

# BEFORE THE MAHARASHTRA ELECTRICITY REGULATORY COMMISSION, MUMBAI

Filing No: \_\_\_\_\_

Case No. 59 of 2017  
Date: 2<sup>nd</sup> November 2017

## IN THE MATTER OF

Petition of Maharashtra State Power Generation Company Limited (MSPGCL) for approval of Capital Cost and Tariff determination of Koradi Units # 8, 9 & 10, Chandrapur Units # 8 & 9, Parali Unit # 8 - Case No. 59 of 2017

AND

## IN THE MATTER OF

Maharashtra State Power Generation Company Limited (MSPGCL)

**Petitioner**

Prayas (Energy Group), Pune

**Consumer Representative / Applicant**

## SUBMISSION FROM PRAYAS (ENERGY GROUP) REGARDING MATTERS IN CASE No. 59 of 2017

This submission by Prayas (Energy Group) is in response to the petitions under case no. 59 of 2017, and the additional submissions made in these matters. We participated in the public hearing dated 26<sup>th</sup> October 2017 conducted in this regard and have submitted a brief presentation that captures our main comments and suggestions. This submission elaborates on those issues with more details. We request the Commission to accept this submission on record and to allow us to make further submissions in these matters, if any.

### I. Summary of the Petition

Maharashtra State Power Generation Company Limited (MSPGCL) has submitted this petition for approval of capital costs and tariff determination for its six new units, namely Koradi Units 8, 9, 10 (3 x 660 MW), Chandrapur Units 8 & 9 (2 x 500 MW) and Parli Unit 8 (250 MW).

Table 1 gives the Hard Cost, IDC and Total Cost of all three projects, as well as the additional capitalization claimed by MSPGCL. Table 2 gives the fixed and variable cost of the projects.

**Table 1: Capital cost claimed for approval by MSPGCL (in Rs. Cr)**

| Particulars   | Koradi Units 8, 9 & 10 | Chandrapur Unit 8 & 9 | Parli Unit 8 |
|---|------------------------|-----------------------|--------------|
| Hard Cost   | 10125                  | 4609                  | 1470         |
| IDC   | 3830                   | 2244                  | 727          |
| Total Cost  | 13955                  | 6854                  | 2198         |
| Less (FERV Gain)  | -104                   |                       |              |
| Less unbilled revenue from infirm Power                 | 2                      |                       |              |
| <b>Capital cost for Tariff</b>                          | <b>13849</b>           | <b>6854</b>           | <b>2198</b>  |
| <i>Rs. Cr per MW</i>                                    | <i>6.99</i>            | <i>6.85</i>           | <i>8.79</i>  |
| Additional capitalization post COD (up to cut-off date) | 972.92                 | 920.09                | 148.2        |
| Additional capitalization post COD (after cut-off date) |                        | 20.98                 |              |
| <i>Rs. Cr per MW (incl. additional capitalisation)</i>  | <i>7.49</i>            | <i>7.80</i>           | <i>9.38</i>  |

Source: MSPGCL's petition in case no. 59 of 2017.

**Table 2: Variable Cost and Fixed Cost in Rs. per unit for all three projects as claimed by MSPGCL**

| Koradi (3x660 MW)           | FY 2015-16 (Unit 8) | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 |
|-----------------------------|---------------------|------------|------------|------------|------------|
| Fixed Cost (Rs. per kWh)    | 5.65                | 3.75       | 1.98       | 2.25       | 2.21       |
| Variable Cost (Rs. per kWh) | 2.97                | 2.57       | 2.51       | 2.51       | 2.51       |
| Total (Rs. per kWh)         | 8.62                | 6.32       | 4.49       | 4.75       | 4.72       |
| Chandrapur (2x500 MW)       | FY 2015-16          | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 |
| Fixed Cost (Rs. per kWh)    |                     | 3.01       | 2.02       | 2.29       | 2.26       |
| Variable Cost (Rs. per kWh) |                     | 2.39       | 2.38       | 2.38       | 2.38       |
| Total (Rs. per kWh)         |                     | 5.40       | 4.41       | 4.67       | 4.65       |
| Parli (250 MW)              | FY 2015-16          | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 |
| Fixed Cost (Rs. per kWh)    |                     | 69.59      | 2.48       | 2.87       | 2.83       |
| Variable Cost (Rs. per kWh) |                     | 7.35       | 2.90       | 2.90       | 2.90       |
| Total (Rs. per kWh)         |                     | 76.95      | 5.37       | 5.77       | 5.72       |

Source: MSPGCL's petition in case no. 59 of 2017.

As can be seen from the tables above, the projects are extremely expensive with all units above Rs. 7.5 crore per MW and with Parli Unit 8 over Rs. 9 crore per MW. The high variable costs of the units also calls into question the amount they will be able to generate given their place in the Merit Order Dispatch (MOD) stack. Delays in project implementation have played a major role in the capital cost increase and there seem to be quite a few concerns regarding fuel arrangements as well as operational efficiency. This submission delves into these issues in more detail.

