

Overview

of

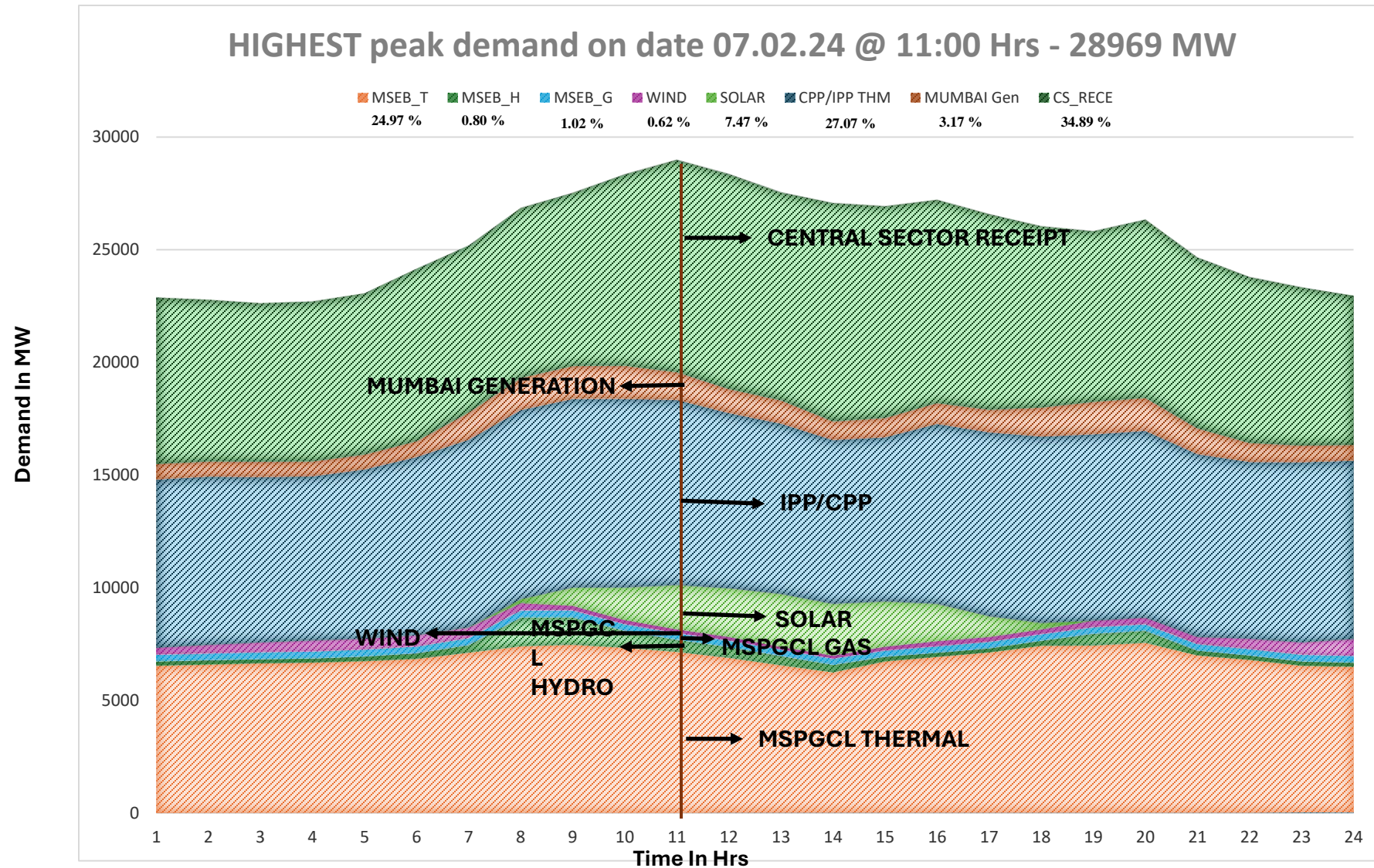
MERC Resource Adequacy Regulations

at

Capacity Building Workshop on Resource Adequacy for Maharashtra

5 December 2024

Load Curve of State Demand for Peak Day 2024



Evolution of RA

MoP Amendment Rules

Draft MERC RA Regulations

Receipt of ST-DRAP and MT-DRAP

Jun'23

Jun'24

Nov'24

Dec'22

Mar'24

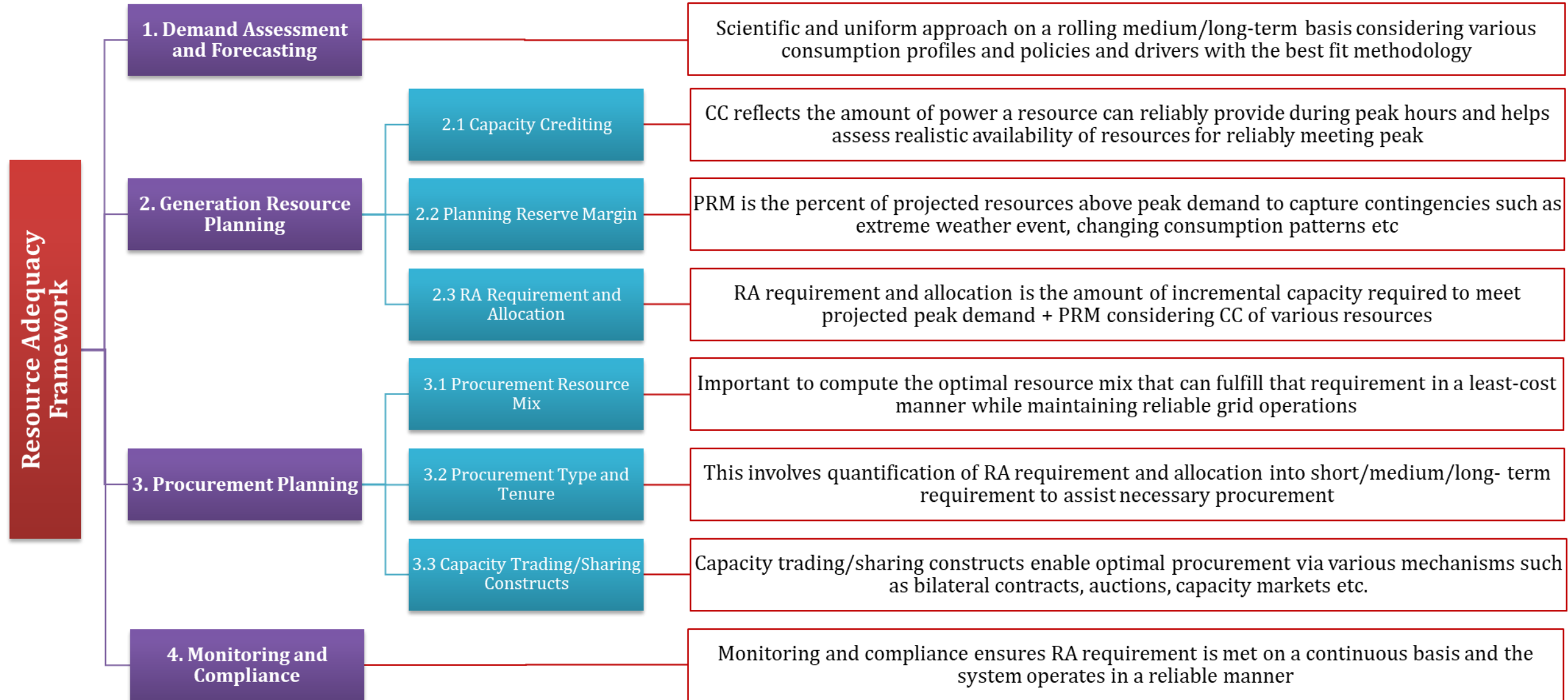
Sep'24

CEA Guidelines & FoR State
Model Regulations

Final MERC RA Regulations

Scrutiny

Salient Features of MERC RA Regulations



Preliminary & General

- **Objective**

- To enable the implementation of RA framework by outlining a mechanism for planning of generation and transmission resources for reliably meeting the projected demand in compliance with specified reliability standards for serving the load with an optimum generation mix.

