Before the

MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

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Case No. 27 of 2006

In the matter of

MSEDCL Petition for Approval of Power Purchase Agreement with M/s Lanco Energy Private Limited for purchase of saleable energy from their 500 MW Teesta VI Hydro Electric Project in Sikkim

Dr Pramod Deo, Chairman
Shri A. Velayutham, Member
Shri S. B. Kulkarni, Member

ORDER

Dated: June 26, 2007

Maharashtra State Electricity Distribution Company Limited (MSEDCL) filed a petition on 30th August 2006 under Sections 61 to 64 of the Electricity Act, 2003 for approval of long-term power procurement from M/s Lanco Energy Private Limited (LEPL) for purchasing saleable energy from its 500 MW (4 x 125 MW) Teesta Hydro Electricity Project, Stage-VI to be developed in South Sikkim, along with a copy of the Power Purchase Agreement (PPA) executed with LEPL dated 29th August 2006. The following were the main prayers in the Petition:

1. *"To examine the PPA enclosed with the Petition and approve the terms and conditions of the PPA.*
2. *Pass such further and other orders as the Hon. Commission may deem fit and proper keeping in view the facts and observations of the case."*

2. MSEDCL, in its Petition, submitted that the PPA executed with LEPL is in accordance with Ministry of Power Guidelines and National Tariff Policy (NTP) as the Project has been offered to MSEDCL prior to January 6, 2006 and the Project has submitted the application for Financial Appraisal to a Financial Institution prior to January 6, 2006.

3. The Commission examined the relevant provisions of National Tariff Policy (NTP) and subsequent clarifications issued by Ministy of Power (MoP), to assess the adherence of PPA to the provisions of NTP. The relevant provisions of NTP and clarifications issued by MoP are as follows:

Section 5(1) para 3 of NTP stipulates as follows:

> *"All future requirement of power should be procured competitively by distribution licensees except in cases of expansion of existing projects or where there is a State controlled/owned company as an identified developer and where regulators will need to resort to tariff determination based on norms provided that expansion of generating capacity by private developers for this purpose would be restricted to one time addition of not more than 50% of the existing capacity".*

<u>Ministry of Power (MoP) Clarifications</u>

The clarifications issued by Ministry of Power (MoP) on March 28, 2006 in response to CERC letter in this regard clarifies as follows:

> *"The power generation projects which satisfy any of the following conditions would be well within the provision of Tariff Policy:*
>
> *……..Where the appraisal of any power project has started before 6.1.2006 by relevant financial institutions for lending funds to the project on the basis of appropriate evidence of process of procurement of power by any utility, such procurement would be treated as falling outside the scope of clause 5.1 of the Tariff Policy provided that in all such cases final PPA is filed before the Appropriate Commission by 30th September, 2006.*
>
> *In case of hydro projects where detailed project report (DPR) has been submitted to the CEA/CWC before 6.1.06 for concurrence (except for projects where concurrence of DPR is not mandatory) and appropriate evidence of process of procurement of power by any utility exists before 6.1.2006, such procurement would be treated as falling outside the scope of clause 5.1 of the Tariff Policy provided that in all such cases final PPA is filed before the Appropriate Commission by 30th September, 2006."*

4. The Commission, vide letter dated September 19, 2006, directed MSEDCL to submit additional information under affidavit. The information sought by the Commission and MSEDCL's response to the same, vide its letter dated September 30, 2006, is given below:

a) Date of Submission of DPR to CEA

MSEDCL submitted that the DPR of 500 MW Teesta Hydro Electric Project was filed by Lanco Energy Private Limited with CEA for appraisal and concurrence on March 3, 2006 and M/s Lanco have informed MSEDCL that they are in process of obtaining the final concurrence from CEA.

b) Commencement of Appraisal of Project by Financial Institution

MSEDCL submitted that M/s Lanco Energy Private Ltd. had filed an application for sanction of Term Loan for the Project with Rural Electrification Corporation (REC) on December 27, 2005. MSEDCL also attached a certificate dated August 2, 2006, from REC to this effect.

c) Long Term Power Procurement Plan

MSEDCL submitted a statement dated July 12, 2006 regarding Power Procurement Plan along with a list of approved MSPGCL, Central Sector, Inter State and Private Sector power projects and their expected date of Commercial Operation. MSEDCL considered CAGR of 6.65% for evening peak load requirement and projected evening peak shortfall of 3232 MW in the year 2011-12.

d) Capacity in the Inter State Transmission system for power evacuation

MSEDCL submitted a letter from MSETCL dated September 30, 2006, stating that while carrying out the Load Flow Study, MSETCL would make appropriate provision for transmission of this power to MSEDCL.

e) Evacuation of power from Sikkim

MSEDCL submitted a copy of letter dated August 30, 2006 to PGCIL for arrangement of long term access for evacuation of 500 MW power from Sikkim. MSEDCL also submitted a copy of letter dated September 5, 2006 written by LEPL to PGCIL with revised application for long term Open Access.

f) Landed cost of power

MSEDCL submitted that the long term fixed and flat rate at LEPL's bus bar at Sikkim as agreed in the PPA with LEPL is 2.32 Rs/kWh. Adding to MSEDCL, the total transmission loss of 8% i.e. 18.56 paise/kWh, wheeling charges of 20 paise/kWh at current applicable costs and income tax and other incidental charges of 5 paise/kWh results in proposed landed cost of Rs 2.75/kWh at MSEDCL periphery.

g) Justification for the cost of power

MSEDCL submitted the following justification for accepting fixed and flat tariff of Rs. 2.32 per kWh:

i) Fixed tariff mitigates the risk of increase in tariff due to various factors. Only variation in tariff would be due to change in law and taxes.

ii) In the power shortage condition prevailing in Maharashtra, the tariff rate of Rs.2.32/kWh will be a relief, particularly, when MSEDCL has to purchase costly power from traders at Rs.5.40 /kWh.

iii) LEPL is to provide 2121 MU p.a for the first 15 years and 2049 MU p.a for the next 10 years.

5. The Commission examined the additional information submitted by MSEDCL and observed that the Petition satisfies the following conditions mentioned in the clarification given by the Ministry of Power vide its letter No. 45/2/2006-R&R, dated March 28, 2006:

a) the loan sanction process was initiated prior to January 6, 2006
b) MSEDCL has submitted the Petition for approval of PPA to the Commission before September 30, 2006.

