

**MADHYA PRADESH ELECTRICITY REGULATORY  
COMMISSION**



**Discussion Paper On**

**TARIFF FOR**

**SMALL HYDRO PROJECTS**

**IN MADHYA PRADESH**

**NOVEMBER 2007**

**MADHYA PRADESH ELECTRICITY REGULATORY  
COMMISSION**

**‘Metro Plaza, Bittan Market, Bhopal – 462 016, INDIA**

## **1. BACKGROUND**

- 1.1 In February 2004, MP Electricity Regulatory Commission (MPERC) had issued a discussion paper entitled “Approach Paper on Tariff-Setting and Support to Renewable Energy Sources”.
- 1.2 The above Approach Paper had noted that conventional electricity pricing does not take into account the costs corresponding to negative externalities such as pollution, depletion of resources, displacement of people, damage to fragile ecosystems, etc. In this regard, the Paper had emphasized the importance of investments in renewable energy.
- 1.3 Broadly, the Approach Paper had covered the following areas
  - (a) Mechanisms to determine Minimum Purchase Requirements for the Licensees
  - (b) Identification of issues that may arise as a result of increasing production from renewable sources
  - (c) Mechanisms to supplement Minimum Purchase Requirements and address issues that arise as a result of increasing production from renewable sources.
  - (d) Suitable tariff for wind energy.
- 1.4 In continuation with the above Approach Paper, it is proposed to continue the consultation process on tariff determination for purchase of power from renewable energy generators through discussion papers on sources of renewable energy, other than wind energy. The present paper deals with small hydro projects upto a project capacity of 25 MW.
- 1.5 Water Resources Department (WRD) of Government of Madhya Pradesh had also filed a petition before the Commission for determination of tariff and other charges and other terms and conditions for the Small Hydro Projects in the State.
- 1.6 Hydroelectricity accounts for 25% India’s electricity generation. There is a wide variance in the size of hydroelectric plants, ranging from a few kilowatts to several thousand megawatts. In 1999, small hydro projects upto sizes of 25 MW were brought under the jurisdiction of the Ministry of New and Renewable Energy (MNRE).
- 1.7 Apart from providing a clean & renewable source of energy, small hydro projects avoid some of the key pitfalls of larger projects, such as extensive submergence, loss of forests, habitat destruction, rehabilitation problems, etc.

## 2. POLICY & LEGAL CONTEXT

### i. Electricity Act, 2003

- 2.1 Sections 86(1) and 61(h) of the Electricity Act, 2003, provide the legal framework for the involvement of the Commission in renewable energy:

Section 86 (1) *“The State Commission shall discharge the following functions, namely: -*

- (a) -----
- (b) -----
- (c) -----
- (d) -----
- (e) *promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee.”*

Section 61 *“The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-*

- (a) -----
- (b) -----
- (c) -----
- (d) -----
- (e) -----
- (f) -----
- (g) -----
- (h) *the promotion of co-generation and generation of electricity from renewable sources of energy;”*

### ii. National Electricity Policy & National Tariff Policy

- 2.2 The National Electricity Policy (NEP), 2005 reasserts the Government’s intent to promote renewable energy. Select extracts from the NEP are presented hereunder:

5.2.20 *“Feasible potential of non-conventional energy resources, mainly small hydro, wind and bio-mass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non-conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures.”*

5.12.1 *“Non-conventional sources of energy being the most environment friendly there is an urgent need to promote generation of electricity based on such sources of energy. For this purpose, efforts need to be made to reduce the capital cost of projects based on non-conventional and renewable sources of energy. Cost of energy can also be reduced by promoting competition within such projects. At the same time, adequate promotional measures would also have to be taken for development of technologies and a sustained growth of these sources.”*

5.12.2 *“... Percentage for purchase of power from non-conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest. Progressively the share of electricity from non-conventional sources would need to be increased as prescribed by State Electricity Regulatory Commissions. Such purchase by distribution companies shall be through competitive bidding process. Considering the fact that it will take some time before non-conventional technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies.”*

