

**MADHYA PRADESH ELECTRICITY REGULATORY COMMISSION
BHOPAL**

Sub: In the matter of petition under Section 86(1)(b) of the Electricity Act, 2003 read with Regulation 7 of the MPERC(Power Purchase and Procurement Process) Regulations, 2004, Revision 1, 2008[RG-19(1) of 2006] seeking in principle approval for Power Procurement as per Committee Reports dated 24.07.2018 and 13.05.2019 in respect of Review of Demand and Availability of power in the State upto FY 2029-30 and accordingly finalization of capacity addition plan.

(Petition No.27 of 2019)

**ORDER
(Date of Order: 13.01.2020)**

M.P. Power Management Co.Ltd., Shakti Bhawan, Rampur, Jabalpur	-	Petitioner
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V/s

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| 1. The Managing Director
M. P. Poorv Kshetra Vidyut Vitaran Co. Ltd.
Shakti Bhawan, Rampur, Jabalpur – 482008. | - | Respondents |
| 2. The Managing Director
M. P. Madhya Kshetra Vidyut Vitaran Co. Ltd.
Nishtha Parisar, Govindpura, Bhopal – 462023 | | |
| 3. The Managing Director
M. P. Paschim Kshetra Vidyut Vitaran Co. Ltd.
GPH Compound, Pologround, Indore. | | |

Shri A.K. Alung, GM, Shri A.K. Kanhaia, AGM, Shri R.V. Saxena, DGM, Shri Deepak Vyas, Sr. GM and Shri Yogesh Gaur, Manager appeared on behalf of the petitioner.

2. The subject petition is filed by M.P. Power Management Co.Ltd., Jabalpur seeking in-principle approval for procurement of additional 3960 MW power in phased manner from Financial Year 2023-24 to FY 2029-30, as per the Committee Reports dated 24.7.2018 and 13.5.2019 constituted by the State Government, in

accordance with Section 86(1) (b) of the Electricity Act, 2003 and MPERC(Power Purchase and Procurement Process) Regulations, 2004, Revision 1, 2008[RG-19(1) of 2006]. The petitioners have stated in their submission that in order to ensure continuity of 24x7 power supply in the state, procurement of additional power is of utmost importance. The Commission vide daily order dated 16.07.2019 has admitted the subject petition for further deliberations.

3. Subsequently, during the hearing held on 30th July, 2019 the petitioner had prayed to admit its additional submission with regard to the allocation of 200 MW & 494 MW power from Tilaiyya UMPP, due to which a change in power availability has been envisaged in the Committee's report submitted with the main petition. The Commission had accepted the request of the petitioner to submit the filing comprehensively by incorporating the additional availability and capacity addition programme accordingly. Subsequently, during the hearing held on 20th August 2019, the petitioner sought time extension citing the reason that they intend to file the revised submission. The request was accepted by the Commission, and rescheduled the hearing on 3rd September, 2019. During the hearing held on 3rd September, 2019, the petitioners had submitted before the Commission that they have filed the revised submission in the matter on 24.8.2019 by incorporating the impact of Tilaiyya UMPP. The Commission vide daily order dated 06.09.2019 had directed the petitioner that, the Distribution Licensees be made respondents and they shall be served copy of the petition for submission of their response on the subject matter.

4. During the hearing held on 17th September, 2019, the Commission has referred the additional submission dated 24.08.2019 made by petitioner and observed that a total capacity addition of 4845.42 MW is envisaged during the period between FY 2023-24 to FY2029-30 which constitutes 1320 MW(660 x2) of MPPGCL(MPGenco) during FY 2023-24 and FY 2024-25, 191.42(63.8x5)MW of NTPC in FY 2024-25 and FY 2025-26, 2640 MW (660x4) through competitive bidding during FY 26 to FY 29, and 694.02 MW (115.67x5) of Tilaiyya UMPP during FY 27 to FY 30 respectively. In light of the above, out of 4845.42 MW capacity addition plan, 885.42 MW shall be available through Central sector and Tilaiyya UMPP and the petitioner after considering the same, has requested for in principle approval of balance 3960 MW capacity addition, out of which initially 1320 MW capacity is proposed to be added by the Competitive bidding route for which the Commission has granted provisional approval to commence the bidding process vide order dated 17.09.2019 against IA 03/2019 in subject petition. In this IA, the Commission allowed the petitioner to commence the process of procuring 1320 MW power through competitive bidding route subject to final outcome of petition no.27 of 2019. The Commission was appraised that out of remaining 2640 MW capacity addition, 1320 MW is to be added by State Generating Company (MP Genco) while balance 1320 MW is to be added through competitive bidding as

evident through GoMP letter dated 08.08.2019 addressed to the petitioner. The Commission has also placed reliance on aforesaid GoMP letter dated 08.08.2019 consenting the recommendations of Committee report dated 24.07.2019. The Commission has also taken note of the submission made by the Petitioner and all the three Discoms in the IA 03/2019 in the subject matter. In the aforesaid IA, the following submissions were made:

