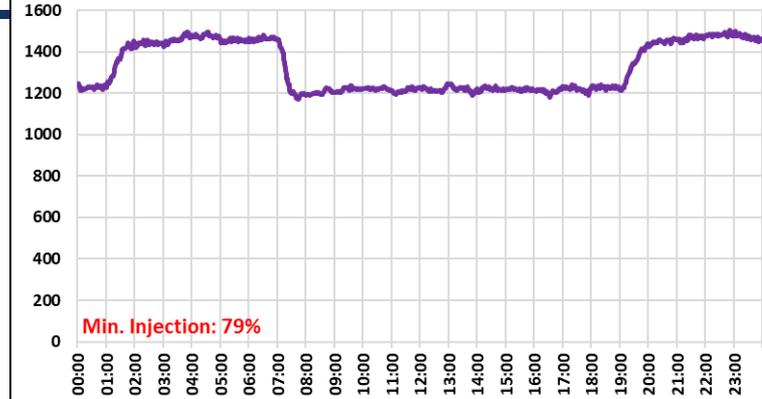
In addition, due to flexible operation there would be loss of availability on account of increased maintenance requirements and increased EFOR which will make it difficult for the generator to recover full capacity charges.

Flexing by Intra-state Plants on 25 May 2025

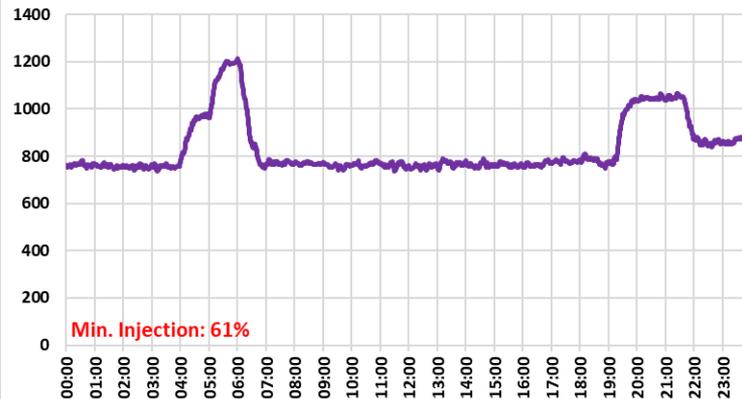
HINDUJA (ANDHRAPRADESH) Actual for 25-05-2025



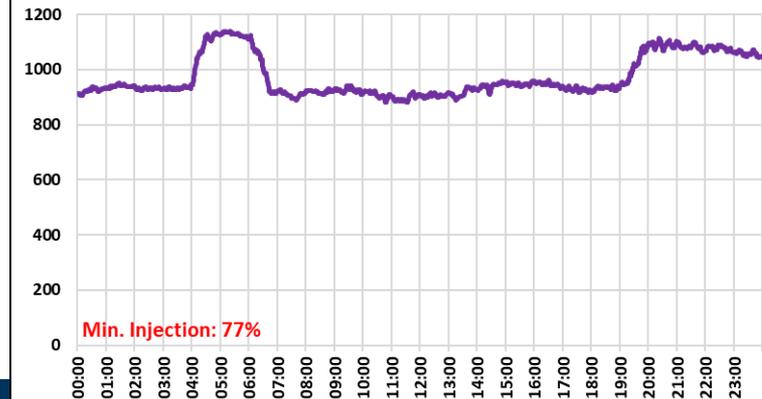
KRISHNAPATNAM (ANDHRAPRADESH) Actual for 25-05-2025



RAYALASEEMA (ANDHRAPRADESH) Actual for 25-05-2025

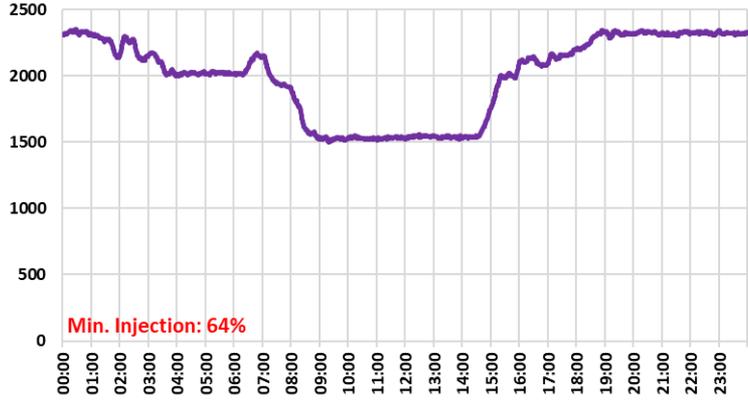


VIJAYAWADA (ANDHRAPRADESH) Actual for 25-05-2025

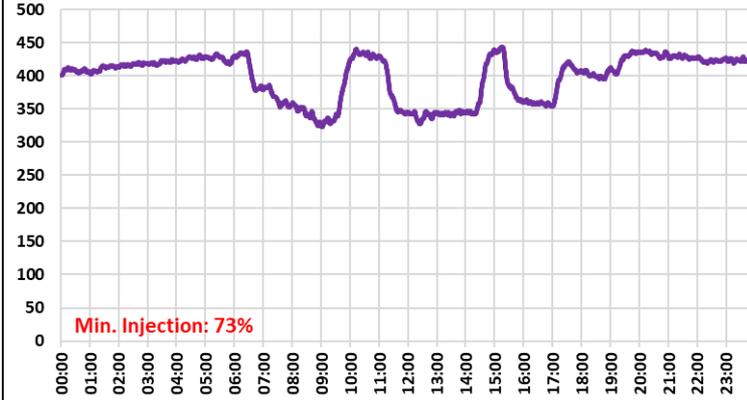


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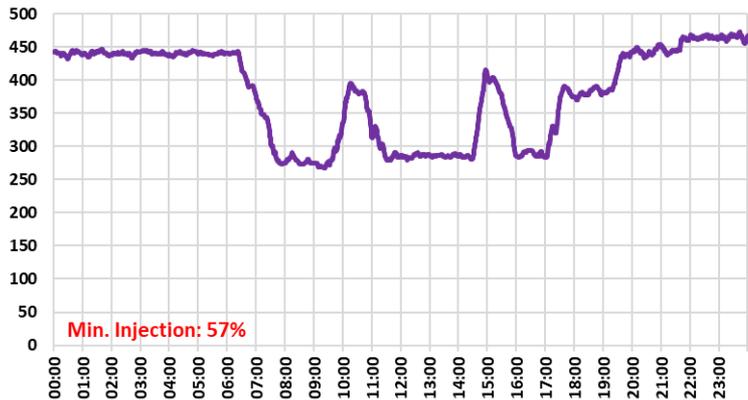
TAMNAR (JPL) (CHATTISGARH) Actual for 25-05-2025



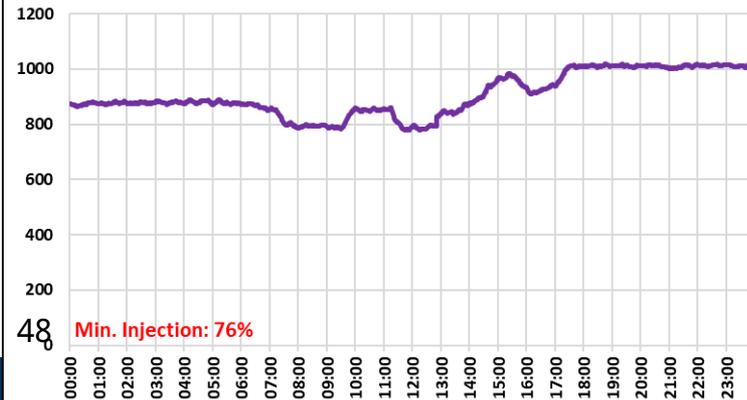
KORBA E EXT. (CHATTISGARH) Actual for 25-05-2025



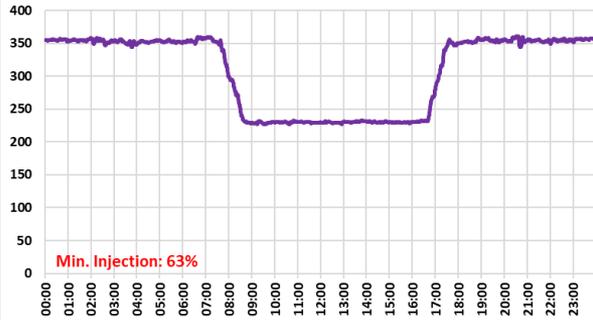
MARWA (CHATTISGARH) Actual for 25-05-2025



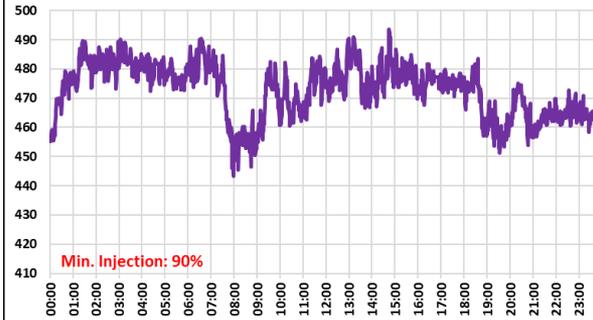
KORBA (W) (CHATTISGARH) Actual for 25-05-2025



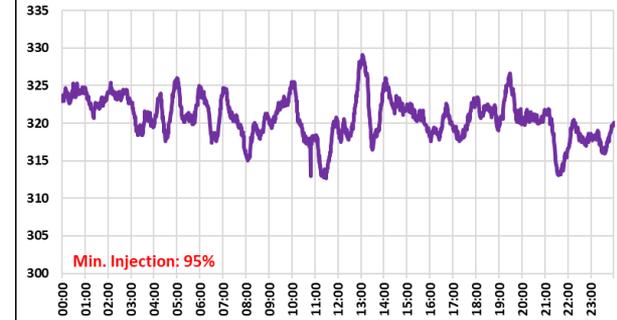
A.E.CO. (GUJARAT) Actual for 25-05-2025



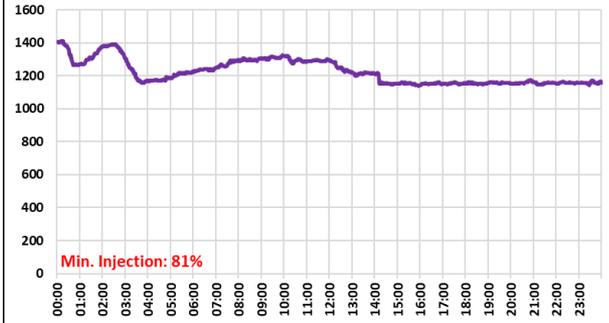
GANDHINAGAR TPS (GUJARAT) Actual for 25-05-2025



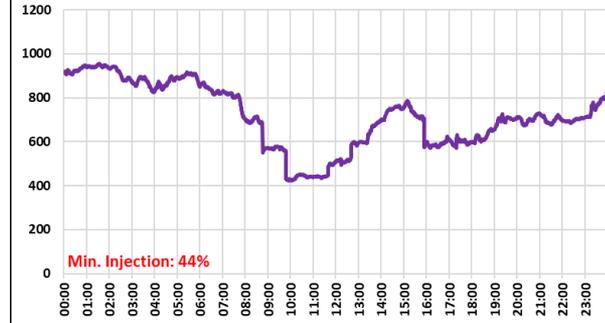
BECL Bhavnagar (GUJARAT) Actual for 25-05-2025

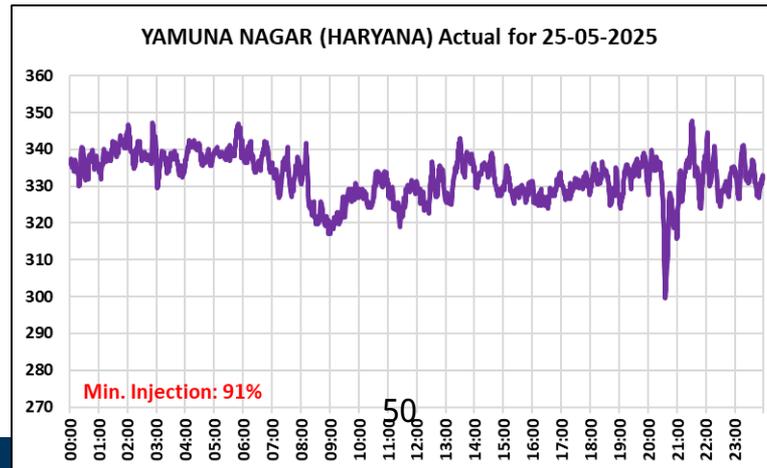
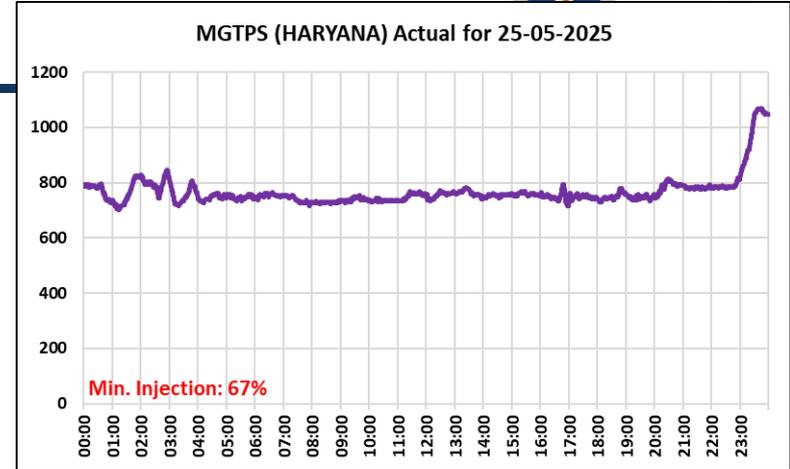
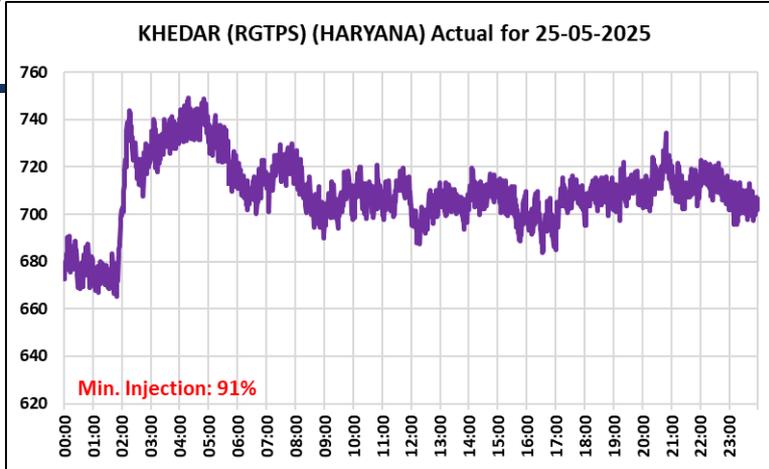