2.3 The National Tariff Policy (2006) also reinstates the importance of the renewable energy generation and their subsequent benefits for the country. Some key extracts are presented below:

5.3 (i) *“ Tariff fixation for all electricity projects ( generation, transmission, and distribution) that results in lower Green House Gas emissions than the relevant base line should take into account the benefits obtained from the Clean Development Mechanism into consideration, in a manner so as to provide adequate incentive to the project developers.”*

6.4 (1) *“..... The Appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs....”*

6.4 (2) *“ Such procurement by Distribution Licensees for future requirement shall be done as far as possible through competitive bidding process under section 63 of the Act within the suppliers offering energy from same type of non conventional sources. .... ”*

**iii. Madhya Pradesh Small Hydro Policy**

- 2.4 The Government of Madhya Pradesh has issued an “Incentive Policy for the Development of Small Hydro Power Projects in Madhya Pradesh” in August, 2006. The policy provides for selecting the developers of pre-identified small hydro projects on the basis of the quantum of free power they are willing to provide to the state.
- 2.5 These developers of such projects may operate the plants as CPPs/IPPs on a Build-Own-Operate-Transfer (BOOT) basis for a period of 30 years or plant life, whichever is less.
- 2.6 The determination of bulk supply tariffs as well as the regulation of PPAs, wheeling, banking, T&D loss charges, etc remain under the jurisdiction of the Commission.

**iv. MPERC’s Responsibilities**

- 2.7 On the basis of the legal & policy framework described above, MPERC’s primary responsibilities relating to small hydro projects are:
  - (a) Specification of minimum purchase requirements from renewable sources including generation from small hydro projects
  - (b) Fixation of tariff for purchase of power from small hydro projects by the distribution licensees in MP, when such purchase is not through the competitive bidding route as per the guidelines issued by the Ministry of Power u/s 63 of the Electricity Act, 2003.
  - (c) Defining terms & conditions for wheeling, banking and third-party sale

### **3. TARIFF FOR SMALL HYDRO PROJECTS**

#### **i. Norms & Assumptions for Tariff Determination**

- 3.1 Two different tariffs for the run of river (ROR) and canal based SHPs have been proposed in this note. The ROR projects exploit the water flows in the river by diverting the water flow to the power house by constructing small barrages. If the river is not perennial, then the generation could be possible only when there is sufficient water flow, may be, during monsoon. On the other hand generation of power from canal based projects is solely dependent on water releases for the purpose of irrigation and is, therefore, done during the irrigation seasons only. At the same time, such projects have ready available reservoirs and relatively more easily accessible sites. These projects would normally not have problems of land acquisition, forest clearances and rehabilitation and resettlement costs. As such capital cost of canal based projects is less than that of run of river projects. The canal based projects would have a lower capacity utilization factor averaging around 25% as compared to around 30% in case of run of river projects. This approach of separate tariff for run of river (ROR) and canal based project has also been suggested by Water Resource Department in their petition.
- 3.2 It is proposed to have cost plus method and one part tariff for small hydro projects. Most of the states have adopted the same methodology. MP has also adopted same methodology in case of wind and bio mass tariff. Water Resource Department in it's petition has also recommended cost plus methodology and one part tariff.
- 3.3 Here in subsequent sections we will be analysing different parameters for ROR and canal based generation.

#### **ii. Run of the river:**

- 3.4 Tariff determination using a cost-plus approach would require assumptions on the following parameters:
- Capital Cost
  - O&M Cost
  - Debt-Equity Ratio
  - Normative PLF for recovery of fixed charges
  - Interest Cost on Long term debt
  - Depreciation
  - Return on Equity
  - Other costs such as water royalty, etc
  - Normative Working Capital and Interest on Working capital

3.5 **Capital Cost:** A hydel power project does not have any variable costs corresponding to fuel usage as in case of other conventional plants. On the other hand, its primary fixed costs such as depreciation, RoE and interest are derivatives of the capital cost. Even O&M costs can be determined as a percentage of the capital cost. Hence, accurate assumptions on capital costs are critical to ensure fair tariffs for hydel projects.