- (i) *On perusal of the Demand and Availability scenario of future, in terms of Peak (MW), the State may start facing deficit during Rabi season from FY 2023-24 onwards. In order to cater the future demand, the State needs to add one unit of 660 MW each during 2023-24, 2024-25, 2025-26, 2026-27, 2027-28 and 2028-29.*
- (ii) *On account of various factors like Saubhagya Yojana, increase in peak demand etc. which unfolded during the last one year, the major factor being the implementation of Saubhagya Yojana, it was felt necessary to file this I.A, so that timely action can be taken to ensure that the process for power procurement / capacity addition could start as early as possible to get the capacity addition for FY 2023-24 and 2024-25 in a timely manner for ensuring continuity of 24x7 power supply in State.*
- (iii) *This I.A. is filed considering the substantial time (of about 6-12 months) involved in carrying out the competitive bidding process as per Model Bidding Documents notified by Ministry of Power on 06.03.2019, apart from the time required for Financial Closure of the Project and thereon the gestation period for setting up a thermal power project (approx. 48 months) and the various constraints faced in setting up a thermal power project, such as land availability etc. The State Government, MPPMCL and Discoms felt it necessary to start the bidding process for procurement of power at the earliest so as to enhance the availability of power before the situation of peak power deficit arises in the year 2023-24.*
- (iv) *Petitioner has filed the instant application seeking interim directions from this Commission for commencing the process of 1320 MW power procurement as an ad-interim measure against the total requirement of 3960 MW, during the pendency of the main petition.*
- (v) *As per the committee report dated 13.05.2019 there will be a peak deficit from the Financial Year 2023-2024 onward and a generation capacity to the tune of 3960 megawatts shall be required in phased*

manner, within a specified time line so as to ensure 24X7 power supply as per State Govt. and Central Govt. mandate.

(vi) *According to the committee report a capacity of about 3960 megawatts may be required in the coming years and a capacity of 1320 MW would be required in next 3 to 5 years to overcome the peak deficit and it will be seen that to add such huge capacities through new projects is a time consuming process more so when the mandate is to complete the process through competitive bidding.*

(vii) *MP State Load Dispatch Centre, vide their Views in Committee Report dated 24.07.2018 Annexed in the main Petition have mentioned as below for Madhya Pradesh with regard to the additional capacity in near future:*

“Spinning reserves are required to be maintained of requisite quantum depending upon the grid conditions. Operation at constant frequency target of 50.0 Hz with constant area interchange should be the philosophy adopted. As per NEP, Spinning Reserve of atleast 5 % needs to be created.

.....

Thus in view of above, one more Thermal Generating Unit of 660 MW may also be planned and brought on bar at the earliest possible.....”

The National Electricity Policy also envisages for keeping the spinning reserves by the States.

(viii) *In view of aforesaid submissions and the timeline involved for setting up of a Thermal Power Plant of 1320 MW through competitive bidding, while this Hon’ble Commission adjudicates Petition No.27 of 2019, the Petitioners herein are seeking an interim direction/approval from this Hon’ble Commission to commence competitive bidding process for the power procurement process for at least 1320 megawatts power (about 1/3 of total requirement of 3960 MW). This is highly essential for ensuring 24X7 power supply in the State in future also.*

(ix) *The power shall be procured through competitive bidding route on long term basis and it is well known that the process for competitive bidding itself is time consuming and a long drawn process and, if the process for competitive bidding is able to be completed in a timely*

manner then the new projects would also be required to be constructed and established for generation of power and the same shall take time.

- (x) Since time is of essence, as the peak deficit shall occur by FY 2023-24, and already September 2019 has commenced, therefore, the petitioner is seeking an interim direction/approval from this Commission for commencing the process of procurement of 1320 megawatts power through the competitive bidding route.*
- (xi) If the process of competitive bidding route is not commenced shortly, the whole process of capacity addition may be delayed and may result in deficit scenario of availability in the State and may cause power supply interruptions contrary to the mandate of 24X7 supply to the consumers of the State.*

The petitioner on 12th Sep, 2019 filed an additional submission stated that the copy of this I.A. in petition No. 27/2019 has been provided to all the three Distribution Companies viz. Madhya Pradesh Poorv Kshetra Vidyut Vitran Co. Ltd., Madhya Pradesh Paschim Kshetra Vidyut Co. Ltd. and Madhya Pradesh Madhya Pradesh Vidyut Vitaran Co. Ltd. seeking their comments.

