

Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
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Case No. 39 of 2023

Case of the Tata Power Company Limited- Distribution for approval of power procurement plan for the period from FY 2024-25 to FY 2034-35.

Coram

Sanjay Kumar, Chairperson
Surendra J. Biyani, Member
Anand M. Limaye, Member

Tata Power Company Limited - Distribution: - Petitioner

Vs

1	Maharashtra State Transmission Utility	Respondent No. 1
2	Maharashtra State Load Despatch Centre	Respondent No. 2
3	Maharashtra State Electricity Distribution Co. Ltd.	Respondent No. 3
4	The Tata Power Company Limited- Generation	Respondent No. 4
5	Adani Electricity Mumbai Limited– Distribution	Respondent No. 5
6	The Brihanmumbai Electric Supply & Transport Undertaking	Respondent No. 6
7	Indian Railways	Respondent No. 7
8	Gigaplex Estate Private Limited	Respondent No. 8
9	Mindspace Business Parks Private Limited	Respondent No. 9

Appearance

For Petitioner: - Shri. Venkatesh (Adv)

For Respondents:

1	Respondent No. 1	Shri. Peeyush Sharma (Rep.)
2	Respondent No. 2	Shri. M.B.Bhagwat (Rep.)
3	Respondent No. 3	Shri. Dinesh Agarwal (Rep.)
4	Respondent No. 4	Shri. Shivam Sinha (Adv.)
5	Respondent No. 5	Smt. Deepa Chavan (Sr.Adv.)
6	Respondent No. 6	Shri. Ravi Prakash (Adv.)
7	Respondent No. 7	Not Appeared
8	Respondent No. 8	Not Appeared
9	Respondent No. 9	Not Appeared

ORDER

Date: 28 November, 2023

1. The Tata Power Company Limited - Distribution (**TPC-D**) has filed this Case on 17 February, 2023 seeking approval of its Power Procurement Plan for the period from FY 2024-25 to FY 2034-35 under Section 86 (1) (b) of the Electricity Act 2003 (**EA, 2003**) read with Regulations 20 of the MERC (Multi-Year Tariff) Regulations, 2019 (**MYT Regulations, 2019**) read with the directions of the Commission vide Order dated 30 March, 2020 in Case No. 326 of 2019
2. **TPC-D's main prayers are as under:**
 - a. *Approve the Power Procurement Plan of Tata Power-D for FY 2024-25 to FY 2034-35*
 - b. *Allow to initiate Competitive Bidding Process for procurement of Power from FY 2024-25 to FY 2034-35 in line with the competitive bidding guidelines approved by Government of India*
3. **TPC-D in its Petition has stated as follows:**
 - 3.1 TPC-D has approached the Commission for power procurement plan for the period from FY 2024-25 to FY 2034-35 under Regulations 20.1 of MYT Regulations, 2019 to provide a reasonable certainty to the bidder for the recovery of their cost and as per the directions of the Commission in MYT Order in Case No. 326 of 2019.
 - 3.2 TPC-D in MTR Petition in Case No. 225 of 2022 has proposed bundled power procurement on RTC basis for its future power procurement. This bundled source may include thermal, hydro and renewable sources for optimum tariff. TPC-D has proposed around 650 MW at Rs 4.10 per unit for FY 2024-25 and it will approach the Commission separately with the detail finalized power procurement plan for FY 2024-25 in due course.
 - 3.3 TPC -D has analysed its experience in power procurement planning and assessed the prevailing market conditions for deciding the tenure of power procurement plan. Power market is in the process of shifting from the traditional power procurement through conventional generation sources (Thermal) to increasing reliance on renewable sources due to technological advancement, economic viability, increasing demand from the consumers and various government initiatives.
 - 3.4 The various power purchase arrangements along with the capacity tied up and the tenure are shown in the Table below: -

Sr. No	Power Project/ Agency	Capacity of Power Station / Agency- MW (unit wise)	Name of Contracted Power station	Capacity Contracted Arranged -MW	Date of PPA	PPA Validity till	Contract period (long/Medium/Short-term)	Duration of PPA Years	Remark
1	The Tata Power Company Ltd. (Tata Power-Generation)	72 MW	Khopoli Hydro Station	218.27	1st April, 2019	31st March, 2024	Long Term	5	PPA expiring on 31.03.2024
		75 MW	Bhivpuri Hydro Station						
		300 MW	Bhira Hydro Station						
		500 MW	Trombay-Unit 5	244.15					
		180 MW	Trombay-Unit 7	87.89					
		250 MW	Trombay-Unit 8	150.00		Long Term			
2	Tata Power Renewable Energy Limited	25 MW	Solar Plant at Palaswadi	25.00	31st March, 2014	31st March, 2039	Long Term	25	
3	Tata Power - Solar	3 MWp	Solar Plant at Mulshi	3.00	March 2011	31st March 2036	Long Term	25	
4	Tata Power - Solar	60.84 KWp	Rooftop Solar PV based Generation Facility at Carnac	0.06	January 2011	31st January 2036	Long Term	25	
5	Tata Power-Wind	49.50 MW	Agaswadi	49.50	31st March, 2012	31st March, 2025	Long Term	13	
6	Tata Power Renewable Energy Limited	32 MW	Visapur (called as GSW)	32.00	1st January, 2014	31st December, 2027	Long Term	13	
7	Tata Power Renewable Energy Limited	150 MW	Chayyan, Rajasthan	150.00	3rd January 2020	2nd July 2046	Long Term	25	
8	Tata Power Green Energy Limited	225MW	Hybrid	225.00	4th December 2020	31st December, 2046	Long Term	25	
Total Contracted Generation Capacity (MW)				1184.87					

3.5 In addition to the above, the Commission has granted approval for procurement of power from 225 MW Hybrid Renewable Capacity (Wind + Solar) by vide Order dated 28 November 2022 in Case No. 129 of 2022

3.6 Considering the TPC-D Licence Period and the Control period of typically a 5-year period, TPC-D has the option for going for a 6 year (1 year of the current control period + Next Control Period of 5 years) or 11 year (1 year of the current control period + Next 2 Control Periods of 5 years each) or a 16 year tenure of power procurement plan. TPC-D proposes to have a power procurement plan for 11 years such that it provides a reasonable certainty to the bidder for the recovery of their cost. Further, if there is no major technological breakthrough during this period which optimises the power purchase cost further, TPC-D can also consider extending the PPA up to 15 years. Alternatively, if cheaper / new economical sources do become available, the PPA will not be extended. Considering all the above, TPC -D proposes a Power Procurement Plan for next 11 years for the period FY 2024-25 to FY 2034-35.

3.7 For FY 2024-25, TPC-D has considered the sales as projected in MTR Petition. For projecting the future sales, the historical trend of energy sales of TPC-D was analysed based on the Trued-Up Orders till FY 2018-19 and actual sales of FY 2019-20 to FY 2022-23.

3.8 The CAGR for Direct Consumers Sales for the period of 5 years from FY 2016-17 to FY 2021-22 is 4.83% whereas the sale for changeover consumers has shown a negative trend primarily on account of reverse migration of consumers.

3.9 Energy demand in a Distribution Licensees area depends upon various factors such as addition of new consumers, increase in demand of existing consumers, movement of consumers between parallel Distribution Licensees, development of existing and new areas.

3.10 Considering the addition of specific load and drop in sales due to various factors such as consumers choice, DSM measures, policy interventions, it is estimated that the demand and energy sales may additionally increase with the CAGR of 2%. The new major loads of Data Centre projects (200 MW); Dharavi Make Over (50 MW) ; Mumbai Metro (150 MW); EV Charging (60 MW), Large Residential/ commercial Projects (150 MW) which are in line of sight during the period up to FY 2034-35 and considered for projection of sales.

3.11 While there would be addition of sales due to new projects coming up, it is difficult to estimate such sales beyond 5 years. Further, as the network develops, the changeover sales will gradually shift to direct sales without impacting the overall sales. Hence, the CAGR of Direct Sales has been considered @ 7% to factor in growth due to concentrated addition of consumers and reduction in Sale of consumers for reasons listed above for the initial years and tapering it down to 6% and 5% for future years to arrive at the Sales Projections. Based on the above, the Energy sales projected for TPC-D are as follows:

Sales in MU

Particulars	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30	FY 30-31	FY 31-32	FY 32-33	FY 33-34	FY 34-35
Direct Sales	4573	4893	5235	5549	5882	6235	6609	7006	7426	7872	8266
Changeover Sales	1550	1550	1550	1519	1489	1459	1415	1373	1332	1292	1253
Total	6123	6443	6785	7069	7371	7694	8025	8379	8758	9164	9518

3.12 TPC-D has projected gradual increase in the distribution loss over the period and considered transmission loss approved by the Commission in the MYT Order dated 30 March 2020 in Case No. 327 of 2019 at 3.18% for the purpose of forecasting of energy requirement under power procurement planning. TPC-D has submitted energy requirement for FY 2024-25 in MTR Petition of 6364.65 MU whereas Energy Requirement for the future years is as follows: -

Particulars	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30	FY 30-31	FY 31-32	FY 32-33	FY 33-34	FY 34-35
TPC-D Sales (MU)	4893	5235	5549	5882	6235	6609	7006	7426	7872	8266
EHV Sales (MU)	789	797	805	813	821	830	838	846	855	863
Total sales excld. EHV sales (MU)	4104	4438	4744	5069	5414	5780	6168	6580	7017	7402
Distribution Losses	1.03%	1.03%	1.03%	1.03%	1.03%	1.04%	1.04%	1.04%	1.04%	1.04%
T↔D interface (MU)	4116	4484	4794	5122	5470	5841	6233	6649	7091	7480
Sales to changeover consumers (MU)	1550	1550	1519	1489	1459	1415	1373	1332	1292	1253
Energy sales at EHV (MU)	789	797	805	813	821	830	838	846	855	863

Particulars	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30	FY 30-31	FY 31-32	FY 32-33	FY 33-34	FY 34-35
Total Energy Requirement at T\leftrightarrowD (MU)	6486	6832	7118	7424	7751	8085	8444	8827	9237	9596
Transmission Loss	3.18%	3.18%	3.18%	3.18%	3.18%	3.18%	3.18%	3.18%	3.18%	3.18%
Total Energy Requirement at G\leftrightarrowT (MU)	6699	7056	7352	7668	8005	8351	8721	9117	9541	9911

3.13 TPC-D expects various shifts in the consumption pattern going forward on account of certain new loads like EV getting added, consumers using more and more Renewable energy, awareness on energy efficiency, advent of smart meters etc thereby affecting the Demand profile of the Distribution Licensee. Therefore, TPC-D has used the current load profile for analysing the requirement of power expect the shifts would be gradual and TPC-D would have sufficient time to modify its power procurement if the need so arises.

3.14 To arrive at the optimum power procurement plan, a Distribution Licensee needs an optimum mix of Base Loaded plants and peaking plants. Hence, arriving at the base load requirement is a key consideration. TPC-D has analysed the load duration curve for FY 2024-25 based on the demand projected and hourly demand during past periods to derive the base load and peak load requirements, consequently, to arrive at optimum mix of power procurement through various sources including Renewable sources of energy. TPC-D has arrived the Base load requirement for next five years as @400 MW while the peak load requirement is in the range of 1000 to 1200MW. Since, there is not a significant increase over the next 5 years with respect to Base and Peak Load requirement, TPC-D has proposed its power procurement plan based on the projections of FY 2024-25.

3.15 Further there will be shortfall after March 2024. PPA with TPC-G is valid till 31 March 2024. The total quantum of power tied up under the existing arrangement with TPC-G is 700 MW against the total tied up capacity of 1185 MW. Therefore, almost 60% of the power generation capacity of TPC-D shall not be available from 1 April 2024. Considering the projected load curve, shortfall in demand is arrived at after considering existing available sources in FY2024-25, the estimated hourly demand /seasonal hourly shortfall; expected load requirement is analysed and further segregated into seasonal specific hours for optimum and economical power procurement plan. Segregation of load into seasonal hourly requirement is expected to help TPC-D to meet the demand efficiently and will help reduce the dependence on short-term purchases. Summary of the requirement during different seasons and time period of the day as per the study conducted for hourly availability of power from existing sources and balance required is as follows:

Estimated Seasonal Demand Breakup -FY25				
Months	Season	Hours	Average Demand (MW)	Remark
Base Load Requirement				
All	All Season	RTC	350	Base Load
Additional Load Requirement				

March	Summer	17 to 24	400	Peak Load
April				
May				
June				
October	Monsoon	00 to 17	250	
July				
August				
September				
January	Winter	17 to 24	250	Peak Load
February				
November				
December				

3.16 Based on the above analysis of seasonal hourly requirement of TPC -D and availability from existing contracted RE sources, three power procurement options are deliberated from 1 April, 2024:

Options	Particulars	Capacity (MW)	Remarks
1	Long Term / Medium Term RTC Source	350	<ol style="list-style-type: none"> Sufficient to meet base load, but it would be difficult to meet evening peak additional requirement (250 MW to 400 MW) economically, through short term or even through medium term. Adding RE sources to meet future RPO targets would be tough with this option
2	Long Term RE RTC Source	500	<ol style="list-style-type: none"> Cost-effective solution and will help in meeting increasing RPO. Tata Power-D has already contracted @ 400 MW of solar. As per analysis of expected seasonal load curves, Tata Power-D is becoming surplus in day-time by 50 MW to 150 MW for next 2-3 years (base load 350 MW), during monsoon and winter periods. This is due to power availability from existing contracted solar sources. It would still be economically tough to meet remaining evening peak requirement, considering present and future peak scenarios. Even if this option seems economical presently, it may not be prudent to commit such a high capacity on a long term basis (25 years). This may be a lost opportunity of contracting cheaper power in future which may become available due to technological advancements.
3	Long Term Firm Bundled Source	To meet TPC-D specific seasonal hourly demand as mentioned in above table	<ol style="list-style-type: none"> Firm bundled source, combination of thermal / Gas / Hydro / Solar / New Wind / Energy Storage System. Minimum % of RE to be mentioned to meet RPO targets.