3.6 The following are the capital cost values allowed by some other regulators in determining tariffs for purchase of power from mini-hydel sources:

Andhra Pradesh	Uttaranchal	Maharashtra	Karnataka	Chhattisgarh	Himachal Pradesh	Uttar Pradesh
Rs. 4.5 Crore/MW	Rs. 5.5 Crore/MW	Rs. 4.4 Crore/MW	Rs. 3.9 Crore/MW	Actuals *	Actual expenditure (ceiling of Rs. 6.5 Cr./MW)	Rs. 4.5 Crore/MW

\*subject to prudence check by the Chhattisgarh Commission

3.7 The norm for Uttaranchal appears to be higher on account of higher costs involved in setting up a plant in mountainous areas.

3.8 Water Resource Department has suggested Rs 10.45 Crore per MW as the capital cost for the purpose of tariff determination. This cost includes Rs 35 Lakh as cost of evacuation infrastructure.

3.9 MNRE has published a list of SHP projects on its website. The projects commissioned after 2002 have been taken from the website and the average capital cost per MW has been calculated. Average cost in this case works out as Rs. 5.21 Crore.

3.10 As per the Government of M.P order dated 17/October/2006 power evacuation infrastructure for SHP needs to be developed by the developer and the cost of that is to be included in the project cost. Commission has taken an estimated cost of Rs 25.00 Lakh for power evacuation infrastructure.

3.11 For MP, a ceiling of Rs 7.50 Crore per MW is proposed (including Rs. 25.00 Lakh for power evacuation infrastructure).

3.12 In particular, comments are invited on whether capital cost norms should be different for different project sizes (<1 MW, 1-10 MW, 10-25 MW, etc).

3.13 Currently, Ministry of New and Renewable Energy (MNRE) provides a capital subsidy to SHP developers as illustrated in the table below. Following subsidy is proposed to be provided to new grid connected power projects. The subsidy for the projects is linked to capacity (C in MW) of the project and per MW subsidy will decrease with increase in capacity of the projects above 1 MW and vice versa.

<b>Particulars – (As indicated in GoI, MNRE Letters Dated 26/12/2006 and 26/04/2007</b>	<b>Special Category States (NE Region, Sikkim, J&amp;K, HP &amp; Uttaranchal)</b>	<b>Other States</b>
Small Hydro Power projects	Rs 2.25 Crore X (C MW) <sup>0.646</sup>	Rs 1.50 Crore X (C MW) <sup>0.646</sup>

3.14 It is clear from the above formula that subsidy depends upon the size of the plant. It varies from Rs.1.5 Crore/MW for 1 MW to Rs. 0.48 Crore for 25 MW plant. Commission has however decided to take Rs. 0.75 Crore as the subsidy amount by taking an average. However in case of any change in policy from MNRE Commission will reconsider the issue.

3.15 **Capacity Utilisation Factor (CUF):** The actual CUF for a hydel project would depend on various parameters such as location, rainfall, etc. Therefore, a benchmark CUF needs to be assumed for recovery of fixed costs.

<b>Andhra Pradesh</b>	<b>Uttaranchal</b>	<b>Maharashtra</b>	<b>Karnataka</b>	<b>Chhattisgarh</b>	<b>Himachal Pradesh</b>	<b>Uttar Pradesh</b>
35%	45%	30%	30%	Actuals*	40%	35%

\*on the basis of data certified by Water Resources Deptt, Chhattisgarh

3.16 The higher CUF assumed in Uttaranchal is because of the fact that the Himalayan Rivers are perennial which allows generation almost throughout the year. CUF is a crucial assumption for mini-hydel projects and has a significant impact on tariffs.