The three distribution companies of the state through their para-wise submissions in the instant I.A. agreed to the data and contents of the I.A. as submitted by the Petitioner, M/s MPPMCL and submitted as below-

- (i) We agree with the requirement projected in Point No. 7. As per the scenario of demand and availability projected by the Committee and M.P. Power Management Co. Ltd., the State may start facing power deficit during rabi season from FY 2023-24 onwards. Hence, there would be an immediate need for capacity addition as envisaged by Power Management Co. Ltd. in the instant I.A.*
- (ii) Peak demand has been increasing substantially on account of SAUBHAGYA Yojana. In view of the future demand and for ensuring continuity of 24X7 power supply in the Discom, it is necessary to increase the power availability. Therefore the Discom felt it necessary to start the bidding process for*

procurement of power at the earliest to enhance the availability before situation of peak power deficit arises in FY 2023-24.

- (iii) Looking to the urgency of enhancing the power availability, the Discom is agreed with the MPPMCL regarding commencement of procurement process for 1320 MW as an interim measure against the total requirement of 3960 MW.*
- (iv) We agree with the outcome of the reports dated 24.07.2018 and 13.05.2019. We also agree with the loss trajectory considered in the report for projecting the future demand.*
- (v) We agree with Point No. 11 about the projected capacity addition plan and out of which 1320 MW capacity would be required within next 3-5 years to overcome the peak deficit.*
- (vi) In view of the peak deficit scenario which shall occur by FY 2023-24 and since we are already reaching near the last quarter of calendar year 2019, it is felt necessary to commence the process for procurement of 1320 MW power through competitive bidding route on urgent basis. Therefore, we agree with the prayer made by the MPMCL in instant I.A. for according in principle approval for commencing the process of procuring 1320 MW power through the competitive bidding route. The Commission may consider the prayer made by the petitioner with which we are fully agreed.*

5. The Commission vide its order dated 17.09.2019 in IA 03/2019 has accorded the provisional approval for commencing the process of procuring 1320 MW through competitive bidding route after taking into view the submission made by the petitioner.

6. As initially 1320 MW capacity addition has been planned through competitive bidding process, the Commission, therefore, enquired from petitioner to clarify that at which stage, another 1320 MW would be added by the State Genco. Further, referring to additional submission, the Commission also enquired from petitioner regarding current status of 29 nos. capacity addition projects (Annexure – 5 attached with submission dated 4.11.2019) that are not included in the capacity addition plan citing the reasons such as indefinite delay, non-allocation and unavailability of Fuel etc. The Commission cautioned the petitioner that there should not be any room for looming uncertainty in arriving precise demand supply projections for state as the projected availability must be based on firm proposals. Although, the petitioners reiterated that these projects have not been considered in

the power availability, the Commission has sought firm view on these indefinite projects by next hearing.

7. The Commission has also looked into the methodology adopted by the petitioner / State Government in arriving at the demand & availability projections based on which the requirement of capacity addition has been worked out till FY 2029-30. The Petitioner, M.P. Power Management Company Ltd. (MPPMCL) is a holding company of all the three state Discoms. M.P. Power Management Company Ltd. is procuring electricity on behalf of these three state Discoms. It is also having a State Planning Cell under its administrative control which assesses the future demand and availability for the whole state of Madhya Pradesh and based on that long term generation and transmission capacity addition are planned with the approval of the State Government.