## II. Delays leading to increase in costs

As can be seen from Table 3 below, there were huge delays in the Commissioning of these projects, with an average delay of 50 months, which led to a significant increase in the Interest during Construction (IDC). The result is that the IDC, which was usually around 15% of the total cost for previous MSPGCL projects, is nearly a third of the total cost of these projects.

**Table 3: Delays (in months) and IDC as a % of Total Cost**

| Plant/Unit        | Planned COD as per Board resolution | Actual COD | Delay in months | IDC as % of total cost |
|-------------------|-------------------------------------|------------|-----------------|------------------------|
| Koradi Unit 8     | 01-11-2012                          | 16-12-2015 | 38              | 25%                    |
| Koradi Unit 9     | 01-05-2013                          | 22-11-2016 | 43              | 29%                    |
| Koradi Unit 10    | 01-11-2013                          | 17-01-2017 | 39              | 30%                    |
| Chandrapur Unit 8 | 01-09-2011                          | 04-06-2016 | 58              | 31%                    |
| Chandrapur Unit 9 | 01-12-2011                          | 24-11-2016 | 61              | 35%                    |
| Parli Unit 8      | 05-01-2012*                         | 19-11-2016 | 59              | 33%                    |

Source: MSPGCL's petition in case no. 59 of 2017. \*No date specified in the board resolution, so this date is calculated as LoA date plus the contract period.

If we compare the final costs to those approved by the Board, we find that the entire cost increase for Koradi and Chandrapur is as a result of the increase in IDC. For Parli, however, both the Hard Cost and IDC have increased substantially. This can be seen in Table 4.

**Table 4: Comparison of Board approved and final capital costs (Rs. Cr)**

| Particulars | Koradi U8,9&10 |                |            | Chandrapur U8&9 |                |            | Parli U8 |                |            |
|-------------|----------------|----------------|------------|-----------------|----------------|------------|----------|----------------|------------|
|             | Claimed        | Board approved | Difference | Claimed         | Board approved | Difference | Claimed  | Board approved | Difference |
| Hard Cost   | 10019          | 9997           | 22         | 4609            | 4715           | -105       | 1470     | 1183           | 287        |
| IDC         | 3830           | 1883           | 1947       | 2244            | 785            | 1459       | 727      | 192            | 536        |
| Total Cost  | 13849          | 11880          | 1969       | 6854            | 5500           | 1354       | 2198     | 1375           | 823        |

Source: MSPGCL's petition in case no. 59 of 2017.

From this and the previous table, it is clear that the increase in total cost is mostly on account of IDC which in-turn is a result of poor project management. The delays can be attributed to negligence on the part of MSPGCL on the following two fronts:

### Delays due to failure in managing timely execution of BTG and BOP contracts

The BTG and BOP works for all six units were delayed. However, adequate data that could help assess the reasons for delay was not submitted by MSPGCL, despite demands for the same during the Technical Validation Sessions (TVS). Data not submitted by MSPGCL includes:

- CEA and consultant's report on delays
- Form 14 and its sub-sections of the formats specified by MERC

With regard to timely project completion and securing MSPGCL against cost overruns due to contractor's negligence, the following was submitted by MSPGCL as part of its petition:

*"The Contract provided sufficient deterrent clauses to facilitate timely and smooth completion of the project.*

- *Contract Performance Guarantee: Failing to achieve trial operation within time period specified/ Failing to complete the supply of all mandatory spare within specified time limit: Liquidated damages at 1/2% of contract price along with applicable PV per week of delay or part there of subject to the maximum 10% of the contract price along with applicable PV.*
- *Penalty for Poor Performance: In case of poor performance in stated performance parameters, the contractor is rectify the equipment and prove the performance capability, failing to which various penalties were stipulated in the contract. These penalties were independent of penalties/ liquidated damages levied for delay.*
- *Overall cap for liquidated Damages: Overall cap for liquidated damages for delay in completion of work and shortfall in performance of main plant equipment has been restricted to 25% of the total contract price."*

Given that these clauses provide a 'sufficient deterrent' as per MSPGCL against cost overruns, MSPGCL should provide complete information on the use of these clauses to recover costs from its contractors. This is especially important seeing as the Liquidated Damages claimed by MSPGCL as liable to be paid under the contracts cover only 15%-20% of the total IDC of the projects (See Table 5). Considering that the cap on Liquidated Damages is 25% of the total contract price, this amount should be significantly higher if all the delays are attributable to BTG and BOP contractors. The Commission should direct MSPGCL to claim Liquidated Damages to the maximum permissible limit under the respective EPC contracts for all the units.