As the Petition is thus outside the purview of Clause 5.1 of the National Tariff Policy regarding procurement of future power requirement only through competitive bidding process, the Commission admitted the Petition for further Regulatory Process.

6. The Commission, vide letter dated November 21, 2006, informed MSEDCL regarding scheduling of the public hearing on January 9, 2007, at Vista Hall, Centre No.1, 30th Floor, World Trade Centre, Cuffe Parade, Mumbai- 400 005 and directed MSEDCL to publish the Public Notice in newspapers, accordingly.

7. In compliance of instructions received from the Commission, MSEDCL published a Public Notice on 1st December, 2006 in various English and Marathi newspapers inviting objections/ suggestions/ comments on the proposed long-term power procurement.

8. The Commission received only one response from Prayas (Energy Group) before the public hearing. The public hearing was held on 9th January 2007. During the public hearing, Shri. Nikit Abhyankar, Research Associate, Prayas made a power-point presentation in support of their submissions.

9. Shri A.D Palamwar, Director (Operations), MSEDCL and Shri D.V Rao, Joint Managing Director, LEPL also made presentations and responded to the objections of Prayas and to the queries raised by the Commission. Various issues raised during the Public Hearing are discussed below:

Scientific Demand Forecast and Capacity Addition Plan

Prayas pointed out that MSEDCL has not yet submitted a scientific demand forecast and an integrated capacity addition plan despite repeated directions from the Commission and requests made by Prayas.

Shri. A.D Palamwar submitted that with regard to the issue of demand forecast, MSEDCL and the Government of Maharashtra have decided to adopt the 16^{th} EPS prepared by CEA.

The Commission observed that similar submission of MSEDCL stands discarded vide its earlier Order in Case No. 22 of 2005 and in spite of that position MSEDCL has failed to initiate any proactive steps towards carrying out scientific demand forecast.

Technical Validation Session

Prayas objected that the viability of the Project and its contribution to reduction in the demand-supply gap in the area of supply of MSEDCL, and other incidental and ancillary issues, has not been previewed by the Commission before inviting public comments as envisaged under a Technical Validation Session. The Proposal lacks clarity and has severe data gaps, which could have been addressed at the technical validation stage itself.

Deviation from approved routes

Prayas submitted that MSEDCL has deviated from the approved routes prescribed under the National Tariff Policy (NTP) for long-term power procurement, being (i) tariff based competitive bidding route, or (ii) PPA approval route. Though present proposal follows neither of the above two routes, MSEDCL has not provided any justification for such deviation. For the second route, capital expenditure vis-à-vis technical parameters of the Project are to be approved by the Commission.

Project not a Peaking Plant

Prayas submitted that considering that the water flow is the key determinant of the power generation from any run of river based hydro project, a significant variation in the same is ascertainable from analysis of the hydrological data. The lean season of the Teesta river is from the months of November to April and full capacity generation from the Project would be possible only during the months of June to September. Incidentally, the Central Electricity Authority has observed [*ref. letter of CEA received in the month of July, 2006*] that the Project would be able to generate at full capacity only during three monsoon months. Further, the power generation from the Project is fully dependent on the water outflow of Teesta V (which is located at the upstream of Teesta VI). These observations of the CEA, in effect, reveal that LEPL does not have control over Teesta VI, even during the monsoon season and therefore, the Project may not be identified as a peaking plant.

Shri. A.D Palamwar clarified that the Project (run of river) is not a peaking plant as reflected by Prayas and MSEDCL has entered into the PPA with LEPL on a "take and pay" obligation.

The Commission observed that the Project may not be a peaking plant but the viability of generation from the Project to meet the peak demand expected in the summer months, and daily energy demand, needs to be considered. This necessitates the scientific demand forecast to be undertaken by MSEDCL to assess the growing energy demand in the State of Maharashtra. Shri. Palamwar submitted that the present situation requires MSEDCL to urgently procure power and a demand forecast may be submitted after the demand-supply gap is substantially minimized.

The Commission enquired whether the Project, being a run-of-the-river project, is dependant solely on the water flow from the Teesta river, Stage-V.

Shri. Rao submitted that LEPL has intermediary catchments (in the way of 23.5 meter high barrage) to run the Project for about 1.2 hours at full capacity of 500 MW, without being dependant on the water flow of the Teesta river, Stage-V. Therefore, LEPL would be able to run the Project during the lean season for 3.7 hours at full capacity with contribution from Stage V in any of the 90% dependable year.

Generation Tariff

Prayas submitted that it is not mentioned in the PPA whether the procurement at the fixed rate of Rs. 2.32/- per kWh will remain fixed for 25 years, though the same has been mentioned in the Executive Summary of the Petition. Annexure D to the PPA provides that the applicable tariff per year, i.e., Rs. 2.32/- per kWh is estimated based on the assumption of "sales to MSEDCL of 2121 MU per year for first 15 years and 2049 MU thereafter". Thus, there is a possibility of rise in tariff in case MSEDCL off take less than 2121 MU in a given year.

Shri A.D Palamwar made a power-point presentation and presented a chart showing monthly generation profile of the Project. Shri Palamwar submitted that the tariff has been fixed at Rs. 2.32/- per kWh for the saleable generation between 2121 MU and 2049 MU per year and the tariff would be fixed and there would be no variation from such rate, irrespective of the actual off take.

Lack of clarity and key technical data in PPA

Prayas submitted that on perusal of the petition and the PPA, it has been observed that the following data essential for according approval for the power procurement, has not been provided:

(i) Key technical details such as capital cost or tariff, which are crucial for determining viability, have not been provided;

(ii) Basis for determining the capital cost for the Project as Rs. 2997 crore or Rs. 6 crore per MW;

(iii) Break-up of the capital cost for procurement of each Project component;

(iv) Factors determining viability of procurement of power from the Project;

(v) Considering that the Teesta river is a North-eastern Himalayan glacial river, MSEDCL has not clearly stated the months during which maximum energy would be generated from the Project.

(vi) Impact of power purchase under this PPA on the retail tariff;

(vii) Details of generation pattern;

(viii) Details of seasonal variation in power output from the Project.

