

**BEFORE THE HIMACHAL PRADESH ELECTRICITY REGULATORY
COMMISSION, SHIMLA**

In the matter of: Restating of Design Energy and Reconsideration of Tariff
for Small Hydro Power Plants of HPSEB Limited

AND

Himachal Pradesh State Electricity Board Limited
through its Chief Executive Director, Kumar House,
Shimla-171004.

---Petitioner

Petition No. 54 of 2013

(Decided on 15.01.2014)

CORAM

SUBHASH C. NEGI, CHAIRMAN

ORDER

This Petition is filed by the Himachal Pradesh State Electricity Board Ltd. (hereinafter referred as “the HPSEBL” or “the Petitioner”) to

- a) Approve/ restate design energy of small hydro generating stations (SHPs) to ensure adequate recovery to HPSEBL;
- b) Approve the tariff for the balance useful lives of the small hydro projects and make the revised tariff applicable from April 1, 2014 except Bhaba Augmentation which should be applicable from commissioning, as per State Policy/Regulations.
- c) Allow purchase of power from these SHPs at APPC under REC framework in case aggregate availability from renewable sources is more than RPPO and additional revenue so generated from sale of RECs is passed on to the consumers through tariff.
- d) Consider the revised design energy and energy availability, along with revised tariff, for power purchase from these stations while determining distribution tariff for FY 2013-14.

Restatement of Design Energy:

2. The HPSEBL has stated that the actual generation of its SHPs is far less than the designed energy and that it shall not be able to achieve the generation equal to design energy in future also, owing to the following factors, which are beyond its control:

- (i). 100% installed capacity has been considered for calculating the design energy for 90% dependable year in the DPRs, whereas, as per regulations

and guidelines, the design energy should have been calculated on 95% of the installed capacity.

- (ii). As per the requirements of Environmental (Protection) Act, 1986, 15% of the minimum observed flow of the stream has to be released at the downstream of diversion structure w.e.f. 2005. This aspect also contributes towards reduction of generation in lean season and the generation gets reduced by about 3-4%. This is a new development and was not considered in the DPRs.
- (iii). These are run of the river stations and the generation primarily depends on the actual hydrology, which changes year-to-year, based on climatic conditions.
3. The Petitioner states that while the Commission considers the availability from its own generating stations at the approved design energy for approving the power purchase cost of distribution business, it actually has to resort to purchase of the shortfall between approved design energy and actual generation (proposed design energy) at prevailing market rates.
4. To support its contention, it has submitted a summary of actual generation since the year 1979-80, the average generation since the COD, average for the past 5 years and the maximum generation viz-a-viz the design energy, for all the 17 small generation stations having a total installed capacity of 105.45 MW. Accordingly, the HPSEBL has proposed revised design energy of the small hydro generating stations as under:-

Sl No	SHP COD	Installed Capacity (MW)	Design Energy (MUs)	Max Gen. (MUs)	Average Gen. (MUs)	Proposed Design Energy (MUs)
1	Chaba 1913	1.75	7.67	9.619	7.985	7.985
2	Chamba 1938	0.45	5.00	1.850	0.751	0.751
3	Nogli 1963	2.50	14.70	10.547	7.553	7.553
4	Rukti 1979	1.50	6.54	3.523	1.754	1.754
5	Binwa 1984	6.00	29.25	40.884	31.786	29.25
6	Rong Tong 1986	2.00	7.64	2.596	1.655	1.655
7	Andhra	16.95	87.30	80.112	62.779	62.779

Sl No	SHP COD	Installed Capacity (MW)	Design Energy (MUs)	Max Gen. (MUs)	Average Gen. (MUs)	Proposed Design Energy (MUs)
	1987					
8	Killar 1995	0.30	1.16	1.161	0.710	0.710
9	Thirot 1995	4.50	23.44	12.408	8.625	8.625
10	Gaj 1996	10.50	38.31	51.998	42.315	38.31
11	Baner 1996	12.00	60.67	47.233	40.357	40.357
12	Sal – II 1999	2.00	12.52	6.951	5.120	5.120
13	Gumma 2000	3.00	18.11	12.521	6.967	6.967
14	Ghanvi 2000	22.50	93.34	81.813	71.929	71.929
15	Holi 2004	3.00	17.52	10.820	8.924	8.924
16	Khauli 2007	12.00	49.95	50.341	42.386	42.386
17	Bhaba Aug 2011	4.50	23.44	6.492	6.492	23.44
	Total	105.45	496.56	430.869	348.088	358.495

Note : Figures under Average Generation column is higher of average generation during the last 5 years and average of entire period since COD.