3.17 Water Resource Department has suggested a CUF of 40% for ROR projects.

3.18 A normative CUF of 30% has been assumed in this paper, so as to encourage projects at locations where higher CUFs are possible.

3.19 **O&M costs:**

<b>States → Particulars</b>	<b>Andhra Pradesh</b>	<b>Uttaranchal</b>	<b>Maharashtra</b>	<b>Karnataka</b>	<b>Chhattisgarh</b>	<b>Himachal Pradesh</b>	<b>Uttar Pradesh</b>
O&M cost as a % of capital cost	1.5%	3% + upto 1% for insurance	2.5%	1.5%	1.5%	1.5%	2.5%
Annual escalation	4%	4%	4%	5%	5%	4%	4%

- 3.20 As illustrated in the table above four states above have adopted a normative O&M cost of 1.5% of capital cost for SHP. However, Uttaranchal, Uttar Pradesh & Maharashtra have relaxed these norms for small projects.
- 3.21 Water Resource Department has suggested normative O&M expenses amounting to 2.5% of capital cost, escalated at 4% per year.
- 3.22 For MP, this paper assumes normative O&M expenses amounting to 2.5% of capital cost, escalated at 4% per year.

3.23 **Auxiliary Consumption & Transformation Losses:**

Andhra Pradesh	Uttaranchal	Maharashtra	Karnataka	Chhattisgarh	Himachal Pradesh	Uttar Pradesh
1%	0.7-1.2% depending on project type	1%	0.5%	1% aux, 0.5% losses	0.5%	1%

- 3.24 Water Resource Department has suggested 0.5% auxiliary consumption and 0.5% transformer losses.
- 3.25 CERC norms provide for 0.5% transformation losses and auxiliary consumption of 0.2-0.7% depending on the plant type. For simplicity, it is proposed that total of 1% of gross generation be allowed for auxiliary consumption & transformation losses in MP.

3.26 **Depreciation:**

Andhra Pradesh	Uttaranchal	Maharashtra	Karnataka	Chhattisgarh	Himachal Pradesh
6.7% over the first 10 years, balance equal over remaining project life	SLM upto 90% of historical capital cost; different lives assumed for different assets; AAD permissible	3% SLM over 30 years + AAD	7% SLM	7% SLM over 10 years	2.25%, plant life 40 years + AAD

- 3.27 Water Resource Department has suggested, allowing depreciation to match loan repayment.
- 3.28 A base case depreciation of 7% SLM for first 10 years and 1% for next 20 years (covering 90% of capital cost) is assumed in this paper.

3.29 **Water Royalty, Lease charges, etc:** These have been treated as a pass-through by the AP, Maharashtra and Chhattisgarh Commissions and hence not captured in the tariff formulation. In MP, the Hydro Power Policy states “*No water rate shall be payable for the use of water by the SHP*”. Hence, it is proposed that these cost elements be kept out of the tariff exercise.

3.30 WRD has stipulated the amount of free power developers are willing to supply to WRD as the bidding criterion for SHP projects. WRD has requested to allow 8% of total power generated as free power and to allow this to be a pass through item in tariff determination. Commission has decided to keep this out of tariff exercise.

3.31 **Other parameters:**

Particulars	Andhra Pradesh	Uttaranchal	Maharashtra	Karnataka	Chhattisgarh	Himachal Pradesh	Uttar Pradesh	WRD	MP (proposed)
Interest on term loans	12%	As per DPR	9%	11%	11.5%	Prime Lending Rate of a Scheduled Bank plus a pre determined margin	10.25%	11%	11%
Interest on working capital	12%	short-term PLR of SBI on COD or 1.4.2004 whichever is later	11%	12.5%	12.5%	prevalent short term Prime Lending Rate of a Scheduled Bank	10.25%	--	1% plus SBIPLR .
RoE	16% pre-tax	14% post-tax	16% post-tax	16% + MAT	16%	14%	16%	14% post - tax	16% pre-tax (as notified for wind energy)
Debt - Equity ratio	70:30	70:30	70:30	70:30	70:30	70:30	70:30	70:30	70:30