Low debt-equity ratio

Prayas submitted that the debt-equity ratio envisaged by LEPL for project financing is 80:20 [70% comprising of primary debt and 10% comprising of secondary debt] whereas a debt-equity ratio of 70:30 is considered while calculating generation tariff. Such a debt-equity ratio results in higher weighted average cost of capital and higher generation tariff. The debt-equity ratio of 80:20 may be allowed for the benefit of the consumers of MSEDCL that will result in a reduction in tariff by about 10 paise per kWh.

Transmission Charges

Prayas pointed out that while calculating the landed cost of power, MSEDCL has included the cost of transmission charges payable to the Western Region CTU only. Transmission charges payable to the Eastern Region CTU and the STU have to be also considered to arrive at the actual landed cost at the MSEDCL boundary. The actual landed cost of the power is substantially above

Rs. 3/- per unit, which will remain as a contractual obligation of MSEDCL for 25 years for the supply of non-peaking power.

The Commission enquired whether:

i) Transmission charges payable to the CTU-Eastern Region and to the STU have been taken into consideration while computing landed cost?
ii) MSEDCL has entered into any agreement with MSETCL for the payment of transmission charges?
iii) Whether the CTU (PGCIL) is making any additional investment for MSEDCL or whether the existing transmission network of the CTU-Western Region, over which MSEDCL has a right of transmission open access, is sufficient for MSEDCL for transmission of this power
iv) The quantum of transmission charges to be paid to the CTU-Eastern Region, in view of MSEDCL gaining open transmission access rights by the year 2011.

The Commission directed MSEDCL to analyze whether the central sector transmission charges are required to be paid in view of any change in corridor capacity or whether any spare capacity exists for the transmission of power from this Project.

Shri. A.D Palamwar submitted that MSEDCL has advanced an amount of Rs. 12.7 crore to the CTU for undertaking an initial survey and investigation. The CTU, along with its regional strengthening plans, would be calculating the quantum of transmission charges to be borne by MSEDCL. An assurance has been received from the CTU that transmission access would be available to MSEDCL. MSEDCL has further made appropriate arrangements with the STU to avail transmission access at the DISCOM boundary.

The Commission observed that although corridor availability has been assured by the CTU and the STU, whether the transmission charges payable have been negotiated and finalised.

The Commission observed that nevertheless, MSEDCL must undertake analytical research to clarify the abovementioned observations of the Commission. MSEDCL must undertake necessary due diligence to justify the payment of transmission charges.

Shri. Rao submitted that LEPL had initially applied to the CTU for required clearances in the month of April 2005 to allow MSEDCL transmission open access for the Project. LEPL has re-applied for the said clearance after including a comfort letter from MSEDCL after execution of the PPA on 29th August 2006. Thereafter, LEPL has received a written communication from the

CTU requiring the payment of fees to study the transmission corridor allocation plan from the delivery point of the Project to the DISCOM boundary of MSEDCL.

Shri. Rao submitted that the Project is located about 40 km from Siliguri where an interconnection CTU point is located. This CTU interconnection point has capacity to evacuate 500 MW power. LEPL is preparing to construct cables linking the delivery point of the Project to the said CTU interconnection point at Siliguri. That apart, the CTU has made a plan to evacuate the entire 500 MW power from a pooling point located at lower Sikkim. LEPL would not access the 132 kV line available in Sikkim in the absence of any transmission utilities in the State. LEPL would construct the transmission linkage upto the CTU interconnection point at Siliguri at its own cost and such activity would not lead to cost escalation for MSEDCL.

Deemed Generation

The Commission observed that the contractual obligations in the PPA on the aspect of deemed generation is not adequately protecting the interest of MSEDCL. As per the PPA, when capacity is available and MSEDCL fails to procure power, LEPL is vested with the right to be compensated at fixed cost and not at variable charge. However, MSEDCL is not vested with a similar right of compensation at fixed cost, when power is not available for generation and MSEDCL requires drawal of power. MSEDCL needs to clarify these vital aspects.

The Commission enquired that, as per the PPA, what is the basis of LEPL charging MSEDCL recovery of deemed generation at fixed cost, when LEPL has been granted the right to sell the quantum of energy unutilized by MSEDCL, to a third party?

Shri A.D Palamwar submitted that LEPL has been granted recovery of deemed generation as per fixed charge on account of it solely bearing the total hydrological risk for the Project. The PPA is only an energy contract, wherein MSEDCL has no contractual liability towards hydrological risks.

Shri A.D Palamwar submitted that the provisions in the PPA are in consonance with the spirit of the Electricity Act, 2003 to give a comfort level to the generator in the business of generation of power. Shri. Palamwar submitted that MSEDCL is exempted from the “take or pay” (deemed generation) liability for not drawing power during an overall duration of 175 hours in any year, provided the dam/barrack of the Project does not overflow. The “take or pay” liability would arise when MSEDCL fails to draw power over the said duration of 175 hours in one year. Since the maximum flow of water is expected during the monsoon months, MSEDCL does not foresee any unavoidable situation when the dam/barrack of the Project would overflow resulting in the said exemption being extinguished/ curtailed.

The Commission observed that the "take or pay" obligation of MSEDCL should be counter-balanced with an obligation of LEPL to give guaranteed supply of a minimum quantum of power. It appears that MSEDCL is taking a major risk while committing itself with a "take or pay" obligation without requiring the generator to guarantee supply of a minimum quantum of power, considering the power shortage prevailing in the State of Maharashtra.

Shri A.D Palamwar submitted that it has been inadvertently submitted that MSEDCL has entered into a "take *or* pay" obligation. In reality, MSEDCL has committed to a "take *and* pay" obligation under the PPA.

Conditions Precedent

The Commission directed MSEDCL to submit in writing the latest status of way lease, MoU, sanction of loans, availability of transmission corridor, etc., and all other items of conditions precedent specified in the PPA. On the issue of taxation, the Commission observed that aspects concerning change in tax obligation vis-à-vis tariff implication have not been clearly specified in the PPA.

Environmental Clearance

The Commission enquired whether the Project has received environmental clearances. Shri. Rao submitted that the same has been received from the Ministry of Environment and Forests.

Time/Cost overrun

The Commission enquired on the nature of adjustment if the Project faces any time-overrun or cost-overrun.

Shri. Rao submitted that the PPA is an equitable one and any cost-overrun and time-overrun would be absorbed/considered by LEPL equitably, vis-à-vis hydrological risks. On being further questioned, Shri. Rao submitted that the time-overrun and cost-overrun would be calculated on the basis of schedule of 60 months from the financial closure for FY 2006-07. MSEDCL will not be subjected to any cost escalation and LEPL would be accountable solely for any cost escalation till financial closure. The CEA has approved the completed project cost at Rs. 3253.08 crore considering a cost escalation at 5% over the DPR cost being Rs. 2996.89 crore.