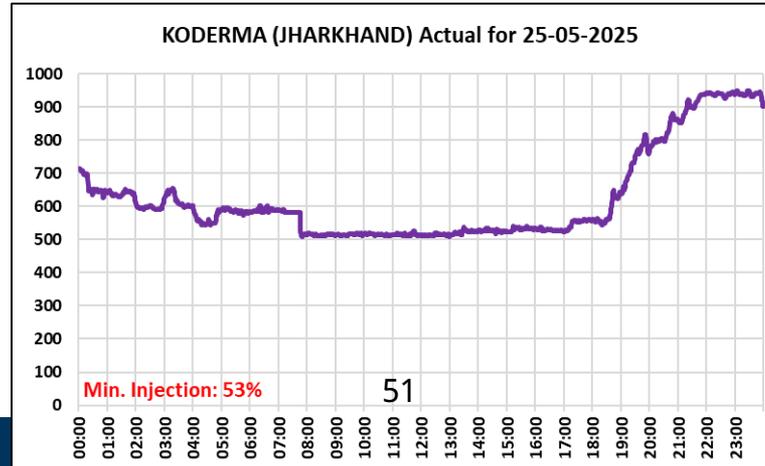
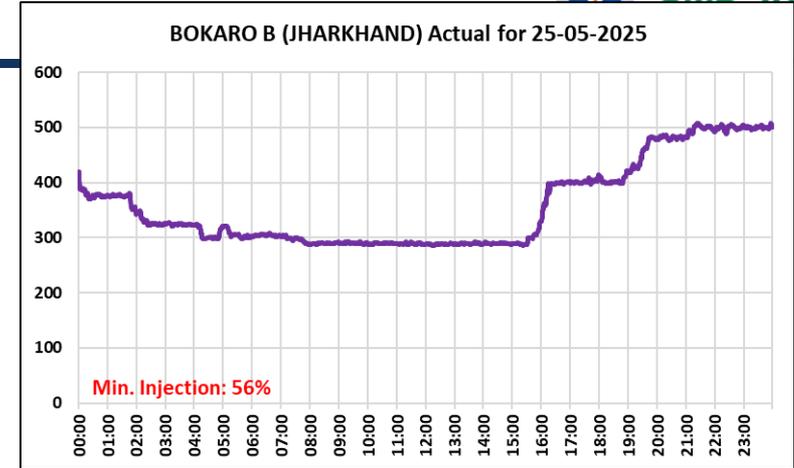
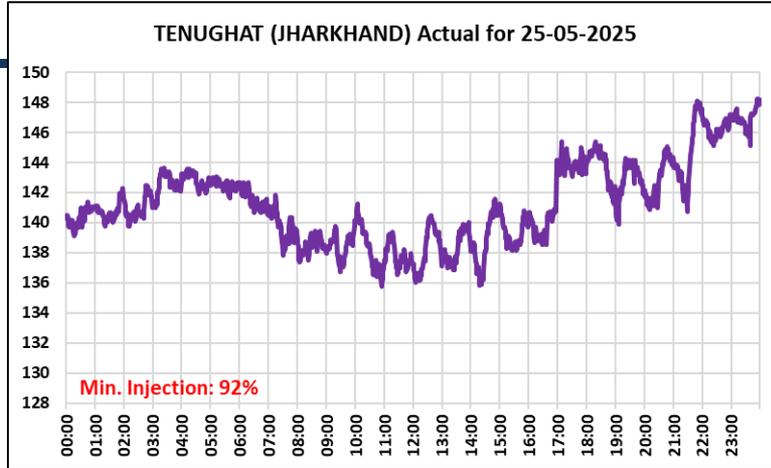
WANAKBORI (GUJARAT) Actual for 25-05-2025



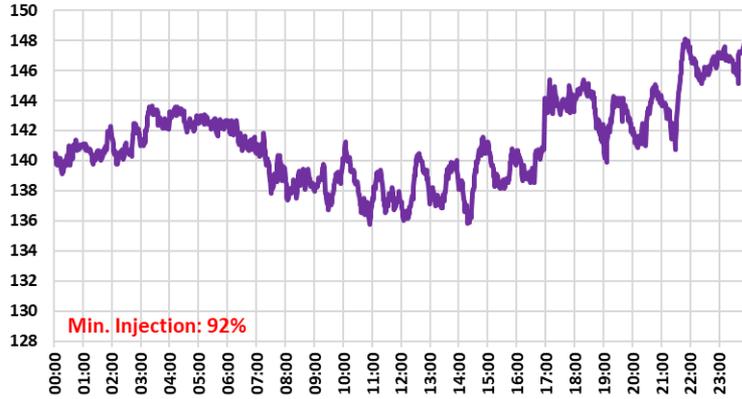
UTPS (GUJARAT) Actual for 25-05-2025



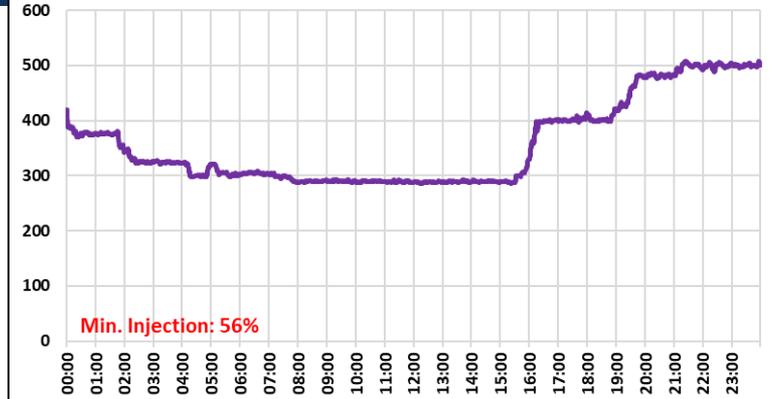




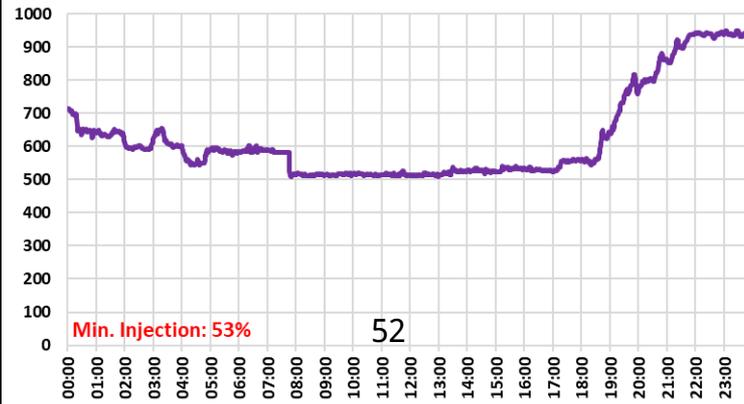
TENUGHAT (JHARKHAND) Actual for 25-05-2025

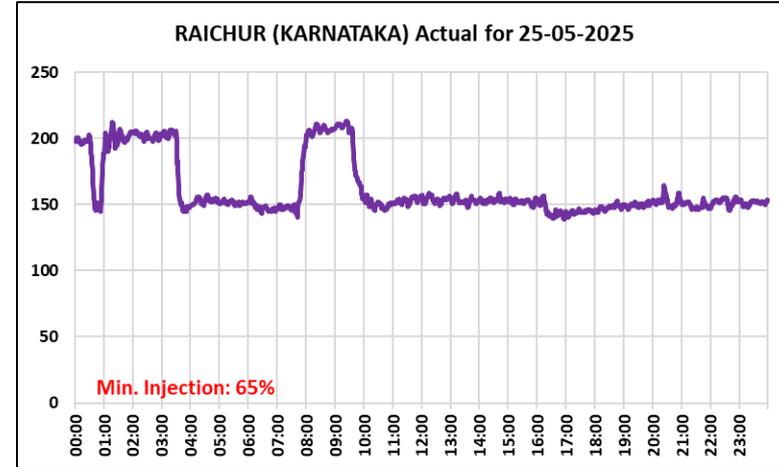
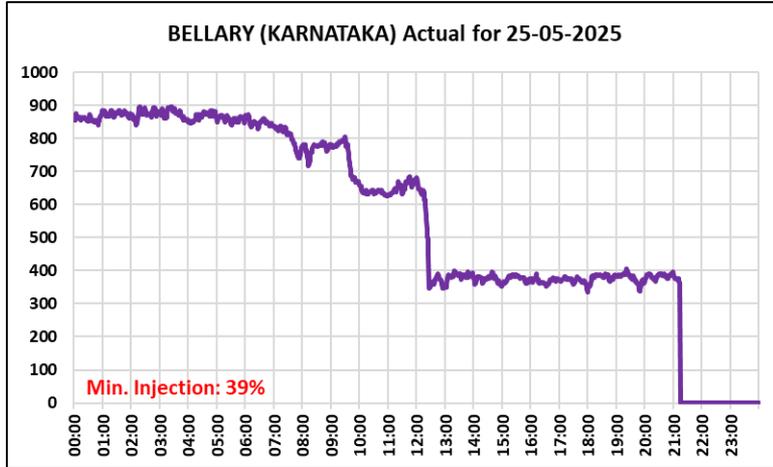


BOKARO B (JHARKHAND) Actual for 25-05-2025

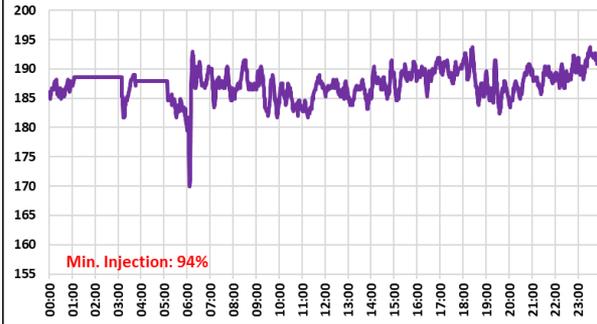


KODERMA (JHARKHAND) Actual for 25-05-2025

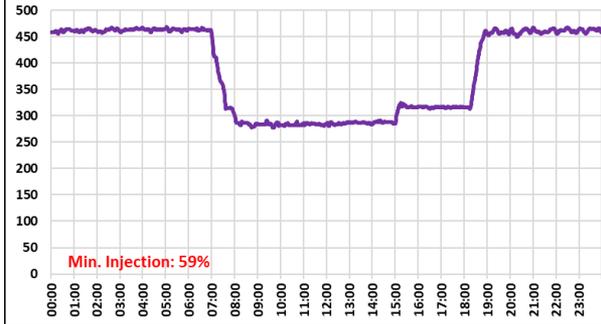




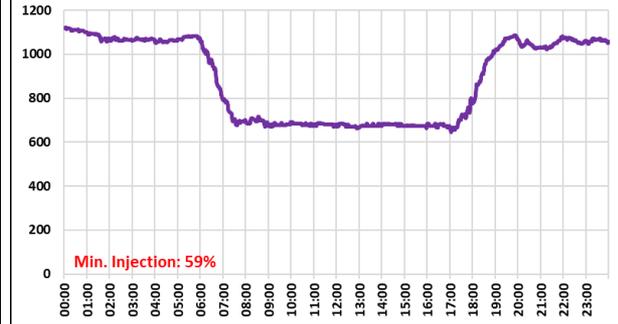
AMARKANTAK (MADHYA PRADESH) Actual for 25-05-2025



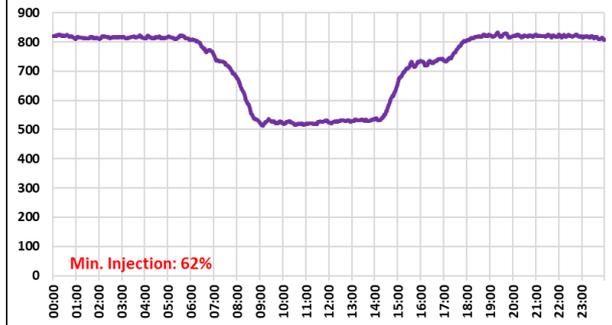
JP BINA (MADHYA PRADESH) Actual for 25-05-2025



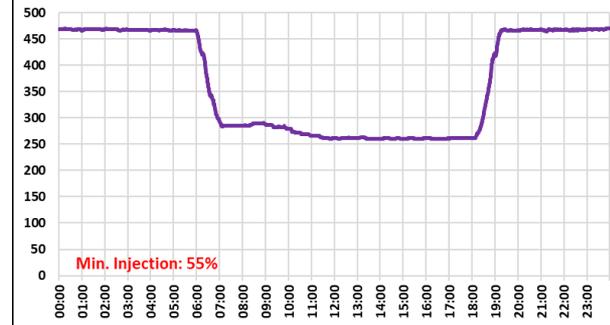
SINGHAJI (MADHYA PRADESH) Actual for 25-05-2025



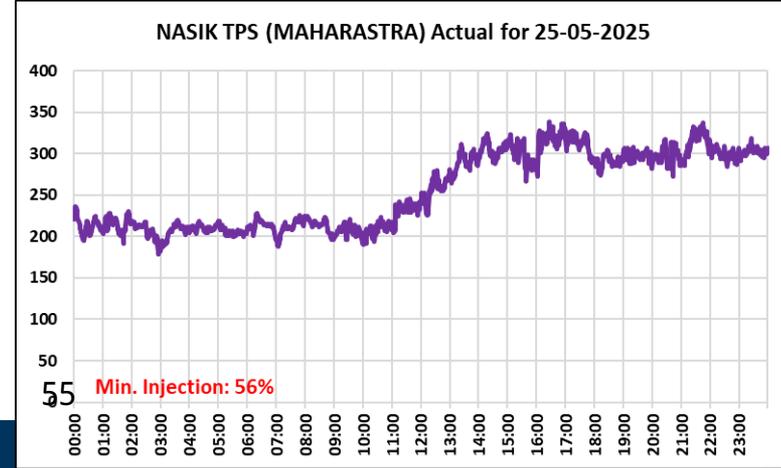
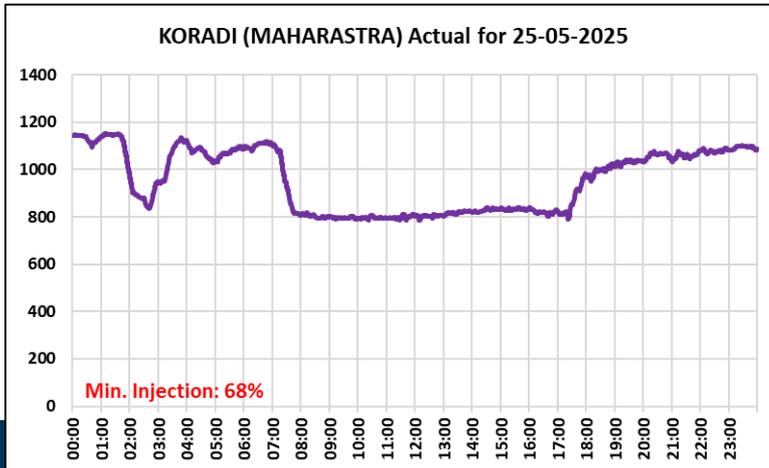
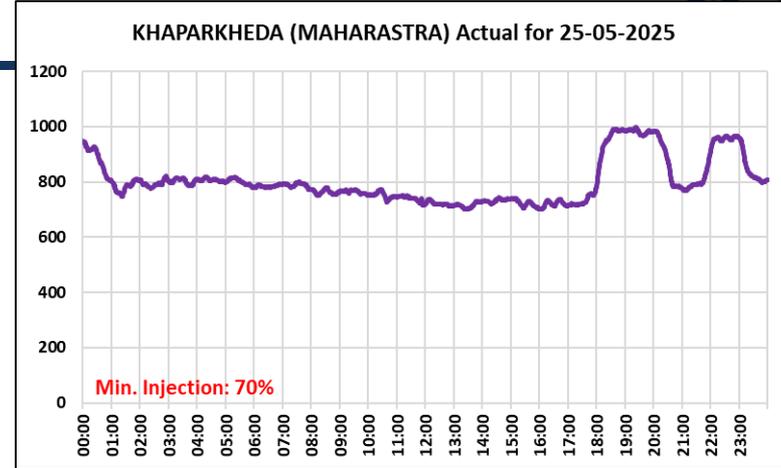
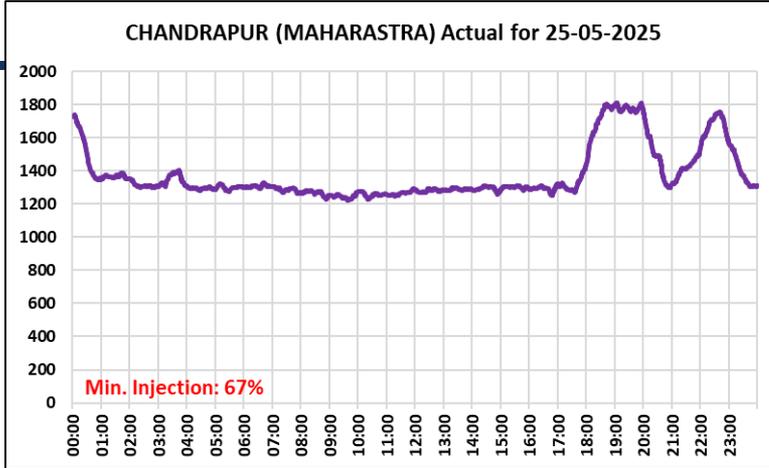
SANJAY GANDHI (MADHYA PRADESH) Actual for 25-05-2025



SATPURA (MADHYA PRADESH) Actual for 25-05-2025

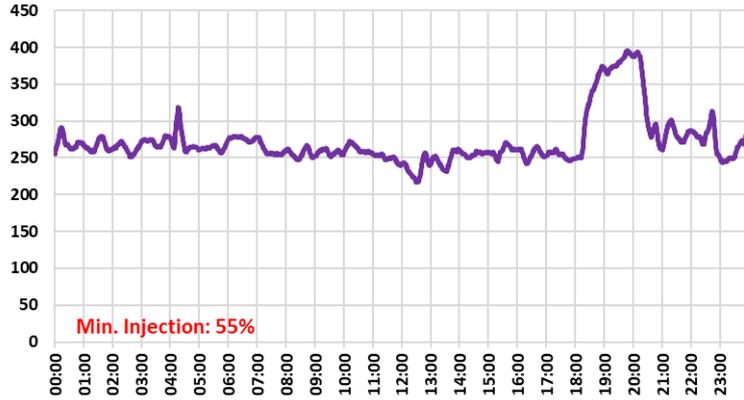


Maharashtra (1)