**Table 5: Liquidated Damages retained versus IDC (Rs. Cr)**

| Project               | LD liable as per contract without considering PV | Retained payments | IDC     | LD as % of IDC |
|-----------------------|--|-------------------|---------|----------------|
| Koradi (3x660 MW)     | 808.68   | 641.28            | 3829.67 | 21%            |
| Chandrapur (2x500 MW) | 386.45   | 369.51            | 2244.43 | 17%            |
| Parli (250 MW)        | 102.82   | 128.28            | 727.3   | 14%            |

Source: MSPGCL petition in case no. 59 of 2017 as well as MSPGCL's replies to TVS

In addition to the Liquidated Damages clause, MSPGCL contracts also include more stringent clauses such as the Contractor's Default clause. This clause allows the following:

*"1. If the contractor shall neglect to execute the works as defined in the contract with due diligence and expedition or shall refuse or neglect to comply with any reasonable orders given to him in writing by the Engineer in connection with the works or shall contravene the provisions of the contract, the Owner may give a notice in writing to the contractor to make good the failure, neglect or contravention complained of. Should the contractor fail to comply with the notice within 30 days from the date of service thereof, then and in all such cases, the owner shall be at liberty to employ other workmen and forthwith execute such part of the works as the contractor may have neglected to do or, if the owner shall deem fit, it shall be lawful for him, without prejudice to any other right he may have under the contract, to take the works wholly or in part out of the contractor's hand and re-contract with any other person or persons to complete the works or any part thereof.*

*The owner shall be entitled to retain and apply any balance which may otherwise be due to the contractor or such part thereof, as may be necessary, to the payment of cost of executing the said part of the works or of completing the works. If the cost of executing the said part of the works or of completing the works thereof as aforesaid shall exceed the balance due to the contractor, the contractor shall pay such excesses. Such payment of excess amount shall be independent of the liquidated damages for delay, which the Contractor shall have to pay if the completion of works is delayed.*

*In addition, such action by the owner as aforesaid shall not relieve the Contractor of his responsibility to pay liquidated damages for delay in completion of the works as defined in this contract.*

*2. The termination of the contract under this clause shall not entitle the Contractor to reduce the value of the performance guarantee nor the time thereof. The performance guarantee shall be valid for the full value and for the full period of the contract including 90 days after the end of the guarantee period.”*

This clause, thus, allows MSPGCL to get the works finished by another party if the contractor is negligent. It is clear from the information submitted by MSPGCL that it did not employ this clause. Thus, it would seem that MSPGCL did not use its powers under the contract to the fullest extent to protect itself and its consumers from cost increases. In this regard, it is important that MSPGCL explain why it did not exercise its powers under this clause even as the project became increasingly delayed.

Given that MSPGCL contractually had the option of getting the work completed on time without incurring any additional cost and it chose not to, no cost arising on account of contractor’s delay should be passed on to consumers. Therefore, the Commission should determine the delay that can be attributed to the contractors and the entire IDC on this account should not be allowed.

### **Delays in Commissioning post full load operation**

It can be seen from Table 6, which gives the delays between actual/planned full load operation and COD, that there is an average delay of almost one year between the actual/planned full load operation and actual COD.

**Table 6: Delays after full load operation**

| Plant/Unit                     | Full load operation | Actual COD | Delay in days |
|--------------------------------|---------------------|------------|---------------|
| Chandrapur Unit 8 <sup>*</sup> | Mar-15              | Jun-16     | 461           |
| Chandrapur Unit 9 <sup>*</sup> | Oct-15              | Nov-16     | 420           |
| Koradi Unit 8 <sup>@</sup>     | Mar-15              | Dec-15     | 290           |
| Koradi Unit 9 <sup>@</sup>     | Mar-16              | Nov-16     | 266           |
| Koradi Unit 10 <sup>@</sup>    | Mar-16              | Jan-17     | 322           |
| Parli TPS Unit 8 <sup>§</sup>  | Mar-16              | Nov-16     | 245           |

Source: Dates as per CEA broad status report or as mentioned in correspondence with MoEF. \* MSPGCL letter to the Ministry of Environment and Forest (MoEF) dated 12th August 2015, @ MSPGCL letter to the MoEF dated 18th December 2014 § CEA Broad Status Report.