The Commission directed LEPL and MSEDCL to submit the present-day project cost and the annual percentage of cost escalation. Shri, Rao undertook to submit the said details, while reiterating that cost escalation would be solely borne by LEPL.

The Commission further observed that nevertheless, LEPL should make best efforts to prevent any time-overrun leading to delay in availability of power. Shri. Rao submitted that, as agreed in the PPA in case of time-overrun, LEPL would bear the transmission charges for MSEDCL.

Appointment of pre-qualifying engineering Consultants

On being queried by the Commission whether LEPL and MSEDCL have agreed on the appointment of pre-qualifying engineering consultants, Shri Rao submitted that the approval of the power procurement being pending before the Commission, no appointment has been yet finalized but the same is in process and project lenders are going to appoint the same.

Tariff Model

As regards tariff, Shri Rao confirmed that it is a fixed and flat tariff enumerated well in 'Schedule D' of PPA document with all assumptions elaborated. The Commission observed that the soft copy of the tariff model should be submitted to the Commission.

Risk Analysis

The Commission directed MSEDCL to submit a detailed analysis of the risks involved in the Project that may lead to non-availability of power.

6. On January 13, 2007 Prayas submitted additional comments as follows:

- It became clear during the public hearing that certain documents such as DPR, Tariff Model, etc., were submitted by LEPL/MSEDCL to the Commission or MSEDCL. However, the Commission did not hold the technical validation session for identifying the data gaps and consistency of these documents. Prayas submitted that considering criticality of such documents in determining the generation tariff, generation pattern and financial impact on consumers, it is advised to have technical validation session in such cases. Further, Prayas requested to share the key documents (DPR, TEC by CEA, Tariff Model, etc.) with the consumer representatives.
- The Project would generate power for 24 hours between June and September which are monsoon months and demand is much less than the peak season. For rest of the months, the plant would generate 500 MW for 3-5 hours and hence the generation during monsoon period will be about 50% of the total generation. As the landed cost of power

would be in range of Rs 3.25/kWh, MSEDCL proposal envisages a must run base load plant during monsoon months for next 25 years with landed cost of Rs 3.25/kWh, which appears very high for base load hydel generation.

- As per provisions of PPA, in case MSEDCL fails to draw the contracted energy, MSEDCL would have to compensate LEPL the difference between the tariff payable by MSEDCL and the third party tariff in case third party tariff is less than tariff payable by MSEDCL.
- This PPA would have implications for next 25 years and hence justifying the techno-economic viability of the project based on current power shortages would be inappropriate. Therefore, a scientific demand forecast and integrated capacity addition plan on least cost principles should be submitted by MSEDCL. Prayas requested the Commission not to approve any long term power purchase arrangements proposed by MSEDCL unless it submits the aforesaid forecast and integrated capacity addition plan.

7. Subsequently, the Commission vide its letter dated January 22, 2007, directed MSEDCL to submit additional information. The information asked by the Commission and submissions made by MSEDCL dated February 23, 2007, is summarized below:

a) <u>Detailed Demand Forecast</u>

The Commission directed MSEDCL to submit the detailed demand forecast and long term power procurement plan.

MSEDCL submitted that Govt. of Maharashtra is in process of engaging a committee of experts for demand forecasting for the State of Maharashtra. Meanwhile, MSEDL has requested to approve the said proposal considering the severe power deficit in the State.

b) <u>Deviations in tariff structure vis-à-vis that specified in MERC (Terms and Conditions of Tariff) Regulations, 2005</u>

MSEDCL submitted that the tariff has been computed on the basis of CERC (Terms and Conditions of Tariff) Regulations, and single part tariff has been agreed in the PPA due to following reasons:

i) The tariff varies significantly from Rs 2.65 per unit to Rs 1.41 per unit. With the proposed single part tariff structure, initial higher cash outflows are obviated without increasing the financial liability of MSEDCL.

ii) Capacity charges in the two part hydro tariff as per MERC Regulations makes the procurer liable for entire hydrological risk, while in present single part tariff structure the hydrological risk is avoided because MSEDCL is not obligated to pay any capacity charges.

c) <u>Year-wise tariff calculations along with supportive workings</u>

MSEDCL submitted year-wise tariff computations with the spreadsheet model supporting the computations as follows.

Year	Total Cost (Rs.Million)	Units Generated (MU)	Net Saleable units (MU)	Tariff per Unit (Rs/kWh)
1	5135.78	2440.53	2121.89	2.42
2	5074.96	2440.53	2121.89	2.39
3	5632.11	2440.53	2121.89	2.65
4	5491.85	2440.53	2121.89	2.59
5	5352.51	2440.53	2121.89	2.52
6	5214.14	2440.53	2121.89	2.46
7	5076.78	2440.53	2121.89	2.39
8	4940.48	2440.53	2121.89	2.33
9	4805.27	2440.53	2121.89	2.26
10	4617.21	2440.53	2121.89	2.20
11	5216.89	2440.53	2121.89	2.46
12	5085.27	2440.53	2121.89	2.40
13	4954.95	2440.53	2121.89	2.34
14	4825.98	2440.53	2121.89	2.27
15	4698.43	2440.53	2121.89	2.21
16	4571.24	2440.53	2049.56	2.23
17	2854.74	2440.53	2049.56	1.39
18	2894.2	2440.53	2049.56	1.41
19	2935.33	2440.53	2049.56	1.43
20	2978.22	2440.53	2049.56	1.45
21	3022.93	2440.53	2049.56	1.47
22	3069.54	2440.53	2049.56	1.50
23	3118.15	2440.53	2049.56	1.52
24	3168.82	2440.53	2049.56	1.55
25	3221.67	2440.53	2049.56	1.57

* Cost includes O&M, Depreciation, Interest on rupee term loan, interest on working capital loa
Income tax, Environmental Cess, Return on Equity

d) <u>Details and Basis of Design Energy, Auxiliary energy and Energy Computations</u>

MSEDCL submitted the DPR of Teesta-VI Hydro Electric Project to the Commission.

e) <u>Basis of arriving at Net Energy for sale to MSEDCL including assumptions made and estimated month wise estimated generation</u>

MSEDCL submitted the month-wise Design Energy Generation in 90% Dependable Year (1994-95) alongwith following assumptions to calculate net energy:

i) Aux. Consumption assumed at 0.7% as per MERC Regulations

ii) Transformation Losses assumed at 0.5% as per MERC Regulations

iii) The quantum of free power to Sikkim taken as 12% for first 15 years and 15% from 16th to 25th year.