3.17 Option 3 out of the above three options is the most suitable and economical for the consumers of TPC-D due to following advantages:

- a. Most cost-effective solution meeting specific seasonal hourly demand of Tata Power-D, where peak requirement (17 hours to 24 hours) is combined with RTC base load to gain composite price advantage along with assured off take. Proposed source will be easy to operate, sufficiently meeting peak requirement with almost no or very less dependency on short-term market.
- b. Power to be tied up for next 11 years till 2035 (end of control period), through competitive bidding route. Choice with bidders to propose a source which can be a combination of thermal/gas/hydro/RE/any other source including energy storage source.

3.18 In view of the above, TPC -D proposes to option 3 for the purpose of power procurement planning after the expiry of existing 700 MW PPA. Detailed Request for Selection (RfS) and draft Power Purchase Agreement (PPA) shall be submitted before the Commission for approval accordingly.

3.19 As the Sales grow and consequently the Demand, there is bound to be a shortage of tied up capacities to meet the growing demand. However, the possibility of the growth not happening as envisaged cannot be ignored on account of the competitive scenario and consumer behaviour. Hence, care needs to be also taken that TPC-D does not end up in surplus tied up capacity. Accordingly, the power procurement in the first phase is on a conservative basis. Any increment in base load and peak load will be met through short-term arrangement. Additionally, TPC-D will be reviewing demand periodically and will plan future contracts. This will enable TPC-D to explore cost effective solutions in future, on account of technological developments. Based on present estimate of demand projections till 2030, following capacity additions are expected in the power procurement portfolio, for which TPC-D will approach the Commission as per the timeline proposed or when the actual need materialises.

Sr No	Expected Peak Demand (MW)	To be tendered in	Proposed Source	Capacity Addition Planned (MW)	Remark
1	975	2025	Hybrid	200	Predominantly Wind
2	990				
3	1010	2027	Pump Storage	250	To meet evening Peak Demand
4	1035				
5	1055	2029	Battery Storage	150	To phase out brown Power and to meet peak demand

3.20 About transmission corridor, TPC-D has already submitted its suggestions in Case No 240 of 2022. Accordingly requested for approval of power procurement plan.

4. At the time of E- Hearing held on 18 July, 2023:-

4.1 IA No. 39 of 2023 was filed by TPC-D for urgent listing of the matter. Accordingly, the Commission heard TPC-D.

- 4.2 TPC-D has explained its petition in brief. In reply to the Commission's query regarding pressing this Petition even after the Commission has already directed in MTR Order for extension of the PPA with TPC-G for a year (up to March 2025), TPC-D replied that considering 40 years life of the generating plant such one-year extension is not feasible. TPC-D requested the Commission to allow them to initiate bidding process for procurement of power. Post bidding process, after consultation with STU and SLDC, if there is any issue of transmission constraint then TPC-D will approach the Commission again. Further TPC-D also requested the Commission to allow changing its proposal of procuring entire power through round the clock renewable energy sources to conventional plus round the clock RE.
- 4.3 The Commission notes that the issue of transmission constraint needs to be decided first so that prospective bidders would have clarity about evacuation facility. Issue of transmission constraint for bringing power into Mumbai cannot be decided in the absence of other affected parties. Hence, the Commission directs Petitioner to implead STU, MSLDC, TPC -G, MSEDCL, AEML-D, BEST Undertaking, Indian Railway and other SEZ based distribution licensees.
- 4.4 The Commission allowed TPC-D to make changes in its power procurement options as mentioned during the hearing and directed to serve such amended Petition on impleaded parties.
5. **TPC-D in its amended Petition dated 4 August 2023 has made following prayers:**
- a. *Allow the present Amendment Petition.*
 - b. *Approve the Power Procurement Plan of Tata Power-D*
 - c. *Allow Tata Power-D to initiate Competitive Bidding Process for procurement of Power to meet the demand of Tata Power-D as presented in the Table 1 above in line with the competitive bidding guidelines approved by Government of India*
 - d. *Allow the liberty to Petitioner to file the deviations, if any, from the standard bidding guidelines for initiation the proposed quantum of Power Procurement*
6. **TPC-D in its amended Petition has stated as follows: -**
- 6.1 Based on directions of the Commission in MTR Order in Case No 225 of 2022, TPC-D has approached TPC-G for the extending the future tie up for 1 year. However, in response to the request of extension of PPA for FY 2024-25, TPC-G has submitted that considering the life of the generating plant such one-year extension is not feasible as substantial amount of Capex will be required to keep the plant in operating condition. In view of the this, TPC-D has no option but to purchase power through bidding process post expiry of the existing power purchase from TPC-G.

6.2 TPC-D in its original petition has proposed RE RTC bidding i.e. combination of Renewable with Thermal power. However, it is observed that there is a lukewarm response to such type of Bidding on view of the complexity in combining renewable and firm sources and no bidders are participating in such bid. TPC-D requested the Commission to approve the procurement of power to meet its demand by issuing two separate bids, one for RTC power and second for RE power. Further, TPC-D has taken out a RE Hybrid bid for 225 MW in line with the approval received from the Commission earlier; the bidding process is in progress and the capacity is expected to be operational from FY 2025-26.

6.3 Hence, TPC-D is now proposed as follows:

i. Bid for power (Thermal/gas or any other firm source) for a period of 10 years till FY 2033-2034 to meet the load curve of TPC-D. Power supply will start from 1 April, 2024 i.e. From FY 2024-25 to FY 2033-34.

ii. Separate Bid for wind power for a period of 25 years from 1 April, 2026 onwards

6.4 Accordingly, TPC-D is now proposing the following amendment.

Season	Months	Hours	Demand (MW)	Remark
Bid I:- 1 April, 2024				
Base Load Requirement				
All	All 12 months	00 to 24 (RTC)	300	Base Load
SUMMER	March, April, May June, October	17 to 24	400	Peak 1
		00 to 08	250	Peak 2
MONSOON	July, August, September	17 to 24	300	Peak 1
		00 to 08	100	Peak 2
WINTER	January, February, November, December	17 to 24	250	Peak 1
		00 to 08	100	Peak 2
Bid II:- 1 April, 2026				
ALL	Renewable Energy	Wind	200	25 years from FY 2026-27

6.5 Accordingly, TPC-D proposes to invite two separate bids as presented in the above Table and requested the Commission to allow the power procurement as proposed in the amended Petition.

7. The Brihanmumbai Electric Supply & Transport Undertaking (BEST) in its submission dated 18 September, 2019 has stated as follows:

7.1 The Commission vide its Order in Case No. 240 of 2022 dated 15 March, 2023 had directed BEST to extend the existing PPA with TPC-G (Thermal + Hydro) by one more year i.e., till March 2025 considering prevailing transmission constraints. Pertinently, while passing such directions, the Commission also observed that TPC-G would not have any issue in extending the PPA till March 2025 since all embedded generation units of TPC-G are under Section 62 of the EA, 2003 and its ARR and tariff under MERC MYT Regulations 2019 has been determined till 4th Control Period i.e. till FY 2024-25.

- 7.2 In response to the above directions, TPC-G in its letter dated 21 April 2023 communicated the constraints faced by them in extending the PPA and/or running the units beyond the tenure of the existing PPA. TPC-G has further called upon BEST to bear the additional cost estimated at around Rs. 900 Crores to enhance the life of the units. TPC-G reiterated its stand in a letter dated 21 April 2023 in a meeting dated 2 May, 2023 with the BEST.
- 7.3 From last one decade Mumbai utilities are facing difficulties for availability of transmission corridor and struggling to bring power inside Mumbai from Maharashtra and outside Maharashtra. There are constraints at state periphery in CTU-STU corridor and utilities are deprived from optimizing their power purchase portfolio by purchasing cheap power from outside Maharashtra. On the contrary, high-cost power from embedded thermal generators of TPC-G is required to be purchased. This is ultimately resulting into higher tariff to consumers in Mumbai.
- 7.4 Express rejection of the TPC-G to extend the PPA on the existing terms and conditions and in compliance of the Order dated 15 March 2023 has placed BEST in a precarious position. The decision to extend the PPA with TPC-G was not a unilateral decision taken by BEST but in compliance with the directive issued by the Commission after duly considering all the issues and constraints associated to reduction in embedded generation. The Commission has deliberated on the data presented by the stakeholders including TPC-G as well the studies conducted by them to arrive at the conclusion that embedded generation needs to be continued for some time. Further TPC-G has not challenged the Order dated 15 March 2023 thus, this Order is binding upon it. The Commission while issuing the said directives had also given due regard to the directions issued by the Government of Maharashtra under Section 108 of the EA, 2003 to extend PPA with embedded generation at least for 10 years once Distribution Licensee approaches for the same.
- 7.5 The omission on the part of TPC-G to extend the PPA at the existing terms is in complete disregard to the directions of the Commission as well as that of the State Government. This will expose the consumers of Mumbai to the possibility of unsecured, unreliable and vulnerability to curtailment of power. This act of deliberate non-compliance on the part of TPC-G attracts the penal provisions prescribed in Section 142 read with 146 of the EA, 2003
- 7.6 TPC-G cannot conveniently ignore the fact that Mumbai as a City is of very critical importance to the nation and that its electric supply is critical to its smooth uninterrupted functioning. The embedded generation has been functional since last 100 years and geographically located near the load centre and ensures islanding of the city in the event of major disturbances in the grid. This generation also provides a back up to the power imported from outside route ensuring robust arrangement.

- 7.7 Traditionally, TPC-D and BEST have been sharing approximately 50: 50 in TPC-G generation. In case TPC- D does not continue this arrangement, BEST will be the only one left and will be ladened with the costly power.
- 7.8 Cost of embedded power ought to be absorbed and socialized amongst all the distribution licensees of Mumbai based on their respective demand in Mumbai region.
8. **Maharashtra State Electricity Distribution Company Ltd (MESDCL) in its submission dated 20 September, 2023 has submitted as below: -**
- 8.1 The transmission constraint for bringing power into Maharashtra and eventually to Mumbai is a well-recognised issue and a pressing one. As of now Available Transmission Capability (ATC) of Mumbai is around 2522 MW. Whereas Mumbai demand has reached around 4100 MW recently. Thus, the demand of Mumbai is more than the ATC limit. For any power procurement plan for Mumbai to be executed, Mumbai's ATC limit needs to be enhanced nearly by around 60% which will take considerable time.
- 8.2 As per observations of the Commission in Order in Case No. 212 of 2022 in BEST MTR Order, the contracted embedded generation capacity of Mumbai discoms need to be utilized first on a must schedule basis in the current scenario of non-availability of ATC margin.
- 8.3 MSEDCL's contracted resources are used to control state overdrawl during system constraints, Mumbai overdrawl, etc. For example, MSEDCL's contracted source such as Koyna hydro is utilized by MSLDC during the transmission constraints at times when MSEDCL is at no fault in VSE mechanism. Further, due to this, for the quantum of power produced by Koyna due to unethical picking up, during the transmission constraints, MSEDCL has to procure same quantum of power from open market, which implies that MSEDCL's cheap power will be replaced by costly power, burdening MSEDCL and effectively end consumers. In view of the aforesaid fact and circumstances, it is submitted that the Petitioner may be directed to extend its existing PPA with TPC-G for appropriate time period.
9. **Maharashtra State Load Despatch Centre (MSLDC) in its submission dated 21 September, 2023 has stated as below: -**
- 9.1 MSLDC has made similar submissions as that of STU on the ATC availability, simulation study.
- 9.2 Further the Mumbai Demand is increasing. The past trend of Mumbai Demand is given in below table.

Mumbai Demand In MW

Year	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Demand In MW	3368	3310	3592	3670	3744	3038	3368	3851	4108

- 9.3 Based on the simulation study results and for reliable & secure operation of Mumbai System, embedded generation is mandatory till enhancement of ATC/TTC of MMR and Mumbai.
- 9.4 Further, in the joint study between CTU & STU, it has been anticipated that the State ATC will be enhanced to 22500 MW subject to commissioning of various proposed transmission schemes. Hence, status of commissioning of these schemes needs to be confirmed for availability of margin in the State ATC.
- 9.5 There are multiple contingencies occurring in Real time and MSLDC is monitoring the power flow of important critical 400 kV lines connecting MMR & Mumbai region and to address these contingencies MSLDC is operating the Virtual State Entity (VSE) thereby increasing internal Generation of Mumbai as per the Commission *suo moto* Order in the matter of Commercial implementation of the MERC (Deviation Settlement Mechanism and related matters) Regulations, 2019, post expiry of stabilization period and related issues thereof dated 2 August, 2022. Hence in view of the same the committed availability of embedded generation of Mumbai is a must till completion of all ongoing system strengthening schemes for TTC/ ATC enhancement.
10. **State Transmission Utility (STU) in its submission dated 22 September, 2023 has stated as below:**
- 10.1 Mumbai system demand (for the present reply - TPC-D, BEST and AEML-D) is catered by way of embedded generation with installed capacity of 1877 MW within Mumbai and external power sources (around 2000 MW), imported into Mumbai through four interconnections points with Intra-State Transmission Network (InSTS) at 220 kV Trombay, Kalwa, Borivali and Boisar sub-stations of MSETCL.
- 10.2 Mumbai has total generation installed capacity of 1877 MW. Out of this 930 MW of thermal generation and 447 MW of hydro generation is owned and operated by TPC-G and the remaining 500 MW of thermal generation is owned and operated by AEML-G. The entire 1877 MW of embedded generation is tied up with three distribution companies, namely, TPC-D, BEST and AEML-D and approved by the Commission. PPA's in respect of embedded generation of TPC-G and AEML-G are expiring in March-2024 and March 2025 respectively.
- 10.3 Due to reduction in embedded generation and growth in Mumbai demand there is increased power flow from outside to Mumbai through tie-lines to meet the demand of the island. Further, all the three distribution licensees have tied up significant

renewable power which is also approved by the Commission and is likely to be commissioned in next 2-3 years.