It is unclear if this delay between full load operation and COD are due to delays by contractors. In case of Koradi Unit 8, 9 & 10, it seems that delay in achieving COD could also be attributable to MSPGCL’s failure in complying with conditions specified in the environment clearance for these units. Regarding the issue of FGD installation at Koradi TPS, the Expert Appraisal Committee (EAC) in the minutes of its 60<sup>th</sup> meeting held on 27<sup>th</sup> July 2016 notes as follows:

*“(2.2.1) According to the background documents circulated by the PP to the EAC Members for this 60th EAC meeting on 27th July 2016, and as informed to the EAC by the MoEFCC representatives, the PP’s proposal was appraised by the EAC in its meetings held in August 2009, and September 2009. In the later meeting, the EAC had recommended the proposal for EC subject to installation of FGD. EC for the above TPP had been accorded on 04.01.2010 with a validity of 5 years to start operations by the TPP. The Specific Condition No. (i) of the EC was that, “FGD with one unit of 660 MW will be installed initially to begin with and the requirement, if any, for the installation of FGD system with the other two units will depend upon the prevalent ambient levels of SO<sub>2</sub>. Provision for installation for FGD in all units shall be made”. The validity of the EC was extended vide letter dated 27.03.2015 till 30.06.2016 to start the production/operation of all the Units of the TPP.*

*(2.2.2) Even before issue of the EC in Jan 2010, the PP had been approaching the Ministry/EAC for waiver of installation of FGD in their plant. Accordingly, the matter was considered by the EAC in its meetings held in December 2009, April-May 2010, & August, 2012. The EAC and the MoEFCC did not however agree to the waiver.*

*(2.2.3) According to the background documents circulated by the PP to the EAC Members, after the PP obtained Consent to Operate (CTO) from the MPCB, Unit 8 “has been declared for commercial operation” from 16.12.2015. However, when approached by the PP in Jan 2016, the MPCB did not agree to issue the CTO for Unit 9, “and asked to install the FGD to at least one unit”. Thereafter, the MAHAGENCO Board had approved FGD installation on the third unit i.e. Unit 10. With this, MAHAGENCO once more approached MPCB in April 2016 for CTO for Unit 9; however, MPCB “has not considered our request and asked for obtaining the amendment of EC regarding the FGD condition from MoEF for issue of C to E”.*

***(2.2.4) Further, according to the background documents circulated by the PP to the EAC Members, the Chief Minister of Maharashtra had last year in July 2015 taken up the matter with the Union Environment Minister. The Union Environment Minister in August 2015 had however not agreed to the request.***

*(2.2.5) Now, the PP vide online application dated 09.06.2016 has inter-alia, stated that MAHAGENCO shall abide by the Ministry’s Notification dated 07.12.2015 regarding the stack emission levels of TPP on or before 07.12.2017. In addition, in the background documents circulated by the PP to the EAC Members, it has been requested that now that the Dec 2015 Notification has been issued, the MoEFCC is requested to “.....kindly amend the condition of FGD in the EC and permit to install the FGD / SO<sub>2</sub> control systems upto 7/12/2017 in line with the Gazette Notification.....”*

***(2.2.6) In the light of the above background, the EAC in this 60th meeting on 27th July 2016 was not clear why the PP had yet again approached the EAC for waiver of the FGD installation. During discussions, a view was also put forward that the EC condition reproduced in para 2.2.1 above did not mean that FGD had to be installed in the first unit itself – it could be installed in any of the three Units 8,9, or 10. It was however pointed out that in the EC condition, very specific words had been used i.e. “initially”, immediately followed by “to begin with”. Not only***

**common usage, but even the dictionary meaning of these words would make it amply clear that the intention was for FGD installation in the first unit to come on stream, in this case Unit 8.**

(2.2.7) The PP informed that monitoring of SO<sub>x</sub> from stack of Unit 8 is now being done regularly and the value is found to be less than 50 ppm. It was also informed by the PP that as some of the old units i.e. Unit Nos. 1 to 4 have been shut down permanently and Unit No. 6 is under R & M, the value of SO<sub>x</sub> at the GLC is also stated to be much less than the prescribed standards and thus, installation of FGD plant was not done in Unit No. 8. Therefore, installation of FGD plant was thought up to provide in any of the three Units.

(2.2.8) In this connection, the CEA representative further informed that another unit i.e. Unit 5 of 200 MW capacity also have been shut down permanently which in turn has further reduced Ambient SO<sub>2</sub> level. The installation of FGD in the unit/s should be considered in consonance with Revised Emission Norms for Thermal Power Plants published by MOEF&CC dated 7th December 2015

**(2.2.9) In passing, the EAC noted that the documents submitted by the PP didn't have any detailed comparative data of the AAQ, year wise i.e. baseline data, when old plants were shut down and when Unit-8 came into operation along with stack emission data, year wise. However, quite apart from this, the EAC was of the view that since the PP has approached the EAC for FGD waiver for the reasons recorded in para 2.2.5 above, bringing up monitoring data by the PP was not justified. If the PP now wished to have his case of FGD waiver considered on the basis of new /additional information, the proper course would be for the PP to first approach the MoEFCC since the MoEFCC, at the level of the Union Environment Minister, had earlier not agreed to the request (ref para 2.2.4 above). The MoEFCC could then, if it so desired, refer the matter to the EAC. The EAC was of the further view that seeking FGD waiver on the grounds put forward by the PP was itself not correct –the 2015 Notification was actually meant to 'strengthen' the ECs already granted, and not to 'weaken' the existing ECs by diluting the already laid down conditions.**

(2.2.10) The PP's proposal for FGD waiver was not considered further in the light of the reasons recorded in para 2.2.9 above.