5. The HPSEBL published the Public Notices in the Tribune and Divya Himachal on 19.05.2013 and in Hindustan Times and Punjab Kesari on 21.5.2013 in terms of the directions of the Commission as per its interim order dated 07.05.2013 inviting public objections and suggestions.
6. The Commission also published Public Notices in The Tribune and Amar Ujala on 29 May 2013 requesting the stakeholders for providing comments on the Petition of the HPSEBL by 1 July 2013.
7. The Commission did not receive any comments on the Petition.

Commission's View:

8. The matter regarding variation in actual generation vis-à-vis design energy fixed at the time of project execution had been under active review, both at HPSEBL and HPERC levels and series of joint consultations also had taken place between the HPSEBL and HPERC. Substantial reduction in generation may require looking into the issues of inefficiencies, both of installed equipments and the O&M. On the other hand, if design energy is reduced consequent to change in hydrology, inefficient investment has to be compensated by efficient O&M. Therefore, it is important to have station-wise diagnosis to identify the factors leading to under-performance and where it is fully established that there is substantial change in hydrology, either due to data inaccuracies at the time of designing the project or reduction over the period of time, only such cases merit review of design energy.

9. There could be various reasons, other than change in hydrology, for under performance of the powerhouses. As per the information in the petition, including supplementary information on queries, the following factual positions are also brought on record:-
 - (i) R&M works of Rukti and Rong-Tong projects are likely to be completed by the end of next year and consequently plant availability and generation shall improve.
 - (ii) Water conductor system of Thiroat project was damaged and hence water for one machine was available. Now new channel has been constructed and full water for three machines are available, which will increase the generation.
 - (iii) Machines of Gumma project are giving problems frequently and power house is under complete shut-down. The fault lies in design of machines and hence original equipment manufacturer i.e. BHEL has been engaged to address the problems.
 - (iv) Design energy of Chamba is technically not possible and its appears to be a patent error in records, being very old project.

The above facts indicate that in these cases it is not the issue of hydrology or the design energy but of deficiencies and inefficiencies in the project components and also O&M of projects. There could be similar issues in other projects also.

10. While reviewing the design energy, the following implications, relevant to the present context, shall have to be kept in view:-
 - (a) It is a benchmark power potential as per project design and hence an indicator for performance and efficiency. Under-performance will lead to loss to the HPSEBL because loss on account of inefficiency cannot be passed on to the consumers under the regulated tariff regime. While

determining tariff, certain benchmarks, including normative design energy, is taken into account and any shortfall in generation is under-performance and is direct loss to the HPSEBL.