The gross energy generation computed with installed capacity of 500 MW is 2440 MU and Net Energy for sale to MSEDCL is 2121 MU for first 15 years and 2049 MU from 16th to 25th year.

f) <u>Status of all the Conditions Precedent, all clearances, financial closure and list of lenders to the project</u>

MSEDCL submitted the status of Conditions precedent, clearances and financial closure and also submitted the list of indicative Lenders to the Project.

From the status of Conditions Precedent submitted by MSEDCL, it is observed that substantial progress on several Conditions Precedent is yet to be made.

g) <u>Estimated Cost along with assumptions and details of escalation considered and supporting workings</u>

MSEDCL submitted the estimated project cost and the basis and assumptions, as follows:

Current Estimated Cost with basis and assumptions

Sr No	Description	Amount (Rs Crore)
1	Total Direct Charges	2580.16
2	Total Indirect Charges	24.17
3	**Total**	**2604.33**
4	FC and IDC	424.51
5	W/C Margin Money	30
6	**Total Cost(Exc. Escalation)**	**3058.84**
7	Escalation Charges	284.35
8	**Total Cost(Inc. Escalation)**	**3343.19**

Escalation Calculations (Rs Crore)

Description	Year- 1	2	3	4	5	Total
Civil Cost	466.69	520.87	520.87	87.43	466.69	**2062.54**
E&M Cost	54.18	0	0	433.43	54.18	**541.79**
Effective Escalation Rate						
Civil	4.25%	8.68%	13.30%	18.11%	23.13%	
E&M	1.25%	2.52%	3.80%	5.09%	6.41%	
Escalation Value						
Civil	19.83	45.21	69.27	15.84	107.97	**258.13**
E&M	0.68	0	0	22.08	3.47	**26.23**
Total	**20.51**	**45.21**	**69.27**	**37.92**	**111.44**	**284.36**

h) Landed cost of power along with the basis considering Wheeling Charges, Transmission Charges, and Transmission Losses etc.

MSEDCL submitted that the estimated landed cost per unit at MSETCL bus is calculated to be Rs 2.831/- per unit after taking into account the Transmission Losses and Transmission Charges. MSEDCL stated that though the landed cost comes to Rs. 2.831/-, in the Petition they have filed for landed tariff of Rs 2.75/- per unit which includes all the charges and also includes provision of 5 paise per unit for Income tax and other incidentals.

MSEDCL has submitted that it is also taking up the matter with CTU for negotiating the transmission charges by utilizing existing spare capacity from its allocated capacity.

i) Capacity Charge for CTU transmission facility and status of the current transmission system to meet the power evacuation requirements

MSEDCL submitted that it has filed an application with CTU for Long Term Open Access and CTU vide letter dated October 18, 2006, has intimated that the transmission system planned for implementation by year 2011 would not be able to transfer 500 MW power to Maharashtra. MSEDCL has engaged the services of PGCIL to study the details of exact evacuation arrangement and investments required.

j) Risks involved in case of non-supply of power due to non availability of open access

MSEDCL submitted that the following clauses from the PPA (Article 9.1.3 – Breakdown of Grid/ Non- availability of open access, Article 4.3.5 – Non availability of open access for a longer duration and Article 4.3.6(i) - Early synchronization of power station) address the various risks associated with non- availability of open access.

k) Taxes payable in addition to the tariff quoted by LEPL

MSEDCL submitted that the tariff computation already factors in the following taxes:

i) Income tax holiday as applicable

ii) Corporate Income Tax @30% and surcharge @10%

iii) MAT @7.5% and surcharge @10%

iv) Education Cess of 2%

v) Environmental Cess to be paid to Govt. of Sikkim @1 paise/kWh

l) Rebate clause in the PPA with respect to MERC Regulations

MSEDCL submitted that since LEPL is assuming all geological risks and cost overrun risk, granting of rebate was not agreed upon by LEPL during negotiation of PPA, and MSEDCL has agreed for the same.

m) Penalty for non supply of committed power

MSEDCL submitted that the proposed PPA has 'take and pay' arrangement, wherein MSEDCL is not paying any Capacity Charges and in such case, if the Seller is unable to achieve a minimum generation, it has an in-built penalty mechanism.

n) Sale of Secondary Energy

MSEDCL submitted that as per the terms of PPA, the total electrical energy generated, i.e., the Design Energy and Secondary Energy is available for sale to MSEDCL

8. The Commission has analysed the PPA submitted by MSEDCL executed with LEPL and the replies to the queries submitted by MSEDCL. The Commission's views on some of the critical issues are discussed in following sections.

Compliance with MERC (Terms and Conditions of Tariff) Regulations, 2005

9. Regulation 24.2 of MERC (Terms and Conditions of Tariff) Regulations, 2005 stipulates as follows:

"The Commission shall review an application for approval of power purchase agreement / arrangement having regard to the approved long-term power procurement plan of the Distribution Licensee and the following factors:

(a) Requirement for Power Procurement under approved long-term power procurement plan;

(b) Adherence to transparent process of bidding in accordance with guidelines issued by the Central Government;

(c) Adherence to the terms and conditions for determination of tariff specified under part (E) of these regulations where the process specified in part(b) above has not been adopted;

(d) Availability (or expected availability) of capacity in intra-state transmission system for evacuation and supply of power procured under the agreement/arrangement;

(e) Need to promote cogeneration and generation of electricity from renewable sources of energy."

Demand Forecast and Long Term Power Procurement Plan

10. Despite repeated directions given by the Commission, MSEDCL has not yet submitted the detailed demand forecast and long term power procurement plan for the approval of the Commission. MSEDCL submitted a statement dated July 12, 2006 regarding Power Procurement Plan along with a list of approved MSPGCL, Central Sector, Inter State and Private Sector power projects and their expected date of Commercial Operation. MSEDCL considered CAGR of 6.65% for evening peak load requirement and projected evening peak shortfall of 3232 MW in the year 2011-12. Further, MSEDCL vide its letter dated February 23, 2007 submitted that Govt. of Maharashtra is in the process of engaging a committee of experts for demand forecasting for the State of Maharashtra. Based on the demand forecasts to be carried out by this Committee, MSEDCL shall prepare a long-term power procurement plan and submit to the Commission, Meanwhile MSEDL has requested to approve this PPA considering the severe power deficit in the State.