- **Applicability**

- Apply to the generating companies, distribution licensees, State Load Despatch Centre, State Transmission Utility, and other grid connected entities and stakeholders within Maharashtra.
- Entails the planning of generation and transmission resources for reliably meeting the projected demand in compliance with specified reliability standards for serving the load with an optimum generation mix.
- Covers the following steps:
 - Demand assessment and forecasting
 - Generation resource planning
 - Procurement planning
 - Monitoring and compliance

Demand Assessment and Forecasting (1/2)

Discoms to undertake demand forecasting as per the following steps:



Additional Inputs

- Consumer Data
- Historical Demand Data
- Weather Data
- Demographic, Econometric Variables
- T&D losses
- Actual electrical energy requirement & availability including curtailment
- Peak electricity demand & peak met along with changes in demand profile (e.g.: agricultural shift, time of use etc.)
- Historical hourly load shape

Consumption Profile of Consumers

- Domestic
- Commercial
- Public Lighting
- Public Water Works, Irrigation
- LT Industries
- HT Industries
- Railway Traction
- Bulk (Non-Industrial HT Consumers) Supply
- OA
- CPP
- Insights from load survey
- Contribution of consumer category to peak demand,
- Seasonal variation aspects

Policies and Drivers

- LED penetration
- Efficient fan penetration
- Efficient Appliance penetration
- Increase in households using electrical appliances for cooking
- Increase in commercial activities
- Increase in number of agriculture pumps and solarization
- Reduction in Specific Energy Consumption of Tea plants
- DSM and Distributed Energy Resources
- EVs and OA
- National Hydrogen Mission
- Reduction of AT&C losses

Forecasting Methodologies

- Trend analysis
- Compound annual growth rate
- Econometrics
- ARIMA
- AI including machine learning, ANN
- Partial End-Use Method

Demand Assessment and Forecasting (2/2)

- DLs shall be responsible for assessment and forecasting of demand (MW) and energy (MWh) within its own control area.
- DLs to provide comprehensive input data, consumer categories, policies and drivers, and scientific and mathematical modelling tools to be used.
- MT forecast may be revised with a detailed explanation of refinement conducted.
- The summation of energy forecast (MWh) for various consumer categories upon adjusting for captive, prosumer, and open access load forecast to be the load forecast for the Licensee.
- DLs to develop a methodology for hourly/sub-hourly demand forecasting and maintain a historical database
- Load research analysis to be conducted with inputs from SLDC and detailed explanation for refinement to be submitted.
- STU with inputs from SLDC to estimate ST, MT, and LT forecasts for the entire State.
- SLDC to submit state-level aggregated forecast to NLDC

Generation Resource Planning

Capacity Crediting

- Net load-based approach.
- 5-yr avg. on rolling basis.
- Consider contributions of ISTS and InSTS generators.
- No separate method for imports/exports/additions.
- CC for hydro: based on water availability & separate for RoR and dam-based.
- CC for thermal: based on coal availability and planned outages.
- DLs to calculate the CC for various resources (existing and planned) and use it in their assessment of supply availability.
- SLDC to calculate state-specific CC factor and submit it to CEA/NLDC for regional RA requirement and allocation.

Planning Reserve Margin

- PRM (as a percentage of peak load) based on LOLP (say, 0.2%) and NENS (say, 0.05%) as notified by CEA or separately computed by the DLs and STU/SLDC at state level to be considered.
- DLs and STU/SLDC to factor in PRM while developing Integrated Resource Plan.

Resource Adequacy Requirement and Allocation

- National RA planning approach; ongoing assessment through annual rolling plan and MT review for slippages.
- Allocation to state to be done w.r.t share in national CPD.
- Allocation to DLs to be done w.r.t average of share in state CPD and share in state NCPD.
- DLs to keep min. 70% LT contracts and min. 20% MT contracts, with the rest through ST contracts.