- (b) Under the power procurement planning of the HPSEBL, quantum of energy to be procured from own generating stations are estimated based on design energy and any shortfall in actual generation would require additional procurement of power from other sources on short term basis, which would ordinarily entail higher costs, because average cost of its own generation is much lower and also short term arrangements may generally be costlier. Hence, under performance will lead to higher cost of energy procurement to HPSEBL and consequent burden to consumers due to higher tariff.
 - (c) The performance parameters of the HPSEBL projects should not be less than the norms assumed/ prescribed by the Commission for determination of generic levelised tariff for SHPs.
 - (d) Any review in design energy, particularly of project above 5 MW, should essentially take into account the provisions of Regulations and PPAs, because a uniform principles need to be followed for all projects. Any change in its own projects of HPSEBL shall have bearing on other projects of IPPs during the tenure of PPAs.
11. As stated by the petitioner, these generating stations are set up to meet the power requirement in the State. Some of the stations located in the remote areas largely function as decentralised distributed generation projects due to unreliable and seasonal grid connectivity and therefore, their generation is lesser, in spite of optimal hydrological potential and design energy. All the stations in the tribal areas are of such nature. Commission is of the view that shortfall in generation may not be due to hydrological changes and hence restatement of design energy is not called for in such circumstances.
12. The Govt. of HP in its order dated 21.04.2012, have clarified that orders of minimum 15% discharge of water downstream will be applicable prospectively i.e. such orders will not be applicable to projects which are either commissioned or where I.A. are signed prior to the issuance of notification of 15% mandatory discharge in 2005. Hence, Commission is of the view that restatement of design energy on this ground is not called for.
13. Design energy is the projected output of the project in terms of energy generated, based on design of various project components taking into account various parameters like hydrological potential, economic and social costs benefits etc. at the time of project preparation and subsequent execution and O&M as planned. Therefore, it is not expected that design energy is changed during the life of the project. The reasons cited for restatement of design energy is for ensuring adequate

recovery to the HPSEBL. This is contrary to the tariff principles in general. Inefficient costs cannot be recovered from the consumers. In the cases of old projects, where-ever it is fully established that over time there has been substantial change in hydrology, it becomes a matter of an investment decision. Additional capital infusion for life extension and renovation and modernisation of the project will demand whether to re-rate the installed capacity or restate the design energy, after due studies and prudence.

14. Keeping in view these facts, circumstances, factors, and reasons, Commission is of the view that restatement of design energy or re-rating the capacity should be considered only where project has completed useful life, which as per current policy and practice is 40 years. Accordingly, Commissions reviews design energy of three projects which have completed 40 years, as under:-

- 14.1 Chaba:

It is a vintage project commissioned in 1913. Its approved design energy is 7.670 MUs whereas average generation of past 5 years is 7.985 MUs and maximum generation is 9.619 MUs. HPSEBL has proposed upward revision of design energy to 7.985 MUs. Commission is of the view that there is no need for review of design energy. Instead efficiency should be rewarded.

- 14.2 Chamba:

Chamba commissioned in 1938, has design energy of 5.00 MUs for installed capacity of 0.45 MW. There appears to be a patent error in records. Its average generation is 0.751 MUs and the highest is 1.850 MUs. Commission is of view that since it has completed useful life of 40 years much before 2007 SHP regulations, we should adopt a norm of 45% CUF and accordingly restate the design energy and fix it at 1.77 MUs.

- 14.3 Nogli:

As per design energy of 14.70 MUs, CUF works out to 67.12%. It has achieved average generation of 7.553 MUs and maximum generation of 10.547 MUs. It was commissioned in 1963 and has completed useful life before 2007 Regulation and hence we should adopt a norm of 45% CUF and fix design energy of 9.85 MUs.

- 14.4 With respect to 4 more pre-1994 projects, no change in design energy of Binwa is sought. Substantial capital investment is being made in Rukti and Rongtong projects. Hence, in these 3 projects no review is required even otherwise. Petitioner has not brought out any empirical grounds, except actual generations, for review of design energy of Andhra project and hence does not merit any review only on this ground.

14.5 Remaining 10 projects are relatively new and therefore, there would not ordinarily be material change in hydrology that would necessitate re-statement of design energy. Petitioner has also claimed generic levelised tariff for these projects at par with IPPs and therefore, restatement of design energy is neither required nor it is prudent because there are large number of IPPs who have PPAs with the petitioner for a term of 40 years on fixed tariff and equity and fair play demands that there shall not be any departure for HPSEBL's its own projects. Therefore, the Commission does not find any merit in reviewing design energy of the remaining 10 projects at this stage.

14.6 Based on these observations and findings, the Commissions orders that design energy with respect to Chamba and Nogli projects are permitted to be restated and revised design energy of these two projects will be 1.77 MUs and 9.85 MUs respectively.