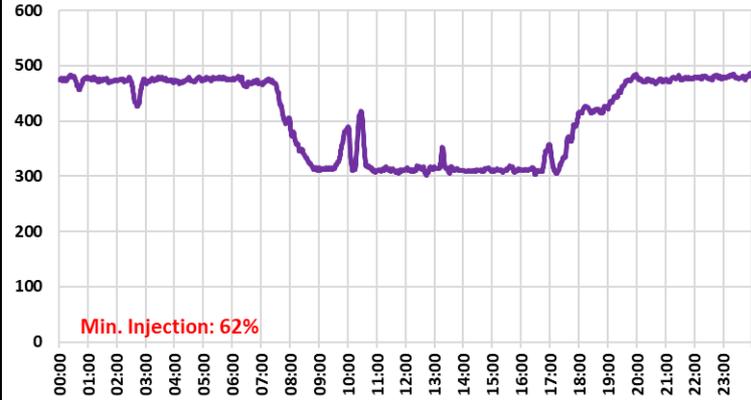


Maharashtra (2)

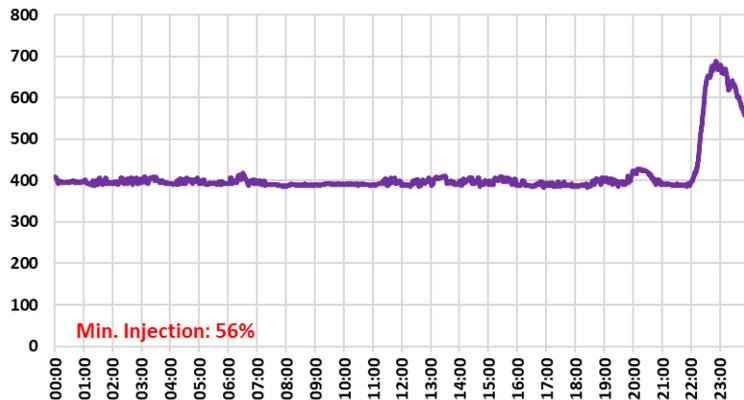
PARAS (MAHARASTRA) Actual for 25-05-2025



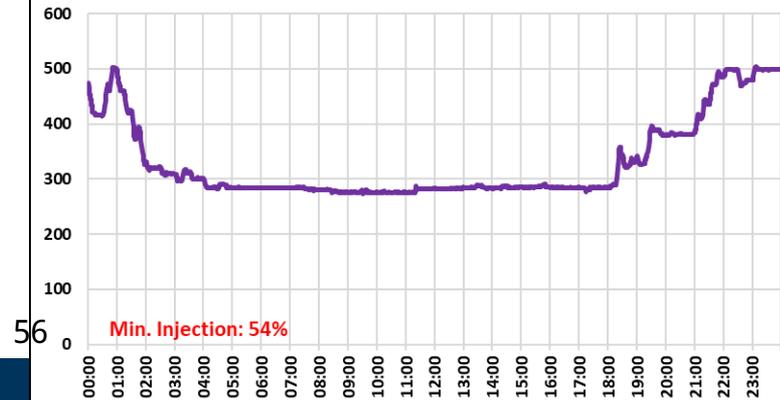
WPCL(WARDHA) (MAHARASTRA) Actual for 25-05-2025

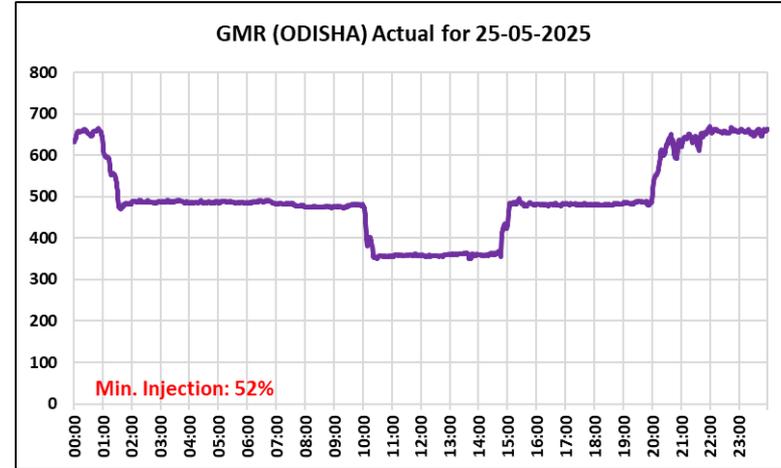
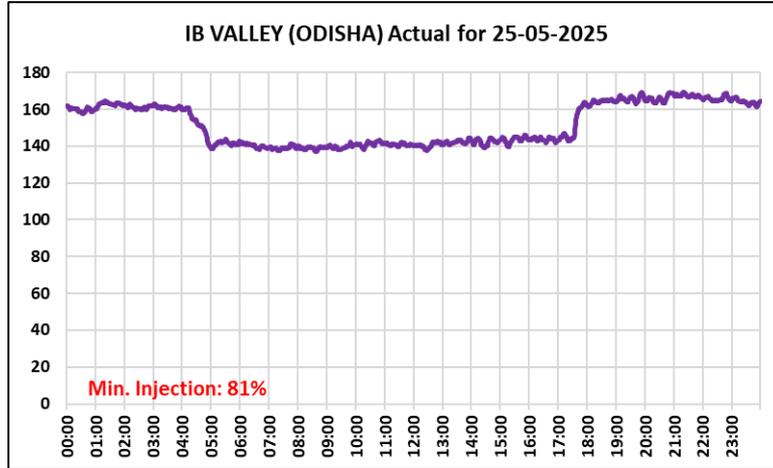


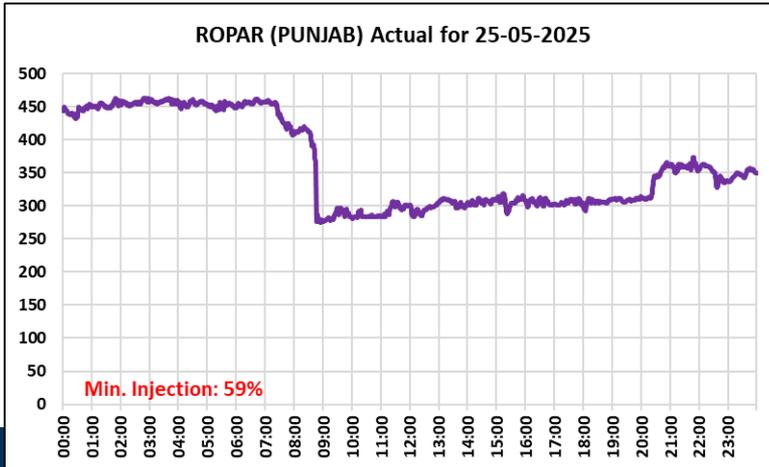
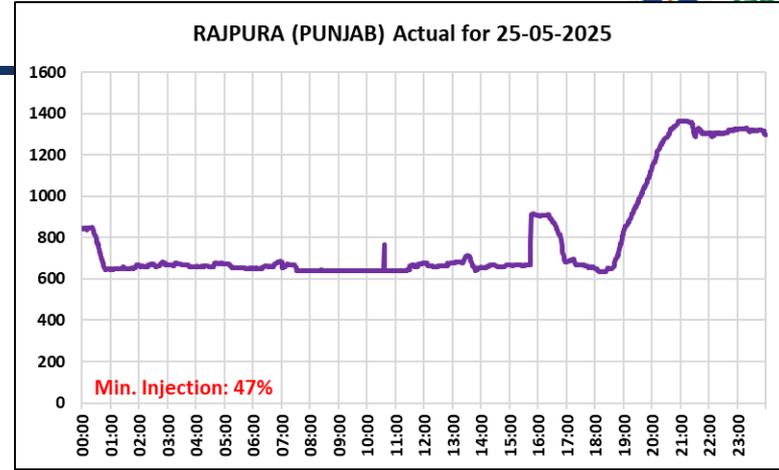
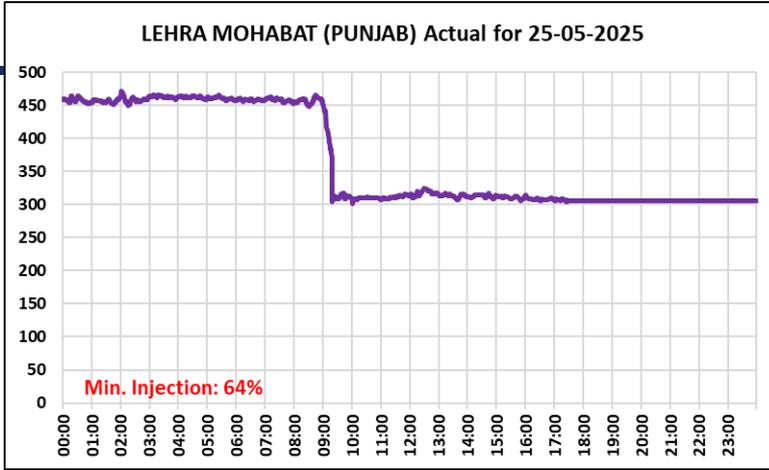
TROMBAY TH. (MAHARASTRA) Actual for 25-05-2025



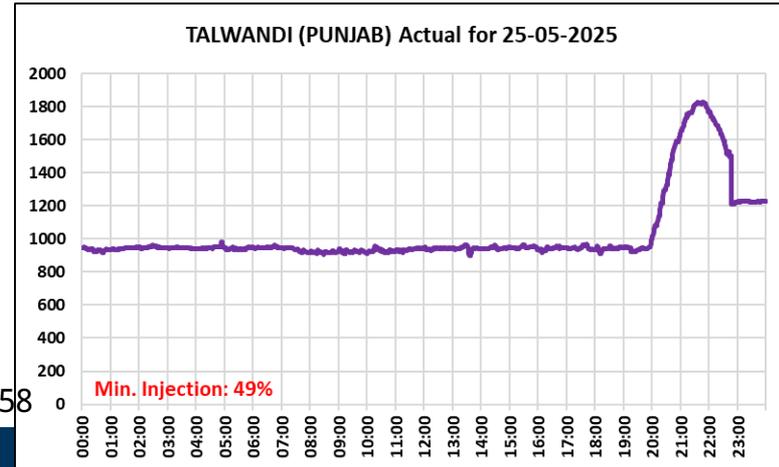
REL DHANU (MAHARASTRA) Actual for 25-05-2025

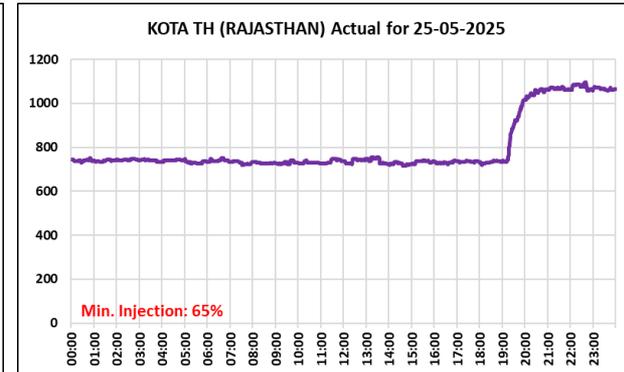
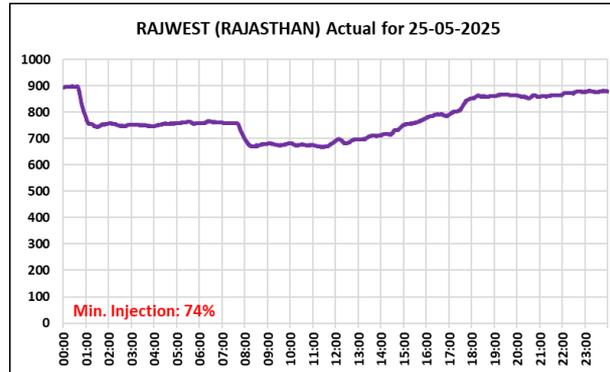
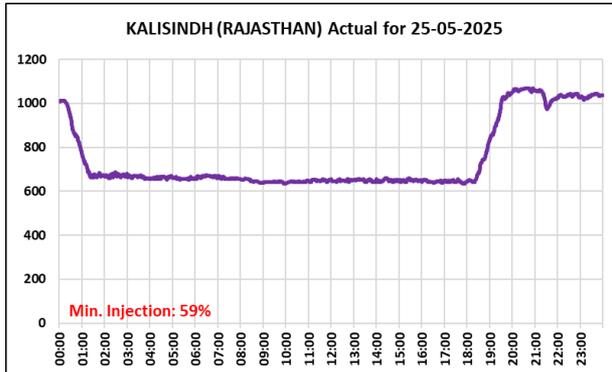
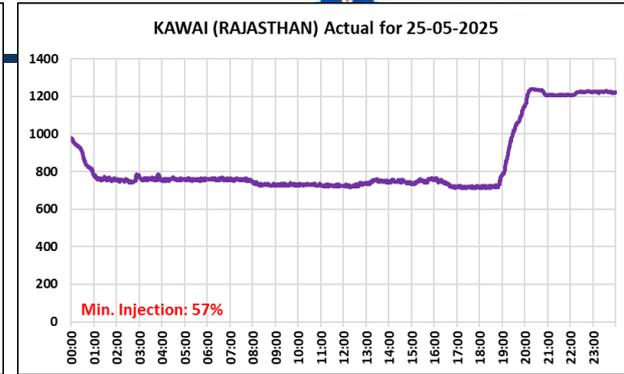
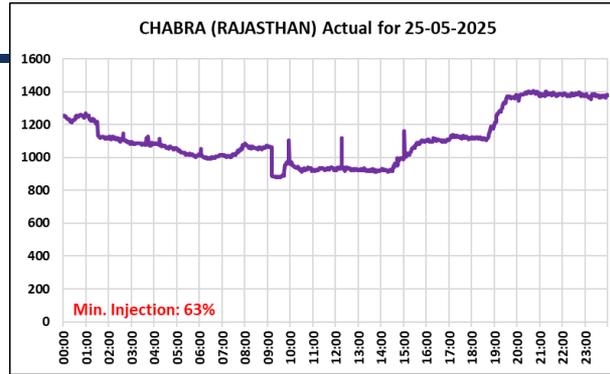
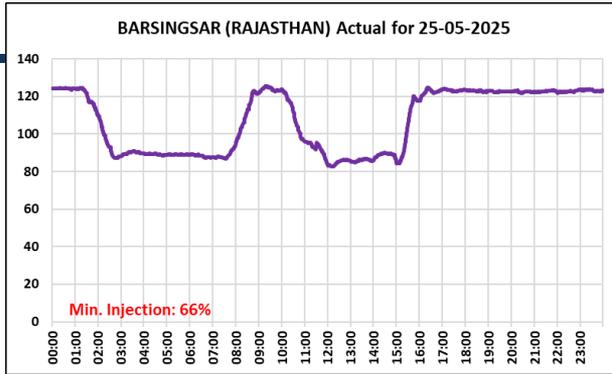


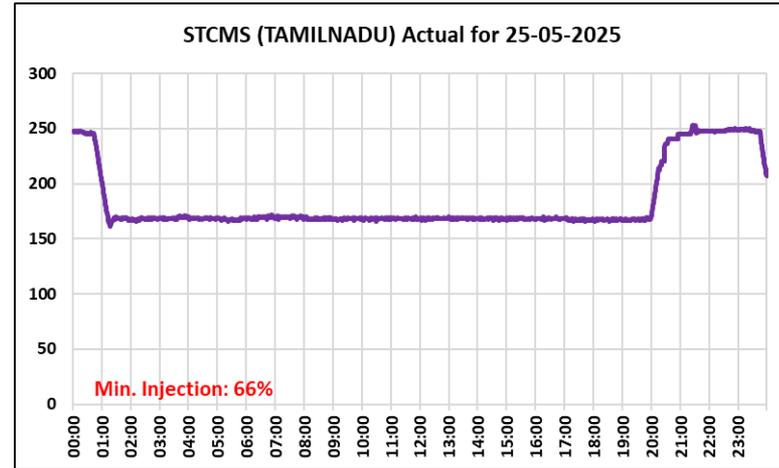
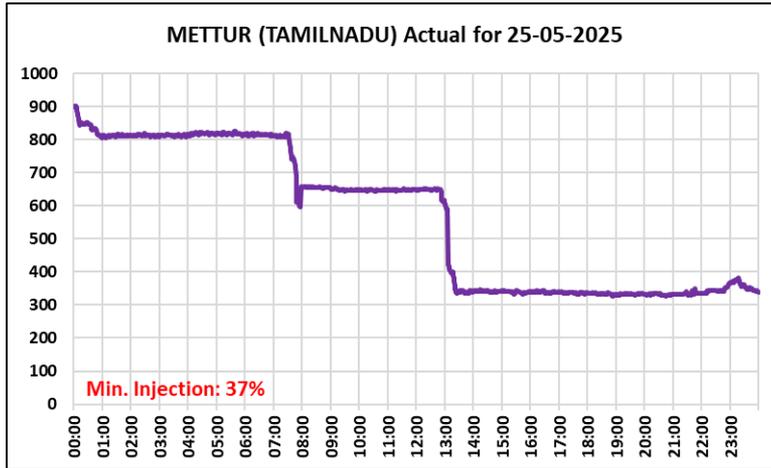