3.32 This paper assumes that the loan would be repaid over a 10 year period. No moratorium has been considered.

3.33 While the Karnataka Commission has allowed for 2 months billing as working capital, the Chattisgarh Commission has allowed for 1 month’s O&M expenses and 2 months billing. However, the Uttaranchal & Maharashtra Commissions have allowed the following:

- (a) 1 month’s O&M expenses

- (b) Maintenance spares @ 1% of historical cost escalated at 6% p.a. from the COD
- (c) 2 months billing as receivables

The above norms are also proposed for MP.

- 3.34 For generation above the normative PLF, an incentive amount is proposed. In AP, a fixed amount of 21.5 paise/kWh is payable for generation above the normative PLF. In Uttaranchal, the incentive reduces progressively over time as follows:

Year after Commissioning	1	2	3	4	5
Rate (p/u)	26	26	25	24	24

- 3.35 For MP, a fixed incentive of 24 paise/kWh is proposed.

### iii. PPA and Project Life

- 3.36 Under the MP State Hydro Power Policy, small hydro projects are to be executed under a Build-Own-Operate-Transfer (BOOT) basis, with the BOOT period being 30 years or the life of the project, whichever is less. This paper assumes a project life of 30 years and PPA period also of 30 years.
- 3.37 Among other states, Karnataka and AP have provided for 20 year PPAs, with the entire capital cost (except for residual value of 10%) being recovered during this period. Maharashtra has provided for 20 year PPAs with a 30 year lifespan.

### iv. Tariff Structure

- 3.38 The tariff has been worked out by taking 3 different capital costs. These alternate scenarios are given in the table below.

Parameter	Base Tariff	Alternate Tariff: Taking capital cost as calculated from MNRE data	Alternate Tariff : Taking capital cost as suggested by WRD
Capital Cost	Rs. 6.75 Crore (including evacuation infrastructure and deducting Rs. 75.00 Lakh on account of capital subsidy)	Rs. 4.71 Crore (including evacuation infrastructure and deducting Rs. 75.00 Lakh on account of capital subsidy)	Rs. 9.70 Crore (including evacuation infrastructure and deducting Rs. 75.00 Lakh on account of capital subsidy)
CUF	30%	30%	40%
O&M	2.5 % of capital cost escalated @ 4% per year	2.5 % of capital cost escalated @ 4% per year	2.5 % of capital cost escalated @ 4% per year

**Discussion Note on Tariff for Small Hydro Projects in MP**

<b>Auxiliary Consumption &amp; Transformation Losses</b>	1%	1%	1%
<b>Depreciation</b>	7% for 1 <sup>st</sup> year and 1% for next 20 years	7% for 1 <sup>st</sup> year and 1% for next 20 years	7% for 1 <sup>st</sup> year and 1% for next 20 years (This will ensure repayment of loans as suggested by WRD)
<b>Interest on term loan</b>	11%	11%	11%
<b>Debt equity ratio</b>	70:30	70:30	70:30
<b>Interest on Working capital</b>	13.75%	13.75%	13.75% ( WRD has not considered but Commission has included working capital interest)
<b>ROE</b>	16% pre tax	16% pre tax	16% pre tax (WRD has suggested 14% post tax. Commission has taken 16% pre tax to avoid tax issues)

3.39 The table below shows year-wise tariffs for different scenarios of ROR projects.

**(Tariff in Rs. per Unit)**

<b>Year</b>	<b>Base Tariff : Taking benchmark capital cost</b>	<b>Indicative Tariff: Taking capital cost as calculated from MNRE data</b>	<b>Alternate Tariff : Taking capital cost as suggested by WRD</b>
1	5.81	4.05	6.26
2	5.63	3.93	6.07
3	5.46	3.81	5.88
4	5.29	3.69	5.70
5	5.11	3.57	5.51
6	4.94	3.45	5.33
7	4.78	3.33	5.15
8	4.61	3.22	4.97
9	4.44	3.10	4.79
10	4.28	2.99	4.61
11	2.60	1.81	2.80
12	2.64	1.84	2.85
13	2.69	1.88	2.90