15. Accounting of Energy Availability and Efficiency Gains:

Petitioner's contention that shortfall in actual generation against targeted generation equal to design energy assumed as energy availability for procurement planning by distribution license result is short term purchases at higher costs, to meet the deficit, has merit. This issue has to be addressed from two standpoints i.e.:-

- (a) Generation activity is an other business of the distribution licensee and hence it should not encumber the distribution business of the license. Any consequence of underperformance in generation activity has to be borne by generation business only. Hence, generation business should be accountable in accordance with industry practice and regulations and targets to be achieved should not be diluted.
- (b) Generation being an independent and accountable activity, any efficiency gains should be retained by generation business for redeployment of such surpluses for making business more efficient so that it generates power on competitive rates on sustainable basis.

While design energy shall not be reviewed before completion of useful lives of SHPs, there is a case for fixing normative availability of energy, inspite of design energy, where-ever generic levelised tariff is determined and applied based on normative CUF, so that underperformance is to the account of generator (HPSEBL) and efficient performance is an incentive to generator.

Accordingly, the Commission is of the view that in cases of post 1994 projects up to 5MW capacities where generic levelised tariff is applicable, normative energy availability should be based on normative CUF of 45% as

has been considered in the SHP Regulations of 2007 and Orders dated 18.12.2007 thereunder. CUF is 55% in cases of projects falling under the purview of 2012 SHP Regulations. Since all these projects under consideration are of prior to 2012, normative CUF of 45% shall be taken for energy availability except where CUF of the project is lower as per approved design energy. Tariff is uniform for primary and secondary energy and therefore such arrangement does not impact the distribution business adversely and is also at par with similarly situate IPPs. It shall be the concern of the HPSEBL management to ensure that actual performance is in accordance with design energy and any higher performance over and above normative performance is gained as incentive for generation business.

- 15.4(a) For the purposes of overall accountability of generation business to the Company/HPSEBL in terms of generation of all the 17 SHPs, the Commission shall consider aggregate performance i.e. total generation from all the 17 SHPs, instead of plant/project wise generation/performance.
- 15.4(b) Excess generation of one station can be accounted to cover the deficit of any other station(s). However, tariff shall be plant wise only. Excess generation beyond aggregate energy availability will be incentive to be retained by the generation business. Tariff for such excess generation shall also be plant wise as applicable for secondary energy for that plant. Excess generation from a plant shall first be accounted for meeting the deficit of any other plant in the SHP category, if any, and any surplus even after meeting the aggregate generation requirement thereafter, shall be the efficiency gains to be accounted at the rate of applicable secondary energy tariff for that plant. Such gains shall be to the generation business account, which shall be spent in generation business or transferred to distribution business as income from Other Business.
- 15.4(c) Since plant sizes and their potential are varying and also tariff for stations having project specific tariff are varying, petitioner will take in to consideration economies of scale and commercial principles in operation and maintenance for optimizing efficiency gains.

Tariff Determination:

16. HPSEBL has sought the approval of generic levelised tariff for the balance useful life of the Projects, to be made applicable to all the stations from 1st April 2014 except Bhaba Augmentation. The revised tariff for Bhaba Augmentation be made applicable from the COD.
17. The HPSEBL states that the SHPs were allocated to Board with the sole motive of development of vast hydro power potential in the State and the energy generated from these stations are consumed within the State. The purchase from these stations

was considered at Nil Cost and all the expenses borne for the generation function were recovered from the distribution function only, being an integrated entity.