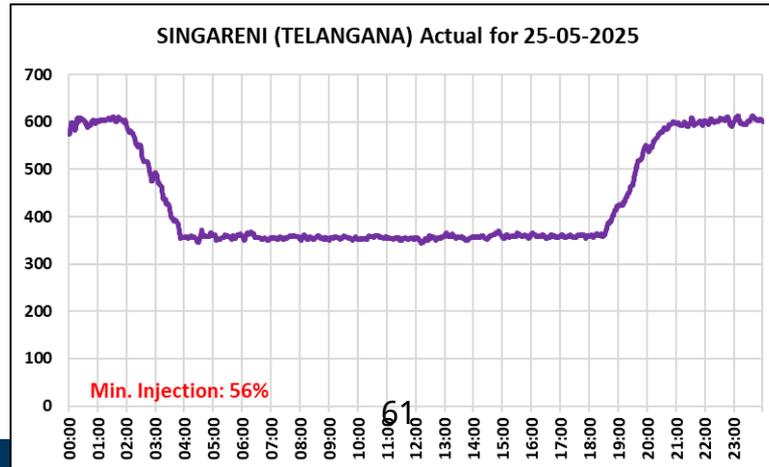
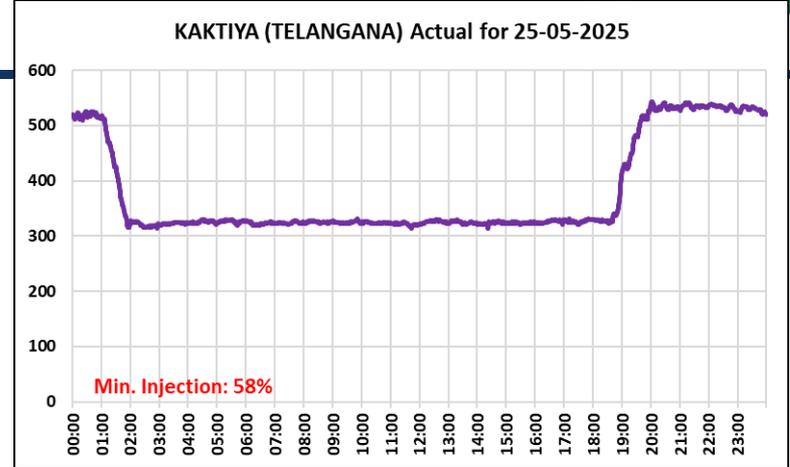
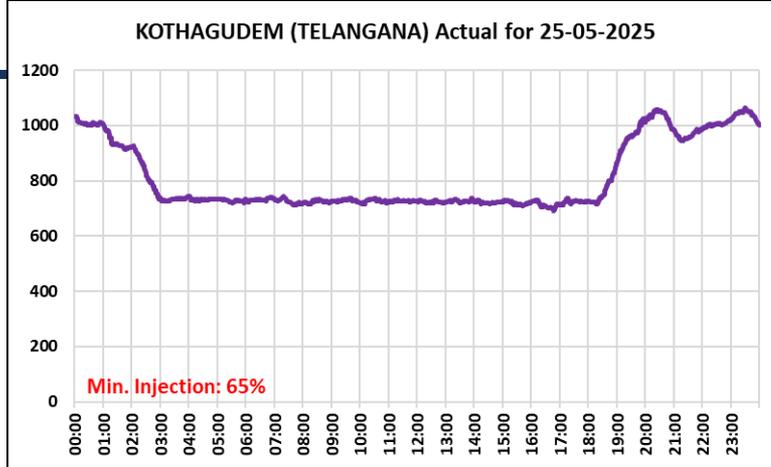


58

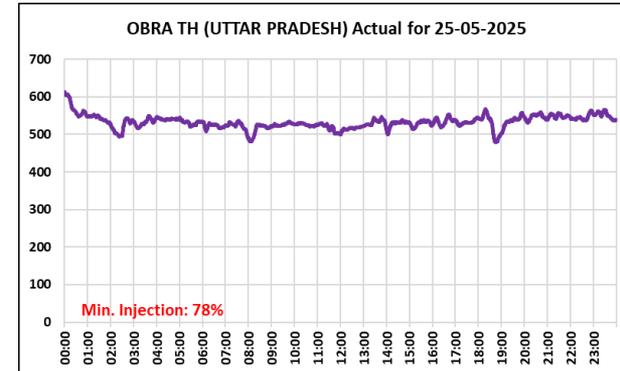
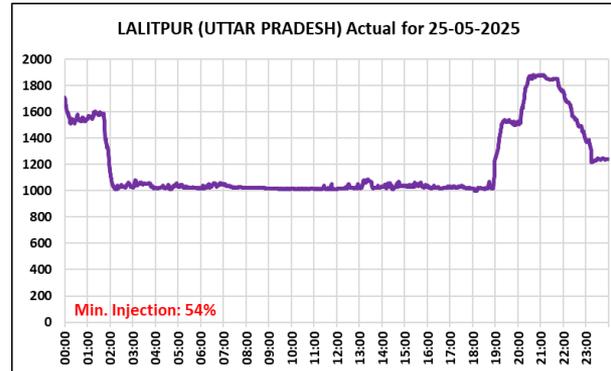
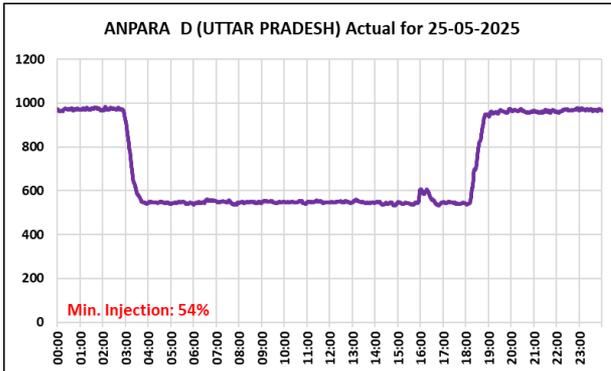
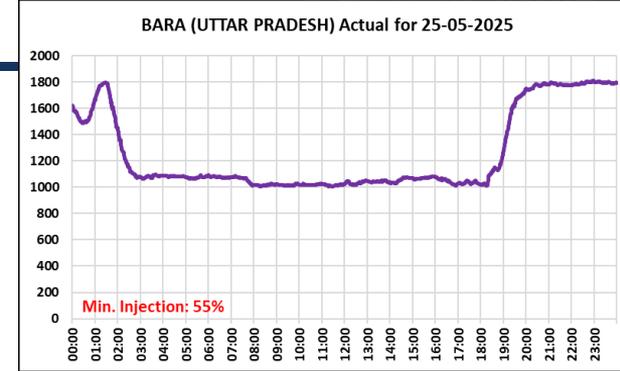
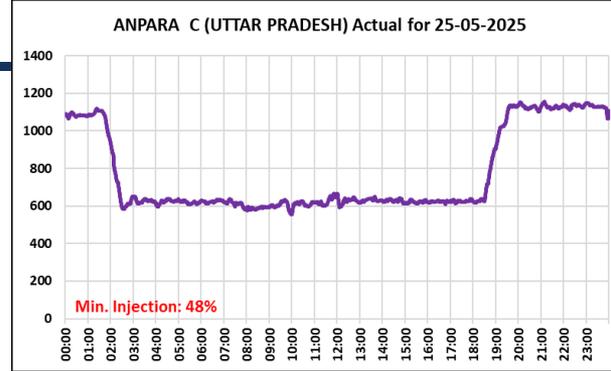
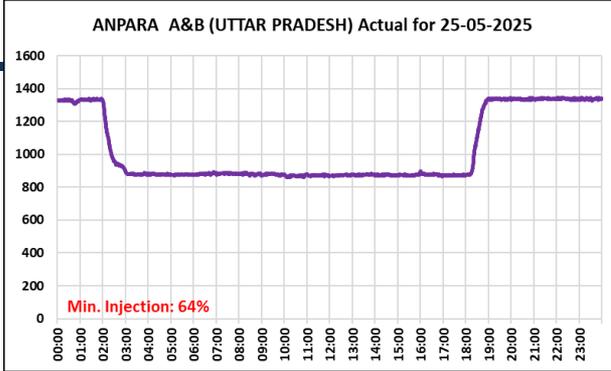




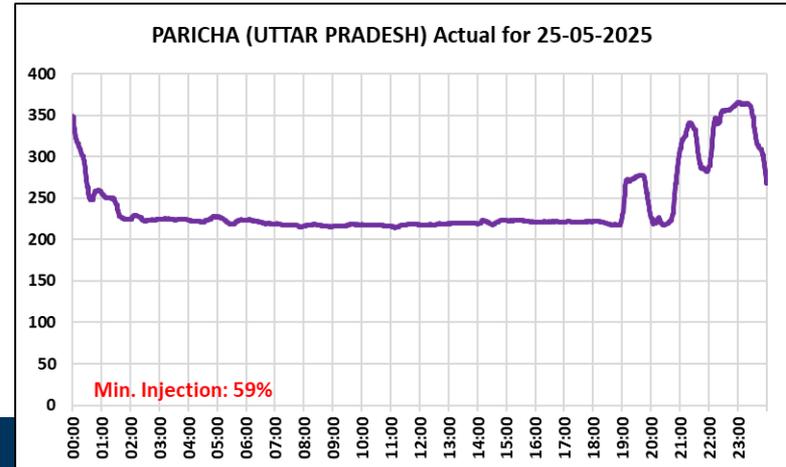
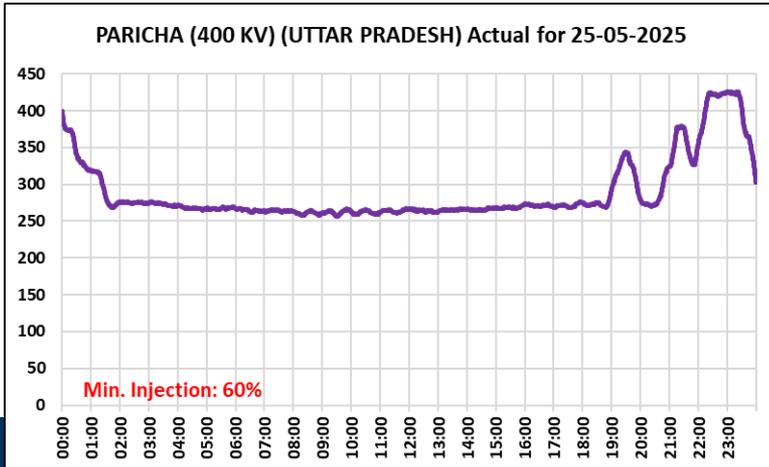
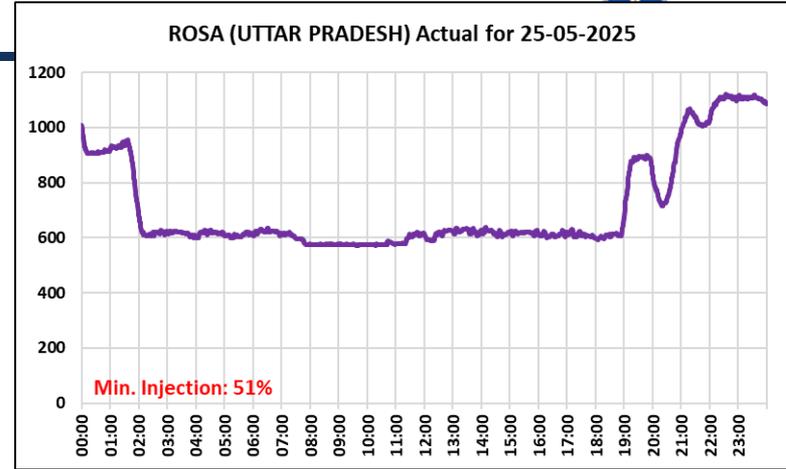
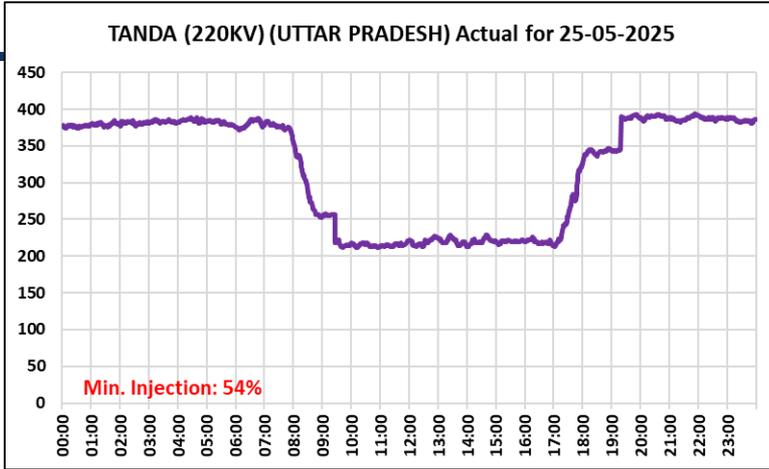




Uttar Pradesh (1)

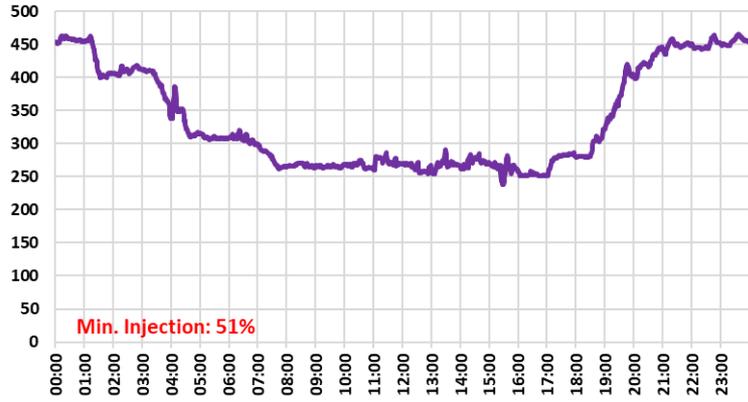


Uttar Pradesh (2)

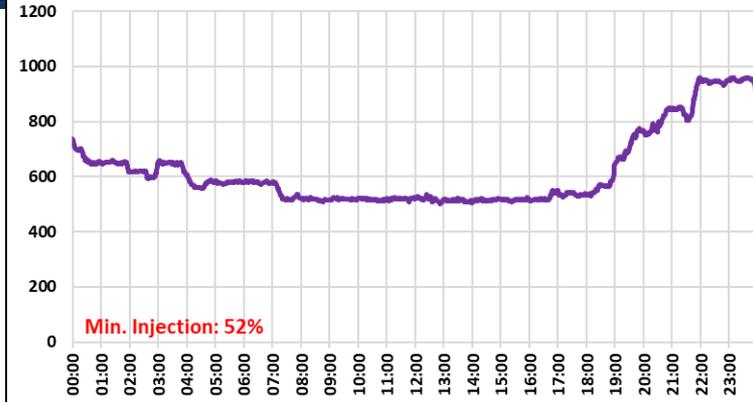


West Bengal (1)

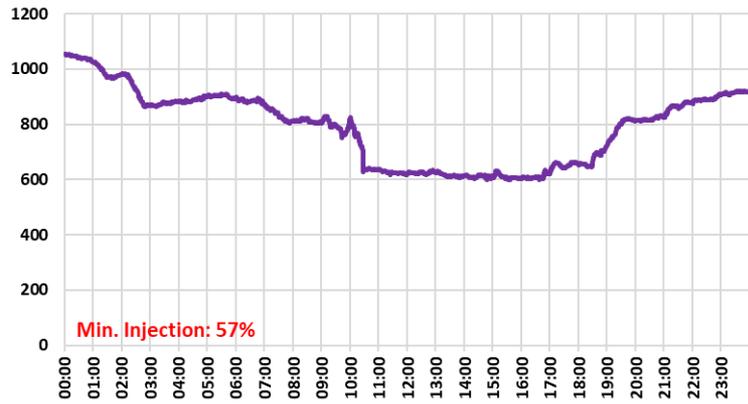
CHANDRAPUR B (WEST BENGAL) Actual for 25-05-2025