14	2.74	1.91	2.95
15	2.79	1.94	3.00
16	2.84	1.98	3.06
17	2.89	2.02	3.12
18	2.95	2.06	3.18
19	3.00	2.10	3.24
20	3.07	2.14	3.30
21	3.13	2.18	3.37
22	3.19	2.23	3.44
23	3.26	2.28	3.52
24	3.33	2.33	3.59
25	3.41	2.38	3.67
26	3.49	2.43	3.76
27	3.57	2.49	3.85
28	3.65	2.55	3.94
29	3.74	2.61	4.03
30	3.83	2.67	4.13

**v. Comparison of tariffs with other states**

3.40 The table below shows a snapshot of minihydel tariffs in other states:

State	Year-1	Year-5	Year-10
Andhra Pradesh	2.60	2.27	1.88
Maharashtra	2.84	2.96	3.11
Karnataka	3.24	2.83	2.33

**vi. Canal Based Projects**

3.41 For Canal based Projects all costs will be same as those assumed for the ROR projects only difference would be in the capital cost. O&M cost, working capital, depreciation etc will be either same or in same proportion with capital cost.

3.42 Project life and all other parameters like debt equity ratio are assumed to be same for both the scenarios.

3.43 Water Resource Department has suggested capital cost of 6.05 Crore for canal based projects. This also includes evacuation infrastructure cost.

3.44 MNRE has published a list of SHP projects on its website. The projects commissioned after 2002 have been taken and the average capital cost per MW has been calculated. Average cost in this case works out as Rs 5.81 Crore.

- 3.45 As per the Government of M.P order dated 17/October/2006 Power Evacuation infrastructure for SHP needs to be developed by the developer and the cost of that is to be included in the project cost. Commission has taken an estimated cost of Rs. 25.00 Lakh.
- 3.46 The tariff has been worked out by taking 2 different capital costs. These alternate scenarios are given in the table below.

<b>Parameter</b>	<b>Benchmark Tariff: Taking capital cost as calculated from MNRE data</b>	<b>Alternate Tariff : Taking capital cost as suggested by WRD</b>
<b>Capital Cost</b>	Rs. 5.31 Crore (including evacuation infrastructure and deducting Rs. 75.00 Lakh on account of capital subsidy)	Rs. 5.30 Crore (including evacuation infrastructure and deducting Rs.75.00 Lakh on account of capital subsidy)
<b>CUF</b>	25%	25%
<b>O&amp;M</b>	2.5 % of capital cost escalated @ 4% per year	2.5 % of capital cost escalated @ 4% per year
<b>Auxiliary Consumption</b>	1%	1%
<b>Depreciation</b>	7% for 1 <sup>st</sup> year and 1% for next 20 years	7% for 1 <sup>st</sup> year and 1% for next 20 years( This will ensure repayment of loans as suggested by WRD)
<b>Interest on term loan</b>	11%	11%
<b>Debt equity ratio</b>	70:30	70:30
<b>Interest on Working capital</b>	13.75%	13.75% (WRD has not considered but Commission has included working capital interest)
<b>ROE</b>	16% pre tax	16% pre tax (WRD has suggested 14% post tax. Commission has taken 16% pre tax to avoid tax issues)

- 3.47 The table below shows year-wise tariffs for Canal Based Projects

**(Tariff in Rs. per Unit)**

<b>Year</b>	<b>Alternate Tariff: Taking capital cost as calculated from MNRE data</b>	<b>Alternate Tariff : Taking capital cost as suggested by WRD</b>
1	5.48	5.47
2	5.32	5.31
3	5.15	5.14
4	4.99	4.98
5	4.83	4.82
6	4.67	4.66