- 10.4 The Mumbai power system is connected with the rest of the Maharashtra grid through 16 tie lines (220kV & 110kV) at MSETCL's four receiving stations (Trombay, Kalwa, Borivali, and Boisar). Also, AEML Dahanu's generating units and its associated transmission network are connected to TPC's transmission network through three tie lines at the TPC - Borivali receiving station and AEML – Versova receiving station.
- 10.5 The total Available Transmission Capacity of the tie lines to bring power within Mumbai is 2522 MW. The said transmission capacity is able to meet the present demand of Mumbai considering the embedded generation capacity of 1877 MW. However, during peak Load conditions and during N-1 contingency following elements are loaded close to rated capacities:
- a. 400kV Padghe- Kalwa D/c Line (Over 80%)
 - b. 3x500+1x600 MVA 400/220kV Kalwa ICTs (Over 80%)
 - c. 400 kV Talegaon (PG) – Kharghar S/c (Over 80%)
 - d. 400 kV Talegaon (PG) – Kalwa S/c (Over 80%)
- 10.6 In FY 2018-19, when the Commission approved the PPA's of embedded generation and presently, the Mumbai Demand and ATC are as given below:

Particulars	Mumbai Peak Demand - MW	ATC - MW
FY 2018-19	3888	2474
FY 2022-23	4108 (As on date)	2522*

**220 kV Kalwa-Salsette line-5 is commissioned in March 2023. However, kept off due to network configuration constraints hence the ATC is not changed.*

- 10.7 Further, on the backdrop of the partial Grid failure occurred in MMR & Mumbai area on dated 12 October 2020, the maximum permissible line loadings have been modified than as considered earlier. The revised maximum permissible loading on the said 400 kV lines are as below:
- a. 400 kV Talegaon (PG) – Kalwa: 900 MW
 - b. 400 kV Talegaon (PG) – Kharghar: 900 MW
 - c. 400 kV Padghe – Kalwa D/C: 800 MW each.
- 10.8 The transmission constraints subsequently have been observed on 400 kV lines viz. 400 kV Talegaon (PG) – Kalwa, 400 kV Talegaon (PG) – Kharghar, 400 kV Padghe – Kalwa D/C.
- 10.9 Accordingly, now while carrying out the systems studies for calculating the Mumbai system TTC/ ATC, the constraint on 400 kV lines hits even before the 220 kV constraints with present network conditions. As a result of this the region under

consideration for any actions with respect to this congestion becomes larger MMR area including all the locations fed through these lines.

10.10 As, the loads in MMR have impact on these 400 kV lines, ATC considered in the Petition need to be recalculated thereby considering contingencies on these 400 kV lines.

10.11 Accordingly, STU & MSLDC has carried out simulation studies at different Mumbai demand scenarios viz. 2200 MW, 2500 MW, 2700 MW, 3000 MW, 3300 MW, 3500 MW, 3800 MW & 3940 MW. Contingency of tripping of highest loaded 400 kV line is considered to check whether loading on remaining lines is up to permissible limit.

10.12 Most credible contingency, tripping of 400 kV Talegaon (PG) – Kharghar & 400 kV Talegaon (PG) – Kalwa lines have been considered as ‘N-1’ condition. The observations from simulation studies are as below.

- In all cases under study the system under consideration is not N-1-1 compliant and will always result into a load trimming / curtailment scenario.
- For Mumbai Demand below 3000 MW with full embedded generation on bar, the 400 kV lines in MMR remains ‘N-1-1; compliant.
- For Mumbai demand @ 3800/3940 MW, even after full embedded generation on bar, the 400 kV lines are not ‘N-1’ compliant. Under such conditions, load trimming is the only option available for reliability.
- The voltages in the MMR & Mumbai area under non-availability of embedded generation are reducing drastically below permissible limits specified in the IEGC as the Mumbai System becomes load rich. Under such scenario, the low voltages will pose limitations for reliable import from the Grid to Mumbai System.
- Thus, TTC of Mumbai System is limited to 1979 MW and ATC as 1905 MW with 74 MW as TRM considering contingencies at 400 kV level due to transmission constraints.

10.13 Considering the fact that, PPA’s signed for embedded generation are expiring in March 2024/March 2025 leading in further reduction in embedded capacity within Mumbai and expected increase in Mumbai demand @CAGR of 3.75%, the following schemes have been planned and are under different stages of execution to enhance the Mumbai transmission capacity to 4657 MW by FY 2024-25. The details of the scheme are as given below:

Sr. No	Schemes	Executing Agency	Estimated Date of Completion	Status
1*	400 kV Vikhroli Substation: <ul style="list-style-type: none"> • 400/220 kV GIS Substation with 3 x 500 MVA, 400/220 kV ICTs • 400 kV Kharghar-Vikhroli D/C & M/C line with bays at Kharghar & Vikhroli (with conductor capacity of 	Kharghar Vikhroli Transmission Private Ltd	July 23	<ul style="list-style-type: none"> • Substation work Completed and Ready for Charging. CEI permission obtained on 13.4.23. • 2 Nos. Kharghar Bay Charged on 21.7.23.

Sr. No	Schemes	Executing Agency	Estimated Date of Completion	Status
	<p>2,000 MW) along with 400 kV Bus extension at 400 kV Kharghar end.</p> <ul style="list-style-type: none"> • LILO on 400 kV Talegaon-Kalwa line at 400 kV Vikhroli GIS S/S with bays. • LILO of existing 220 kV Trombay - Salsette I & II and 220 kV Trombay – Salsette III & IV at 400/220 kV Vikhroli S/S. • Installation of 1 x 125 MVAR 400 kV Bus reactor. 			<ul style="list-style-type: none"> • 400 kV D/C Kharghar-Vikhroli line <ul style="list-style-type: none"> i. Foundation (Nos.)- 70/70. - All foundations Completed. ii. Erection (Nos.) - 68/70,- 2 Loc. - WIP iii. Stringing (Kms)- 19.01 kms /21.725 -2.7 Kms- WIP. Work is hampering due to heavy rainfall. • LILO on 400 kV Talegaon-Kalwa line <ul style="list-style-type: none"> i. Foundation (Nos.)- 15/39 Completed., 23 Nos. -WIP ii. Erection (Nos.)- 5/39 Completed., 2Nos. -WIP iii. Stringing - 0/12 km Completed. Work is hampering due to heavy rainfall.
2	<p>400 kV Velgaon Substation:</p> <ul style="list-style-type: none"> • 2x500 MVA, 400/220kV ICT • LILO on 400 kV Tarapur - Kudus II line at Velgaon 	MSETCL	Mar 25	<p>1] Land status :-Land acquiring is in process at Collector office, Palghar 2] Under tenderisation at CO</p>
3	<p>400 kV Navi Mumbai Substation</p> <ul style="list-style-type: none"> • Padghe (PG)(GIS) – Khargar/Vikhroli 400kV D/c line along with LILO of Padghe-Vikhroli LILO at Navi Mumbai • 220kV Apta-Taloja LILO at Navi Mumbai • 220kV Apta-Kalwa LILO at Navi Mumbai 	Sterlite (CTU/TBCB)	Jun 23	<p>Detailed Survey Completed F – 0/8 Nos E – 0/8 Nos S – 0 Ckms 1) CIDCO (NAINA) – 8 locations approval received. Proposal of transmission line alignment over existing underground cable has been submitted to Power Grid. 2) ROW issues at all 8 locations. SDM orders for 1 Thesil (Panvel) for revised rates as per New GR dated 02.11.2022 received on 25.01.23. However, landowners are still not accepting the compensation rate and ROW is not resolved. 3) MSETCL has proposed to change the conductor from ACSR to HTLS which is not in the scope of TSA/RFP. MSETCL vide letter dated 01.03.2023 requested CEA to issue the suitable directions for change in scope.</p>
4	<p>400 kV Kalwa GIS Substation</p> <ul style="list-style-type: none"> • 400/220 kV Kalwa GIS with 3x500 MVA ICT. • Reorientation of 220kV Kalwa-Salsette-III, 220kV Kalwa-Salsette-IV, 220kV Kalwa-Siemens, and 220kV Kalwa-Tiffil. • Proposed 220kV Kalwa-Salsette 3rd Line. • Proposed 400 kV Padghe-Kalwa GIS (additional) DC Line. 	MSETCL	Mar 24	MERC approval under process.

Sr. No	Schemes	Executing Agency	Estimated Date of Completion	Status
	<ul style="list-style-type: none"> Existing 400 kV Kalwa-Kharghar Line. 			
5	400 kV Kalwa-Padghe S/C I and II - HTLS conversion	MSETCL	Mar 23 (Ckt I) Dec 23 (Ckt II)	1] 400kV Kalwa-Padgha-II Line: 47.695/50.9 Km (94%) of HTLS conductor work is completed 2] 400kV Kalwa-Padgha-I : 16.318/49.99 km (33%) HTLS Work is completed on 17.05.2023.
6	400 kV Kalwa – Padghe Conversion from S/C to D/C	MSETCL	Mar 26	CEA/CTU recommendation received. Scheme Under Preparation
7	1000 MW Kudus Aarey HVDC Link with HVDC terminal stations at Aarey and Kudus	AEMIL	Mar 25	1. Boundary wall construction in Kudus Completed. 2. Land development activity such as Boundary wall, Land filling in progress. 3. Construction Power & Water provided at Kudus site. 3. Engineering activity of Converter & Transmission Link contracts in progress. 4. Cable Trenching of 9 km Laying of 7.5km and Jointing of 6 joints completed. (Cable trenching work on Hold in certain portion in MMRDA region due to permission issue) 5. O/H Transmission line check survey in progress 33% Completed.
8	400 /220kV Kudus – 220kV downstream network	MSETCL	Jun 23	LILO on 220 kV Tarapur-Borivali & Boisar- Ghodbunder line at Kudus – 29.19 km Foundation: 110/120, Erection: 101/120, Stringing: 63.216/116.76 ckm. Expected by Dec 23 LILO on 220 kV Padghe-Wada & 220 kV Kolshet-Wada at 400 kV Kudus – 9 km Foundation: 29/50, Erection: 27/50, Stringing: 14.88/36 Ckm. All foundations in non-forest area completed. Expected by Dec 23

** Estimated Date of Completion of projects awarded through TBCB is as per MERC Order*

10.14 The schemes that have been identified as mentioned above are expected to be completed by FY 2024-25. However, considering the ROW issues, forest clearance, permission from various statutory authorities in the MMR area, some of the transmission projects may be delayed beyond FY 2024-25. However, considering the urgency of enhancement of adequate transmission capacity of Mumbai, various Committees have been formed to monitor the execution of the aforesaid projects. Also, State Government is actively involved in resolving the issues related to various statutory permissions/approvals for speedy execution of the projects.

10.15 The year-wise proposed increase in Mumbai Transmission Capacity as given below:

Financial Year	Project likely to be Commissioned	Increase in Transmission Capacity - MW	Total TTC (Cumulative – MW)	Total ATC considering Reliability Margin of 500 MW
As on date	Existing Capacity		3022	2522*
FY 2023-24	Vikhroli/Kudus	693	3715	3215
FY 2024-25	Velgaon/Kalwa GIS/ Kudus Aarey - HVDC	1200	4915	4415

*220 kV Kalwa-Salsette line-5 is commissioned in March 2023. However, kept off due to network configuration constraints hence the ATC is not changed.

10.16 Though the present ATC of the tie lines to bring power within Mumbai, transmission is 2522 MW, constraints have been observed on 400 kV lines viz. 400 kV Talegaon (PG) – Kalwa, 400 kV Talegaon (PG) – Kharghar, 400 kV Padghe – Kalwa D/C. Accordingly, the constraint on 400 kV lines hits even before the 220 kV constraints of Mumbai tie-lines with present network conditions. Thus, TTC of Mumbai System is limited to 1979 MW and ATC as 1905 MW with 74 MW as TRM considering contingencies at 400 kV level due to transmission constraints.

10.17 Considering the existing PPA's, LTA being granted and availed by the beneficiaries on the Mumbai Tie Line is 597 MW for the power being sourced from within the State. The details are as given below:

Utility	Mumbai Tie-Line Capacity Utilised
TPC-D	137 MW
AEML-D	100.5 MW
BEST	120 MW
MSEDCL	240 MW (as per Demand)
Total	597 MW

10.18 In addition to the aforesaid, the LTA being granted/used in Mumbai Tie-Line for inter-state power is 303 MW (AEML-D -Dhurshar Power -33 MW, Railways – 120 MW and TPC-D-150 MW). Thus, the total capacity of Mumbai Tie Lines which is granted LTA and is operational is 900 MW (597+33+120+150 MW) out of available 1905 MW.

10.19 In view of the said constraints, STU in respect of applications received for power to be supplied in Maharashtra from inter-state generators, have issued unconditional and conditional NOC based on availability but LTA not granted (and not operationalised) by CTU due to constraints. The details of the same are as given below:

Particulars	TPC-D	AEML-D	BEST	TOTAL
LTA not granted by CTU (Conditional NOC issued by STU)	225 MW	700 MW	400 MW	1325 MW

- 10.20 Even though the LTA is not granted by CTU, the power from 700 MW contract of AEML-D and 225 MW contract of TPC-D is being scheduled under short term open access and there has been no curtailment or denial of corridor under short term from the date of COD of the said plants. In addition to this AEML-D is purchasing 500MW power in short term open access through Interstate power. The 400 MW plant for which BEST has signed PPA is yet to be commissioned. STU has issued conditional NOC to BEST for 400 MW Power from outside Maharashtra.
- 10.21 The present balance available transmission capacity of 1005 MW (1905-597-303 MW) on Mumbai Tie-Lines is being utilised for scheduling the power contracted by Mumbai utilities under long term PPA wherein LTA is yet to be granted by CTU (AEML-D - 700 MW, TPC-D - 225 MW) a total of 925 MW on short term open access basis in addition to the Short open access contracts of 500 MW by AEML-D.
- 10.22 As and when constraints are removed, LTA will be regularised on FCFS basis for which STU has previously granted conditional NOC's as per provisions of Transmission Open Access Regulations. Thus, as per extant Regulations, STU would be constrained to grant any long/medium term open access for any application received by it for intra-state or Inter-State power to be supplied to Mumbai Utilities before regularising the open access of previous applications/conditional NOC's issued by it.