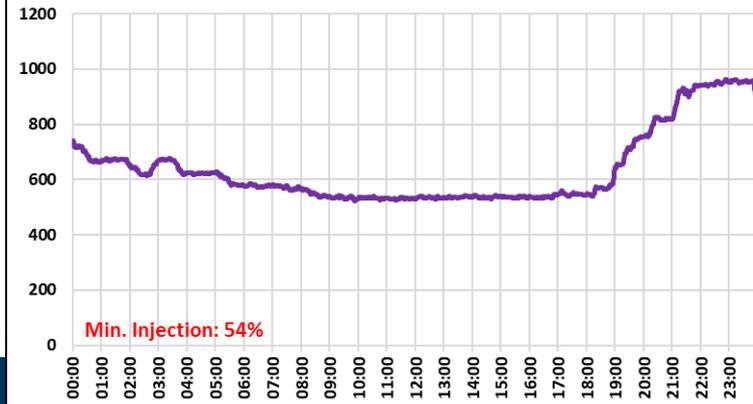
DSTPS (WEST BENGAL) Actual for 25-05-2025



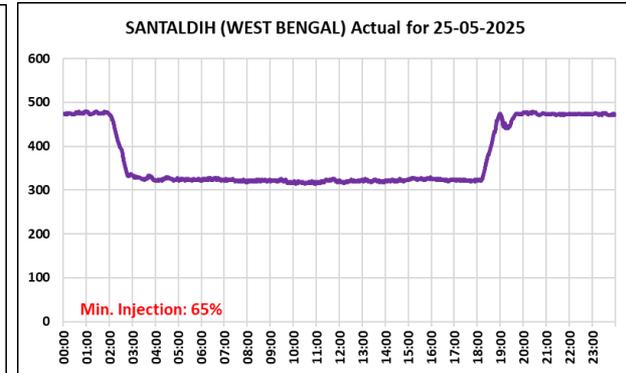
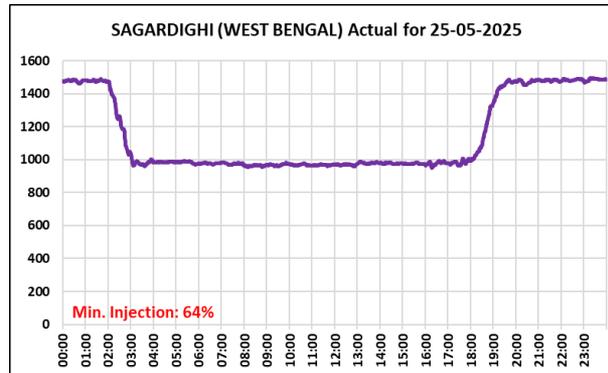
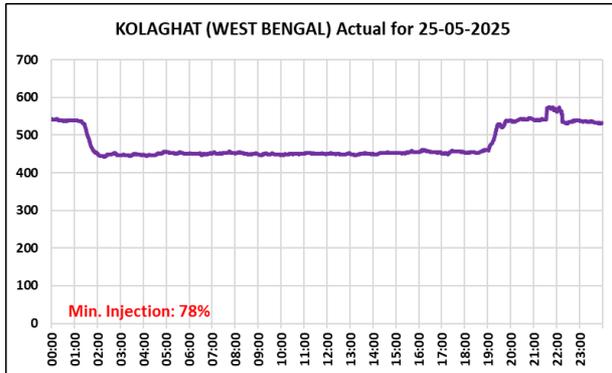
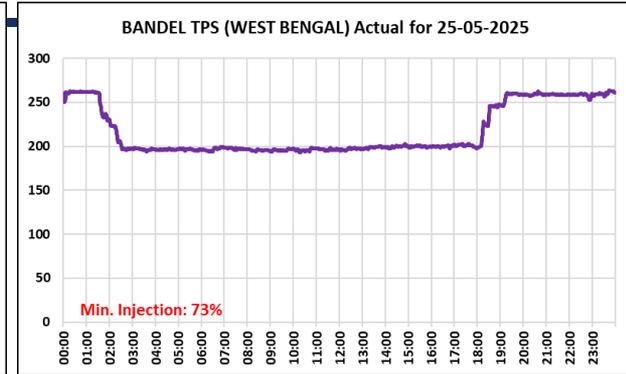
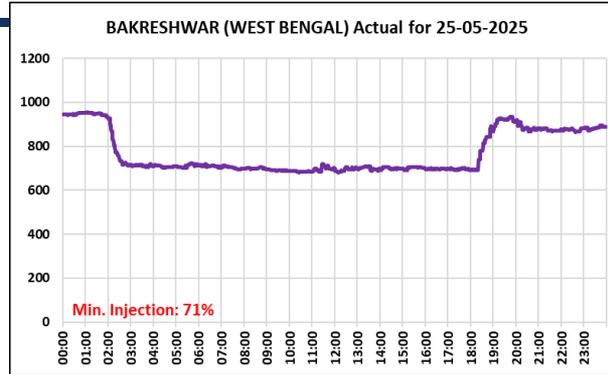
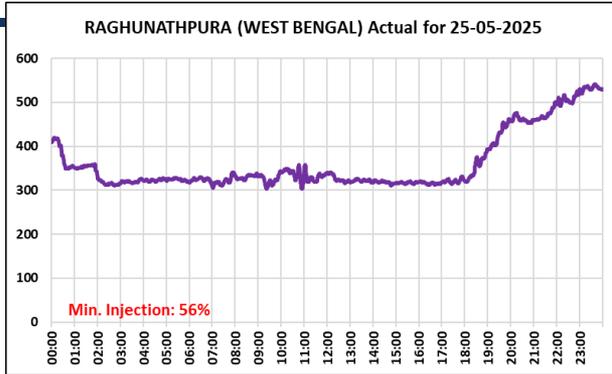
MEJIA (WEST BENGAL) Actual for 25-05-2025



MEJIA B (WEST BENGAL) Actual for 25-05-2025



West Bengal (2)



Reimagining India's Energy Value Chain

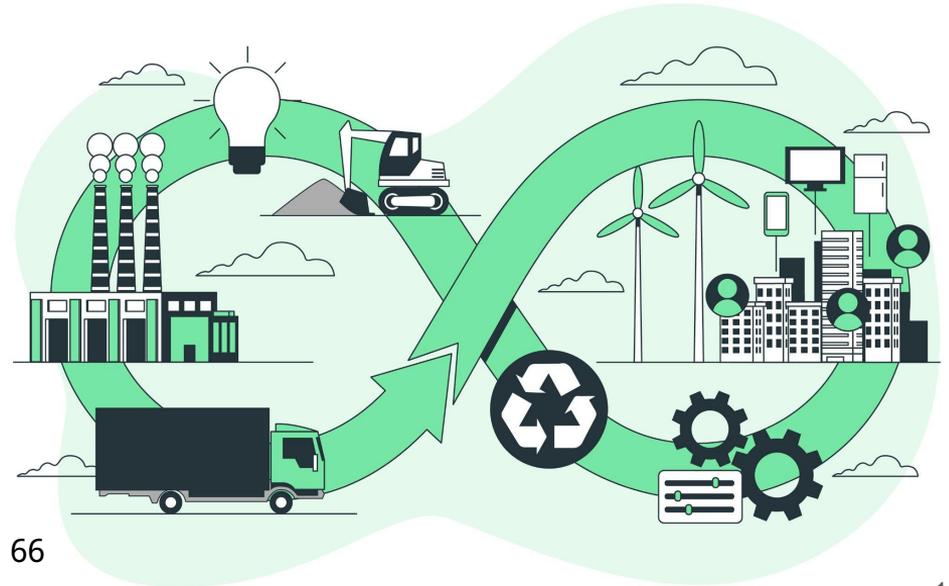
Through a Digital Public Infrastructure

Dr. Ram Sewak Sharma

Chair, IES Taskforce

Former Chairman, TRAI

Founding DG & Mission Director, UIDAI



Technology is only Means, not the Mission

Four crucial questions



What's the real problem?



Who are the stakeholders involved?



Are stakeholder incentives aligned?



What's the most optimal solution?

Problem first- Lessons from Aadhaar



Duplicates

(Multiple identities per person)



Ghost entries

(Non-existent beneficiaries)



Exclusion

(Citizens without formal identification)

With
Aadhaar-
linked DBT



0.15 ₹ out of 1₹
Reaching beneficiary



1 ₹ out of 1₹
Reaching beneficiary

Map stakeholders clearly- know who gains, who loses and by how much



Who are the clear stakeholders and what are their incentives and disincentives to drive such a change?

Choose problems that are solvable



Instead of aiming too wide, focus on few “realistically” solvable ones, but solve at scale!

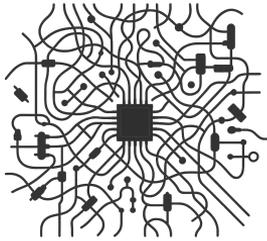
Prioritisation of solvable problems

*You don't have to solve everything. Focus on what is both **impactful** and **feasible at scale**.*

- Demand management
- Peer to peer trading
- Dynamic pricing
- Solarisation of rooftops
- Energy Storage Systems
- Ancillary services
- OTC market trades
- EV chargers network
- Virtual BESS
- ...
- ...



Modular building blocks unlocks solution at scale

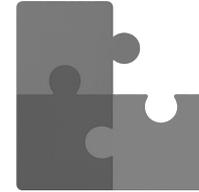


**Over-designed
platforms**

- Tries to solve too many things
- High cost, poor adoption
- User confusion
- Lack of scale



with
**Digital Public
Infrastructure (DPI)**



**Fit for purpose
building blocks**

- Solves one or two clear problem
- Easy to understand
- Fast adoption, low resistance
- Works at scale

like

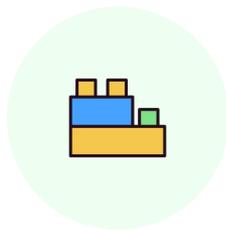


5 DPI Technical Architecture Principles

has inspired the design



1.
Interoperability
driven by open specifications

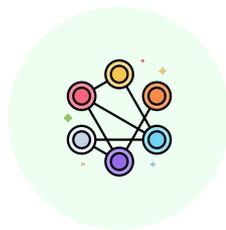


2.
Minimalist, Reusable building blocks
rather than end-to-end solutions



3.
Diverse, inclusive ecosystem innovation by both public + private actors via open & multi-modal access

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4.
Federated & Decentralized with a preference for letting data stay where it's been collected



5.
Security & Privacy by design

Essence of DPIs

A unique model of economic growth, balancing openness and innovation



Innovation

*Diverse public/private solutions
by large ecosystem*

Governance

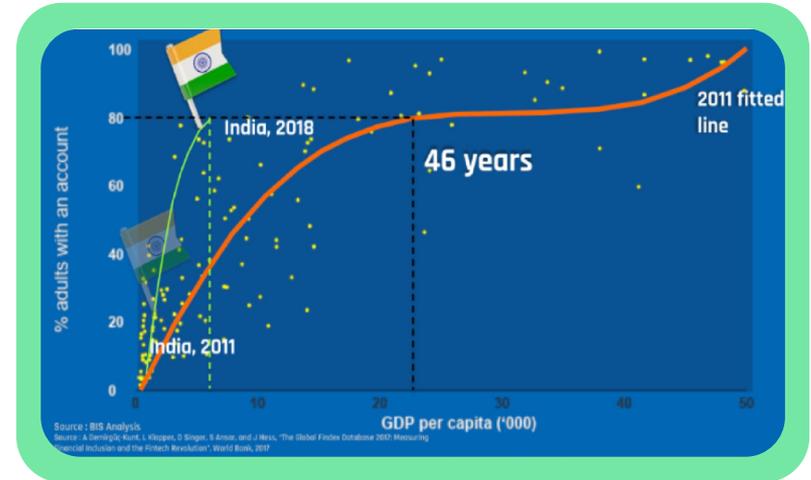
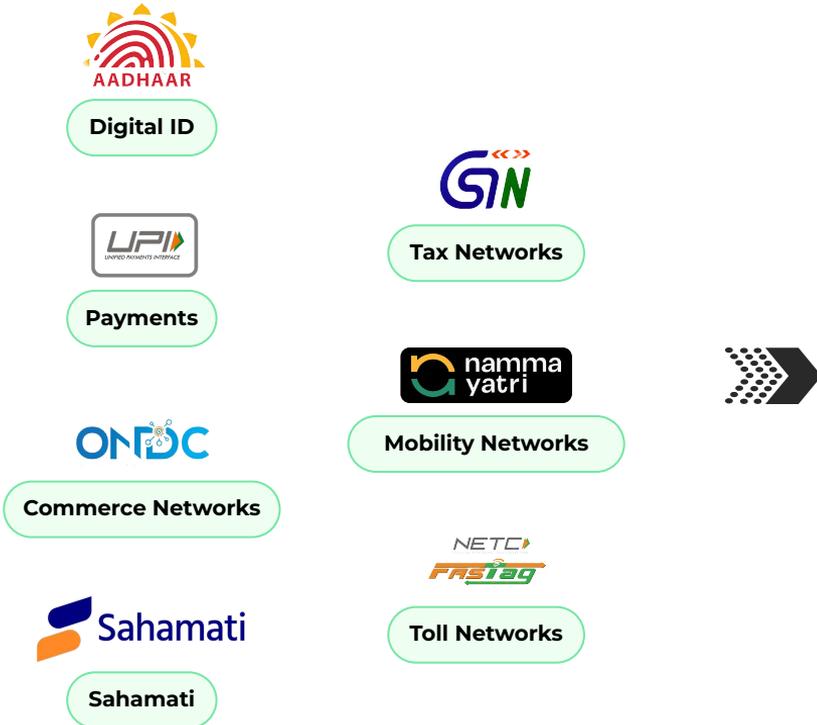
*Transparent, participatory,
user & ecosystem centric*

Technology

*Open specs, standards, protocols,
platforms*

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Leading to a battle hardened playbook that world is embracing as a model of sustainable growth



India's leapfrog in digital tech
(Compressed 5 decades of growth in 1)

India model is unique: Low-value, high volume, low cost



India transacts in sachets —
not subscriptions



Telecom recharges of ₹10–₹50



Small UPI payments at tea stalls



Daily wage DBT credits



Low balance accounts

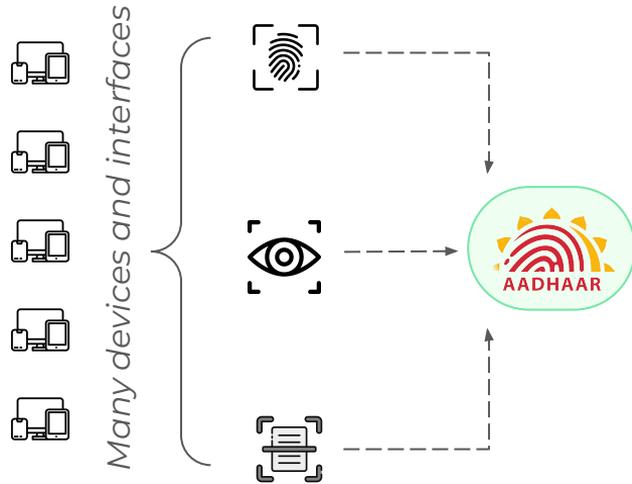
Low-value, high-frequency use cases

Mass-scale adoption

Minimal transaction cost

Designed for **everyone** — not just the top 10%

Many devices, one ecosystem: Enable hardware and software plug-n-play



Increased device **penetration**



Better **competition**



Lower unit **costs**



Faster **innovation** cycles

Share Data Purposefully.

Keep it federated

Trust Systemically.



Limited access
(Only needed information)

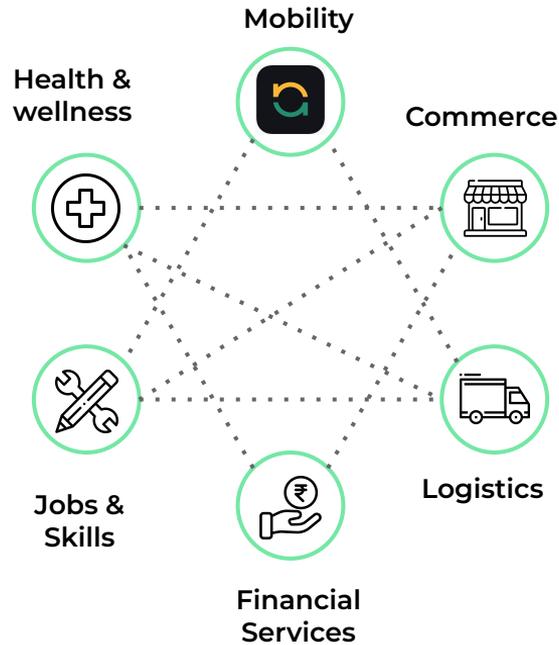


Purpose bound
(Why is this data needed)



Consent based
(Authorised by the data owner)

India is witnessing a new generation of digital innovations, societal inclusion, & empowerment



~237M+ Transactions



288 Platforms connected



616+ cities



160K+ Sellers



26 Domains

The background of the slide is a dark, teal-toned image of a city at night. The city lights are visible, and a complex network of glowing white lines and dots is overlaid on the scene, suggesting a digital or energy network. The text is centered in the upper half of the image.