8. The petitioner submitted that to assess the future electricity demand in the state, State Planning Cell has used the methodology as prescribed by Central Electricity Authority. This method is named as Partial End Use method (PEUM). PEUM is a combination of time series analysis and End Use method and is a “bottom up” approach focusing on end users or final energy needs of different categories of consumers like domestic, commercial, irrigation, industries, public lighting, water works etc. In PEUM, time series analysis is used to derive growth indicators giving higher weightage to the recent trends so as to consider the benefits of energy conservation initiatives and technological changes. End Use method considers the electricity consumption at the consumer premises and the projection is based on various growth indicators which include the number of consumers, connected load, specific consumption, hours of operation etc. Electricity demand projections has been done keeping in view the parameters as illustrated above, mainly focussing rapid growth in domestic demand arising due to SOUBHAGYA Yojana owing to electrification of huge number of un-electrified households, industrialization envisaged on account of Global Investors Summits organized by GoMP, growth in irrigation sector owing to GoMP policies etc. It has been reported by the petitioner that during the Brain Storming Sessions, held in New Delhi & Mumbai, for 19th EPS, it was suggested by CEA that the demand growth in the future may gradually slow down due to introduction of various new policies, viz, Solar rooftop, solar pumps, solar street light and various other schemes which are in pipeline relating to renewable energy, and the same has been kept in mind while projecting future energy consumption in related consumer categories. After assessing the consumer category wise consumption, component of transmission & distribution losses is added to forecast overall energy requirement in the state. After assessing the energy requirement, a suitable load factor was applied to assess the Peak demand in terms of Megawatt. The three state Discoms as the respondents in the petition are agreed with these projections & loss trajectory and they stated it through the affidavits.

9. It has further been submitted that to assess the future energy requirement and peak demand, a vast amount of data was collected by the State Planning Cell/Committee, which includes the following:

- i. DISCOM wise data of past 15 years relating to number of consumers, connected load and energy consumption of different consumer categories, for urban and rural areas separately. The consumer categories for which data is collected are – Domestic, Commercial, Street Light, Water works (LT & HT), Irrigation (LT & HT), Industrial (LT & HT), Non-industrial and Licensees.
- ii. Historical data of past 15 years relating to DISCOM wise energy requirement at DISCOM boundary and Ex-Bus level
- iii. DISCOM wise ST&D loss and T&D losses of past 15 years
- iv. Peak demand of DISCOMs as well as state for past 15 years

After collecting the above mentioned data, the State Planning Cell analyzed various growth indicators on year on year basis. CAGR of each 5 years was also analyzed to get an idea of growth pattern in urban and rural areas separately in each DISCOM. The various growth indicators used to assess future energy consumption by the Planning cell/Committee are as under:-

- i. Growth in number of consumers (Domestic, Commercial, Irrigation)
- ii. Growth in connected load (Irrigation, Industrial, Water works)
- iii. Growth in consumption per consumer per year (Domestic, Commercial)
- iv. Growth in hours of operation (for industrial, water works, street light, Non industrial).

10. It has also been informed by the petitioner that while assessing the future Energy Availability from existing as well as upcoming plants, projections have been made by the State Planning Cell/Committee considering – (i) normal coal supply for thermal units, and (ii) normal monsoon for hydel units. To project the future energy availability, Plant Availability factor (for Thermal plants), Capacity Utilization Factor (for Renewable sources), suitable average multiplying factor to Design Energy of hydel plant on the basis of past 3 to 5 years data, and fuel category wise auxiliary consumption was considered as indicated below:-

- i. PAFs of MP GENCO Thermal plants have been considered on the basis of past pattern. PAFs of Central sector stations were considered as 85% for coal units and 60% for gas based units. PAF of IPPs were also considered as 85%, except for BLA power (75%). CUF of solar plants was considered

as 19% and that of Non solar plants as 20%. PAFs of all new thermal projects were considered as 85%.

- ii. Auxiliary consumption of MP GENCO Thermal & Hydel units was considered on the basis of previous year's performance. Auxiliary consumption of all other plants of Central Sector, IPP etc were considered as per planning norms issued by CEA.
- iii. It is very difficult to predict hydel availability as it wholly depends on the rainfall. During FY 2019-20, hydel availability of around 7000 MUs is anticipated, and the same quantum is considered for forthcoming years.
- iv. RPO is kept to a maximum of 17% till FY 2021-22 as per MPERC's regulations and thereafter it is gradually increased to a maximum of 22%.
- v. CODs of new thermal units were considered as intimated by concerned sections.
- vi. The state remains power surplus during four months of monsoon, and at that duration normally surplus power is banked with other states, which has been taken back during Rabi season, especially in November and December months which are normally peak load season in the State. Banking availability during peak season has been considered as per the last year's banking availability while assessing the peak availability.
- vii. Peak availability factors are considered as per details given below,

- MP GENCO Thermal	74%
- MP GENCO Hydel	48.7%
- ISP, OSP, SSP & Other Hydel	41.7%
- Central Sector Thermal	85%
- UMPP & IPP Thermal	75%

viii) CEA had conducted a study on the contribution of solar and wind power during peak hours on the basis of hourly load curve of last two years, provided by MP SLDC. In the report, it is suggested by CEA to keep the peak availability factor for solar and Wind plants as 67.4% and 3.7% respectively, and the same has been considered for the peak hours by the State Planning Cell.