Maharashtra STU-CTU Interconnection

- 10.23 As per the discussion in 62nd Meeting of Western Region Constituents regarding LTA and connectivity applications in Western Region held on 27/08/2021, WRLDC informed that the present ATC of Maharashtra is 9760 MW.

TTC	TRM	ATC
10060	300	9760

- 10.24 From 01 August 2023, WRPC has revised the Central Sector Power allocation for Maharashtra to 6530.40 MW.
- 10.25 The NOC proposals received by STU for grant of LTA to CTU network as on 31 August 2023 and further their approval etc. are detailed below:

Present ATC of Maharashtra (x)	9760 MW
Total LTA operationalized (As on 01.07.2022) (y)	10246.27 MW
Available ATC Margin (A) (x-y)	0 MW (-486.27 MW)
LTA Granted but not operationalized (B)	550 MW
NOC issued but LTA not granted (C)	1736 MW (Conditional NOCs)
NOC applications under process (D)	1030 MW
ATC Requirement by strengthening CTU-STU lines (B+C+D-A)	3802.27 MW

a. Total LTA Operationalized

Central Share allocation to Maharashtra (Firm + infirm) and Central Generator Contracted:	8133.27 MW
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LTA granted to Discoms by CTU (Old):	258 MW
NOCs issued by STU and LTA granted by CTU and operationalized for R.E. Power	1855 MW
Total LTA operationalized	10246.27 MW

b. Conditional NOC issued by STU but LTA yet to be granted by CTU:

From	To	Quantum (MW)
Adani Renewable energy Park Rajasthan Ltd (RSEPL Hybrid Power one Ltd)	AEML-D	700
Tata Power Renewable energy Ltd (TPREL)	TPC-D	225
BEST (SECI)	BEST	400
M/s. Rewa Ultra Mega Solar Ltd. (RUMSL)	Central Railway	61
M/s ACME Solar Holding Ltd.	MSEDCL	300
Green Infra Energy Ltd.	Central Railway	50
(C) : Total		1736

c. NOC applications received and under process by STU:

From	To	Quantum (MW)
National Hydroelectric Power Corporation (NHPC)	MSEDCL	183
M/s. ReNew Solar power Pvt. Ltd.	MSEDCL	200
M/s Ircon Renewable Power Ltd	Central Railway	180
M/s NTPC Renewable Energy Ltd.	Central Railway	205
SECI	BEST	234
Tata Power Renewable Energy Ltd.	Tata Steel Ltd (Boisar Plant)	15
Tata Power Renewable Energy Ltd.	Tata Steel Ltd (Khopoli Plant)	13
(D) : Total		1030

10.26 Presently there is no ATC margin available in the CTU-STU network. Summary of Peak demand & ATC requirement vis-à-vis ATC enhancement in Maharashtra (Year wise) with planned schemes is as below:

Year	Peak Demand (ant.) (MW)	ATC requirement (MW)		ATC availability (MW)(with Under implementation/ planned Transmission schemes)		Surplus ATC (MW)
		Addl. Requirement (A)	Cumulative (B)	Enhancement (C)	Cumulative (D)	
Present	28800	-	9905	-	9905*	0
2022-23	29500	893	10798	1038	10798	0
2023-24	31600	461	11259	702	11500	241
2024-25	33000	1408	12667	5500	17000	4333
2025-26	34500	1500	14167	4500	21500	7333
2026-27	36000	1500	15667	1000	22500	6833

*Including 145MW being accommodated under Reliability Margin

- 10.27 STU has undertaken various transmission schemes anticipated up to FY 2026-27 time-frame which are directly impacting ATC enhancement of Maharashtra from ISTS.
- 10.28 STU is continuously monitoring the project schemes being implemented for strengthening of CTU-STU network and also directing concerned transmission licensees to ensure completion of the same on or before their scheduled COD.
- 10.29 In respect of allocation of transmission capacity, STU has submitted as follows:
- a. Presently, there is no regulatory provision available for allocation of ATC among the stakeholders in the State.
 - b. In this case the available Mumbai ATC on the 220kV Tie Lines is calculated based on the capacity enhancement of interconnections but is further limited due to the transmission constraints on the 400kV network. 400 kV network being grid connected elements, the power flow depends upon various grid conditions viz. availability of HVDC, loading on 400 kV Babhaleshwar-Padghe lines, power flow from Tarapur Generation (depends up on Gujrat network), loading on Talegaon (PG) (depends up on 765 kV network of CTU & RE generation in Karnataka), forced outages on any embedded generating units or lines, etc. These conditions would also affect the ATC of Mumbai.
 - c. For allocation of ATC to MSEDCL & Railways, the Base TCR of both of these utilities is common for the State whereas only part of the load having impact on the 400 kV line constraints is in MMR. No separate schedules of MSEDCL & Railways for MMR area are available.
 - d. Method has only considered current contracts of Discoms with generators. In future, for reliable and secure operation of Mumbai system, ensuring Unit commitment of Mumbai embedded generators would be necessary till transmission congestion is relieved.
- 10.30 In respect of applications received for power to be supplied in Maharashtra from inter-state generators, the conditional NOCs issued by STU subject to completion of strengthening projects of CTU-STU network & availability of ATC margin with obligation to Indemnity Bond. It is further submitted that STU is issuing NOC to the applicant as per LTA-3 prescribed format provided by CTU in their procedure for making application for Grant of Long-Term Access to ISTS. STU further submits that the power procurement plan submitted by TPC-D includes power proposed to be procured/contracted from outside MMR Region/state. However, as mentioned herein above, there is no margin available at CTU-STU interconnection and various schemes are proposed to increase the capacity. Thus, any approval/NOC issued would be subject to completion of the proposed projects.

- 10.31 A peculiar situation has arisen in view of the fact that, historically transmission planning for meeting Mumbai load has been done considering the embedded generation is available for meeting Mumbai Load. However, in last few years, STU has initiated several projects, as mentioned herein above, to increase the transmission capacity of Mumbai so that load of Mumbai can be met even if the reduced/nil embedded generation is available. The schemes proposed are under execution phase and are likely to be commissioned FY2024-25.
- 10.32 If the embedded generation is withdrawn due to expiry of PPA before the schemes for enhancement of transmission capacity are executed, it will impact the reliability of supply to Mumbai. Embedded generation is required to remain operational till transmission capacity is enhanced for safe, secure and reliable operation of the grid to meet the demand of Mumbai.
- 10.33 Reduction in embedded generation poses significant risk to the successful operation of Mumbai Islanding scheme unless and until the planned schemes are commissioned. Various Committees were formed pursuant to grid failure incident of 12 October 2020 to find the root cause of the grid disturbance and to suggest remedial measures. These Committees have made many suggestions including enhancement of embedded generation for islanding scheme and also strengthening & connectivity for Mumbai transmission system.
- 10.34 Bundling of thermal power with renewable energy as per MoP Letter dated 26 May 2022 on replacement of thermal energy to be explored by TPC-G and AEML-G which will not only reduce the overall cost of generation but also provide additional embedded generation capacity within Mumbai.
- 10.35 The present power procurement plan submitted by TPC-D accompanying the Petition shall result in termination of PPA with TPC-G in respect of thermal generation and reduction in generation at Trombay. As per the study results, it can be inferred that the entire embedded Generation of TPC-G at Trombay cannot be taken out at one stroke that will affect the reliability of Mumbai supply, but rather be planned in phase wise manner along with the completion of projects enhancing the Mumbai transmission system capability & CTU-STU ATC.
11. **The Tata Power Company Limited-Generation (TPC-G) in its submission dated 28 September, 2023 has stated as follows:**
- 11.1 The Commission while passing the directions for extension of existing PPA for a limited period of one year in Case No. 225 of 2022 and Case No. 240 of 2022, opportunity of being heard was not granted to TPC-G in both the proceedings before directing such extension, that too for a limited period of one year.
- 11.2 The generating units of TPC-G are very old and have outlived their useful lives and would need expenditure for replacement of certain equipment's TPC-G in its letter

dated 14 April 2023 and 21 April, 2023 to both TPC-D and BEST respectively, citing its inability to extend the PPA for a limited period of one year. TPC-G in both its letter also highlighted that the CAPEX requirement would be around Rs. 900 Crores to enhance the life of the generating units and any utilization of the generating units for a period of less than 10 years would be unviable for TPC-G and uneconomical for BEST and TPC-D as well.

- 11.3 In regard to the extension of the PPAs entered between TPC-G and TPC-D, STU vide letter dated 20 May 2022 expressed the need to extend the PPAs for a period of 5-10 years and sought a proposal from the generators (TPC-G) and distribution utilities for both the 5 years and 10 years extension plan. Accordingly, TPC-G vide letter dated 06 June 2022 had submitted its plan highlighting the capital expenditure requirement for enabling the units to run for a period of 5 / 10 years.
- 11.4 STU and SLDC may be required to make a comprehensive submission factoring inter alia the growth of demand in the area of Mumbai, the unpredictability of renewable generation, technical requirements like meeting the reactive power requirement and sustainability of the islanding scheme and the estimated year wise transmission capacity addition to arrive at the subsequent requirement of embedded generation.
- 11.5 TPC-G may not be able to run the generating units on a year-to-year basis. To extend the term of the PPA, TPC-G would require clarity to enable a comprehensive plan laying out reliable and sustainable operation of its generating units.
- 11.6 TPC-D and BEST must accordingly propose their power procurement plan towards embedded generation based on which TPC-G would be able to make an optimum plan (CAPEX / Special Maintenance Allowance) for the reliable operation of its units which would be beneficial to the beneficiaries of the PPA.

12. Adani Electricity Mumbai Limited- Distribution (AEML-D in its submission dated 30 September, 2023 has stated as follows:

- 12.1 The Commission in MTR Tariff Order in Case No 225 of 2023 has already directed TPC-D to extend its PPA with TPC-G sources till 31 March 2025 after conducting a detailed and thorough examination of the Mumbai Transmission constraints and related issues. Therefore, seeking an acceptance of its proposal for purchase of power from alternate sourced w.e.f. 1 April 2024 runs explicitly contrary to the MTR order of the Commission.
- 12.2 The above MTR order has now been challenged by TPC-D before the Hon'ble Appellate Tribunal for Electricity (APTEL) in Appeal No. 369 of 2023. In the said appeal, TPC-D also filed an interlocutory application (I.A. No. 732 of 2023) seeking for stay of its tariff schedule limited to the period of FY 2023-24. In the above IA, the Hon'ble APTEL passed an interim order dated 13 July 2023, whereby a limited stay is granted only to the extent of stay of TPC-D's tariff schedule of FY 2023-24.

- 12.3 Thus, in terms of the aforesaid directions of the Hon'ble APTEL, it is clear that neither TPC-D sought for any stay of its power purchase quantum for FY 2024-25 (which includes the direction to extend its PPAs with TPC-G up-till 31 March, 2025) nor has the Hon'ble APTEL stayed the findings of the Commission directing TPC-G to extent its PPAs with TPC-G till 31 March, 2025.
- 12.4 TPC-D seeking to discontinue its PPAs with TPC-G, is barred by res-judicata. The said bar is based upon the fact that the Commission, in earlier proceedings, has decided the issue based on the facts related to transmission constraints, and the impact of the same on other licensees. The issue is not limited to the distribution business of TPC-D, or impact on its tariff alone.
- 12.5 Mumbai Power Supply is historically dependent on the embedded generation and the reliability of Power supply is primarily driven by the embedded generation capacity. Mumbai system has the unique islanding scheme which is first of its kind and is operational for more than 30 years, wherein it has been ensured uninterrupted power supply to critical loads in Mumbai even when the State/ National Grid faced blackouts due to Grid Disturbances. Therefore, continuance of the embedded generation is substantially important for the reliability of Supply to Mumbai and continuance of the Islanding System.
- 12.6 Mumbai city and suburbs have faced multiple instances of wide-spread power supply interruptions in the past on account of constraints in Tie Line capacity in situations of outages of embedded generation. In fact, all the Technical Committees as well as the statutory authorities (STU, SLDC, WRPC & CEA) investigating such events have recommended that the Mumbai Embedded generation is a must-run for reliability of Power Supply to the City of Mumbai. However, through the present petition, TPC-D is giving an impression such that there are no Transmission constraints in bringing external power to Mumbai. Therefore, the Commission ought to give due consideration to the fact that the proposal made by any Licensee (as done by TPC-D in the present case) should not put the entire Mumbai Consumers at risk supply failures and reduction in reliability as the system will become N-1 non-compliant.
- 12.7 Transmission constraints are a continuous phenomenon and they become important when embedded generating unit(s) are under outage, since constraints do not allow import of sufficient alternative power into Mumbai, leading to load shedding in Mumbai. This makes it important that embedded generation remains fully available till transmission constraints are resolved through transmission network augmentation. However, it is further relevant to consider that the Mumbai grid also operates in an islanded mode in order to isolate it from transmission disturbances occurring outside. Thus, if islanding is to continue and Mumbai is required to be isolated from the grid, especially in case of a wide-spread disturbance, then availability of embedded generation will forever be necessary. Hence, embedded generation availability is

needed for both, (a) to obviate the constraints due to insufficient tie-line capacity; and (b) to allow Islanding of the city of Mumbai.