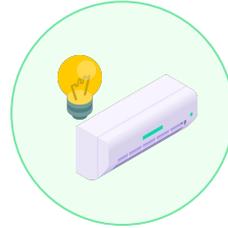
**Is Indian energy
ecosystem ready for
such transformation?**

The grid is seeing an unprecedented shift

GRID OF THE PAST



Bulky, centralised production



Passive consumers



Static



No Grid, No Electricity

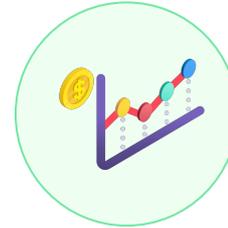
GRID OF THE FUTURE



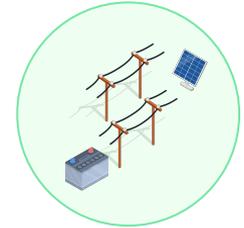
Decentralised production



Active Participant



Variable

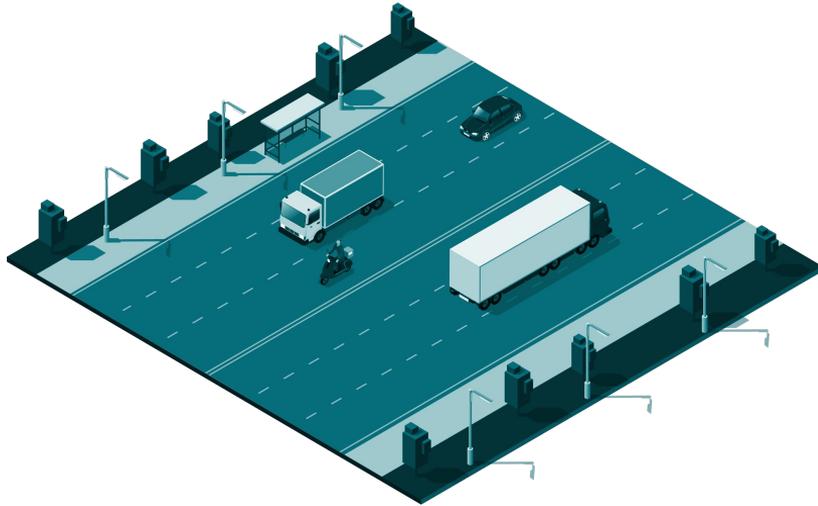


Microgrids

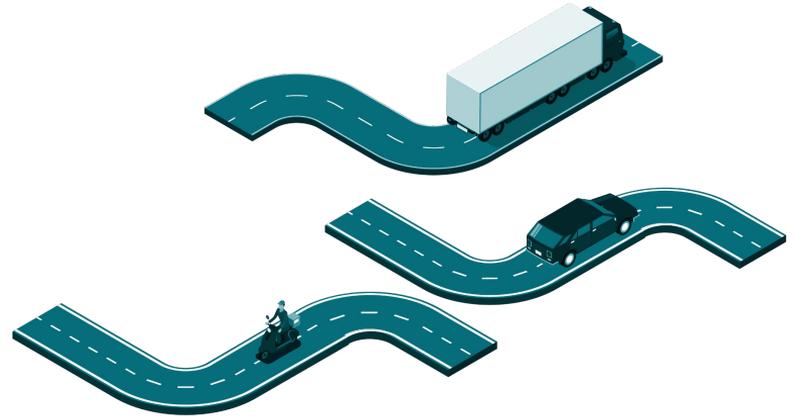


The grid is unified electrically, but not digitally

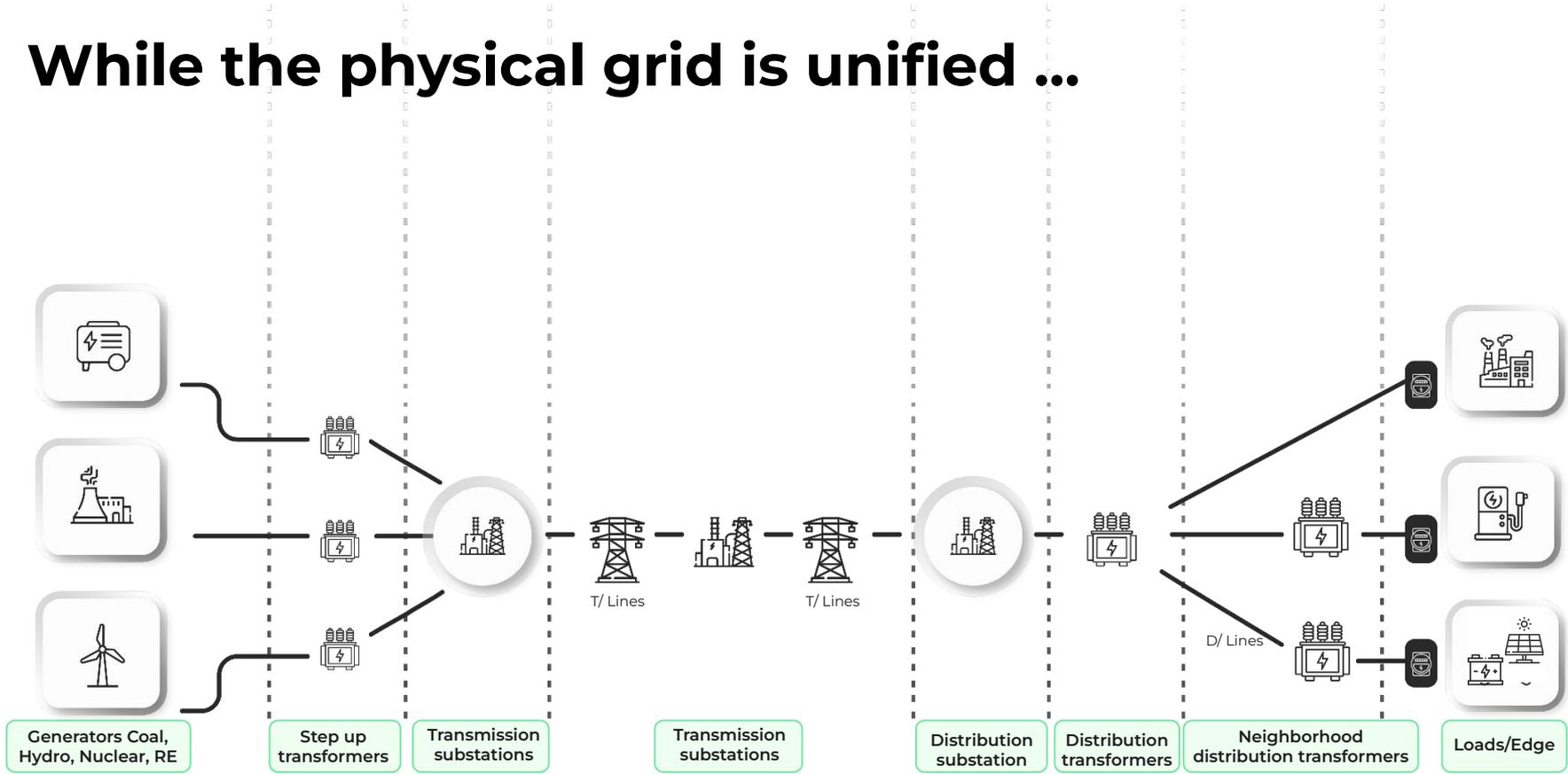
Flow of electrons



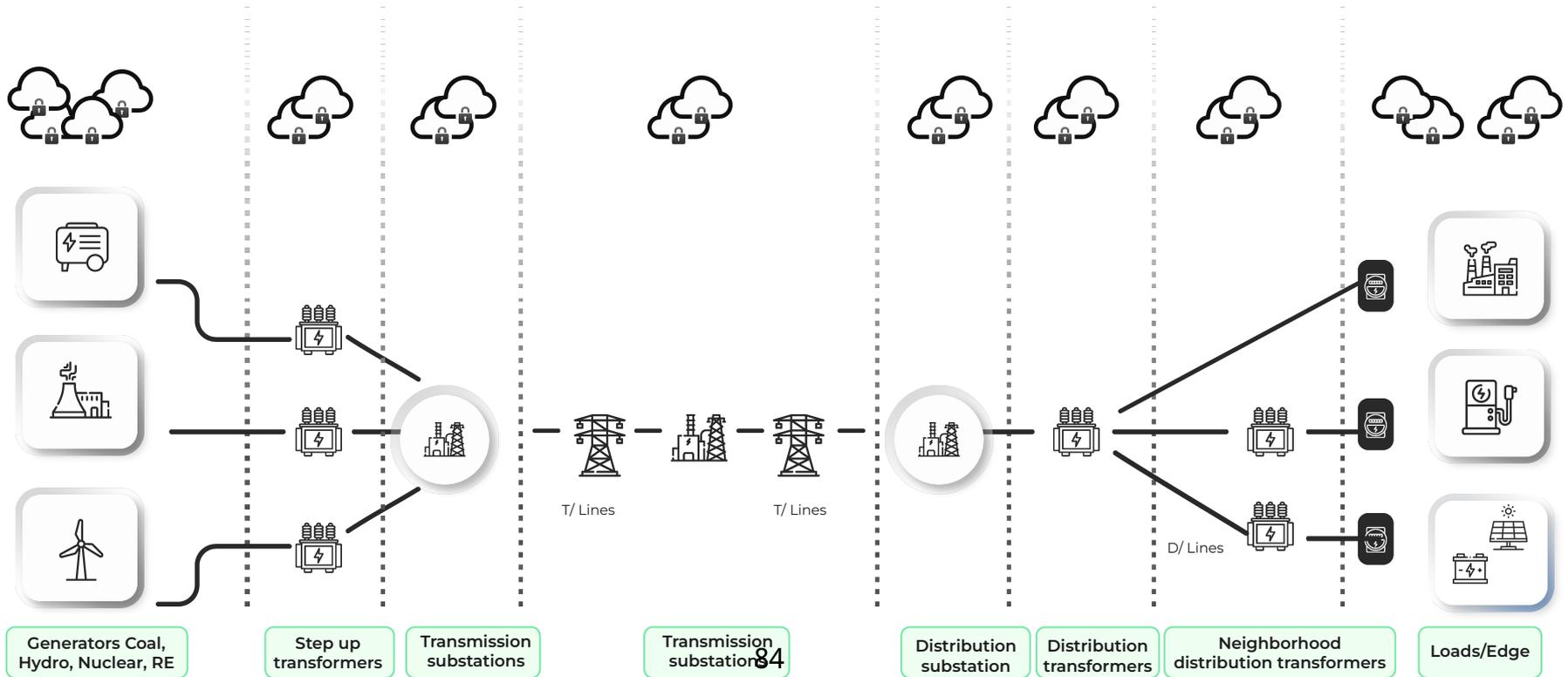
Flow of bits



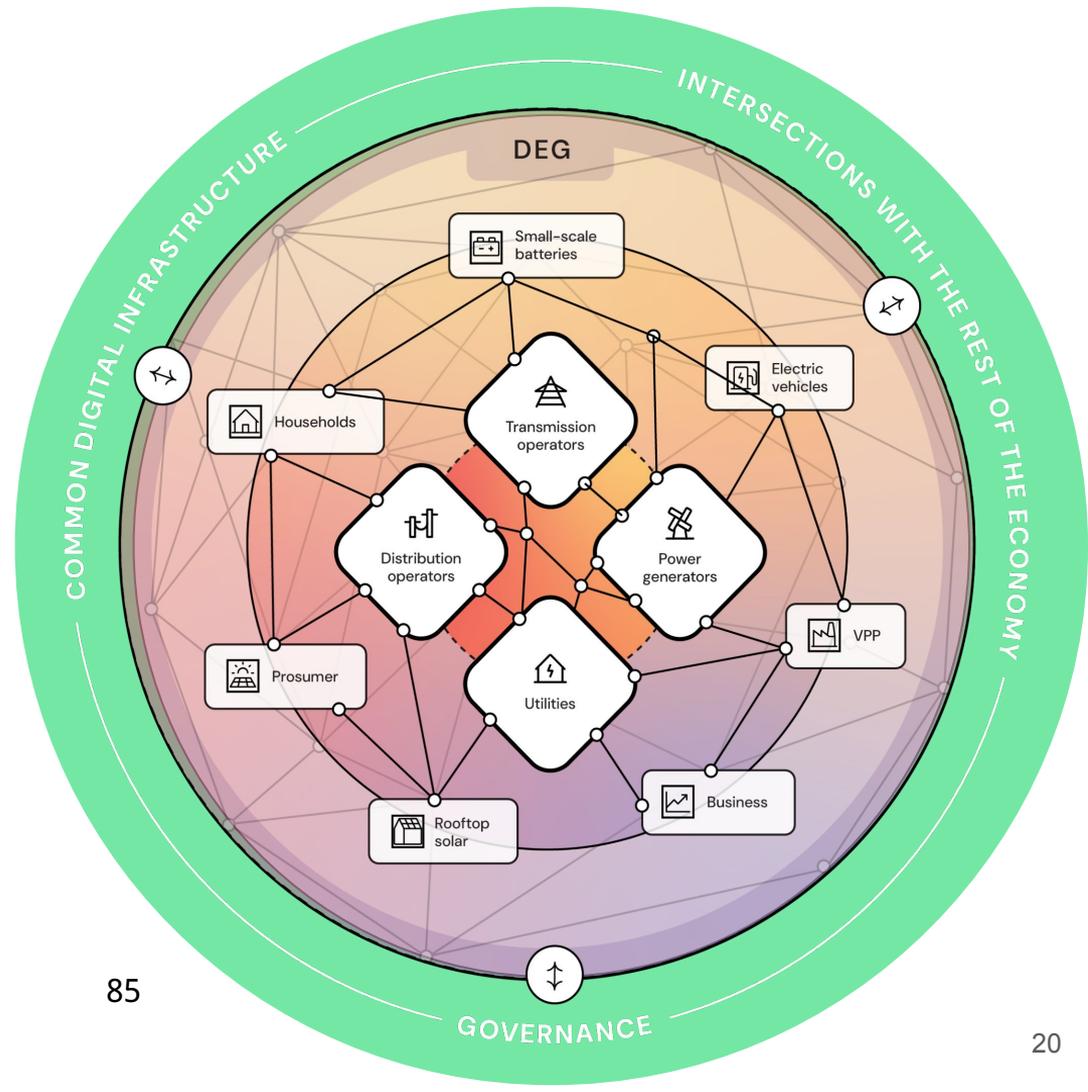
While the physical grid is unified ...