11. It is submitted with the petition that while assessing the long term capacity addition requirement, the State Planning Cell/Committee also considered the

views of State Load Despatch Center particularly on spinning reserve. MPSLDC in its report stated that the National Electricity Policy (NEP) mandates that adequate reserves may be maintained to ensure secure grid operation. In Clause 5.2.3, it is mentioned that Spinning Reserve of at least 5%, at national level would need to be created to ensure grid security and quality and reliability of power supply. It has further been stated that CERC constituted a Committee vide letter No. 25/1/2015/Reg. Aff. (SR)CT.RC dated 29th May 2015, under the chairmanship of Shri A.S. Bakshi, Member CERC, to examine the technical and commercial issues in connection with Spinning Reserves and evolve suggested regulatory interventions in this context. CERC vide Suo Moto Petition No. 11/SM/2015 in the matter of Road Map to Operationalize Reserves in the Country, has accepted the following recommendations of Shri A.S. Bakshi Committee regarding maintaining Reserves in the country:-

- (i) Spinning Reserves are required to be maintained of requisite quantum depending upon the grid conditions. Operation at constant frequency target of 50.0 Hz with constant area interchange should be the philosophy adopted. As per NEP, Spinning Reserve of at least 5% need to be created.
- (ii) Tertiary Reserves should be maintained in a decentralized fashion by each state control area for at least 50% of the largest generating unit available in the state control area. (This would mean secondary reserve of 330 MW is to be maintained in MP).
- (iii) Primary Reserve of 4000 MW should be maintained on an All India Basis considering 4000 MW generation outage as a credible contingency.

Petitioner stated that as per M.P. Load Despatch Center, in line with the CERC order dated 13.10.2015 in Suo Motu Petition No. 11/SM/2015 regarding maintaining reserves for safe & secure grid operation and for balancing of penetration of variable and intermittent RE generation, following reserve capacity which is bare minimum, is required to be maintained for Madhya Pradesh Control Area:-

Tertiary Reserve	330 MW (As per WRPC letter dated 26.07.17)
Spinning Reserve	200 MW
Primary Reserve	125 MW
<u>Total</u>	<u>655 MW</u>

In view of M.P. Load Despatch Center, one more Thermal Generating Unit of 660 MW may also be planned and brought on bar at the earliest possible, so that CERC directives for maintaining Reserves could be complied by Madhya Pradesh for safe, secure, reliable and efficient operation of the State Grid.

12. In the submission made by the petitioner, the committee report states that while assessing the peak demand, CEA, in the 19th EPS report, assumed the system load factor as 70%, whereas the actual load factor remained quite lower which resulted into higher peakload. CEA, in the 19th EPS report, for FY 2017-18 and FY 2018-19, assessed energy requirement (for the state, i.e., DISCOMS+SEZ+OACs+Railways) to the tune of 75209 MU and 81732 MU respectively and by assuming the system load factor as 70%, the peak demand forecasted in 19th EPS was 11806 MW and 12830 MW respectively. But, the actual energy supplied in the state in these two years were 69227 MU and 76347 MU, respectively. Actual peak load recorded during these two years was 12240 MW and 14089 MW respectively. Accordingly, actual system Load Factor remained 64.56% and 61.86%, respectively during these two years against 70% envisaged in the 19th EPS. Also, from the table given below, it can be seen that the system load factor for past 15 years varied from 50.5% to 67.3%. Average load factor of past 15 years was 58.2%. From past three years, the load factor is continuously declining, and it was 61.8% during 2018-19. Year wise details furnished are as under:-

2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
53.97%	56.86%	54.64%	53.65%	57.58%	53.38%	55.54%	50.57%

2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
54.65%	55.72%	60.78%	66.40%	67.36%	64.21%	64.56%	61.86%

Accordingly, looking to historical trends, the Committee presumed that the system load factor on forthcoming years may also be on lower side and that in turn will lead to higher peak load. Year wise system load factors, to assess the peak demand, chosen by the committee, are indicated below. System Load Factor is gradually increased (improved) to a level of 62.5% which is an average of past 7 years.