11. In the absence of approved long term demand forecast and power procurement plan, and considering the prevalent demand supply situation and huge supply shortfall position, the Commission is constrained to consider MSEDCL's Petition for approval of PPA between MSEDCL and LEPL. However, the Commission directs MSEDCL to carry out long term demand forecasting on scientific basis and prepare the Long Term Power Procurement Plan depending upon the power requirement during peak and off-peak period, which will facilitate the future planning with respect to entering into long term PPAs. In case the execution of long term PPAs results in surplus power availability at any stage in the future, the Commission will approve the power purchase costs of MSEDCL by applying the Merit Order Dispatch (MOD) criteria. However, the Commission directs that MSEDCL must undertake long term demand forecast on scientific basis to firm up its future procurement plan which will give a mix of base load, intermediate load and peak load and submit the same to the Commission.

Adherence to Terms and Conditions for Tariff under Part E of Tariff Regulations

12. MSEDCL submitted that the tariff has been computed based on the CERC (Terms and Conditions of Tariff) Regulations, however, MSEDCL has adopted a different tariff structure as there is significant variation in tariff over the term of the PPA if the tariff structure as per the Regulations is adopted. In such case, the tariff is front loaded and varies from a maximum of Rs 2.65/kWh to a minimum of Rs 1.41/kWh and with the proposed flat tariff structure, the initial higher cash outflows are obviated without increasing the financial liability of MSEDCL.

13. MSEDCL submitted as per MERC Tariff Regulations, the hydro tariff shall be two part tariff and the power station shall be entitled to recovery of the entire Annual Fixed Charges on achievement of a normative capacity index and thus the entire hydrological risk rests with the procurer. While, in the present PPA, MSEDCL is not obligated to pay any capacity charges separately and shall pay a composite tariff only upon offtake of energy from the Project (except for deemed generation) and hence by adopting flat tariff structure, MSEDCL has avoided the hydrological risk altogether. Further, MSEDCL shall not pay any incentive on account of capacity index, which would have been payable by adopting the MERC Tariff Regulations structure.

14. The Commission's analysis on the basis and assumptions of year-wise tariff computations and levelised tariff computations submitted by MSEDCL is discussed in subsequent paragraphs.

Availability of capacity in Intra-State Transmission System

15. MSEDCL confirmed the availability of intra-State transmission capacity for the power available from Teesta VI Hydro Electric Project and submitted a copy of letter from MSETCL dated September 30, 2006, stating that MSETCL has planned transmission line network considering the demand of 23000 MW for the State at the end of Eleventh Plan (2011-12) and intra State transmission of 500 MW power by MSEDCL from M/s LEPL will be accommodated. MSETCL, in its letter, further mentioned that while carrying out the Load Flow study, MSETCL would make appropriate provision for transmission of this power to MSEDCL after the CTU suggests the injection point on the inter-State boundary of Maharashtra. However, firm contractual arrangements with the various transmission Utilities with appropriate provisions safeguarding MSEDCL's consumers should be put in place before commencement of the Project.

Estimated Capital Cost and Financing Package for the Project

16. The Commission observed that the estimated Capital Cost for the Project mentioned in PPA and considered for tariff determination is Rs 2996.89 Crore. However, the Capital Cost approved by CEA in its concurrence dated December 27, 2006 is Rs 3283.08 Crore including IDC and Financing Charges of Rs 415.73 Crore. CEA, in its concurrence, mentioned that the Capital Cost should not exceed the approved amount, except on account of change in rates of Taxes and Duties and levy of additional taxes/duties, change in Indian Law resulting in change in cost and variation in actual interest rate. The CEA concurrence further mentions that IDC and financing charges shall be as per actuals but not exceeding the amount approved in Concurrence.

17. CEA Concurrence further stipulates that the cost cleared is for the purpose of tying up of funds and the tariff shall be determined by the appropriate Regulatory Commission.

18. In reply to the Commission's query on current estimated capital cost, MSEDCL submitted that the current estimated capital cost of the Project including Escalation is around Rs 3349 Crore. LEPL representative during the hearing submitted that the PPA is an equitable one and any cost-overrun and time-overrun would be absorbed/considered by LEPL equitably, vis-à-vis hydrological risks.

19. The Commission for the purpose of the tariff determination in this Order on approval of PPA between MSEDCL and LEPL has considered the capital cost of Rs 2996.89 Crore as per the DPR submitted by LEPL. The Commission will examine the actual completed Project Cost upon commissioning of the Project and if the actual Project Cost is less than Rs 2996.89 Crore, the same will be considered for tariff determination and tariff will be adjusted accordingly. However, in case the actual capital cost is higher than the capital cost of Rs 2996.89 Crore, the capital cost of Rs 2996.89 Crore shall act as ceiling cost for the purpose of tariff determination.

20. The Debt:Equity ratio mentioned in PPA and considered for tariff determination is 70:30. Further, the CEA in its concurrence has also approved tentative financing package with the Debt:Equity Ratio of 70:30 and mentioned that the final financing package shall not be inferior to the tentative financing package. The summary of financing package approved by CEA and as considered in the PPA for tariff determination is given in following Table:

Table: Financing Package

Description	As approved by CEA in its concurrence	As considered in PPA for Tariff Determination
Debt:Equity Ratio	70:30	70:30
Source of Debt	Indian Currency Debt from Indian Financial Institutions	Indian Currency Debt from Indian Financial Institutions/Banks
Interest Rate on Term Loan	10%	11%
Repayment Period	15 years	15 years
Moratorium Period	Construction Period plus one year	Construction Period plus one year

Based on the information submitted by LEPL, the Commission observed that the LEPL in its loan application has considered the Debt:Equity Ratio of 80:20 consisting of 70% Primary Debt and 10% Secondary Debt. During the hearing, Shri Rao of LEPL submitted that the Debt:Equity Ratio envisaged for the Project is 70:30 and it is proposed to consider secondary debt of 10% as equity.
MERC (Terms and Conditions of Tariff) Regulations, 2005 stipulates "*Any generating station commissioned on or after the date of notification of these Regulations shall be assumed to be financed at normative debt:equity ratio of 70:30*"

21. Therefore, the Commission for the purpose of the tariff determination in this Order on Approval of PPA between MSEDCL and LEPL has considered the Debt:Equity Ratio of 70:30 as per the PPA. The Commission will examine the actual Debt:Equity Ratio upon commissioning of the Project and if the actual Debt Component is higher than 70%, the same will be considered for tariff determination and tariff will be adjusted accordingly. However, in case the actual debt is lower than 70%, the Debt:Equity Ratio of 70:30 shall be considered for the purpose of tariff determination.