Power Procurement Planning

Procurement Resource Mix

- DLs to identify an optimal resource mix to enable smooth RE integration and to meet RPO targets while meeting reliability standards.
- DLs to adopt least cost modelling and optimization techniques and demonstrate the same in its overall power procurement planning.
- Power procurement from WS, Hybrid, RTC to be carried out as per guidelines for tariff based competitive bidding process notified by the MoP.
- DLs to contract storage capacity corresponding to the results of MT- DRAP for future years from BESS and PSP as per the guidelines for tariff based competitive bidding process notified by the MoP.
- DLs may procure power on DEEP and PUSHP portal.

Procurement Type and Tenure

- DLs to demonstrate 100% tie-up for the first year and a minimum 90% tie-up for the second year.
- For subsequent three years, DLs to also furnish a plan to meet requirement of their contribution to meet state peak for the Commission's approval.

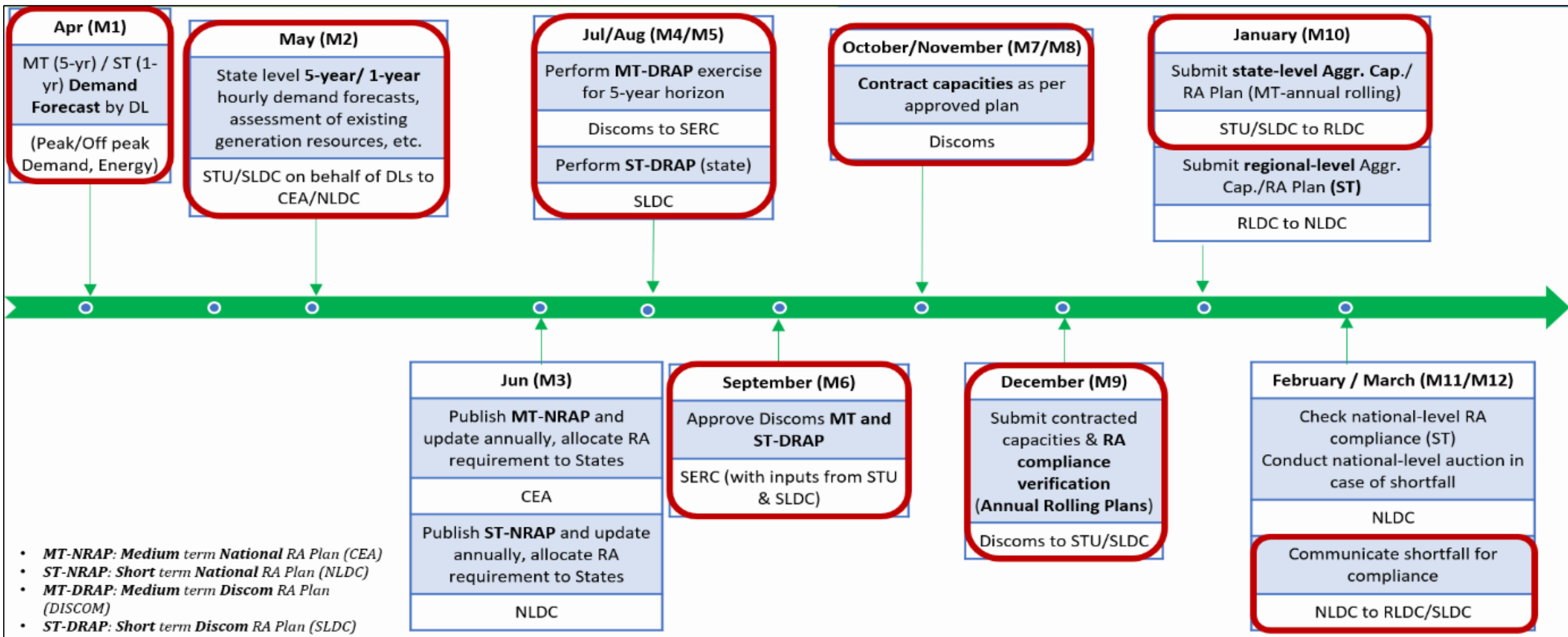
Capacity Trading / Sharing

- DLs to factor in ST capacity sharing within the state through bilateral arrangements or other mechanisms, and then use the platform for inter-state capacity sharing or trading mechanism if created by the Central Commission or other mechanisms.
- DLs to submit information about contracted capacity to the SLDC/STU for compliance.
- DLs, SLDC/STU to seek Commission approval of the procurement plan as well as Annual Rolling Plans.