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
61.25%	61.25%	61.50%	61.50%	61.50%	61.75%	61.75%	62.00%

2027-28	2028-29	2029-30	2030-31	2031-32
62.00%	62.25%	62.25%	62.50%	62.50%

13. To review the Peak Availability Factor (PAF) of hydel plants during Rabi season when demand normally reaches to peak level, requisite details of peak periods of 15 days during past three years, regarding availability from hydel plants (in terms of MW), were obtained from State Load Despatch Centre and thereafter a meeting was held with SLDC, MP Genco and Power Management Cell to discuss and finalize the PAF. The PAF considered by the Committee are as under:-

Plant / Sector	MP Share MW	Plant wise PAF during yearly peak period of 15 days	Availability in MW	Overall PAF
Rani Awanti Bai Sagar, Bargi HPS	90	50%	45	
Bansagar Ph I HPS (Tons)	315	55%	173	
Bansagar Ph-II HPS (Silpara)	30	55%	17	
Bansagar Ph-III HPS (Deolond)	60	55%	33	
Bansagar Ph-IV HPS (Jhinna)	20	55%	11	
Birsinghpur HPS	20	50%	10	
Madikheda HPS	60	50%	30	
Rajghat HPS	23	40%	9	
Gandhisagar HPS	58	95%	55	
Ranapratap Sagar HPS	86	0%	0	
Jawahar Sagar HPS	50	0%	0	
Pench HPS	107	60%	64	
Total (MP Genco Hydel)	917		446	48.70%
NHDC Indira Sagar HPS	1000	60%	600	
NHDC Omkareshwar HPS	520	60%	312	
NVDA Sardar Sarovar HPS	826.5	8%	66	
NVDA Indira sagar LBC HPS	15	50%	8	
NVDA Bargi LBC HPS	10	50%	5	
Rihand HPS	45	40%	18	
Matatila HPS	10	40%	4	

Total (JV Hydel & Other Hydel)	2427		1013	41.70%
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14. The Committee also assessed the Renewable Energy contribution for the State of Madhya Pradesh. As part of the Committee, Central Electricity Authority has done an analysis of the contribution of the Renewable, especially Solar and Wind for the future years based on the data of the existing Solar and Wind installations in MP and likely future capacities to be added in the State.

The following assumptions were made pertaining to the studies carried out for analysis of Solar and Wind generation in the state of Madhya Pradesh during 2017-18 to 2031-32 :-

1. Hourly solar and Wind generation of MP for the years 2016-17 and 2017-18 (till February 2018) was used (as provided by the state SLDC).
2. Monthly Solar and Wind IC for the aforementioned years were obtained.
3. The normalized Solar generation profile for the years 2016-17 and 2017-18 were obtained and was found that the CUF is in the range of 18.3-19.5%.
4. The normalized Wind generation profile for the years 2016-17 and 2017-18 was similarly obtained. It was observed that the CUF was around 13% for the year 2016-17 while it increased to 17.5% during the next year. Hence the wind profile of 2017-18 was used as the more apt representative of the wind generation pattern of the state.
5. The projected Solar and Wind Installed capacity of MP was obtained for the years 2017-18 to 2031-32.
6. The normalized Solar profile for the year 2016-17 was used to project the hourly solar generation profile for MP for the years 2018-19 to 2031-32.
7. The normalized Wind profile for the year 2017-18 was used to project the hourly Wind generation profile for MP for the years 2018-19 to 2031-32.
8. The Projected Annual Solar and Wind energy values were thus obtained for the future years for the state of MP.

15. Likely contribution of Solar and Wind generation during the years 2018-19 to 2031-32 was worked out by the Committee. The Committee found that based on the data received, the energy contribution from Wind and Solar progressively increases from

8.98% during 2018-19 to 14.66% during the year 2031-32. The Committee report dated 13.5.2019 also stated that during FY 2018-19, the state witnessed a sharp growth in terms of state's peak demand which increased to 14089 MW in comparison to 12240 MW in FY 2017-18. It was more than 15% growth in peak demand while it was only 7.2% growth during 2017-18. Peak demand growth in FY 2016-17 was only 5.4%. In consequent three years the growth rate was increased. The petitioner also highlighted that because of substantial growth in demand during FY 2017-18, the PMCL was forced to purchase short term power to the tune of 500 MW, even after getting un-requisitioned power of 385 MW to meet the peak load of 14089 MW on 5th January, 2019.