18. The HPSEBL has further submitted that the Commission while approving the tariff for these SHPs had considered the HPERC (Terms and Conditions for Determination of Hydro Generation Supply Tariff) Regulations, 2011, on MYT principles, whereas HPERC (Power Procurement from Renewable Sources and Co-generation by Distribution Licensee Regulations), 2007 should have been considered while determining the tariff for Small HEPs of HPSEBL. HPSEBL is required to purchase power from its own generating stations as per the prevailing MYT Order and it is entitled to tariff for its small hydro generating stations at par with the private SHPs, in accordance with various policies and regulations notified by GoI/GoHP/HPERC.
19. The HPSEBL has proposed the following tariffs for its own SHPs:-
 - (i). As there was no GoI/GoHP policy specifically applicable to small hydro power stations up to 25 MW prior to 1994, no generic tariff can be specifically applicable to the Pre 1994 stations, viz., Chaba, Chamba, Nogli, Rukti, Binwa, Rong Tong and Andhra. The tariff of these stations, hence, be allowed at least par with APPC rate so that it is able to earn REC certificates by sale of power. It has further submitted that since most of these stations have either completed their useful lives or are nearly on the verge of completion of useful life (40 years), the additional revenue generated owing to the differential between approved and APPC rates shall be specifically used for the Renovation & Modernization of these stations so as to further extend their useful life. As the HPSEB will become eligible for sale of REC for these stations, the additional revenue generated from sale of RECs will be passed on to the consumers of HPSEB.
 - (ii). The Ministry of Non-Conventional Energy Sources had issued Guidelines for Non-conventional Energy Tariffs in 1993, wherein tariff for purchase of power from renewable sources of energy was set at 2.25 rupees / Unit assuming 1994-95 as the base year with a provision for escalation of 5% per annum for the first 10 years. From the end of 10th year onwards, the price of power shall be equal to the purchase price in the 10th year. These guidelines were applicable to all small HEPs up to 25 MW capacity commissioning on or after 1994-95 and accordingly HPSEBL stations are also entitled for this tariff viz., Killar (287 paise/unit), Thiroth (287 paise/unit), Gaj (273 paise/unit), Baner (273 paise/unit) and Sal-II (236 paise/unit), commissioned between the year 1994 to 2000 or at least these should be allowed 250 paise per unit for their balance useful life.

- (iii). The GoHP through a notification dated May 6, 2000 revised the incentives for private/ joint sector participation in the micro hydel projects up to the capacity of 3 MW (revised to 5 MW in December, 2000). As per the policy, HPSEB was required to purchase power from small HEPs @ Rs. 2.50 per unit. Further, the Government of Himachal Pradesh formulated “*Hydro Policy of Himachal Pradesh-2006*” wherein the tariff for purchase of power by HPSEB was approved @ Rs. 2.50 per unit. These guidelines were applicable to all small HEPs up to 5 MW commissioned on or after 2000 and accordingly HPSEBL stations are also entitled for this tariff. Accordingly, Gumma and Holi commissioned between the years 2000 to 2007 be allowed tariff of Rs. 2.50 per unit for balance useful life.
- (iv) The tariff for Patikiri HEP (16 MW) whose PPA was approved during same period on 29th March 2004 was allowed at 225 paise per unit by the HPERC. Accordingly, the HPSEBL has requested the Commission to approve the tariff of 225 paise per unit for the HEP Ghanvi (above 5 MW) for its balance useful life.
- (v) SHP Regulations 2007 dated 18.06.2007 are applicable to all small HEPs up to 5 MW capacity commissioned on or after 2007 and accordingly HPSEBL stations are also entitled for the tariff of 295 paise per unit and accordingly approve this tariff for the Bhaba Augmentation HEP from the COD till the balance useful life.
- (vi) In respect of the Stations above 5 MW to 25 MW, there is no provision of generic tariff as per the Regulations, 2007. Currently, Khauli HEP has been commissioned on April 2007 and is the only HEP to fall in this category. The accounts of HPSEB Limited are consolidated and station- wise detailed information is not available, hence Commission should consider the tariff of this station at par with APPC rate as interim tariff so that the HPSEB Limited is able to earn REC certificates by sale of this power. The HPSEBL will make its best efforts to file the separate petition at the earliest.
- (vii) The Commission should allow purchase of power from all these post 1994 stations also at the APPC rate under REC framework in case the aggregate purchase from all sources is more than the RPPO Compliance requirement. The additional revenue generated from sale of REC Certificates will be directly passed on to the consumers of HPSEB Limited.