(2.2.11) The EAC also noted the following:-(i) **that the PP has violated/not-complied with the said EC condition as the Unit-8 is in operation without FGD and also no initiative, so far, has been taken for installation of FGD for Unit-8. (ii) as recorded in para 2.2.1 above, the validity of the EC was till June 16 for all the units to come into operation. The validity of the EC had thus already expired. The EAC recommended that the MoEFCC may take appropriate action on (i) and (ii).**

(2.2.12) The Ministry was also requested to provide to the PP a copy of the representation received by the EAC vide e-mail dated 27.07.2016 for requisite action by the PP and the Ministry in line with the decision recorded under Agenda item 3.1 of the 59th EAC meeting held during 14-15 July, 2016." **(Emphasis added)**

The above minutes indicate that the EAC has held the Project Proponent (PP), i.e. MSPGCL responsible for violating the EC conditions regarding installation of FGD. It would seem that this failure has resulted in further delay in getting the appropriate consent to operate the plant, which in-turn delayed the commercial operation.

**Table 7: Cost of FGD (Rs crore)**

| Particulars                    | Koradi Units 8, 9 & 10   | Chandrapur Unit 8 & 9 | Parli Unit 8 |
|--------------------------------|--------------------------|-----------------------|--------------|
| Cost of FGD envisaged (Rs. Cr) | 400.5 (for Unit 10 only) | 726.91                | 78.81        |

Source: MSPGCL's petition in case no. 59 of 2017.

The installation of FGD in Unit 10 of Koradi, in Chandrapur and Parli will cost an additional Rs. 400 crore, Rs. 727 crore and Rs. 79 crore respectively (See Table 7).

Thermal power plants have huge environmental impacts and we believe that any prudent costs arising on account of efforts made towards reducing such adverse impacts should be allowed recovery through tariff. Also, since such costs are on account of statutory requirements, and being a section-62 power project, MSPGCL would be entitled to recover such costs through tariff, subject to prudence check. Hence, it is not clear why the said conditions were not duly complied with. Further, it is important to note the significant increase in costs on account of the delay in COD as a result of failure to comply with the conditions specified in the environment clearance. Hence, any cost arising on account of such failure should not be passed on to consumers. It is worth noting that the IDC claimed by MSPGCL for Koradi units (Rs. 3830 crore) is more than thrice the cost of installing say, FGDs in all three units (Rs. 400 crore x 3) of Koradi.

Similarly, in the case of Chandrapur, the original environment clearance was accorded by MoEF on 30.01.2009 and was valid only till January 2014. However, as per the documents available on the MoEF website, post expiry of the validity of this clearance, MSPGCL seems to have approached the MoEF for an extension only in August 2015. After such an application by MSPGCL, the MoEF extended the validity of the clearance on 31st March 2016. Thereafter, MSPGCL got the consent to operate the two units from the Maharashtra Pollution Control Board (MPCB) on 13<sup>th</sup> May 2016 and commercial operation for Unit-8 was declared in June 2016.

The MERC should take a serious note of such lapses and review whether any delay on part of MSPGCL in securing the necessary clearances has delayed commercial operation. If the delay is not on account of such reasons, MSPGCL should explain the time elapsed between the scheduled and/or actual full load operation and the actual date of commercial operation. MERC should not only disallow any costs arising on account of MSPGCL's failure to comply with environmental regulations, but also issue appropriate directions to avoid such issues in future.

### **Need for better monitoring**

In order to fully appreciate the impact of the delays, it is important to understand the context in which this capacity addition was approved. It was during the period when MSEDCL was facing one of its worst supply deficits that this capacity addition was approved. However, given the delays in Commissioning



coupled with the changing context of distribution sector in light of falling prices of renewable energy based generation and an increase in sales migration means that this capacity is likely to be underutilized. Further, the high cost of this capacity means that even backing it down is going to be a costly affair. Such issues in capacity addition planning underscore the need for continuous monitoring of such process by the Commission, as the cost of these failures is ultimately borne by the consumers or the taxpayers. Prayas has repeatedly highlighted these issues in planning and sought a public review of the on going as well as planned capacity addition in the state.

It is important to note that the Commission has initiated a suo moto process in this regard under the case no. 42 of 2017 and in fact this petition was filed in response to that process. In light of the multiple planning failures highlighted above and given the cost implications of such failures, we would like to reiterate the need and urgency of taking forward the suo moto process initiated by the Commission.

### III. Fuel Arrangements

Currently, all six units are relying on a combination of Bridge Linkages (from SCCL and WCL) and transfer of coal from other plants to meet their fuel requirement (See Table 8).