- 12.8 As per State Grid Code, 2020, Available Transmission Capacity is equal to Total Transfer Capacity (TTC) minus Total Reliability Margin (TRM). In the case of Mumbai, the TRM which is required at 400 kV Tie Line level would be around 500 MW considering largest element capacity. Below the said capacity of TRM, the system, for certain time blocks may be used to source power from outside by only during contingencies, but the same is not a sustainable scenario as a sufficient, technically feasible capacity of TRM must be kept aside for grid security. The argument of TPC-D in the present Petition seeks to negate the said philosophy.
- 12.9 The Commission has, time and again, acknowledged the issue of transmission constraints being faced by the city of Mumbai and the importance of embedded generation which needs to be procured by the licensees who have contracted such generation, i.e., TPC-D and BEST, from TPC-G. AEML-D has referred the Commission's Orders in Case No. 249 of 2018; Case No 44 of 2019 and in Case No 240 of 2022 for the same.
- 12.10 To determine as to whether there is a transmission constraint or not, the same cannot at all be based on taking reference of load catered on a particular day/ date. This is because there could be a possibility that on a particular day/ date, even with low Transmission Reliability Margin, the transmission constraint may not occur. However, this does not mean that the grid will operate normally (without any constraints) throughout the period of such low Transmission Reliability Margin. In other words, operating with low Transmission Reliability Margin or without any margin will not be sustainable and in contravention to the existing Regulatory framework.
- 12.11 Hon'ble APTEL in the interim order dated 13 July, 2023, made certain observations on the issue of transmission constraints. However, such findings do not in any manner bind either the Commission or the other statutory authorities. It is settled law that interim orders passed by higher forums do not have any precedential value on the lower forum. This is because, even if an order of a lower forum is stayed by a higher forum, the same does not invalidate the said order. The lower forum is bound by its own order, till the said order is finally set-aside by the higher forum. AEML-D has placed reliance of Hon'ble Supreme Court Judgments in *Shree Chamundi Mopeds Ltd. v. Church of South India Trust Assn., reported in (1992) 3 SCC 1 [Para 10]* and in *State of Punjab v. Gurdev Singh, reported in (1991) 4 SCC 1 [Para 8]*.
- 12.12 Based on the above proposition, once the Commission has passed earlier orders covering the issue of transmission constraints, including the MTR order dated 31 March, 2023 of TPC-D the Commission is still bound by the said view. This is also flowing from the settled legal principle that a coordinate bench cannot have different views, till the earlier view is finally set-aside. AEML-D has placed reliance of Hon'ble Supreme Court Judgments in *Sub-Inspector Rooplal v. Lt. Governor, reported in (2000)*

1 SCC 644 [Para 12] and in *Govt. of A.P. v. A.P. Jaiswal*, reported in (2001) *1 SCC 748 [Para 24-25]*.

- 12.13 Further AEML-D has placed reliance of Hon'ble Supreme Court Judgments in *State of U.P. v. Ram Sukhi Devi*, reported in (2005) *9 SCC 733 [Para 8]*; and in *Union of India v. Era Educational Trust*, reported in (2000) *5 SCC 57 [Para 7]* on the proposition that the observations of the Hon'ble APTEL are only interim in nature meaning thereby that no finality on the issue has reached, and as such, the same cannot have a binding force of law.
- 12.14 Vide the present Petition, it appears that TPC-D has proposed the power procurement plan only because TPC-G has informed that the PPA extension is not possible only for one year as capex will be required to run the plant.
- 12.15 As transmission constraints still exists on Mumbai Tie Lines and the STU-CTU (ISTS) corridor, there is a need to continue with the embedded generation PPA till the time all schemes are implemented, and actual power flow is seen considering then available network. Hence, TPC-D may be directed to continue with the embedded generation PPA not just for one year till FY 2024-25 but for the future periods as well (i.e., till ten years period) as sought by TPC-G. This is because, by that time transmission constraints on Mumbai and STU-CTU network would have been relieved. As such, a longer period will also obviate the apparent concern of TPC-G that capital expenditure is required to be incurred to run the plant.
- 12.16 For reliable transmission system in Mumbai, 400 KV Kharghar-Vikhroli and 1000 MW HVDC Scheme are important for bringing in the immediate relief required for Mumbai Transmission System. Further, as per the study done by the STU, this capacity addition will reduce dependency on embedded generation to some extent, however, the same would still not completely resolve the issue of transmission constraints. Further referring to the STU report dated July 2022 titled as "*Report on PPA extension of Mumbai embedded Generation*" it can be seen that even though the Tie line capacity would be sufficient for considering phasing out embedded Thermal capacity by FY 2025-26, Mumbai system will not be able to cater entire load by FY 2029-30/ FY 2030-31, if embedded generation is not available.
- 12.17 TPC-D has been continuously taking a contradictory stand before this Hon'ble Commission, as well as before various Authorities with respect to the issue of transmission constraints and the continuance of its embedded generation PPA with TPC-G in order to gain undue advantage in respect of competition in the City of Mumbai.
- 12.18 As per the power procurement plan proposed by TPC-D (from FY 2024-25), it is submitted that considering the present generation availability in Maharashtra power can either be sourced from the embedded generation in Mumbai or from the outside the State of Maharashtra. If power is sourced from outside Maharashtra, then the same

would flow through the STU-CTU(ISTS) corridor, thereby having spare availability of capacity. However, it is stated that there is no such spare capacity available on the ISTS corridor and as such, there are many existing LTA applications which are pending for want of Transmission capacity. The Commission has already approved an additional 225 MW RE Hybrid procurement for TPC-D which will also flow on the Mumbai Tie Lines and STU-CTU corridor which would in-turn further delay availability of spare capacity.

- 12.19 TPC-D being aware of transmission constraints and that power from outside cannot flow on ISTS and Mumbai tie-lines, it has still proposed not to off-take power from TPC-G from FY 2024-25 and because of the same, MSLDC will have to ramp up TPC-G Generation in order to maintain the grid stability.
- 12.20 In the event TPC-D (and BEST) moves out of the PPA with TPC-G, then such costly power from TPC-G will get passed on to all distribution licensees (including MSEDCL & AEML-D) in Mumbai through the VSE mechanism. It can be seen that TPC-D's intent is therefore two-fold: (i) wriggle out of the PPA with TPC-G, where power is costlier, and; (ii) impose the same cost on other distribution licensees viz. AEML-D, thereby distorting the level playing field and the competitive market prevailing in the City of Mumbai. Therefore, in line with the judgment passed in Case No. 240 of 2022 on Embedded generation PPA's, TPC-D may be directed to continue with the PPA for the longer period as requested so that Transmission constraints issue gets resolved till then.
- 12.21 If TPC-G plants are withdrawn from the system or maintained idle, then Mumbai will lose its islanding system feature as this scheme will remain operational only till the time the embedded generation is operational and on bar. Ministry of Power (MoP) in a meeting dated 7 October 2021 has directed to explore implementing the islanding schemes for all urban areas. Hence, continuance of Mumbai islanding scheme is important and same can be done only by continuing the existing PPAs of the respective distribution licensees with their embedded generation plant.
- 12.22 Mumbai being radially connected to State Grid its voltage profile, reactive power requirement etc., is supplemented through the embedded generation for which Hydro generation plays very important role as it can respond to system contingencies in short period. Furthermore, even the State Grid Code (i.e., MEGC 2020) provides that whenever required, Hydro Generation should be used in Synchronous Condenser mode for Grid Operation. Hydro Generator responds to the load variation at a very fast pace and helps MSLDC meet the load variations. This is also required by MSLDC to manage the grid with higher RE integration. Also, Hydro generation resources are scarce and capacity addition is not so easy, mainly because sites are not available. Therefore, the available Hydro generation as a part of Mumbai embedded generation is a must. Therefore TPC-G Hydro generation is very important for safe and secure Grid operations and should remain available at the disposal of the MSLDC for maintaining Reliable and quality supply for Mumbai. However, MSLDC will be able to use the

Hydro Generation of TPC-G only if the existing Distribution Licensees continue their existing PPAs. Thus, considering the above issues, the Commission ought to direct TPC-D to continue existing PPA with TPC-G for longer period.

- 12.23 Government of Maharashtra (GoM) on 3 November 2022 advised the Commission to consider extension of the embedded generation PPAs by ~10 years to maintain reliability of Supply to Mumbai. This clearly goes to show that, even the GoM is well aware about the critical issue of transmission constraint persisting in the City of Mumbai.
- 12.24 Further pursuant to the Grid Failure incident on 12 October 2020, various Technical Committees have expressed their views on the issue of transmission constraint still existing in the City of Mumbai.
- 12.25 In view of above, it is requested not approve the alternate options put forth by TPC-D and accordingly, direct the said licensee to extent/ continue its PPAs for longer period for the maximisation of embedded generation from TPC-G.

13. TPC-D in its rejoinder dated 5 October, 2023 has stated as follows: -

Response on submission of BEST:

- 13.1 BEST has primarily contended on the non-compliance on the part of TPC-G to extend the PPA with BEST for the embedded generation in terms of Order in Case No 240 of 2022 and do not have any bearing or effect in the present case. TPC-D is also of view that in case it decides to procure further power from embedded generation (subject to an arrangement attaining finality and approval of the Commission), in that circumstance the cost of embedded power ought to be absorbed and socialized amongst all the distribution licensees of Mumbai based on their respective demand in Mumbai region.

Response on submission of MSEDCL:

- 13.2 With regard to the contention of the MSEDCL for issuing directions to TPC-D for extension of PPA with TPC-G for appropriate period of time, TPC-D contended that it is a well settled position of law the terms and conditions agreed upon between the parties to a contract are binding on both parties and there cannot be any modification of the said contract without the mutual consent of both parties.
- 13.3 From TPC-G's prior communications and reply dated 28 September, 2023 filed in the present Petition it is clear that it is not viable for the PPA between TPC-D and TPC-G to be extended for a year, without taking into consideration the fact that additional capital expenditure would be required to extend the life of the generating station of TPC-G and a that too with PPA for period of not less than 10 years.

- 13.4 The Commission, in view of the inputs and reply filed by the STU, may decide that embedded generation is required to be procured for an appropriate further period of time for TPC- D. However, in the interest of reliability of power supply, TPC-D prays that it will not and ought not to be made liable to bear the burden of procuring costly power from the embedded thermal generation, if the units are directed to run for meeting transmission constraint scenario beyond the schedule provided by TPC-D, as all the distribution licensees shall benefit from such scheduling in view of any transmission constraint.
- 13.5 In this regard, it is requested that the MSLDC/STU may be directed to device an appropriate ancillary mechanism before 01 April 2024 to enable the operation of the embedded thermal generation under transmission constraint scenario so that burden of transmission capacity constraint does not fall only on some utilities alone, while all the other utilities also enjoy the benefit of reliability of power.

Response on submission of TPC-G:

- 13.6 STU/MSLDC in their reply has submitted the analysis of the available transmission capacity with the present and demand scenario and number of transmission schemes being implemented. However as submitted by TPC-G, the STU and/or MSLDC are required to submit a year wise comprehensive plan regarding phasing out of embedded generation so that the Mumbai Utilities including TPC-D shall be enabled to accordingly plan their power purchase, tie-ups through competitive bidding and with embedded generation, if necessary.
- 13.7 TPC-D in its power procurement plan as well as in its tariff petition has submitted that considering the present competitive scenario, tie-ups under Renewable Purchase Obligations and demand of TPC-D, it is not economical for TPC-D to have the entire procurement tied up with TPC-G. Thus, TPC-D has proposed its future tie ups through the competitive bidding route.
- 13.8 However, in view of the present transmission constraint, TPC-D can tie up certain quantum power from TPC-G as set out below.
- a. At the time of entering existing contract, Renewable portion in TPC-D's portfolio was limited which is now increased considerably and will further get added being low-cost generation and in compliance with RPO targets which will reduce requirement of embedded generation which is high in the Merit Order Despatch. In the past TPC-D has been mandatorily made to run these units at least on technical minimum even when TPC-D does not require any power from these units as TPC-D's requirements can easily met through its cheaper power tie ups.
 - b. From the submission of STU it appears that the transmission constraint is likely to continue beyond FY 2024-25 as well. Thus, there is no clarity as to how long embedded generation will be required beyond FY 2024-25. The Commission

shall give clarity to TPC-D to enter tie-ups for power purchase in the most optimize manner for the benefit of its consumers. Extending PPA's on a yearly basis will be an inefficient way of operation for TPC-D, which will ultimately hamper the reliability as well as cost of the power supplied by it.

- c. TPC-G has taken a categorical stand that it would require an expenditure to the tune of Rs 900 Crores to operate the Units and considering the expenditure, the PPA should be extended for a period of at least 10 years. In view of such proposed expenditure by TPC-G, should TPC-D be required to extend the PPA, it is necessary for TPC-D to know the tenure of the PPA to enable the expenditure required by TPC-G to be optimized depending on the tenure.
- d. If the units are directed to run for meeting transmission constraint scenario beyond the schedule provided by TPC-D, the burden should not fall only on TPC-D.