---

**Discussion Note on Tariff for Small Hydro Projects in MP**

---

7	4.51	4.50
8	4.35	4.34
9	4.19	4.19
10	4.04	4.03
11	2.45	2.45
12	2.49	2.49
13	2.54	2.53
14	2.58	2.58
15	2.63	2.62
16	2.68	2.67
17	2.73	2.72
18	2.78	2.78
19	2.84	2.83
20	2.89	2.89
21	2.95	2.95
22	3.02	3.01
23	3.08	3.07
24	3.15	3.14
25	3.22	3.21
26	3.29	3.29
27	3.37	3.36
28	3.45	3.44
29	3.53	3.52
30	3.62	3.61

## 4. OTHER ISSUES

### i. Transmission & Wheeling

- 4.1 Transmission Charges, Wheeling Charges and applicable surcharge on Wheeling Charges shall be levied as determined by the Commission from time to time for third party sale / captive consumption.
- 4.2 Wheeling Charges shall be payable to the Distribution Company where the energy is consumed irrespective of the point of injection. No wheeling charges are payable for sale to M.P. Power Trading Company Limited on behalf of Distribution Companies.
- 4.3 Till such time the wheeling charges are determined by the Commission for third party sale / captive consumption, the Distribution Company in whose area the energy is consumed (irrespective of point of injection) shall deduct 2% of energy injected towards provisional wheeling charges in terms of units. The M.P. Power Trading Company Limited shall also claim subsidy from the State Government towards wheeling charges @ 4% of the energy injected at the rate of prevailing energy charges for the user in terms of provisions made in the Government of MP incentive policy for encouraging the generation of power in MP through Non-conventional Energy Sources notified on 17<sup>th</sup> October 2006. This amount of subsidy shall then be passed on to the Distribution Company / Companies in whose area the energy is consumed on the basis of allocation indicated by the generator in the agreement executed.

### ii. Banking

- 4.4 The MP State Hydro Power Policy provides for banking of 100% of the energy generated during a financial year, with banking charges of 2% and a restriction on availing the banked energy during the Rabi season (November to February) and during peak hours.

### iii. Balancing & Settlement Code

- 4.5 It is proposed that the MP Balancing & Settlement Code be applicable to mini-hydel stations also.
- 4.6 Under the above Code, mini-hydel plants are not required to provide day-ahead schedule. The actual generation by such plants in each 15-minute block would be treated as their scheduled generation, and no UI charges would be applicable.
- 4.7 The above Code also states, “*For wind based generation and other non-conventional sources, loss levels shall be as decided by the Commission from time to time.*” It is proposed that the transmission & distribution loss regime as applicable to conventional generators be extended to mini-hydel stations also.

**iv. Minimum Purchase Requirement**

- 4.8 Under the National Tariff Policy, the Commission is required to fix a minimum percentage for purchase of energy from renewable sources.
- 4.9 In AP and Karnataka, the minimum purchase requirement from NCE sources has been fixed at 5%. In Tamil Nadu, the corresponding figure is 10%. However, none of these states have a sectoral minimum purchase requirement for small hydro projects.
- 4.10 The Commission does not propose to fix a sectoral minimum purchase requirement for small hydro projects, with a view to providing greater flexibility to licensees and encouraging competition between different renewable sources. However, an overall purchase requirement from NCE sources is stipulated, amounting to 10% in 2007-08,

**v. Consultation Process**

- 4.11 The Commission invites comments from interested parties, including licensees, consumers and members of the public, on the issues discussed in this paper.
- 4.12 Comments may be sent electronically to [secmperc@sancharnet.in](mailto:secmperc@sancharnet.in) or by post to the Commission's office at the following address:

Madhya Pradesh Electricity Regulatory Commission  
4<sup>th</sup> and 5<sup>th</sup> Floor, Metro Plaza, Bittan Market,  
Bhopal – 462 016

\*\*\*\*\*