Monitoring and Compliance (1/2)

- **Monitoring and Reporting:** Based on the MT-DRAP and ST-DRAP, STU and MSLDC shall communicate the state-aggregated capacity shortfall to the Commission by 30th September of each year for the ensuring year(s) and advise the distribution licensees to commit additional capacities.
- **Treatment for shortfall in RA Compliance:** Distribution licensees shall comply with the RA requirement and in case of non-compliance, appropriate non-compliance charge shall be applicable for the shortfall for RA compliance.
- **For shortfall in RA compliance:** STU/SLDC shall levy and collect non-compliance charge from the concerned Distribution Licensee.
- **Rate of Non-compliance charges:** equivalent to 1.1 times the Marginal Capacity Charge (Rs/kW/month) or 1.25 times the Average Capacity Charge (Rs/kW/month) whichever is higher, as approved by the Commission for the power procurement by concerned distribution licensee under its ARR/Tariff Order for the relevant financial year, unless separately specified by the Commission.
- DLs to not be allowed to recover such non-compliance charge as part of its ARR.
- Preparatory period for operationalization of RA framework to State entities incl. DLs could be provided. Accordingly, a proviso to be inserted that the Non-Compliance Charge could be imposed from the date to be notified by Commission through separate order, not later than 2 years from notification of RA Regulations.

Monitoring and Compliance (2/2)



Implementation Status (1/2)

- Distribution Licensees (DL) are required to develop:
 - Long-Term Distribution Resource Adequacy Plan (LT-DRAP) >5 Yr,
 - Medium-Term Distribution Resource Adequacy Plan (MT-DRAP) upto 5 Yrs,
 - Short-Term Distribution Resource Adequacy Plan (ST-DRAP) upto 1 yr.
- Accordingly, **15 DLs submitted** their RA plans by 15th Oct 2024.
- Maharashtra Industrial Township Limited (MITL) has submitted request to allow to submit alongwith MYT Petition as they are yet to commence their DL operation.
- **MSLDC** (30 Oct 2024) and **STU** (6 Nov 2024) also submitted their observations on the RA plans submitted by DLs.
- RA plans of the Discoms were required to approve by 15th Nov 2024.
- For the purpose of MYT projections (2025-26 to 2029-30), the power procurement planning needs to be aligned with the approved RA Plans (ST-DRAP /MT-DRAP) for MYT filing of DLs by 30th Nov 2024.
- Accordingly, Discoms are required to file their RA Plans along with MYT Petitions by 30th Nov 2024

Implementation Status (2/2)

FY 2025-26 (ST-DRAP)

S. No.	Distribution Licensee.	Peak Demand Forecasting at D<>T (MW)	Energy Requirement (MUs)	RA Requirement in MW	Contracted Capacity in MW	Firm Capacity with CC factor in MW	RA Short/(Surplus) in MW	Proposed Arrangement
1	MSEDCL	25,412	1,89,495	24,678	49,181	26,086	-674	Not required
2	AEML-D	2132	11,113	1701	2138	974	727	750
3	TPCL-D	1084	6382	1030	1417	824	206	205
4	BEST	954	5030	1001	1476	1050	-96	Not required

FY 2029-30 (MT-DRAP)

S. No.	Distribution Licensee.	Peak Demand Forecasting at D<>T (MW)	Energy Requirement (MUs)	RA Requirement in MW	Contracted Capacity in MW	Firm Capacity with CC factor in MW	RA Short/(Surplus) in MW	Proposed Arrangement
1	MSEDCL	35,334	2,29,795	29,353	74,649	35,305	-2309	Not required
2	AEML-D	2587	13,916	2064	1638	495	1570	1700
3	TPCL-D	1414	9195	1343	1562	628	715	750
4	BEST	986	5534	1035	1750	927	59	125

Thank You