Response on submission of STU:

- 13.9 As per submission from STU there is a constraint in both Intra State and Inter-state transmission systems to bring the power into Mumbai and into Maharashtra which is likely to continue beyond FY 2024-25 as well. There is no clear picture as to how long embedded generation will be required beyond FY 2024-25.
- 13.10 There is no regulatory provision available in the State for allocation of ATC. However, in the past under Grid constraint, Unit 6 was operated as per the instructions of MSLDC from time to time. The actual variable cost of such power had been shared between TPC-D, BEST & RInra (now, AEML-D) in the ratio of sharing of transmission costs as per the arrangement advised by Principal Secretary (Energy), GoM on 24 March 2014 and mutually agreed by all the Discoms in Mumbai area. Hence, if the embedded Units are required to be run for the Mumbai Utilities, the actual fuel cost need to be shared between them in the ratio of transmission charges payment as per the methodology adopted and approved earlier the Commission.
- 13.11 Once it is principally accepted that the cost related to the transmission constraint has to be shared amongst the distribution licensees, an alternative mechanism can be devised for sharing the cost in case it is deemed appropriate that transmission charges is not the only way to share the burden. Thus, it is requested that the MSLDC/STU may be directed to devise an appropriate mechanism so that burden of transmission capacity constraint is socialised, i.e., does not fall only on some utilities while all utilities enjoy the benefit of reliability of power without bearing the burden of the same.
- 13.12 As per submission of STU, embedded generation is required for secure and reliable supply in MMR Region. In that case after taking into consideration the demand requirement and proposed PPA's, the scheduling (including zero scheduling) of the generation should be as per the requirement of the contracted Distribution Licensees

and if the requirement of thermal embedded generation persists, then the same can be scheduled under proper ancillary mechanism.

Response on submission of MSLDC:

- 13.13 In the recent past when the demand had gone significantly high during the summer season MSLDC has successfully managed Mumbai gross interchange with MSETCL system to the tune of around 3000 MW. Thus, while MSLDC has indicated that there is a transmission constraint, it has failed to clarify as to whether such constraint is throughout the year or is during only some specific periods of the year.
- 13.14 The Commission may specify the PPA tenure so that TPC-D is able to optimize the power purchase cost from the embedded generation. Alternatively, the Commission may specify that after one-year TPC-D would be free to tie up power in the most optimised manner and the factor of transmission constraint would no longer remain a hinderance in tying up of power thereafter. This will enable to TPC-D to tie-up for power purchase in the most optimize manner for the benefit of its consumers.
- 13.15 From a bare perusal of the present reply, it is evident that transmission constrain may continue beyond FY 2024-25 as well. In view of this, MSLDC may be directed to device appropriate ancillary mechanism before 1 April, 2024 to enable operation of the embedded thermal generation under transmission constraint scenario.

14. At the time of E- hearing held on 6 October, 2023

Advocate of TPC-D:

- 14.1 Advocate of TPC-D stated in brief the background of the Petition referring to the Orders of the Commission in Case No 44 of 2019, in Case No 326 of 2020 and in Case No 225 of 2022. Further he clarified that he is not relying on the observations recorded by APTEL in its Interim Order dated 13 July 2023.
- 14.2 He reiterated the submission made in the Petition about demand and supply. In response to the Commission's query for demand projections in future, he stated that he will make additional submission satisfying the same. He further stated that as the procurement of power is proposed from 1 April 2024, TPC-D would require time to carry out competitive bidding and requested the Commission to approve Power Procurement Plan submitted as per provisions under MYT Regulations, 2019. Otherwise, it would be difficult for TPC-D to meet the consumer demand.
- 14.3 He further stated that, TPC-D has not challenged the Commission's directions for extension of PPA with TPC-G for year for FY 2024-25 before Hon'ble APTEL.

- 14.4 Also due to transmission constraint, if TPC-D is required to have PPA with TPC-G, he requested the Commission to evolve the mechanism so that the cost for the same to be divided among all consumers of the city and not among the particular set of consumers.
- 14.5 STU, MSLDC, MSEDCL and BEST reiterated the submission made in the Petition.
- 14.6 Advocate of TPC-G reiterated the submission made in the Petition. He stated that it cannot do year on year extension as there is sustained capital requirement to run the plants.

Advocate of AEML-D:

- 14.7 Advocate of AEML-D reiterated the submission made in the Petition. Advocate of AEML-D referring to the Order of the Commission in Case No 44 of 2019 stated that the Commission has directed TPC-D for extension of PPA with TPC-G for 5 years, till the transmission constraint is mitigated. Transmission constraint is an important factor as far as power procurement from Mumbai Licensee is concerned.
- 14.8 The Commission in its Order 240 of 2022 has recorded detailed submission of STU on transmission constraint and this submission of STU/ Order has not been challenged by TPC-D. TPC-D has not made any submission about transmission constraint in the Petition.
- 14.9 TPC-G in past had extended PPA with TPC-D. Thus, the conduct of parties in Regulatory provision need jurisprudence. TPC-D without proceeding against TPC-G accepted the decision of TPC-G.
- 14.10 Embedded generation is the only way out to address the technical aspect of transmission constraint for providing reliable quality supply in the large public interest. Therefore, till the issue of transmission constraint is resolved, historical arrangements need to be continued.

Advocate of BEST:

- 14.11 Advocate of BEST reiterated the submission made in the Petition.
- 14.12 TPC -G was party the proceedings in Case no. 240 of 2022 and has not challenged or filed review of the Order. It is a settled position of law that an Order once passed becomes legal and binding upon the parties if the same is not challenged before the Superior Court.
15. BEST in its additional written submission dated 13 October 2023 has requested the Commission to pass appropriate directions to the TPC-G for complying with the Order dated 15 March 2023 for extension of PPA.

16. **TPC-G in its additional written submission dated 13 October, 2023 has stated as follows:**
- 16.1 The Commission directed TPC-D vide Order in Case No 225 of 2022 and BEST vide Order in Case No 240 of 2022 to extend the term of the PPA without giving an opportunity to be heard to the existing parties of the PPA i.e., TPC-G, that too for a limited period of one year when the same was not the actual subject matter of the said petition.
- 16.2 It is settled law that relief not found on pleadings should not be granted. If a Court considers or grants a relief for which no prayer or pleading was made depriving the respondent of an opportunity to oppose or resist such relief, it will lead to miscarriage of justice. TPC-G has placed reliance of Hon'ble Supreme Court Judgments in *Akella Lalith vs. Konda Hanumantha Rao and Anr. 2022 SCC Online SC 928, Para. 18; Trojan & Co. Ltd. v. Rm.N.N. Nagappa Chettiar, 1953 1 SCC 456, Para. 38 and Bharat Amratlal Kothari v. Dosukhan Samadkhan Sindhi, Para. 30.*
- 16.3 Further the Commission has not issued any directions to TPC-G for extension of PPA. It is a trite law that extension of the any contract cannot be made without due consent from both the parties.
- 16.4 The generating units of TPC-G are very old and have outlived their useful lives and would need expenditure for replacement of certain equipment's which are at the end of their service life or due for upgradation due to obsolescence. Therefore, the condition of the generating units during the FY 2017-18 cannot be equated with the condition of the generating units for FY 2024-25
- 16.5 A generating company incurs investment cost and subject to the Electricity Act, 2003, a generating company is free to generate and supply electricity to those who intend to enter into an agreement with it. TPC-G has placed the reliance of Hon'ble Supreme Court Judgment in *Tata Power Company Limited vs. Reliance Energy Limited 2009 16 SCC*
- 16.6 Free will and consent of the parties is a fundamental aspect in a contract / agreement and the Commission cannot force either a generating company or a licensee to enter a contract against the will / consent invoking its inherent jurisdiction. Accordingly, in terms of the extant statutory framework, the parties are to enter any contract based on their commercial prudence and cannot be forced to enter into a PPA. TPC-G has placed reliance of Hon'ble Supreme Court Judgment in *Haryana Power Purchase Centre vs. Haryana Electricity Regulatory Commission and Anr., 2020 SCC.*
- 16.7 TPC-G has never denied extending the term of the power purchase agreements either with BEST or with TPC-D. However, it has merely expressed its unviability and challenges which both parties would face in the event the power purchase agreements are to be extended for merely a period of one year.

- 16.8 In STU and MSLDC submission, there is no clarity as to the requirement of the embedded generation from timeline and quantum perspective. In view of that TPC-G may not be able to run the generating units on a year-to-year basis. To extend the term of the PPA, TPC-G would require clarity to enable a comprehensive plan laying out reliable and sustainable operation of its generating units.
- 16.9 TPC-D and BEST must accordingly propose their power procurement plan towards embedded generation based on which TPC-G would be able to make an optimum plan (CAPEX / Special Maintenance Allowance) for the reliable and safe operation of its units which would be beneficial to the beneficiaries of the PPA.
17. **TPC-D in its additional written submission dated 13 October, 2023 has stated as follows:**
- 17.1 TPC-G has already communicated the capex requirement for rejuvenating the units and it will neither be viable for TPC-G nor advisable for TPC-D to enter PPA with sudden loading of entire cost in one year and long-term contract required for certainty.
- 17.2 Therefore, subject to the concurrence of TPC-G, the Commission may upfront specify the PPA tenure, as requested by TPC-G, so that TPC-D is in a position to optimize the power purchase cost from the embedded generation.
- 17.3 After taking into consideration the demand requirement and proposed PPA's, the scheduling (including zero scheduling) of the generation should be left to the discretion of the Distribution Licensees.
- 17.4 If the Commission decides that procurement from embedded generation is essential for an appropriate further period of time for TPC-D, it is requested that the Commission may prescribe an appropriate ancillary mechanism (for recovery of fixed and variable cost) for the same by 1 April, 2024 to enable the operation of the embedded thermal generation under transmission constraint scenario to ensure that the burden of transmission capacity constraint does not fall only on some consumers alone, while all consumers of Mumbai enjoy the benefit of reliability of power. The same shall be in the interest of all the consumers in Mumbai and as such also the larger public interest.
18. **AEML-D in its additional written submission dated 16 October, 2023 has submitted as follows:**
- 18.1 The proposal of TPC-D to not continue with its PPAs with TPC-G (both thermal and hydro), is barred by res-judicata. The said bar is based upon the fact that the Commission, in earlier proceedings, has decided the issue by holding that the PPAs of TPC-D with TPC-G shall remain till the transmission constraints exist in the city of Mumbai. The issue is not limited to the distribution business of TPC-D, or impact on its tariff alone, but also impacts the business of other distribution licensees in Mumbai,

as well. AEML-D has placed reliance of the Commission's earlier Orders in Case No 249 of 2018, Case No 44 of 2019 and Case No 240 of 2022. None of the findings were challenged by TPC-D or TPC-G, and that the same have therefore attained finality. As such, today, neither TPC-D nor TPC-G can seek to come out of the said arrangement.

- 18.2 On the issue of socializing the cost among the distribution licensee on account of transmission constraint, AEML- D stated that it does not accept the said proposal of sharing the cost of embedded generation through any arrangement including the Ancillary services, as the benefits of lower cost and basket PPAs (with embedded generation) were enjoyed by TPC-D in the past, hence till the time sufficient Transmission Network is developed, TPC-D will have to continue the said PPAs to maintain status quo.
- 18.3 Furthermore, irrespective of fact that even if ancillary services mechanism is developed, then AEML-D would be forced to purchase costly power from TPC-G, which ought to have been absorbed by TPC-D during the period of constraints.
- 18.4 Historically, Mumbai Generation was reliable and cheaper. Because of TPC's unilateral decisions, AEML-D was forced to purchase power from outside Mumbai sources using Mumbai Transmission corridor capacity.
- 18.5 During capacity shortage period from FY 2007-08 to FY 2014-15, AEML-D was forced to buy from short term markets at rates up to say Rs 10-18/unit, whereas TPC-D & BEST enjoyed the low-cost embedded generation.
- 18.6 Now, since TPC-G's embedded generation is costlier compared to market due to higher imported coal prices, TPC-D is now seeking to either discontinue the PPA or, if not allowed to do so, due to transmission constraints, then socialise the cost of the PPAs over all Mumbai distribution licensees.
- 18.7 AEML-D has not enjoyed the benefit of low-cost generation in the past hence, it cannot be expected to share high-cost generation now.
- 18.8 The Commission in Suo Moto Order dated 02 August, 2022 has discussed Virtual State Entity operations and cost sharing during Mumbai Transmission constraints. However, it needs to be noted that AEML-D has preferred an Appeal before the Hon'ble Appellate Tribunal for Electricity being Appeal No. 360 of 2023 against the aforesaid order and the same is pending adjudication.
- 18.9 The Commission on 1 March 2019 notified the MERC DSM Regulations, 2019 in order to maintain grid discipline and grid security. During the process of implementing the aforesaid Regulations, a Working Group was appointed wherein the said Group deliberated upon the issue qua the scheduling of the Embedded Generation in the Mumbai area during the period when constraints are observed on the Transmission lines supplying power to Mumbai.

- 18.10 The said Working Group formulated three options qua the issue of embedded generation, wherein Option 1 related to the scheduling embedded generation as per the PPAs entered into by the Distribution Licensees. However, Options 2 & 3 was qua transmission corridor allocation and sharing of available ATC and embedded generation in fixed ratio amongst the Distribution Licensees
- 18.11 Pertinently, TPC-D has supported the implementation of Options 2 & 3 as devised by the Working Group Committee and the same are being implemented by this Hon'ble Commission on a trial basis. This in turn shows that it would be a win-win situation of TPC-D on account of the fact that firstly, TPC-D would wriggle out of its contractual obligations with its embedded plant i.e., TPC-G in order to source cheaper power from outside and secondly, TPC-G would be able to recover its fixed cost of generation from the other licensees/ authorities (i.e., from AEML-D and BEST) functioning in Mumbai, whenever, VSE operated during transmission constraint.
- 18.12 TPC-D's intention is to source cheaper power from outside Mumbai, which only means that such opportunities exist only for the parties contracted with TPC-G, which are TPC-D itself and BEST. Through this "opportunity", TPC-D gets a chance to back down TPC-G whenever the same is more expensive than outside Mumbai power and, under the garb of transmission constraints then, it can conveniently pass on the costly TPC-G power on to AEML-D, while remaining free to explore cheaper power from outside Mumbai.
- 18.13 Sharing/ socialisation of costs would not be feasible at the very moment as the issue of transmission constraints persists, however, if the same is permitted then AEML-D would be forced to source expensive power from TPC-G impacting its competitiveness, in the process, TPC-D will again undue competitive advantage over AEML-D.
- 18.14 By way of the present Petition, TPC-D is indicating specifically alleged higher cost only of the Thermal Generation Units, to mislead all the stakeholders, thereby stating that the embedded generation is costlier and same need to be socialised. In this process of doing so, TPC-D is trying to mislead the Commission by retaining only cheaper Hydro PPA for TPC-D and socialise the costlier PPA (i.e., Thermal) on other competing licensees using its dominant position in Mumbai power system, thereby distorting the level playing field.
- 18.15 Entering PPAs with TPC-G was a commercial decision of TPC-D and was taken after having full knowledge of the Mumbai grid situation. Therefore, TPC-D ought to continue to procure the contracted capacity from TPC-G as held by this Hon'ble Commission in the aforesaid orders, so that grid constraints do not occur, till the issue of transmission constraint is resolved, more so when it is TPC group which delayed implementation of key transmission schemes with an agenda to perpetuate the grid constraints. AEML-D has placed reliance of the Commission's Order in Case No 204 of 2017 and APTEL Judgments in Appeal No 89 of 2019 and in Appeal No 280 of 2021.