Commission’s View:

- 20. While determining tariff for Board’s own Generation under the Multi Year Tariff framework, the Commission had observed that the Board being a bundled entity, the accounts are maintained for the Board as a whole and separate accounts for the three

functions, namely, Generation, Transmission and Distribution, were not maintained. The segregation of assets, liabilities, cost and revenues of the three functions is dependent on the availability of appropriate data and prudent judgement, which is possible once the Board puts in place separate accounting system for the three businesses or is unbundled into separate entities. However, the Commission carried out the exercise of determination of ARR for respective businesses as it would help in focussing on the information gaps and inefficiencies in the different businesses and identify areas, which require immediate attention. Further, while approving the tariff for each of the SHPs owned by the HPSEBL, the Commission has considered the norms of operation for generating stations of normative capacity index for recovery of full capacity charge, auxiliary energy consumption and transformation losses as specified by the HPERC Generation Regulations, 2007.

21. While determining the AFC for the Pre- 1990 HEPs, the Commission was severely constrained due to lack of adequate and proper information on these projects. The Commission has relied upon the past submissions and petitions of the Board submitted during the finalization of previous years tariff orders and any further information that was made available to the Commission by the Board during the course of processing tariff order. The Commission had to make certain assumptions to determine the AFC and tariff for sale of electricity.
22. While determining the tariff for MYT control period 2009-11 by its order dated 30.05.2008, the Commission observed that the Board has shown in its petition higher assets base of its generating stations, whereas figures as per the audited accounts were less in many cases, as shown in table 81 of para 5.123 of the said order, reproduced as under:-

Particulars	FY07	FY07	FY07
	Petition	Accounts	Difference
	Rs. Crs.	Rs. Crs.	Rs. Crs.
Giri	40.02	36.22	3.80
Andhra	57.61	57.61	0.00
Gumma	36.60	28.89	7.71
Bhaba	239.78	222.19	17.59
Nogli	11.81	11.81	0.00
Ghanvi	166.30	142.62	23.68
Chaba	1.21	1.21	0.00
Bassi	31.26	31.26	0.00

Binwa	17.44	17.44	0.00
Gaj	75.49	60.58	14.91
Baner	68.79	55.67	13.12
Khauli	126.30	60.95	65.35
Rukti	1.59	1.59	0.00
Rong Tong	16.39	16.39	0.00
Chamba	0.50	0.50	0.00
Sal-II	19.25	17.48	1.77
Killar	8.65	8.65	0.00
Holi	29.93	29.93	0.00
Thirot	60.18	49.30	10.88
Larji	1291.00	943.04	347.96

23. The Commission had accordingly taken the capital costs of the plants as per the Accounts for determination of generation tariff except Larji and Khauli. In the same Order as contained in para 6.104, Commission considered the following assumptions for determination of AFC and tariff for sale of electricity for the post 1990 projects.
- The funding of Sal-II, Killar, Thirot, Gumma and Holi projects is through 100% debt and all debt has been retired as of date.
 - The completed cost of Sal-II, Killar, Thirot, Gaj, Baner, Gumma, Ghanvi and Holi projects have not been subjected to prudence check by the Commission as these are relatively old projects and the detailed breakup of costs needed for determining the completed cost is not available. Therefore, the Commission has taken the cost of these projects as specified in the Accounts statement of the Board.
24. During determination of tariff for the 2nd control period for 2012-14 also, petitioner did not provide details and Commission determined station-wise tariff, except for Larji project, based on audited accounts figures taken into account for the tariff order dated 30.05.2008.
25. As stated by the petitioner, the small hydro projects were allotted to the Board by the State Govt. with the sole motive of development of vast hydro power potential in the State and that the energy so generated are consumed within the State. Therefore, all the projects, including the large projects, executed by the Board were

pioneering in development of hydro potential by its State agency and hence it is implied that these projects were executed by raising resources by the Board/State and also that energy generated were meant to be consumed in the State. The Board as an integrated entity discharging multiple functions of generation, transmission and distribution obviously had been operating common account and the tariff was also largely determined by the Board in consultation with the State Govt. mainly on considerations of O&M expenses and repayment of debt of the Board for its activities as a whole. Therefore, it is logical that tariff for old generating stations will be based mainly on O&M costs and depreciation, which the Commission determined as per the Hydro Generation Tariff Regulations, 2007 and 2011, irrespective of project sizes. It is also apparent that capital costs of projects like Ghanvi, Gumma, Khauli, Sal etc. are quite inefficient and Commission has taken only such costs which is capitalised, which is lower than the actuals.