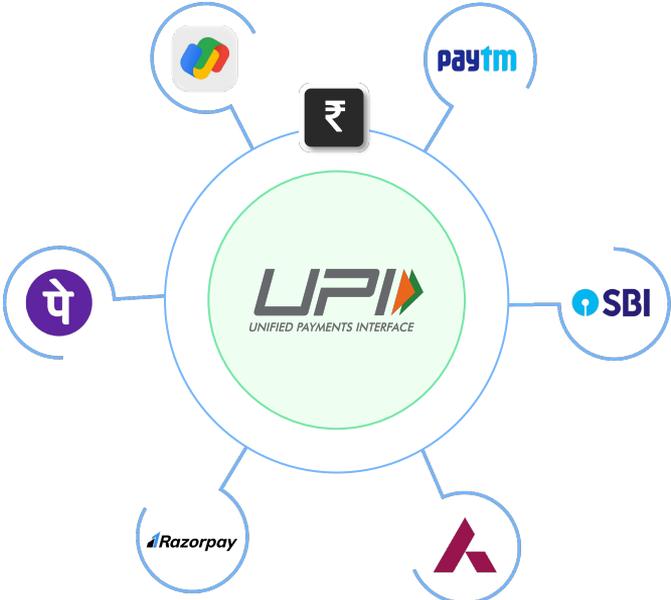
... the digital grid is broken, in silos



Like the Internet,
India Energy Stack (IES),
based on the global vision of
Digital Energy Grid (DEG)
proposes a common
infrastructure that
interconnects diverse
digital energy systems



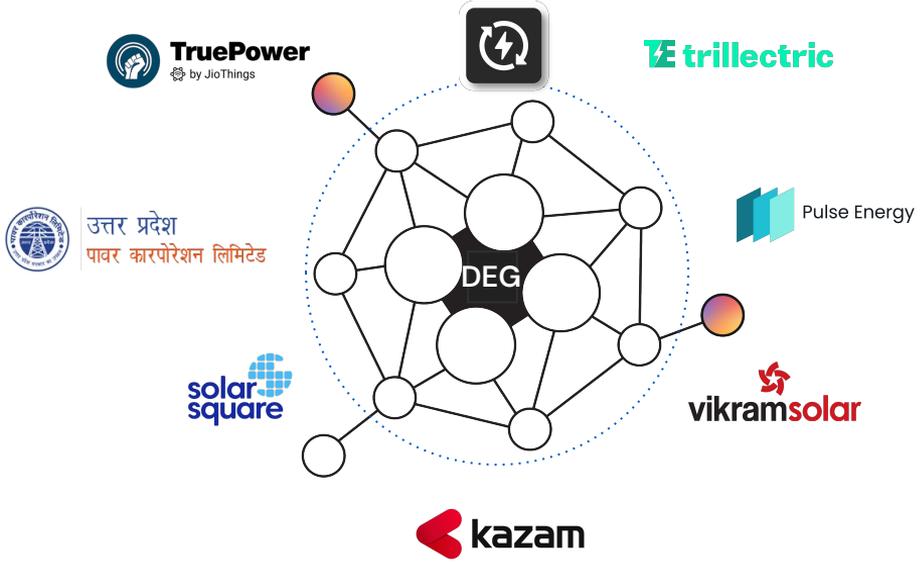
UPI did it for money, IES is doing it for energy...



Any **reciever**
 Any **sender**
 Any **bank**
 Any **merchant**
 Any **time**
 Any **where**



Any **consumer**
 Any **prosumer**
 Any **utility**
 Any **business**
 Any **time**
 Any **where**



And fortunately, we don't have to start from scratch ..

Unified Energy Interface (UEI) is an **open network** built on **beckn** for energy transactions across digital systems in India

Early traction

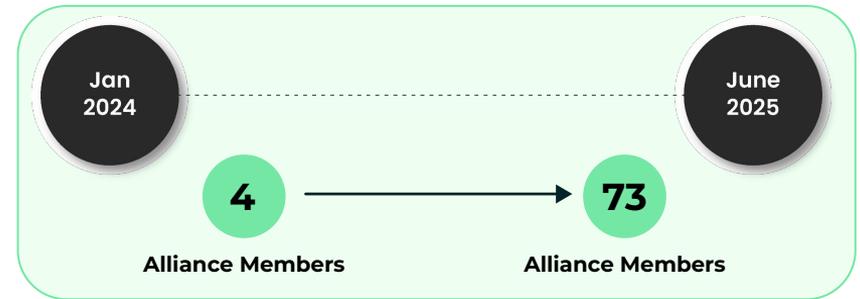
FEB'24 to JUN'25



~4.3 Mn
Total transactions

~22+ GWh
Total energy dispensed

UEI Alliance - a consortium with a similar objective is finding momentum across India



The background of the slide is a dark, teal-toned image of a city at night. The city lights are visible, and a complex network of glowing white lines and dots is overlaid on the scene, suggesting a digital or energy network. The text is centered and written in a clean, white, sans-serif font.

**India has proven time and
again the power of
infrastructure thinking**

**Time is now to trigger
the same for energy!**

Thank you!

Dr. Ram Sewak Sharma



NSE Monthly Electricity Futures (ELECMBL)

One Nation, One Grid, One Price

Presented to: Forum of Regulators
At: CERC, New Delhi
Date: July 14, 2025

Present options available for a Generator



Generator

- Mr. A, a generator, wants to sell 250 MW of power
- **Options**
 - Will strike a PPA
 - Will execute OTC bilateral agreement
 - Will do merchant sale

No financial futures (Hedging Tools) available??

Present options for Buyers (Discoms, Traders, retailers, Industry)



Discom

- A Buyer named B Ltd, wants to buy 250 MW of power
- **Options**
 - Will strike a PPA
 - Will execute OTC bilateral agreement
 - Will do merchant purchase

No financial futures (Hedging Tools) available??

Market Microstructure – Monthly Electricity Futures Contract (NSE)

Parameter	Particulars Monthly Contract - Base Load
Commodity Name	ELECTRICITY FUTURES (ELECMBL)
Contract available for Trading	Available for 12 Calendar Months. Contracts are listed for current and next 3 Months
Contract Start Day	1 st business day of the launch month
Last Day of Trading	Business day immediately preceding the last calendar day of the contract expiry month
Contract Duration	Four months
Trading Days	Monday to Friday
Trading Session	9:00 a.m. to 11:30 p.m. /11:55 p.m.
Price Quote Basis	Rs. per MWh (excluding all taxes and levies)
Trading Unit	50 MWh**
Maximum Order Size	50 times of trading unit
Tick size	Rs. 1 per MWh

Minimum -Maximum Capacity Required for orders and DDR Formula**

Generator/Trader /Retailer	Minimum Capacity Required for 1 order (in KW)	Capacity required for Max order (in MW)*
Solar	347	17.361
Wind	198	9.921
Thermal	94	4.630
Hydro	94	4.630
Retailer/Trader/other consumers	70	3.5 MW

****PXIL DDR Price: Volume weighted Average price of all 3 exchanges as shared by PXIL**

$$\text{DDR_month} = (\sum_{d=1}^D \sum_{t=1}^{96} (P_{\{d,t\}} \times V_{\{d,t\}})) / (\sum_{d=1}^D \sum_{t=1}^{96} V_{\{d,t\}})$$

Where:

$P_{\{d,t\}}$ = Market clearing price (₹/MWh) for block t on day d

$V_{\{d,t\}}$ = Traded volume (MWh) for block t on day d

D = Number of calendar days in the contract month

t = 1 to 96 (15-minute blocks each day)

Maximum allowable open position

Individual level capacity requirement*	Member level capacity requirement *
3,00,000 MWh or 5% of the market wide open position, whichever is higher for all the Electricity contracts combined together.	30,00,000 MWh or 20% of the market wide open position, whichever is higher for all the Electricity contracts combined together.
<u>Open positions (GW)</u>	<u>Open positions (GW)</u>
Solar – 2.08	Solar – 20.8
Wind – 1.19	Wind – 11.9
Thermal – 0.556	Thermal – 5.5
Hydro- 0.556	Hydro- 5.5
Hybrid – 0.833	Hybrid – 8.33

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Plant Load Factor (PLF) and Formula Used for Assessing Capacity

Plant Type	PLF
Solar	20%
Wind	35%
Thermal	75%
Hydro	75%
Hybrid	50%

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Formula Used →

Installed Capacity (MW) = (Electricity Generated by Plant (i.e., 2500 MWh)) (\div) (720 * PLF based on the type of installed Capacity)

Total Hours in a Month = 720 (Fix in monthly contract case)

Electricity Generated = it will vary basis the installed capacity

PLF = it will vary basis the installed capacity

Indian Electricity Derivatives – launch of more products in calibrated manner

MOST TRADED PRODUCTS IN EEX

Product Type	Share of Volume traded (EEX)
Day	<1%
Week	= 1%
Month	13%
Quarter	17%
Year	69%

- NSE propose to launch Quarterly, Annual and CFD products in near future .
- The electricity derivatives market in India is expected to reach ~ USD 175-475 billion, driven by increased demand for hedging instruments.

Nordpool markets

Specification

Base load contracts

Products

- Futures – day (Nordic only)/week
- Forward - month/quarter/year
- European option (Nordic only)
- Contracts for difference (CfD)

Min contract size

1 MW

Min tick size

0.01

Currency

EUR

Reference price

- The official Nordic underlying day-ahead price as published by Nord Pool Spot
- The official German underlying day-ahead price as published by EEX
- The official Dutch underlying day-ahead price as published by APX
- Monday through Sunday inclusive 00.00 to 24.00

Peak load contracts

Products

- Futures - week
- Forward - month/quarter/year

Min contract size

1 MW

Min tick size

0.01

Currency

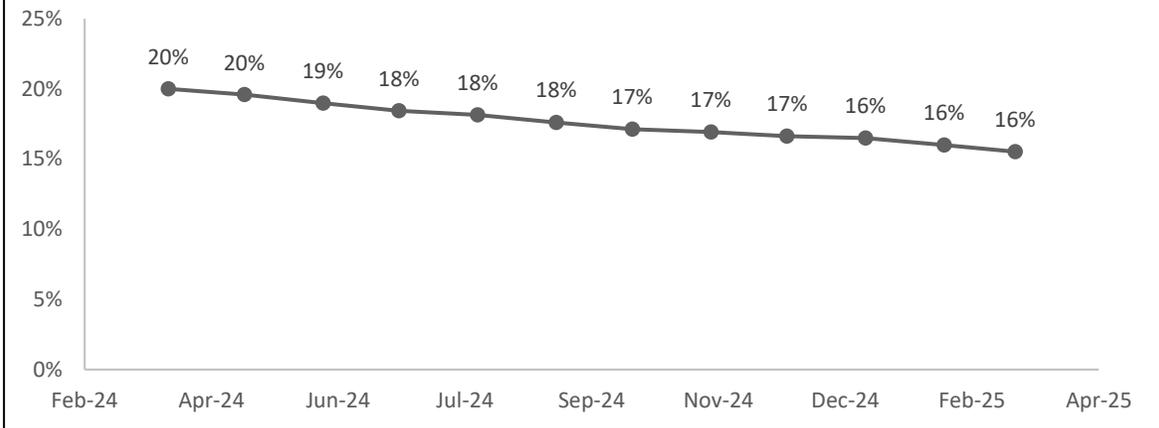
EUR

Reference price

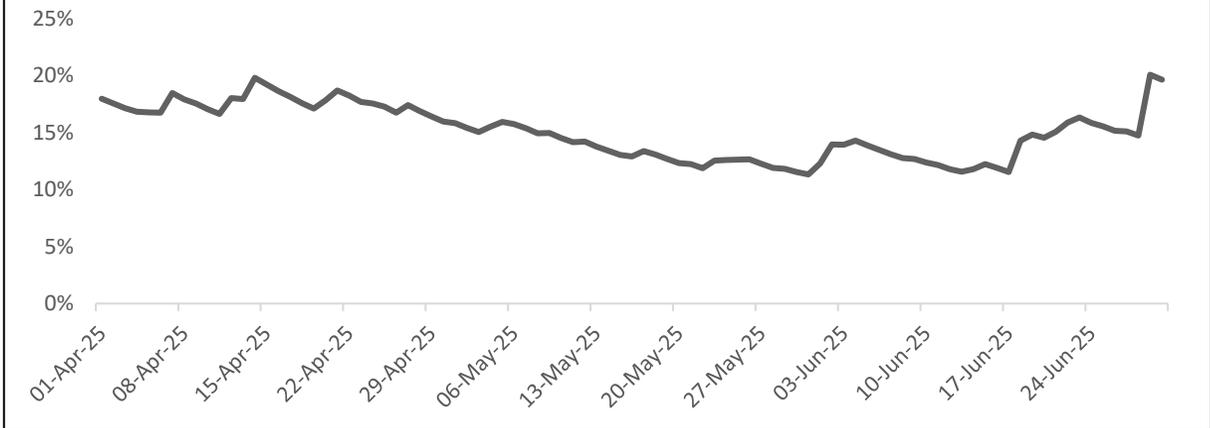
- The official Nordic underlying day-ahead price as published by Nord Pool Spot
- The official German underlying day-ahead price as published by EEX
- Monday through Friday inclusive 08.00 to 20.00

Volatility in DAM

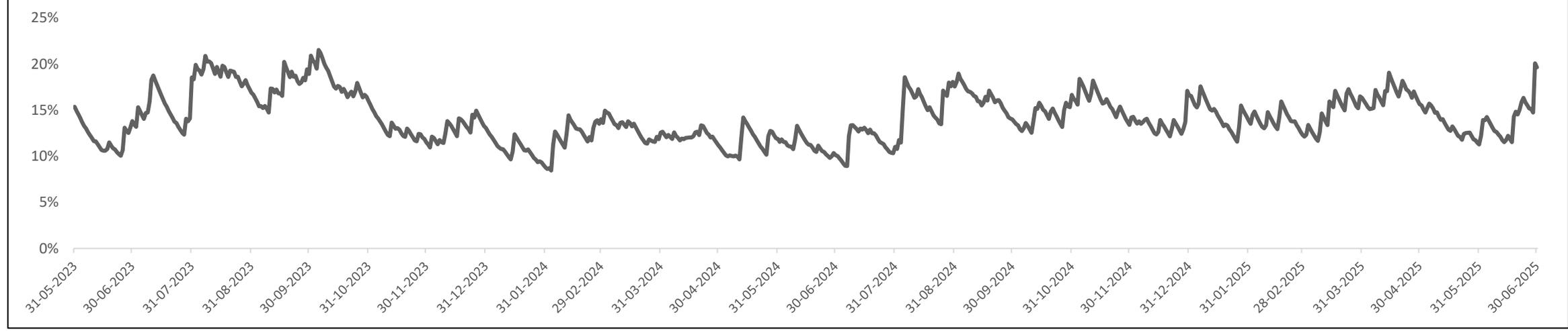
DAM Average Volatility for FY 2024-25



DAM Daily Volatility from April to June



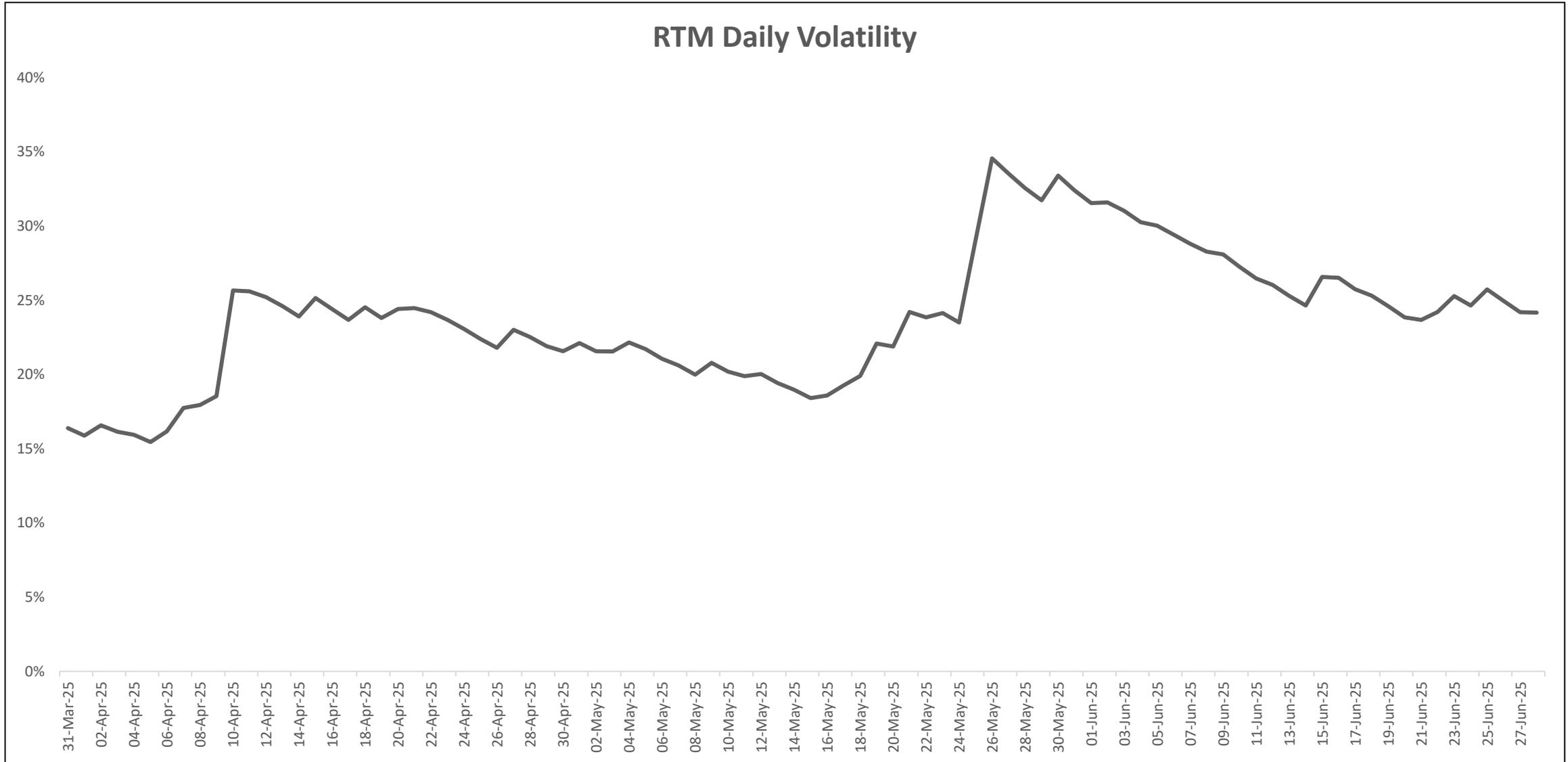
Daily Volatility from June 2023 to June 2025