19. **TPC-D in its additional submission dated 21 October, 2023 has stated as follows:**
- 19.1 In reply to the contention raised by AEML-D about socialisation of the cost, for running of embedded generation the BEST and TPC-D entered arrangements with TPC-G in order to secure economical and firm source of power for its consumers, as prudent utilities. With reference to Case Nos. 87 & 88 of 2006 and 30 of 2007 it is stated that TPC-G proposed to enter PPA with RInfra (now, AEML-D) for its balance quantity after meeting the contractual requirement of BEST for 800 MW and of TPC-D for 477 MW of electricity. The offer was made by TPC-G to RInfra (now, AEML-D) for supply of 600 MW which was not accepted as the latter instead insisted on obtaining a much higher quantum of power. Thus, TPC-G could not accept the said demand keeping in view its continuing obligation towards TPC-D and BEST. Further Hon'ble Supreme Court judgment in *Tata Power Co. Ltd. v. Reliance Energy Ltd.*, (2009) 16 SCC 659) shows that the dispute sought to be relied upon by AEML-D is of no avail for it as the same pertained to the independence of generating companies to enter into contracts with a distribution company, contrary to what is being sought to be canvassed by AEML-D
- 19.2 In response to the contention raised by AEML-D that the PPAs of TPC-D with TPC-G should be directed to be continued till the transmission constraints are not mitigated in the city of Mumbai referring to the Order in Case No 44 of 2019 dated 26 March, 2019 Mumbai is erroneous, as the approval granted for the extension of power procurement was not conditional and the observation of the Hon'ble Commission is merely a background/ observation upon which such approval was granted and to avoid any ambiguity in the applicability of the Order the definite time period was provided.
- 19.3 While AEML-D may opt not to socialise the cost of transmission constraint, it is submitted that TPC-D would only be in a position to bear the cost of transmission constraint only to the extent of its share. Under this situation, AEML-D may clearly specify to the Commission its alternate plan to avoid load curtailment for the system security under the transmission constraint scenario.
- 19.4 Subject to the concurrence of TPC-G, the Commission (if it decides that procurement from embedded generation is essential for an appropriate further period of time for TPC-D) may upfront specify a PPA tenure of only 3 years, so that TPC-D is in a position to optimize the power purchase cost from the embedded generation. Further, there are many instances in the past when SLDC had directed TPC-G to run its Units should be left which are contracted with TPC-D even when there is no specific requirement and Units were run only for transmission constrained. In such case because such generators are tied up with TPC-D the energy automatically get allocated which increase the burden of TPCD's consumers. In view of the same it is requested that after taking into consideration the demand requirement and proposed PPA's, the scheduling (including zero scheduling) of the generation should be left to the discretion of the contracting Distribution Licensees and cost of running embedded generation beyond requested

schedule ought to be socialised among all Mumbai DISCOMs as per ancillary mechanism to be developed by SLDC from 1 April 2024.

- 19.5 The Commission in Case No. 204 of 2022 had directed Maharashtra State Power Committee to undertake analysis, discuss with the stakeholders, and submit its detailed report by 31 December, 2023 on the pending issues (such as VSE operations and cost sharing under Mumbai Transmission Constraints and mapping of Generation Units of Adani Power Maharashtra Ltd. in DSM software) and also providing its recommendations regarding the review/amendment of existing DSM Regulations in line with the CERC DSM Regulations 2022.
- 19.6 In view of above, if the embedded generating Units are required to be run for the purpose of addressing transmission constraint, the actual cost of such generation may be considered to be shared between all the utilities enjoying the benefit in an appropriate pre decided ratio. Alternatively, the Commission may consider the VSE mechanism already established under the DSM Regulations for sharing of transmission constraint cost while ensuring that TPC-D's schedule is as per its requirement i.e., zero scheduling is allowed.

Commission's Analysis and Ruling:

20. TPC-D has submitted the Original Petition on 17 February 2023 for approval of power procurement plan for the Period of FY 2024-25 to FY 2034-35 as per Regulation 20.1 of MYT Tariff Regulations, 2019 and as per directions of the Commission in Case No 326 of 2019. TPC-D in the Petition has proposed to discontinue the power procurement from TPC-G and to procure power from the long-term firm RE bundle sources on RTC Basis from FY 2024-25 onwards through competitive bidding.
21. Meanwhile in the MTR Order dated 31 March 2023 issued in Case No 225 of 2023, the Commission has directed TPC-D to extend existing PPA with TPC-G for one year i.e for FY 2024-25. TPC-G vide its letter dated 14 April 2023 citing reasons of economical unviability informed its inability to extend the PPA for one year. On power procurement from RE bundle sources, TPC-D observed that lukewarm response is being received to RE RTC (Renewable with thermal) bids. Hence, TPC-D has requested the Commission to allow amending its Petition. With the approval of the Commission, TPC-D amended the Petition proposing discontinuing the power procurement from TPC-G post expiry of PPA in March 2024 and long term procurement of power from Thermal/ Gas/ any other source through competitive bidding along with separate bid from wind power.
22. TPC-D has submitted the Petition for approval of power procurement plan as per Regulation 20 of MYT Tariff Regulations, 2019. Regulation 20.1 of the MYT Regulations, 2019 specifies as follows about the Power Procurement Plan to be submitted by a Distribution Licensee:

20.2 The power procurement plan of the Distribution Licensee shall comprise the following:

- (a) A quantitative forecast of the unrestricted base load and peak load for electricity within its area of supply;*
- (b) An estimate of the quantities of electricity supply from the identified sources of power purchase, including own generation if any;*
- (c) An estimate of availability of power to meet the base load and peak load requirement: Provided that such estimate of demand and supply shall be on month-wise basis in Mega-Watt (MW) as well as expressed in Million Units (MU);*
- (d) Standards to be maintained with regard to quality and reliability of supply, in accordance with the relevant Regulations of the Commission;*
- (e) Measures proposed for energy conservation, energy efficiency, and Demand Side Management;*
- (f) The requirement for new sources of power procurement, including augmentation of own generation capacity, if any, and identified new sources of supply, based on (a) to (e) above;*
- (g) The sources of power, quantities and cost estimates for such procurement:*

Provided that the forecast or estimates contained in the long-term procurement plan shall be separately stated for peak and off-peak periods, in terms of quantities of power to be procured (in MU) and maximum demand (in MW):

Provided further that the forecast or estimates for the Control Period from FY 2020-21 to FY 2024-25 shall be prepared for each month over the Control Period:

Provided also that the long-term/medium-term procurement plan shall be a least cost plan based on available information regarding costs of various sources of supply.

(Emphasis Added)

The Commission has evaluated TPC-D's power procurement plan in terms of the above provisions of MYT Regulations, 2019. In addition to above issue of transmission constraints, request for reallocation of transmission capacity has been raised during the proceeding. Accordingly, the Commission has framed following issues for its consideration in present matter:

- a. Sales/Demand Projections of TPC-D
- b. Power Procurement Plan of TPC-D considering transmission constraint.
- c. Way forward

The Commission is dealing with above issues in subsequent paragraphs.

23. **Sales/Demand Projections of TPC-D:**

23.1 TPC-D in its Petition has projected sales for 11 years i.e. FY 2024-25 to FY 2034-35. For FY 2024-25, TPC-D has considered the sales as projected in its MTR Petition. For projecting the future sales, the historical trend of energy sales was analysed based on the Trued-Up Orders till FY 2018-19 and actual sales of FY 2019-20 to FY 2022-23.

23.2 Further for arriving at such sales projection, in addition to factors which contributes increase in sales such as addition of new consumers, increase in demand of existing consumers, movement of consumers between parallel Distribution Licensees, development of existing and new areas, TPC-D has also factored in drop in sales due to various factors such as consumers choice, DSM measures, policy interventions etc. Accordingly, TPC-D has considered CAGR of Direct Sales as @ 7% for the initial years and tapering it down to 6% and 5% for future years to arrive at the Sales Projections. Based on the above, the Energy sales projected by TPC-D are as follows:

Sales in MU

Particulars	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30	FY 30-31	FY 31-32	FY 32-33	FY 33-34	FY 34-35
Direct Sales	4573	4893	5235	5549	5882	6235	6609	7006	7426	7872	8266
Changeover Sales	1550	1550	1550	1519	1489	1459	1415	1373	1332	1292	1253
Total	6123	6443	6785	7069	7371	7694	8025	8379	8758	9164	9518

23.3 With regards to above sales projections, the Commission notes that for FY 2024-25, the Commission in its recent MTR Order dated 31 March 2023 has approved sale of 5824 MU for FY 2024-25 as against sales projection of 6123 MU. Balance 10-year period i.e. FY 2025-26 to FY 2034-35 would be part of next two Control Period of MYT regime. Further as required under existing MYT Regulations 2019, TPC-D would be requiring submitting its 10 years demand-supply projections at the start of new Control Period i.e. for FY 2025-26 to FY 2034-35. At that point of time, the Commission would be go into details for such demand projections.

23.4 Intent of present proceeding is to approve power procurement plan for TPC-D as its exiting tie-up with TPC-G is expiring in March 2023. Therefore, time being without going into correctness of sales projections submitted in present Petition, the Commission has considered energy sales, base load and peak load projected by TPC-D so as to evaluate its power procurement plan. However, final approval for sales projections would be given in respective Tariff Order.

24. **Power Procurement Plan of TPC-D considering transmission constraint.**

24.1 The Commission notes that TPC-D in its amended Petition has proposed discontinuation of power procurement from TPC-G post expiry of existing PPA in March 2024 and to meet its power requirement from FY 2024-25 onwards, it proposed to procure power through competitive bidding from firm source (Thermal/gas or any other firm source) for a period of 10 years till FY 2033-2034 and a separate bid for

Wind Power from FY 2026-27 onwards. Details of such power procurement plan proposed by TPC-D are tabulated below:

Season	Months	Hours	Demand (MW)	Remark
Bid I:- 1 April, 2024 (Thermal/Gas or any other firm source)				
Base Load Requirement				
All	All 12 months	00 to 24 (RTC)	300	Base Load
SUMMER	March, April, May June, October	17 to 24	400	Peak 1
		00 to 08	250	Peak 2
MONSOON	July, August, September	17 to 24	300	Peak 1
		00 to 08	100	Peak 2
WINTER	January, February, November, December	17 to 24	250	Peak 1
		00 to 08	100	Peak 2
Bid II:- 1 April, 2026				
ALL	Renewable Energy	Wind	200	25 years from FY 2026-27

24.2 However, based on various submissions filed in these proceedings highlighting issue of transmission constraint and importance of embedded generation for reliably meeting consumer demand in Mumbai, TPC-D in its additional submission dated 21 October, 2023 has stated as follows:

“21. Further, at the cost of repetition, it may be noted that the PPA of TPC-D with TPC-G is due to expire on 31.03.2024. Therefore, subject to the concurrence of TPC-G, the Hon’ble MERC (if it decides that procurement from embedded generation is quintessential for an appropriate further period of time for TPC-D) may upfront specify a PPA tenure of only 3 years, so that TPC-D is in a position to optimize the power purchase cost from the embedded generation. Further, there are many instances in the past when SLDC had directed TPC-G to run its Units should be left which are contracted with TPC-D even when there is no specific requirement and Units were run only for transmission constrained. In such case because such generators are tied up with TPC-D the energy automatically get allocated which increase the burden of TPCD’s consumers. In view of the same it is humbly submitted that after taking into consideration the demand requirement and proposed PPA’s, the scheduling (including zero scheduling) of the generation should be left to the discretion of the contracting Distribution Licensees and cost of running embedded generation beyond requested schedule ought to be socialised among all Mumbai DISCOMs as per mechanism proposed below.”

Thus, TPC-D has stated that if the Commission is come to conclusion that procurement of power from embedded generation is essential then with the consent of TPC-G, the Commission may specify that PPA with embedded generation be extended for 3 years subject to condition that cost of running embedded generation beyond requisition schedule by TPC-D be socialised among all Discoms of Mumbai.