26. The above factual background indicate that before setting up of the Commission in 2001, investments made in SHPs by the Board was for promotion of generation from renewable sources and for consumption within the State only and therefore investments and recoveries were not guided by commercial principles alone. Consequently separate and updated accounts were not maintained. After setting up of Commission, the duties of tariff determination was vested with the Commission. In absence of project-wise tariff determination proposal, Commission determined tariff based on capitalized costs in the books of account of the Board in 2006-07, which is claimed by the petitioner to be lower than actuals as mentioned in the table at para 22 above.
27. Prior to 1994, there was no specific policy for determination of tariff and therefore the Commission is of the view that all such projects commissioned prior to 1994 i.e. prior to notification dated 22.11.1994 of GoHP laying down purchase price of Rs.2.25 per unit energy from micro hydel projects in private and joint sector, shall be regulated as per tariff principles laid down under Sec.61 of the Electricity Act 2003 and HPERC (Terms and Conditions for Determination of Hydro Generation Supply Tariff) Regulations, 2011. Tariff for these seven stations have been so determined by the Commission in the past also. HPSEBL shall file a consolidated petition for tariff of each of these seven stations separately, in continual to tariff order for MYT period of FY11-14, for the next control period of 2014-15 to 2019 at the earliest, so that tariff orders are issued by 31.03.2014.
28. Purchase rate of Rs. 2.25 per unit by the HPSEBL was applicable for purchases from micro hydel projects as per notification of Department of Science and Technology dated 22.11.1994. By notification dated 13.08.1999, this rate was revised to Rs. 2.50 per unit prospectively for micro hydel projects of capacities up to 3 MW. This rate was made applicable for projects up to 5 MW by notification dated 29.12.2000. Both these notifications stipulated that rate to such capacities

shall also apply to those private investors who applied in response to advertisement during phase-I, phase-II and Phase-III and with whom MOUs have been signed /are being signed as per previous incentive scheme.

29. From these policies, it is apparent that purchase rate of Rs.2.25 per unit was applicable only for micro hydel projects and purchase rate of Rs. 2.50 for micro hydel projects up to 3 MW, later revised up to 5 MW SHPs, was applicable after 13.08.1999 only i.e. prospectively and will also apply in cases where MOUs are signed/being signed for projects in response to advertisement against previous schemes. MOU is a stage prior to Implementation Agreement, wherein developer expresses interest to carry out preparatory activities for project execution. Signing of PPA between Board and IPP is a stage after Implementation Agreement and before financial closure i.e. before actual work starts. Therefore, deemed date of MOU or deemed date of PPA, which is the reference date for applicability of tariff for the project, has to be considered in situations where there is no incidence of MOU or PPA and not the date of commissioning.
30. Commission is of the view that tariff of Rs. 2.25 per unit will not be applicable to Gaj and Baner projects. These are above 5 MW commissioned in 1995 and 1996 respectively and deemed PPA dates for these projects will be much before 1994 i.e. since when policies and purchase rates for renewables were notified by GoI and GoHP. Hence these two projects will be subject to Regulations of 2011 and HPSEBL will file tariff petition for these two projects also along with seven pre-1994 commissioned projects, for determination of tariff for the next MYT control period commencing 01.04.2014.
31. While notification of 13.08.1999 and 29.12.2000 lays down stipulation for retrospective application of purchase rate of Rs. 2.50 per unit in certain cases, as discussed in paras 28 & 29 above, the notification of 22.11.1994 does not lay down any specific terms and stipulations. Therefore, the Commission is of the view that all the SHPs up to 5 MW commissioned after 1994 i.e. Killar, Thiro, Sal-II, Gumma, Holi and Bhaba Augmentation projects, do not meet the test of notifications dated 13.08.1999 and dated 29.12.2000 because these projects were allotted to Board for construction much before 1999 and therefore their deemed MOU or PPA dates were also much before advertisement for phase-I and phase-II projects. Hence, all these projects can be treated as eligible for a rate of Rs.2.25 per unit as per 22.11.1994 notification. HPSEBL now being a distribution company and the generating stations with it also need to be treated at par with any other generating station of similar nature having PPA with it. Therefore, Commission is of the view that all these six SHPs up to 5 MW capacities are eligible for generic levelised tariff of Rs. 2.25 per unit for the balance useful lives of these projects and accordingly they are allowed a levelised tariff of Rs.2.25 per unit with effect from 01.04.2014 for the balance useful lives of these projects.