**Table 8: Coal supply arrangements for the Third Control period (2016-17 to 2019-20)**

| Particulars  | Sanctioned Bridge linkages |               |                        |              |
|--|----------------------------|---------------|------------------------|--------------|
| Financial Year ->                                      | 2016-17                    | 2017-18       | 2018-19                | 2019-20***   |
| Koradi 3x660MW   | 5.425                      | 6.508         | 6.508 (3.469*+3.039**) | 6.508        |
| Chandrapur 2x500MW                                     | 3.328                      | 3.47          | 3.47 (1.454*+2.016**)  | 1.967        |
| Parli 1x250MW  | 0.433                      | 0.865         | 0.865                  | 0.865        |
| <b>Total bridge linkage (a)</b>                        | <b>9.186</b>               | <b>10.843</b> | <b>10.843</b>          | <b>9.34</b>  |
| <b>Auto transfer/Coal through flexible use of coal</b> | <b>4.23</b>                | <b>4.23</b>   | <b>4.23</b>            | <b>4.23</b>  |
| <b>Production Plan (MMT) from Gare Palma (c)</b>       |                            |               |                        | <b>0.25</b>  |
| <b>Expected Coal availability (d) = (a + b + c)</b>    | <b>13.416</b>              | <b>15.073</b> | <b>15.073</b>          | <b>13.82</b> |
| <b>Yearly coal requirement (e)</b>                     | <b>13.82</b>               | <b>13.82</b>  | <b>13.82</b>           | <b>13.82</b> |
| Shortfall /(surplus) of coal ( f ) = (e) – (d)         | 0.404                      | -1.253        | -1.253                 |              |

Source: MSPGCL petition in case no. 59 of 2017.

MSPGCL was allotted the Gare Palma II block in Chhattisgarh by the Ministry of Coal via Allotment Order dated August 31, 2015 and is in the process of developing the same. However, MSPGCL, in its reply to TVS queries, has stated that the economic viability of the project is in question.

*“Considering the lower grade coal as appears in wash ability test report of GP-II coal mine, the expected landed cost of coal at End Use Plants and consequently the per unit rate of generation cost will be on the higher side Therefore, the economical viability of the GP-II coal mine project is in question. MSPGCL is in process of ascertaining the coal quality of GP-II coal mine and thereof the techno-economic feasibility of development of Gare Palma Sector II Coal Mine.”*

However, in the same reply, it states that there is no change in the timeline for development of the project. Thus, production from Gare Palma II is expected from 2019-20.

Opening a mine is a highly capital intensive process and any decision in this regard should be taken only if it is the least cost fuel source for the generator. In light of the concerns regarding the coal quality, as also expressed by MSPGCL, it would not be prudent to make such costs fait accompli for the consumers. Hence, MSPGCL should first demonstrate that the coal from the proposed mine is indeed the least cost, most optimum fuel source for the concerned units. This should be done while considering the fact that under the new policy of flexible utilization of domestic coal by generating stations, MSPGCL can optimize its existing coal linkages in a manner that would allow it to reduce its overall variable cost of generation. Out of its total coal based installed capacity of 10,380 MW, about 4,522 MW is supposed to be backed down in FY 17-18 for economic reasons. As mentioned earlier, going forward, with increasing open access and higher role of renewable energy sources, the annual utilization of coal based generating stations is expected to be low. Given such flexibility in managing coal supply and possibility of excess coal on account of planned backing down, MSPGCL will need to demonstrate the economic benefit of opening a new mine.

Therefore, without complete clarity regarding the full cost implications, Gare Palma II should not be allowed to become a liability for the consumers and the Commission should undertake due public process and fully satisfy itself regarding the cost-benefit analysis of developing the block before allowing any cost in this regard.

#### **IV. Performance**

##### **Plant Load Factor (PLF)**

Post the declaration of commercial operation it is the responsibility of the generator to ensure normative availability of the plant. However, on account of multiple reasons, as discussed below, the PLFs are lower than the normative 85%.

Firstly, given the high variable costs of the units, they rank low in the Merit Order Dispatch (MOD) stack. This is especially true in case of Parli Unit 8, which does not make it to the MOD stack most months.

Secondly, there have been a large number of outages in these units since April 2017. As Table 10 shows, most of these outages were related to the operations of the plant and not on account of coal shortages. Interestingly, Koradi Unit 10 was shutdown for 63 days, from February 2017 to April 2017, due to Performance Guarantee Test even though it declared COD in January 2017.

The Commission should take serious note of such performance issues and clearly identify whether the units are fit for commercial operation. Given the high number of forced outages and lack of availability during high demand period, capital costs in the respective financial year should be disallowed proportionately to the extent that the units have been unavailable.