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Volatility in RTM



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Source: 1) IEX and HPX information as available on respective website 2) Volume weighted price of PXIL, IEX and HPX

Price Risk Management Illustration (Long Position)

ABC Buyer has an electricity procurement requirement of 10,000 MWh for the entire month of August 2025

July 03, 2025

PXIL (Spot) Electricity DAM Price: Rs 6/KWh (i.e., Rs 6000/MWh)
NSE Electricity August Month Contract Price : Rs 6500/MWh

BAU: ABC Buyer doesn't take any position on NSE Electricity Futures

Scenario II: ABC Buyer takes a buy (Long) position on NSE August Monthly Electricity Futures at Rs 6500/MWh

Scenario III: Only Future position

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Prices Rising

August 29, 2025

PXIL DDR Price for August: Rs 7200/MWh
NSE July Monthly Contract Settlement Price: Rs 7200/MWh

BAU: ABC Buyer Company
doesn't take any position on NSE
Electricity Futures

Scenario II: ABC Buyer takes a buy
(Long) position on NSE August Monthly
Electricity Futures at Rs 6500/MWh

Scenario III- (Only Future
Position)

August 29, 2025

Profit/Loss in Futures market: NA

**Effective Purchase Price for entire
August Month: Rs 7200/MWh**

August 29, 2025

Profit in Futures market: Rs 700

Effective Purchase Price: Rs 6,500/MWh = Rs
7200 (PXIL August Month Average) - Rs 700
(Profit)

August 29, 2025

Profit in Futures market: Rs
700/MWh

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Price Falling

August 28, 2025

PXIL DDR Price for August: Rs 5800/MWh

NSE August Monthly Contract Settlement Price: Rs 5800/MWh

BAU: ABC Buyer Company Doesn't take any position on NSE Electricity Future

Scenario II: ABC Buyer takes a buy (Long) position on NSE August Monthly Electricity Futures at Rs 6500/MWh

Scenario III- (Only Future Position)

August 29, 2025
Profit/Loss in Futures market: NA

Scenario II- August 29, 2025
Loss in Futures market: Rs 700/MWh

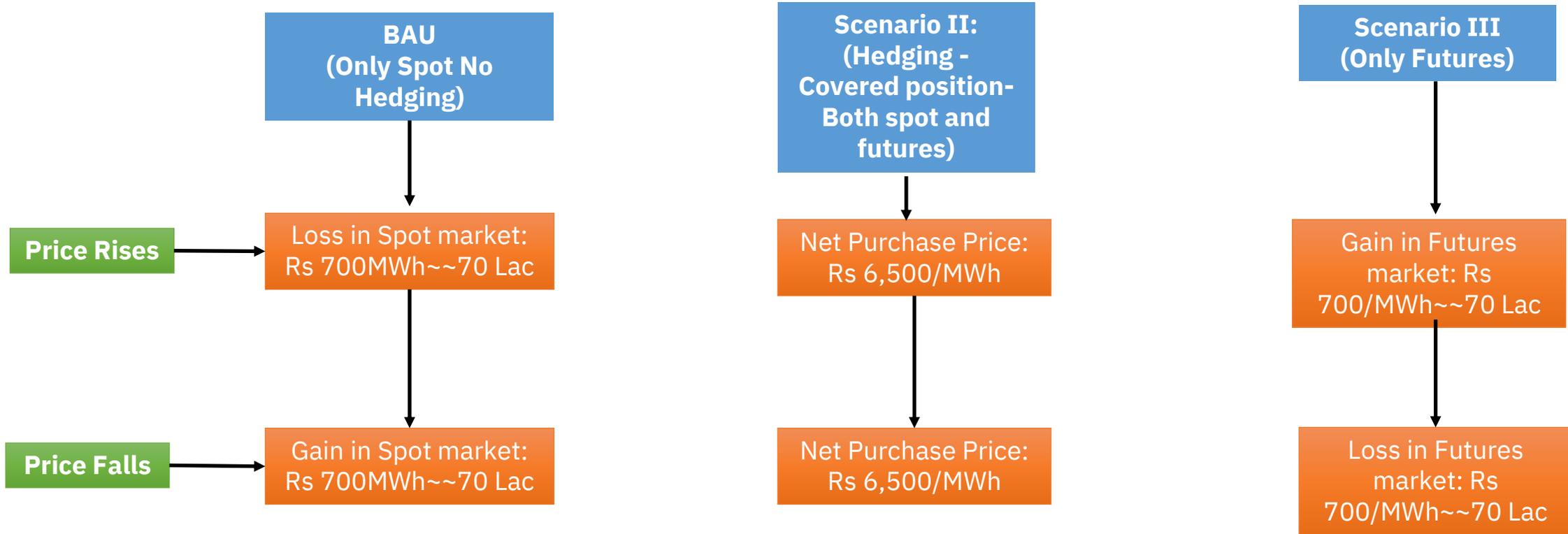
Loss in Futures market: Rs 700/MWh

Effective Purchase Price for entire August Month: Rs 5800/MWh

Effective Purchase Price: Rs 6500/MWh = Rs 5800 (PXIL August Month Average) + Rs 700 (Loss)

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Buyer scenario



- For Gain = $\text{Rs. } 700 \text{ MWh} \times 10,000 \text{ MWh} = (+70 \text{ Lac})$
- For Loss = $\text{Rs. } 700 \text{ MWh} \times 10,000 \text{ MWh} = (-70 \text{ Lac})$

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Discom: example of treatment of Hedging cost and gain loss

- Tariff Order of Discom prescribes Short Term Power Purchase ('STPP') rate or 'Ceiling price' (in Rs./kWh) for each year
 - STPP notified by SERC
 - Discom: Hedges by purchasing Monthly Futures at '**<**' or '**=**' or '**>**' **STPP rate**
 - Futures Settlement Price = Power Exchange computed Volume Weighted Average Price ('VWAP')

	Case-1 : Purchase Futures Contract < STPP At month-end: PX VWAP = Futures Settlement Price ('FSp')	Case-2 : Purchase Futures Contract > STPP At month-end: PX VWAP = Futures Settlement Price ('FSp')
Rising	FSp > Futures Contract	FSp > Futures Contract
	Gain in Futures (difference of FSp and Futures Contract) Effective Purchase Price = PX Settlement – Gain	Gain in Futures (difference of FSp and Futures Contract) Effective Purchase Price = PX Settlement – Gain
Falling	FSp < Futures Contract	FSp < Futures Contract
	Loss in Futures (difference of FSp and Futures Contract) Effective Purchase Price = PX Settlement + Loss	Loss in Futures (difference of FSp and Futures Contract) Effective Purchase Price = PX Settlement + Loss

- **Devise mechanism for treatment of Gain / Loss made in Electricity Futures Contract**

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Discom: example of treatment of Hedging cost and gain loss

- STPP notified for a year: Rs. 5,000 /MWh
- Discom purchases Monthly futures prior to commencement of Contract month

	Case-1 : Purchase Monthly Futures (at Rs 4,500) < STPP	Case-2 : Purchase Monthly Futures (at Rs 5,500) > STPP
Rising	PX VWAP: Rs. 5,200 / MWh Futures Contract settlement: Rs. 5,200 / MWh	PX VWAP: Rs. 6,200 / MWh Futures Contract settlement: Rs. 6,200 / MWh
	Futures Gain = Rs. 700/MWh Spot loss w.r.t STPP = Rs 200 /MWh Effective Purchase price = (PX Settlement – Futures Gain) = (Rs. 5,200 – Rs. 700) = Rs. 4,500 / MWh Net Increase / Decrease w.r.t STPP = (STPP – Effective price) = (Rs. 5,000 – Rs 4,500) = Rs 500 / MWh	Future Gain = Rs. 700 / MWh , Spot loss w.r.t STPP = Rs. 1,200 / MWh Effective Purchase price = (PX Settlement – Futures Gain) = (Rs. 6,200 – Rs. 700) = Rs. 5,500 / MWh Net Increase / Decrease w.r.t STPP = (STPP – Effective price) = (Rs. 5,000 – 5,500) = (Rs. 500/ MWh)
Falling	PX VWAP: Rs. 3,800 / MWh Futures Contract settlement: Rs. 3,800 / MWh	PX VWAP: Rs. 4,800 / MWh Futures Contract settlement: Rs. 4,800 / MWh
	Futures Loss = Rs. 700/MWh , Spot Gain w.r.t STPP = Rs. 1,200 /MWh Effective Purchase price = (PX Settlement + Futures Loss) = (Rs. 3,800 + Rs. 700) = Rs. 4,500 / MWh Net Increase / Decrease w.r.t STPP = (STPP – Effective price) = (Rs. 5,000 – Rs. 4,500) = Rs. 500 /MWh	Futures Loss = Rs. 700/MWh Spot Gain w.r.t STPP = Rs. 200 /MWh Effective Purchase price = (PX Settlement + Futures Loss) = (Rs. 4,800 + Rs. 700) = Rs. 5,500 / MWh Net Increase / Decrease w.r.t STPP = (STPP – Effective price) = (Rs. 5,000 – Rs. 5,500) = (Rs. 500 /MWh)

Proposed treatment of Hedging cost and gain loss in MYT Regulations

□ Treatment of Gain Loss

- Consider Gain Loss in monthly Futures Contract as **‘Uncontrollable factor’ under Regulation 9.1 (f) of ‘Model Regulations for Multi Year Distribution Tariff, 2023’**

	Loss	Gain
Consumer	1/3rd (Rs. 166 / MWh) or (2 paise / kWh whichever is lower) = 2 paise / kWh	85% (or Rs. 425 / MWh)
Discom	2/3rd	15% (or Rs. 75 / MWh)

(treatment in case of ‘Controllable factor’)

□ Loss impact:

- Consumer: Burdens consumer tariff
- Discoms: Erodes Net worth

□ Discom strategy:

- Identify Demand – Supply imbalance for future periods
- Procure power in advance at Power Exchanges – along with simultaneous **purchase of Monthly Futures**

Commodity Futures Costing of NSE Electricity Futures and PXIL

NSE			
Particulars	Buy Side	Sell Side	Total
Futures price	5,000	5,000	
Multiplier	50	50	
Total Turnover	2,50,000	2,50,000	5,00,000
Stamp duty	0.002%		5.00
CTT		0.01%	25.00
Exchange turnover charges	0		0
GST on turnover charges	0		0
SEBI charges	0.0001%		0.5
GST in SEBI charges	18%		0.09
Total			31

- Stamp duty: INR 2 per lakh on buy value
- CTT: INR 10 per lakh on sell value
- Transaction charges: Nil till Dec-25**
- SEBI Charges: INR 0.1 per lakh on turnover & 18% GST.

PXIL			
Particular	Buy Side	Sell Side	Total
Exchange Price	5,000	5,000	
MWh	50	50	
Total Turnover	2,50,000	2,50,000	5,00,000
Transaction Charges Per MWh	20	20	2,000
GST on Transaction Charges	18%	18%	360
Total			2,360

- Transaction charges (per MWh): 20 MWh**
- GST On Transaction charges 18%.

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NSE Monthly Electricity Future - Indicative Trading Screen

Date 02/07/25

Time: 10:30 AM

PXIL DDR Price (Per MWh)

01st July DAM- 6000

June 2025 -6400

May 2025 - 6402

NSE ELECMBL2025JUNE

INR

30th July 2025	6490
29 th August 2025	6500
29 th September 2025	6560
30 th October 2025	6565

1 MWh price (Rs)

Qty*	Bid	Offer	Oty*
50*50 (2500)	6480	6490	40*50 (2000)
40*50 (2000)	6482	6510	30*50 (1500)
5*50 (250)	6475	6520	8*50 (400)

When the bid order 2500 MWh is executed



Qty	Bid	Offer	Qty
50*50 (2500)	6490	6490	50*50 (2500)

=== Physical Market statistics** =====

*Minimum lot size – 50 MWh (For supply of total 720 hrs Base Load *Round The Clock)

Maximum order size – 50*50 MWh =2500 MWH



** The statistics are showcasing the elements around physical markets.

Indicative Trading Screen on NSE Website

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AGRI BASE METALS BULLION **ENERGY**

ENERGY

COMMODITY DERIVATIVES

All Contracts Option Chain All Historical Data Glossary

ELECMBL Energy Futures 28-Nov-2025 Option Type Strike Price Refresh

Clear

INSTRUMENT TYPE	SYMBOL	UNIT	EXPIRY DATE	OPTION TYPE	STRIKE	SPOT	OPEN	HIGH	LOW	PREV. CLOSE	LAST	CHNG	%CHNG	VOLUME (Contracts)	VALUE (₹ Lakhs)
Energy Futures	ELECMBL	50 MWh	28-Nov-2025	-	-	-	7,300.00	7,300.00	7,300.00	7,200.00	7,300.00	100.00	139	63	229.95

Trade Information

Order Book

QTY	BID (₹)	ASK (₹)	QTY
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
Buy (Total Quantity)	-	Sell (Total Quantity)	-

TRADE INFORMATION

Traded Volume (Contracts)	63
Traded Value (₹ Lakhs)	229.95
VWAP	7,300.00
Open Interest	-
Change in Open Interest	-
% Change in Open Interest	-
Implied Volatility	RTM Volatility

Note

- All prices displayed in Quotation unit

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Market Watch - Commodity Derivatives

EQUITY DERIVATIVES CURRENCY DERIVATIVES **COMMODITY DERIVATIVES** INTEREST RATE DERIVATIVES

All Future Contracts

Market is Open As on 20-Jun-2025 23:55:00 IST

Value Convention Lakhs Crores Billions

Click here for Reference Spot* Prices

Day ahead Spot Weighted Average

INSTRUMENT TYPE	SYMBOL	UNIT	EXPIRY DATE	STRIKE PRICE	PREV CLOSE	LTP	CHNG	%CHNG	OPEN	HIGH	LOW	VOLUME (Contracts)	VALUE (₹ Crores)	OPEN INTEREST	SPOT
Energy Futures	ELECMBL	50 MWh	28-Nov-2025	-	7,200.00	7,300.00	100.00	139	7,300.00	7,300.00	7,300.00	63	230	-	7,200.00
Energy Futures	CRUDEOIL	100 Barrel	18-Jun-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00
Energy Futures	CRUDEOIL	100 Barrel	19-Aug-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00
Energy Futures	CRUDEOIL	100 Barrel	19-Nov-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00
Energy Futures	CRUDEOIL	100 Barrel	19-Sep-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00
Energy Futures	CRUDEOIL	100 Barrel	20-Oct-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00
Energy Futures	CRUDEOIL	100 Barrel	21-Jul-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00
Energy Futures	CRUDEOIL	100 Barrel	19-Aug-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00
Energy Futures	CRUDEOIL	100 Barrel	19-Nov-2025	-	-	-	0.00	0.00	-	-	-	-	-	-	4,911.00

Our page is now live on our website -- <https://www.nseindia.com/products-services/electricity-futures>

Potential Impact of Electricity Derivatives on Market Participants – Price risk hedging & Demand elasticity

Generators (IPP, Renewables, Conventional)

- Lock in **future prices** for power sales.
- Ensure **stable cash flows** and reduce financial risk.

DISCOMs & Large Industrial Consumers

- Hedge against **electricity price fluctuations**.
- **Plan procurement costs** effectively, improving financial sustainability.

Traders & Financial Institutions

- Improve **market liquidity**.
- Allow **institutional investors** to enter energy trading.

Attract more investment keeping in view price hedging availability

- Electricity derivatives help attract institutional investors and power generators by offering long-term price hedging mechanisms.
- Ensuring a fully hedged market will **increase foreign investment and market participation**.

Higher participation by Retailers including Hotels, Malls, corporates, ultra HNIs

- Every Indian having 70 KWs demand load become a natural hedger to hedge in the derivative market – It will encourage retail participation and increase demand elasticity for power markets.

Thank You



One
Nation



One
Grid



One
Price