22. As regards to interest rate, the Commission has considered the interest rate of 11% as proposed by LEPL considering the prevalent market trends. Further, the Commission has considered the repayment period of 15 years with moratorium as construction period plus one year. The Commission would like to clarify that this financing package considered is tentative financing package for determination of tariff and the final financing package shall not be inferior to tentative financing package considered in this Order. The Commission will examine the actual interest rate and repayment period upon commissioning of the Project and if the actual Financing Package is better than the tentative financing package considered in this Order, the same shall be considered for tariff determination.

Energy Availability Projections

23. As per the provisions of PPA, Saleable Energy available for sale to MSEDCL is defined as total electrical energy generated by the Project including the Infirm Power available for sale (ex-bus) after allowing for Auxiliary Consumption, transformation losses and Royalty.

24. MSEDCL submitted the month-wise Design Energy Generation in 90% Dependable Year (1994-95) along with following assumptions to calculate net energy:

i) Aux. Consumption assumed at 0.7% as per MERC Regulations
ii) Transformation Losses assumed at 0.5% as per MERC Regulations
iii) The quantum of free power to Sikkim taken as 12% for first 15 years and 15% from 16th to 25th year.

The gross energy generation computed with Installed Capacity of 500 MW is 2440 MU and Net Energy for sale to MSEDCL is 2121 MU for first 15 years and 2049 MU from 16th to 25th year.

25. The Commission has considered the saleable energy of 2121 MU for first 15 years and 2049 MU from 16th to 25th year for the purpose of determination of tariff as proposed in the PPA.

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26. As regards the infirm power, the Commission observed that the PPA provides for purchase of Infirm Energy as per the Tariff. However, the Schedule D to the PPA (Schedule on Tariff) specifies the tariff from first Tariff Year and Tariff Year in PPA is defined as “means the period beginning on the COD of the Project and ending on completion of one full year and each successive twelve (12) month period till the Expiry Date”. Thus, the PPA does not specify the tariff at which MSEDCL will purchase the infirm energy from the Project.

27. The Commission is of the view that the revenue from sale of infirm power should be reduced from the Capital Cost while determining the tariff for sale of energy after the COD of each Unit. The Commission directs MSEDCL to suitably incorporate the provision related to tariff payable by MSEDCL for purchase of infirm energy from the Project and treatment of revenue from infirm power, i.e., reduction from the ceiling Capital Cost of Rs 2996.89 Crore in the PPA.

28. As regards sale of secondary energy from the Project, MSEDCL in its reply submitted that as per the terms of PPA, the total electrical energy generated, i.e., the Design Energy and Secondary Energy is available for sale to MSEDCL. The Commission observed that the PPA does not specifically include the sale of secondary energy to MSEDCL. Further, the gross

generation of 2440 MU and Net Energy for sale to MSEDCL, i.e., 2121 MU for first 15 years and 2049 MU from 16th to 25th year considered in PPA does not include the secondary energy.

29. The Commission directs MSEDCL to specifically include the provision for availability of secondary energy from the Project to MSEDCL. Further, the Commission is of the view that the tariff for sale of secondary energy to MSEDCL in this case should not be equal to primary energy rate, as the primary energy tariff is based on single part tariff which includes the recovery of entire Annual Fixed Charges. Therefore, the tariff for secondary energy shall be in accordance with the provisions of Regulation 39(2) and 39(3) of CERC (Terms and Conditions of Tariff) Regulations, 2004, i.e., the lowest variable charges of central sector thermal power generating station of the Western region.

Project Schedule

30. The Project Schedule mentioned in the PPA for achieving the Commercial Operation of the Project is 60 months from the date of Financial Closure. Further, achievement of Financial Closure is mentioned as one of the Conditions Precedent to the PPA and all the Conditions Precedent are to be satisfied within one year from the date of signing of PPA (August 29, 2006), i.e., the Financial Closure has to be achieved by August 29, 2007. Further, during the hearing LEPL informed that the Financial Closure for the Project is likely to be achieved shortly. Based on the submissions made by LEPL during the hearing, the Commission expects that the financial closure of the Project will be achieved shortly, but not later than 6 months from the date of this Order. This Order on approval of PPA will be effective only if the Financial Closure of the Project is achieved within 6 months from the date of this Order.

Deemed Generation and Penalty Provisions

31. As per Clause 4.32 of PPA, in case MSEDCL fails to offtake power for reasons other than CTU breakdown/outages, LEPL shall be free to sell 5% of energy at mutually agreed tariff and any profit resulting out of such sale shall be retained by LEPL and MSEDCL shall not take any deemed generation obligations for such sale. Further, if MSEDCL fails to offtake less than 95% of the contracted energy, MSEDCL would have to compensate LEPL the difference between the tariff payable by MSEDCL and the third party tariff in case third party tariff is less than tariff payable by MSEDCL.

32. Further, as per Clause 4.3.5 of PPA, in case MSEDCL fails to draw the contracted energy due to breakdown of the Grid or non-availability of Open Access, MSEDCL would have to compensate LEPL the difference between the tariff payable by MSEDCL and the third party tariff in case third party tariff is less than tariff payable by MSEDCL.

33. Though the PPA provides for deemed generation provisions in case MSEDCL fails to offtake power, there is no provision for payment of penalty by LEPL in case LEPL is unable to supply contracted energy and hence, to that extent the PPA executed between MSEDCL and LEPL is not a balanced contract. MSEDCL is taking a major risk while committing itself with a "take or pay" obligation without requiring LEPL to guarantee supply of a minimum quantum of power, considering the power shortage prevalent in the State of Maharashtra.