16. Further, the Commission has referred the MPPMCL letter dated 22.08.2019 addressed to GoMP annexed with additional submission dated 24.08.2019 wherein petitioner has projected scenario for showing assessed peak deficit /surplus during FY 2023-24 to FY 2028-29 stated to be considered availability of 694 MW from UMPP Tilaiyya units; 2x660 MW from MPGenco and 4x660 MW under competitive bidding (DBFOO) route and considering capacity addition of one unit of 660 MW each during FY 2023-24, FY 2024-25, FY 2025-26, FY 2026-27, FY 2027-28 & FY 2028-29 which shows surplus scenario in MW during certain period. It was therefore also sought to explain the demand along with capacity addition plan indicating the tentative schedule of availability from these units. The Commission had directed to furnish the comprehensive reply before the next date of hearing i.e. 05.11.2019. The petitioners, however, submitted their reply during the course of hearing itself and therefore the Commission had scheduled the next hearing on 06.12.2019. During the hearing held on 6.12.2019, the petitioner requested for seven days time to respond on the queries regarding schedule of MP Genco project and firm view of indefinite projects listed in Annexure –5 attached with submission dated 4.11.2019 of the petition. The Commission considered the aforesaid request of the petitioner and vide daily order dated 07.12.2019 directed the petitioner to furnish the written response on the aforesaid points latest by 13.12.2019 positively so that the Commission may take a comprehensive view in the subject petition. In response, the petitioner has furnished their reply on 17.12.2019 which was perused by the Commission. In regard to issue no.(i), the petitioner has stated that in regard to MP Genco's 1320 MW(660x2) projects, neither State Government has accorded its administrative approval nor the Coal Ministry, GoI, has provided any coal linkage and hence, these projects are likely to be delayed. The petitioners however have not indicated any time frame for commissioning of these projects. Further, in regard to issue no (ii), the Commission has observed that the status submitted by the petitioners for some of the projects out of listed 29 projects are still uncertain. The petitioners have not taken the concrete step in terminating the uncertain projects and some of the project developers

such as M/s Katni Thermal Energy (MP) Ltd. (3x660 MW) and M/s Anuppur Thermal Energy(MP) Pvt.Ltd. have requested for extension of scheduled Commercial Operation Date(CoD) due to non-availability of coal linkage. Similarly, NHPC has informed that tentative date of commissioning of first unit and last unit of their Subansiri Lower HE Project (8x250 MW) shall be during the month of June 2023 and September 2023, respectively. Further, NTPC vide its email dated 04.09.2019 and letter dated 06.09.2019 has informed the petitioners that NTPC Board is yet to accord investment approval for Coal based power plant to be located at Gadarwara (Unit 3 & 4) and Dhuvaran and it would approach MPPMCL for obtaining fresh consent from MPPMCL in line with relevant regulation of CERC Tariff Regulations 2019. The Commission has observed that in such case, the petitioners are required to take firm view on such indefinite projects for enabling the Commission to take comprehensive view in the matter.

17. The Commission observed that M.P. Power Management Co. Ltd. has filed this petition under Section 86(1)(b) read along with MPERC(Power Purchase and Procurement Process) Regulations, 2004, Revision 1, 2008[RG-19(1) of 2006] seeking in principle approval for power procurement as per the Committee report dated 24.7.2018 and 13.5.2019. M.P. Power Management Company is a holding company of all the three Discoms and it procures the power on behalf of these three Discoms. The petitioner M.P. Power Management Company Ltd. reviewed and analyzed the reports submitted by the Committee constituted by the State Government for assessment of future demand and supply scenario in the State and accordingly planned the capacity addition so as to ensure continuity of 24x7 power supply in the State as per the mandate given by the Government of India and Government of Madhya Pradesh. The Committee formed by the State Government was comprised of the senior officers of M.P. Power Management Company Ltd., Energy Department, SLDC, MP Genco. Chief Engineer (IRP), Central Electricity Authority was also a Member of the Committee. M.P. Power Management Company Limited is having a State Planning Cell which is carrying out the work of planning capacity addition in generation and transmission sectors. The senior official of the State Planning Cell was also a Member of the Committee. The reports of the Committee have also been annexed by the petitioner in its submissions.