**Table 9: PLF (%) and Variable Cost since April 2017**

| PLF (%)                                    | 2015-16 | 2016-17 | Apr-17 | May-17 | Jun-17 | Jul-17 | Aug-17 | Sep-17 |
|--|---------|---------|--------|--------|--------|--------|--------|--------|
| Koradi U8                                  | 48%*    | 54%     | 66%    | 63%    | 48%    | 59%    | 48%    | 66%    |
| Koradi U9                                  |         | 57%*    | 74%    | 58%    | 57%    | 57%    | 67%    | 14%    |
| Koradi U10                                 |         | 15%*    | 26%    | 25%    | 53%    | 63%    | 65%    | 52%    |
| Chandrapur U8                              |         | 60%*    | 74%    | 77%    | 65%    | 78%    | 84%    | 83%    |
| Chandrapur U9                              |         | 61%*    | 57%    | 81%    | 75%    | 80%    | 52%    | 60%    |
| Parli U8                                   |         | 2%*     | 19%    | 36%    | 9%     | 0%     | 0%     | 6%     |
| Variable Cost from MOD stack (Rs. Per kWh) |         |         | Apr-17 | May-17 | Jun-17 | Jul-17 | Aug-17 | Sep-17 |
| Koradi U8, 9, 10                           |         |         | 2.53   | 2.74   | 2.64   | 2.62   | 2.57   | 2.5    |
| Chandrapur U8 & 9                          |         |         | 2.34   | 2.33   | 2.34   | 2.38   | 2.36   | 2.17   |
| Parli U8                                   |         |         | 2.78   | 2.95   | 3.00   | 3.03   | 3.02   | 3.02   |

Source: MSPGCL's response to queries and MSLDCs Reports. \* is for stabilisation period.

**Table 10: Outage since April 2017**

| Unit/Station  | Total no. of days | Days due to coal receipt | Major reason (days)                          |
|---------------|-------------------|--------------------------|--|
| Koradi U8     | 9                 | 0                        | All outage due to problems with equipment    |
| Koradi U9     | 27                | 23                       | Coal shortage (23)                           |
| Koradi U10    | 41                | 6                        | Work of Performance Guarantee (PG) Test (11) |
| Chandrapur U8 | 5                 | 0                        | All outage due to problems with equipment    |
| Chandrapur U9 | 30                | 0                        | All outage due to problems with equipment    |
| Parli U8      | 152               | 12                       | Zero scheduling (103)                        |

Source: MSLDC Weekly System Reports from April to September 2017.

### **Station Heat Rate**

Regulation 44.8 of the MERC MYT Tariff Regulations 2015 states “Gross Station Heat Rate for New Coal and Lignite based thermal power Generating Stations /Units achieving COD after April 1, 2016 shall be equal to 1.045 times the Design Heat Rate (kcal/kWh)...Provided that the Design Heat Rate shall not exceed the following maximum design Unit Heat Rates depending upon the pressure and temperature ratings of the Units.”

The maximum design heat rate for Koradi units as per the 2015 MYT regulations is 2151 kcal/kWh which means the gross station heat rate to be approved for this capacity should be 2248 kcal/kWh instead of 2265 kcal/kWh as has been claimed. Same principle should be followed for all the units.

Any increase in the heat rate beyond the value allowed in the regulations should not be allowed.

### **Specific Coal Consumption**

There are two unexplained issues with regards to the specific coal consumption (See Table 11):

- The specific coal consumption of the 660 MW supercritical Koradi units is 0.610 unit/kWh, comparable to the 0.636 unit/kWh for the 250 MW subcritical Parli Unit 8.
- The specific coal consumption of the 500 MW Chandrapur units is the highest at 0.705 units/kWh, much higher than that of Parli Unit 8.

**Table 11: Specific coal and oil consumption for the units**

| For FY 2017-18 - FY 2019-20 | SHR  | Raw Coal-Specific Fuel consumption (unit/kWh) | FO-Specific Fuel consumption (KL/kWh) | LDO-Specific Fuel consumption (KL/kWh) |
|-----------------------------|------|---|---------------------------------------|--|
| Koradi 8, 9, 10             | 2265 | 0.610   | 0.4                                   | 0.100                                  |
| Chandrapur 8 & 9            | 2364 | 0.705   | 0.4                                   | 0.100                                  |
| Parli 8                     | 2422 | 0.636   | 0.4                                   | 0.100                                  |

Source: MSPGCL's petition in case no. 59 of 2017.

MSPGCL should explain the reasons for such high specific coal consumption, especially for Chandrapur and for the super-critical units, as it defeats the very purpose of opting for such technology.

### **V. Parli Unit 8**

Amongst all the units concerned in this petition, Parli Unit-8 stands out for its multiple inefficiencies. To begin with, it is the only one, which has substantial increases in both hard cost and IDC making its fixed cost Rs. 2.83 per unit. Variable cost is in excess of Rs. 2.91 per unit, which means that it will not make it to the MOD stack for most part of the year. Even in MERC's order in Case no. 48 of 2016, the monthly MOD stack approved by the Commission (which assumed a rate of 2.76 for Parli Unit 8) did not envisage it generating from more than three months in 2017-18. Hence, not surprisingly, its PLF has been below 10% for the last four months.