34. In the replies submitted to the queries raised by the Commission, MSEDCL submitted that the proposed PPA incorporates a 'take and pay' arrangement, wherein MSEDCL is not paying any Capacity Charges, and if the Seller is unable to achieve minimum generation, there is an in-built penalty mechanism. The Commission does not agree with the above views of MSEDCL. Even under two part tariff mechansim, the payment of capacity charges is linked to normative capacity index and in case the generating station is not available to generate power, it will affect the capacity index and hence, the recovery of fixed charges. Further, when MSEDCL is entering into long term contract for 25 years, it is presumed that this power will be available to MSEDCL and in case of non-availability of power from this generating station, MSEDCL may have to procure power from alternative sources at higher cost. Therefore, the Commission is of the view that the "take and pay" obligation of MSEDCL should be counter-balanced with an obligation of LEPL to given guaranteed supply of a minimum quantum of power with associated penalties. The Commission directs MSEDCL to suitably incorporate a provision towards this effect in the PPA.

35. Further, the Commission notes that while the PPA provides for sale of energy by LEPL on actual basis, Article 8.0 provides for scheduling and despatch according to IEGC and applicable CERC Tariff Regulations. Article 8.8 specifically provides that '*during any settlement period, LEPL shall pay or receive, as the case may be, the unscheduled interchange charges, without any liability to MSEDCL, in accordance with the CERC Tariff Regulations, until such time as the provisions of the ABT Order pertaining to Unscheduled Interchange is in force and applicable to this project*'.

36. As per the PPA, if LEPL schedules 425 MW for a particular settlement period and generates 450 MW, MSEDCL will pay for 450 MW (as payment is on the basis of actual energy) and at the same time; LEPL will also receive payment (in case of frequency is lower than or equal to 50Hz) through Regional Energy Account for additional injection of 25 MW. This is an undesirable situation and must be avoided. MSEDCL is hereby directed to ensure that such anomaly is removed from the PPA.

Tariff for Saleable Energy

37. Schedule D to the PPA specifies the tariff rate of Rs 2.32/kWh at Delivery Point (busbar of the switchyard of the Project) for the tenure of 25 years. The PPA further provides that the tariff applicable from 26th to 35th year will be negotiated during 25th year with mutual consent between the parties.

38. Upon Commission's directions, MSEDCL submitted the year-wise tariff computations along with with the spreadsheet model supporting the computations. The Commission has examined the tariff computations submitted by MSEDCL. Following are the main assumptions on the basis of which, MSEDCL has estimated the year-wise tariff and levelised tariff:

- Capital Cost – Rs 2996.8 Crore
- Debt:Equity Ratio – 70:30
- Interest on Term Loan – 11%
- Interest on Working Capital Loan – 10.5%
- Loan Repayment – 15 years with a moratorium of 1 year after construction
- Return on Equity – 14% p.a
- O&M Expenses – 1.5% of Capital Cost with an escalation of 4% p.a.
- Net Energy Available - 2121 MU for first 15 years and 2049 MU from 16th to 25th year
- Depreciation and Advance Against Depreciation as per Regulations
- Working Capital as per Regulations
- Income Tax holiday as applicable
- Corporate Income Tax Rate: 30% plus surcharge (10%) plus education cess (2%)
- Minimum Alternate Tax – 7.5% plus surcharge (10%) plus education cess (2%)
- Environmental Cess – 1 paise/kWh to be paid to Govt. of Sikkim
- Discounting Rate for computing levelised Tariff – 12%

The Commission verified the year-wise tariff computations and levelised tariff computation. The levelised tariff for 25 years considering the assumptions mentioned above works out to Rs 2.32/kWh.

The Commission, in its Order on Multi Year Tariff (MYT) Petitions of Maharashtra State Power Generation Company Limited (MSPGCL) and The Tata Power Company-Generation Business has elaborated the hydel tariff mechanism and has approved the single part tariff for hydro generation. Further, As MSEDCL and LEPL have agreed for flat single part tariff instead of two part tariff to smoothen the cashflow of MSEDCL, the Commission accords in-principle approval to single part tariff of Rs 2.32/kWh for primary saleable energy for first 25 years. The Commission will determine the final tariff upon completion of the Project considering the following aspects:

- Actual Capital Cost subject to ceiling Project Cost of Rs 2996.8 Crore
- Actual Means of Finance and Financing Package in accordance with Para 22 and 23 of this Order
- Reduction in Project Cost to the extent of revenue from sale of infirm power
- Variation in Capital Cost due to change in law including change in tax
- Any other impact of change in law and change in tax.

Rebate and Late Payment Surcharge

39. The PPA provides for Late Payment Surcharge in case of delay in payment by MSEDCL, however, there is no provision in PPA to provide rebate for payments made through LC or payments before Due Date. MSEDCL in its reply submitted that granting rebate to MSEDCL for early payment was not agreed upon by LEPL during the negotiations of PPA and MSEDCL has agreed to this as LEPL is assuming the geological risk, cost overrun risk and the hydrological risk, which is not mandated in the Regulations.

40. Further, the PPA provides for Late Payment Surcharge in case of delay in payment of Bill beyond the Due Date which is defined as 30 days from the date of receipt of bill. However, MERC (Terms and Conditions of Tariff) Regulations, 2005 as well as CERC Tariff Regulations stipulates late payment surcharge only for payments delayed beyond a period of two months from the date of billing.

41. The Commission therefore directs MSEDCL to incorporate the provisions of Rebate in case of payment before due date and modify the provisions of Late Payment Surcharge in accordance with Regulation 38 of MERC (Terms and Conditions of Tariff) Regulations, 2005.

42. In exercise of the powers vested in the Commission under Section 86(1) (b) of the EA 2003 and subject to the Petitioner complying with the directions of the Commission given in this Order, the Commission hereby grants approval to the electricity purchase and procurement process of MSEDCL including the in-principle tariff at which the electricity shall be procured through the PPA between MSEDCL and LEPL for supply of power from the 500 MW Teesta-VI Hydro Electric Project in the State of Sikkim being developed by Lanco Energy Private Limited.

43. The Commission directs MSEDCL to submit a copy of amended PPA or amendment to PPA complying with the directions given in this Order to the Commission within one month from the date of this Order.

With this Order, the Commission disposes off MSEDCL's Petition in Case No. 27 of 2006.

Sd/-	Sd/-	Sd/-
(S.B. Kulkarni)	(A. Velayutham)	(Dr Pramod Deo)
Member	Member	Chairman

Secretary, MERC