18. The Commission further noted that the Committee with the assistance of State Planning Cell assessed the future electricity demand as well as availability in the State of Madhya Pradesh on the long term basis. The methodology used for assessing the demand was “Partial End Use Method (PEUM) as prescribed by the Central Electricity Authority. The petitioner stated that the PEUM is a combination of time series analysis and End Use method and is a “bottom up” approach focusing on end users or final energy requirements

of different categories of consumers like domestic, commercial, irrigation, industrial, public lighting, water works, etc. While analyzing and arriving at the growth indicators, due considerations were given to the energy conservations initiatives and technological changes. The Petitioner further submitted that after submission of report, by the Committee; it was revisited looking to the higher growth in domestic category demand due to SOUBHAGYA Yojana on account of electrification of huge number of houses and higher growth due to Government policies for industrial and agricultural sectors. After arriving the energy requirement, peak demand in terms of MW was calculated by the Committee / State Planning Cell considering the suitable load factor. One of the Members of the Committee was the Senior Officer of the Central Electricity Authority which is a technical arm of Central Power Ministry. The Central Electricity Authority officer who was also a member of the Committee had also analyzed the CUF of the solar & wind power projects so as to arrive at the future availability from these renewable sources of energy particularly during the peak load hours. The Committee analyzed the future demand and availability projections up to the financial year 2029-30. As per the Committee report the state may start facing peak deficit during the Rabi Season from the year 2023-24 onwards. The Committee also worked out peak deficit on yearly basis which is showing an increasing trend. The final recommendation in the Committee reports and thereafter considering Tilaiyya UMPP & NTPC projects, the generation capacity addition to the tune of 3960 MW is envisaged during the period 2023-24 to 2028-29 in a phased manner, to fill up the gap during peak deficit during this period. The Committee proposed capacity addition of 660 MW units each in the years 2023-24 to 2028-29. So on the basis of the Committee Reports, detailed analysis by State Planning Cell/ PMCL and State Government approval, the Petitioner has sought in principle approval for capacity of 3960 MW upto the year 2029-30. Out of which it has been planned to add capacity of 4x660 MW through competitive bidding process and 2x660 MW capacity addition by the M.P. Power Generating Company Ltd. in order to ensure that the state is able to continue 24x7 power supply to the domestic, non-domestic (commercial), industrial and water works categories of consumers similar to the supply arrangement at present. Even the MP state Load Despatch Center has recommended for additional capacity of thermal unit of 660 MW as spinning reserve for the safety and security of the grid. As the substantial time is required for new thermal capacity addition under Design, Build, Finance, Own and Operate (DBFOO) basis, in a separate IA filed by the petitioner, the Commission allowed

the petitioner to commence the process of competitive bidding for long term power procurement of 1320 MW from new thermal power units to be situated in M.P.. The commencement of the process was allowed for the said 1320 MW capacity (2x660 MW) with the condition of final outcome of this main Petition No.27 of 2019. The petitioner has already started the process of competitive bidding for procurement of 1320 MW power.

19. In light of the aforesaid deliberations, comprehensive study carried out by the State Planning Cell of M.P. Power Management Company, recommendations of the Committee constituted by the State Government as well as the approval of the State Government on these study and recommendations, it is envisaged that in order to avoid situation of peak deficit in future, there is a need to plan the capacity addition on long term basis, which is to the tune of 3960 MW in a phased manner till FY 2028-29 so as to ensure continuity of 24x7 power supply as per the State Government and Central Government mandate. However, the Commission observed that for capacity addition of 1320 MW by MP Genco, neither coal linkage is available nor the administrative approval of the State Govt. is available at present. Because of uncertainty of this State Genco project as stated above, the Commission is not considering this much capacity of 1320 MW at this stage and directs the Petitioner to come up for complying the aforesaid requirement after obtaining the appropriate approvals. Further, vide Annexure –5 attached with submission dated 4.11.2019, the petitioner has submitted a list of 29 projects which have not been considered by the petitioner in future availability due to non-availability of coal/gas linkages, indefinite delay of the projects or some other critical reasons. In spite repeatedly asking for the firm view with regard to these projects, the submissions made by the petitioner still showing uncertainty in respect of some of the projects which have also been highlighted in the foregoing paras.

20. In view of deliberations in the foregoing paras and uncertainty regarding State Genco project and some of the projects listed in Annexure –5 attached with submission dated 4.11.2019 of the petition, the Commission at this stage accords approval for 2x660 MW thermal power capacity additions through competitive bidding process (DBFOO). With regard to the remaining capacity of 2960 MW, the Commission directs the petitioner to take up the matter with the concern IPP/Generators and furnish a definite scenario with regard to each project. The capacity addition planned by MP Genco also needs to be

furnished on firm basis so that after getting a clear view on these projects, the Commission may take further view on capacity addition of remaining 2640 MW. The Commission has directed the petitioner to comply with the aforesaid requirement within a period of three months from the date of this order failing which this petition shall be stand disposed of.

(Shashi Bhushan Pathak)
Member(Law)

(Mukul Dhariwal)
Member

(Dr. Dev Raj Birdi)
Chairman