24.3 In view of above submissions of TPC-D, it becomes essential to analyse situation of transmission constraints and requirement of embedded generation for reliable supply of

electricity to Mumbai. Based on submissions filed by STU and SLDC, the Commission notes following:

- a. Mumbai system demand is catered by way of embedded generation with installed capacity of 1877 MW within Mumbai and external power sources (around 2000 MW), imported into Mumbai through four interconnections points with Intra-State Transmission Network (InSTS) at 220 kV Trombay, Kalwa, Borivali and Boisar substations of MSETCL.
- b. The total Available Transmission Capacity of the tie lines to bring power within Mumbai is 2522 MW. The said transmission capacity is able to meet the present demand of Mumbai considering the embedded generation capacity of 1877 MW.
- c. While carrying out the systems studies for calculating the Mumbai system TTC/ ATC, the constraint on 400 kV lines hits even before the 220 kV constraints with present network conditions. As a result of this the region under consideration for any actions with respect to this congestion becomes larger MMR area including all the locations fed through these lines.
- d. Though the present ATC of the tie lines to bring power within Mumbai, transmission is 2522 MW, constraints have been observed on 400 kV lines viz. 400 kV Talegaon (PG) – Kalwa, 400 kV Talegaon (PG) – Kharghar, 400 kV Padghe – Kalwa D/C. Accordingly, the constraint on 400 kV lines hits even before the 220 kV constraints of Mumbai tie-lines with present network conditions. Thus, TTC of Mumbai System is limited to 1979 MW and ATC as 1905 MW with 74 MW as TRM considering contingencies at 400 kV level due to transmission constraints.
- e. Out of 1905 ATC of Mumbai System, 900 MW LTA is operational. Therefore, the present balance available transmission capacity of 1005 MW (1905-900 MW) on Mumbai Tie-Lines is being utilised for scheduling the power contracted by Mumbai utilities under long term PPA wherein LTA is yet to be granted by CTU (AEML-D - 700 MW, TPC-D - 225 MW) a total of 925 MW on short term open access basis in addition to the Short open access contracts of 500 MW by AEML-D. Further conditional NOC of 1736 MW (including AEML-D -700 MW, TPC-D - 225 MW) has been issued and NOC applications of 1030 MW has been received by STU. This shows that no margin is available on Mumbai Tie Lines. Further present ATC of Maharashtra is 9760 MW and total LTA operationalised are 10246.27MW with zero available margin.
- f. Thus, transmission constraint is being observed at two level viz (1) Mumbai transmission constraint (on MSETCL – Mumbai tie-lines) and (2) CTU-STU tie-lines and all embedded generation capacity in Mumbai is required to be continued till transmission constraint is removed.

- g. STU has planned transmission schemes to enhance Mumbai system ATC from 2522 MW to 4415 MW by FY 2024-25. However, considering the ROW issues, forest clearance, permission from various statutory authorities in the MMR area, some of the transmission projects may be delayed beyond FY 2024-25. Similarly, transmission schemes have been planned for enhancing CTU-STU tie line capacity to 22500 MW by FY 2026-27.
 - h. Entire embedded Generation of TPC-G at Trombay cannot be taken out at one stroke that will affect the reliability of Mumbai supply, but rather be planned in phase wise manner along with the completion of projects enhancing the Mumbai transmission system capability & CTU-STU ATC.
- 24.4 The Commission notes that highest peak demand of Mumbai has been recorded as 4108 MW in June 2023. Said demand has been met with support of embedded generation and power from external sources. The Commission notes that total embedded generation capacity is 1877 MW (1377 MW of TPC-G and 500 MW of AEML-G) and current ATC of Mumbai transmission system is 2522 MW (with constraint on 400 kV level line this ATC is reduced to 1905 MW). Thus, it is very clear that with limited capacity of transmission lines (2522 MW/1905 MW) to bring power from outside into Mumbai, embedded generation is essential for meeting demand of Mumbai which has reached peak of 4108 MW.
- 24.5 Embedded generation can only be discontinued when sufficient transmission capacity has been setup to source power from outside to meet entire Mumbai demand. As per transmission projects planned by STU, ATC of Mumbai transmission system will increase to 4415 MW by FY 2024-25. But STU itself in its submission has stated that there is possibility of delay in execution of these transmission projects on account of various factors. Also, such planned increase in ATC i.e. 4415 MW is only slightly higher than actual peak demand of 4108 MW recorded in June 2023. With various development activities going on in Mumbai region, its peak demand may surpass planned ATC capacity in near future. The Commission notes that Central electricity Authority in its report on 20th Electric Power Survey of India dated November 2022 has projected following electrical energy requirement and peak load demand for Distribution Licensees in Maharashtra:

DISCOM wise electrical Energy Requirement in MU											
Utility	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32
Adani	10869	11383	11814	12277	12654	13151	13577	14046	14584	15205	15823
BEST	4561	4629	4695	4760	4824	4886	4950	5019	5101	5199	5279
MSEDCL	120153	128590	133976	140356	147129	154952	162460	170188	179584	184910	189859
Tata Power	5274	5419	5509	5607	5706	5802	5898	5995	6113	6202	6269
	140857	150021	155994	163000	170313	178791	186885	195248	205382	211516	217230
T&D Losses											
Adani	10.38	10.35	10.31	10.28	10.24	10.21	10.18	10.15	10.11	10.08	10.05
BEST	7.87	7.86	7.85	7.84	7.83	7.82	7.81	7.8	7.8	7.79	7.78
MSEDCL	17.08	16.84	16.59	16.33	16.05	15.76	15.46	15.16	14.84	14.51	14.18
Tata Power	4.16	4.16	4.15	4.15	4.15	4.14	4.14	4.13	4.13	4.13	4.12
DISCOM wise electrical Energy Requirement in MU (Ex Bus)											
Adani	12128	12696	13172	13683	14098	14647	15116	15632	16225	16910	17590
BEST	4950	5024	5095	5165	5233	5301	5370	5444	5532	5638	5724
MSEDCL	144907	154639	160629	167746	175261	183949	192180	200590	210874	216301	221229
Tata Power	5503	5654	5747	5850	5952	6053	6153	6253	6376	6469	6539
DISCOM Wise Peak Electrical Demand (MW)											
Adani	2132	2254	2360	2472	2566	2682	2779	2882	2998	3130	3263
BEST	937	953	967	982	996	1011	1026	1042	1061	1085	1104
MSEDCL	24566	26558	27732	29115	30582	32271	33897	35573	37601	38781	39884
Tata Power	897	923	939	958	976	994	1013	1032	1054	1072	1085
Mumbai Peak Demand (MW)	3966	4130	4266	4412	4538	4687	4818	4956	5113	5287	5452

As can be seen from above, projected Mumbai Discom's demand for FY 2025-26 i.e. 4538 MW which is higher than ATC of 4415 MW which will be achieved when all transmission projects under execution are commissioned. Thus, even though all planned transmission projects are commissioned, certain amount of embedded generation would be required for meeting entire load of Mumbai.

24.6 It is also important to note that CEA has projected demand of 5452 MW for Mumbai Discom by FY 2031-32. If embedded generation is to be discontinued, then transmission system must be capable of bringing such amount of power from outside Mumbai. As stated earlier, as per present plan of STU, transmission system capacity would be enhanced only upto 4415 MW. As on date, there is no plan to enhance transmission capacity further. As per Regulation 12.8 of MERC Grid Code Regulations, 2020, STU is responsible for short term (3 years), Medium Term (5 years) and long term (10 years) planning. Further as per Regulation 12.12, STU must carry out the yearly planning process corresponding to five years forward term for the identification of major transmission system from the financial year immediately following the year in which it is published. It is observed that STU has proposed five year rolling plan from FY 2021-22 to FY 2025-26 and currently no plan is available for the future years on the website of STU. Therefore, the Commission vide its letter dated 9 October 2023 has directed STU to submit five years plan as envisaged in State Grid Code, 2020. Once such scheme are planned, based on past experience of execution of transmission projects, it would take 3-5 years for commissioning of transmission projects. Hence, till that period, embedded generation needs to be continued.

24.7 The Commission also notes that in the past, the Government of Maharashtra, in view of concerned about the supply to the Mumbai city, has issued direction under section 108 of the EA, 2003 to this Commission to extend PPA with embedded generation at least for 10 years once Distribution Licensee approaches for the same. The Commission

has taken note of the concerns of the Government of Maharashtra and has conveyed to Government that the Commission would take appropriate and necessary steps with regards to extension of the existing PPA so as to ensure reliable and secure power supply to Mumbai. Thereafter, in its Order dated 15 March 2023 in Case No. 240 of 2022 (BEST's power procurement plan), the Commission has directed extension of the existing PPAs only by one year i.e upto 2024-25 because once transmission capacity addition projects are commissioned, Mumbai Distribution Licensee shall be free to explore cheaper alternative of power supply. However, based on present status of transmission projects submitted by STU in present proceeding and considering increasing peak demand of Mumbai as explained in earlier part of the Order, the Commission have come to conclusion that embedded generations needs to be continued for slightly longer duration.

- 24.8 TPC-G who runs embedded generation capacity of 1377 MW in its submission has stated that its generating units are very old and have outlived their useful lives and around Rs. 900 Crores of CAPEX would require enhancing the life of the generating units. Considering such investment, any utilization of the generating units for a period of less than 10 years would be unviable for TPC-G and uneconomical for BEST and TPC-D as well. Thus, the Commission notes that TPC-G is ready for extension of PPA but not for one year as directed in Order dated 15 March 2023, but for substantial period of 10 years so that capital investment for running these old units can be recovered in economical manner.
- 24.9 As against, TPC-G's request for extension of PPA for 10 years, TPC-D in its submission dated 21 October 2023 has consented for extension of PPA with embedded generation for 3 years. As stated earlier, the Commission has also come to conclusion that embedded generations needs to be continued for few more years. Considering, CEA's demand projection in 20th EPS, transmission capacity enhancement projects planned by STU and delay in execution of transmission projects, the Commission is of the opinion that embedded generation may be required to be continued for next 5 years and thereafter can be gradually reduced with commissioning of transmission projects.
- 24.10 In view of above, the Commission directs TPC-D to extend existing PPA with TPC-G for 5 years from 1 April 2024 i.e. 31 March 2029. While extending such PPA for 5 more years, it is also important to prepare for gradual phase out if sufficient transmission capacity becomes ready. The Commission notes that TPC-G has different type of units i.e. Coal based, Gas based and Hydro units, life of each generating unit of is different and the Commission has been determining unit wise tariff for all units of TPC-G. However, PPA signed by TPC-G with Distribution Licensee i.e. TPC-D and BEST Undertaking is bundled PPA for all units. But considering the fact that tariff is not bundled tariff and is being determined unit wise, the Commission is of the opinion that PPA should also be signed unit wise. This will help while decided about next extension of PPA. At that point of time, based on available transmission capacity, PPA for certain costly embedded units can be discontinued. Also, PPA for cheaper Hydro units can be extended for longer period say 15/20 years based on life assessment study.

Such arrangement would also enable TPC-G to undertake long term capital investment on their generating units. Hence, the Commission directs TPC-D to sign unit wise PPA with TPC-G for extended period of 5 years. While signing such PPA, existing unit wise allocation between BEST Undertaking and TPC-D shall be maintain. Based on same principles, BEST Undertaking shall also sign unit wise PPA with TPC-G.

- 24.11 Having directed for extension of embedded generation PPA for 5 years, the Commission notes that TPC-D and BEST Undertaking in their submission have requested that they alone should not be burdened with higher cost due to transmission constraint, but such cost should be socialized to all Distribution Licensees in Mumbai. AEML-D has opposed such request for socialization of cost and stated that when power of TPC-G was cheaper, TPC-D and BEST had taken benefit of the same, whereas AEML-D was forced to buy costly power at rate of Rs 10-18/unit from short term markets. Now, when generation cost of TPC-D is increased, they are requesting for socialisation of the cost to the consumers of AEML-D, which cannot be allowed.
- 24.12 In this regard, the Commission notes that the issue of transmission constraint and its implication on scheduling has already been identified as issues of concern and the Commission in its Order dated 15 March 2023 in Case No. 240 of 2022 has directed MSLDC to submit evaluation report of Option 1 or Option 2 as suggested by DSM Working Group.
- 24.13 Further the Commission in the recent Order in Case No. 204 of 2022 filed by MSEDCL seeking review of the Suo Moto Order dated 2 August, 2022 on certain issues had directed Maharashtra State Power Committee to undertake analysis, discuss with the stakeholders, and submit its detailed report by 31 December, 2023 on the pending issues including VSE operations and cost sharing under Mumbai Transmission Constraints. The relevant extract of the Order is reproduced as below:

“8. Maharashtra State Power Committee is directed to undertake further analysis, discuss with the stakeholders, and submit its detailed report by 31 December 2023 on the pending issues (such as VSE operations and cost sharing under Mumbai Transmission Constraints and mapping of Generation Units of Adani Power Maharashtra Ltd. in DSM software) and also providing its recommendations regarding the review/amendment of existing DSM Regulations in line with the CERC DSM Regulations 2022.”

Thus, the Commission at this stage is not deliberating on the issue of sharing cost on account of Mumbai Transmission constraint. Once such report is submitted the Commission will decide on the same in consultation with all the stakeholders after following due process.

25. **Way Forward:**

- 25.1 In view of prevailing transmission constraints, the Commission directs TPC-D to extend existing PPA with TPC-G by 5 years i.e. till March 2029. Further, such extension of PPA shall be signed unit wise.
- 25.2 For meeting balance power requirement, if any, TPC-D may enter into short-term/ medium-term/ long-term PPA through competitive bidding process after considering issue of transmission constraints.
- 25.3 STU shall coordinate with all implementing agencies for ensuring that all proposed transmission schemes are completed as per plan and shall make efforts to expediate the work.
- 25.4 Maharashtra State Power Committee is directed to submit detailed report on cost sharing under Mumbai Transmission constraint within specified timelines i.e 31 December 2023.
26. Hence, following Order:


ORDER

1. Case No. 39 of 2023 is partly allowed.
2. TPC-D to extend existing PPA with TPC-G by five years i.e. till March 2029. Unit wise PPA shall be signed for such extended period.
3. Issue of sharing of cost sharing on account of Mumbai Transmission Constraint will be decided after following due process once report on the same is received from Maharashtra State Power Committee.

Sd/-
(Surenbra J. Biyani)
Member

Sd/-
(Anand M. Limaye)
Member

Sd/-
(Sanjay Kumar)
Chairperson


(Dr. Rajendra G. Ambekar)
Secretary