It also has a high SHR at 2422 Kcal/kWh and its location makes the freight charges higher than the basic cost of coal (See Table 12). Being situated in a drought-prone area, water availability for the plant is also uncertain. It needed special permission from the Government of Maharashtra for its trial run, and then was shutdown due to lack of water. After its COD, it was shutdown for 118 days in 2016-17. Thus, given all these characteristics it becomes apparent that the unit will have very little role to play in terms of catering to the routine demand of MSEDCL.

Under such circumstances, the Commission can take the following steps to ensure that MSEDCL consumers do not bear any undue share of the burden arising from these various issues:

- Disallow all costs pertaining to delays and imprudent capital expenditure to limit the fixed cost of the plant
- Impose stringent performance parameters so that whenever the plant is available it will run at optimum cost

- Direct MSEDCL and MSPGCL to explore arrangements, which can utilize this capacity in spite of its high cost. Some examples of such arrangements could be utilizing this capacity for managing seasonal variability or peak demand, bidding this capacity in tenders invited for peak period power purchase undertaken by other states, etc.

Without the above cost optimization measures and in the absence of any innovative/alternate arrangements, this capacity is unlikely to be utilized in the normal demand-supply circumstances of MSEDCL.

**Table 12: Price of Raw Coal (Rs. per MT)**

| For FY 2017-18 - FY 2019-20    | Koradi 8, 9, 10 | Chandrapur 8 & 9 | Parli 8 |
|--------------------------------|-----------------|------------------|---------|
| Basic Cost                     | 1575            | 1806             | 1348    |
| Freight                        | 1100            | 264              | 1353    |
| Royalty , taxes and cess       | 855             | 938              | 877     |
| Any other charges              | 283             | 124              | 529     |
| Transit loss                   | 1%              | 1%               | 1%      |
| Total price incl. transit loss | 3843            | 3157             | 4141    |

Source: MSPGCL's petition in case no. 59 of 2017.

## VI. Prayers

In light of the points made above, we pray to the Commission as follows:

- 1) Disallow all the costs arising on account of delays in declaring COD. The Commission should determine delay that can be attributed to the EPC contractors and disallow all the IDC pertaining to this delay. The Commission should also thoroughly review and evaluate whether lapses, if any, in MSPGCL's compliance with environment regulations have resulted in prolonging the delay in declaring COD of the said units and if so, consider issuing specific directions to MSPGCL in this regard. Any costs arising on account of such lapses should not be passed on to consumers.
- 2) In connection with the issue of delays, MSPGCL be directed as follows.
  - i) Liquidated damages to the maximum permissible limit under the respective EPC contracts should be claimed for all the units.
  - ii) Management's response in dealing with the delays in project execution should be placed on record. Specifically, whether the possibility of exercising powers such as risk purchase and/or contractor's default clause in the EPC contracts was considered at any point of time and what actions, if any, were taken in this regard by the management should be clearly stated.

- iii) Reports on delays by the CEA and consultant should be published on MSPGCL's website in an easily accessible manner. The reports should be text searchable and easy to download.
- 3) MSPGCL should be directed to demonstrate with evidence that coal from Gare Palma II is indeed the least cost best fuel source for the concerned units. For this purpose MSPGCL should compare the cost of coal from this mine with all the other possible sources, including the possibility of utilising excess coal from its backed down and/or decommissioned units. Without public scrutiny of such data and the claims of MSPGCL, no cost arising out of the coal block development should be passed on to the consumers.
  - 4) All the newly Commissioned units have reported forced outages for long durations and hence the Commission should review the reasons for such poor performance. To the extent that the units have been unavailable on account of such forced outages, capital costs in the respective financial year should be disallowed proportionately.
  - 5) Disallow any increase in Station Heat Rates beyond the maximum allowable heat rate as per the appropriate MYT regulations.
  - 6) As submitted above in Section V, consider the suggested cost optimization measures and direct MSPGCL and MSEDCL to explore alternatives for making Parli Unit 8 economically viable.
  - 7) In light of the many issues regarding project Commissioning and management, accelerate the suo-moto process initiated by MERC under case no. 42 of 2017 to review MSPGCL's capacity addition plans.
  - 8) Similarly, in light of variable cost related issues review the coal utilisation strategy of MSPGCL and evaluate whether the flexibility in managing linkages is being fully used to reduce variable cost.

We once again request the Commission to accept this submission on record and to allow us to make further submissions in these matters, if any.

Thanking you

Sincerely

Ashwini Chitnis and Saumya Vaishnava

Prayas (Energy Group), Pune