32. Petitioner has proposed levelised tariff of Rs.2.25 per unit for Ghanvi project on the lines of Patikari HEP and project specific tariff for Khauli, for which petition will be filed separately. As stated by the petitioner, MNRE in its policy for renewables provided for a tariff of Rs. 2.25 per unit for SHPs up to 25 MW capacities. Govt. of H.P. also suggested a tariff of Rs. 2.25 for projects between 5 MW to 25 MW while inviting proposals from IPPs for development of projects in 1999/2000, under which process Patikari was allowed tariff of Rs. 2.25. HPSEBL projects of similar nature also merit equitable treatment at par with private sector projects. Therefore, the Commission is of the view that Ghanvi and Khauli projects are eligible for levelised tariff of Rs. 2.25 per unit and hence allowed this tariff for the balance useful lives of these projects. Khauli project was commissioned in 2006, as per factual position at paras 6.49 and 6.159 of the Tariff Order for MYT period 2009-11, dated May 30, 2008, and its deemed PPA date, if it were private sector project, would have been much before the date from which 2007 HPERC Regulations are applicable. Provisions of contribution to LADA and down stream release of 15% water are also not applicable to these projects.

33. Sale /Purchase of Surplus Renewables under REC Framework:

After re-organisation of the Electricity Board, State Govt. decided to continue the existing generating stations with the licensee and re-vested them with HPSEBL. Therefore, generation activity amounts to other business of the licensee. Whether these generating stations are with the separate entity or whether it is with the distribution licensee, generation business definitely is not an inherent part of the distribution business and therefore, HPSEBL will be eligible to utilise its generation capacities, beyond its requirement to meet the RPPO, to sell at pooled cost of power purchase under REC framework. It can also sell surpluses as renewable energy to other obligated entities within and outside the State. The present REC Regulations does not make any distinction among the generators, whether of IPP or in State sector, for eligibility under REC. However, it is prudent and obligatory for the licensee to first meet its RPPO from its own generation and from long term PPA sources and if thereafter there is any surplus, licensee can decide to sell under REC framework or as green power, as is more viable and prudent to do so in either mode.

34. The present arrangements under REC framework require scheduling from renewable generating station, therefore, assured grid connectivity and effective communications is important for successful operation under REC. Some of the stations like Rong Tong, Rukti, Thiroth and Kilar are located in remote tribal areas where grid connectivity is neither reliable nor available for the entire year and therefore, these stations have to function mostly in isolation mode as decentralised distributed generation. Similarly, stations like Chaba and Chamba would be required as standby stations for emergency supply to Shimla and Chamba towns. Therefore, Commission is of the view that all such stations may not be operationally

suitable under REC framework. Hence, licensee may identify stations under REC mechanism, which are relatively of higher capacities and have better grid connectivity. CERC and Forum of Regulators are examining whether the distribution licensees should be made eligible to sell its surplus renewables under REC mechanism after meeting its RPPO, in aggregate terms from all sources instead of station-wise scheduling. Therefore, if such aggregate surplus energy from all sources are eligible to be sold under REC at APPC, HPSEBL shall also be eligible to sell entire renewables surpluses without scheduling requirements.

35. REC is an option for a generator and hence it can be a short-term measure and also for either whole or part of the generation. REC framework may not be a permanent viable arrangement for HPSEBL, and hence the tariff of those stations, which are not covered under generic levelised tariff, will be determined in accordance with the MYT principles under Himachal Pradesh Electricity Regulatory Commission (Terms and Conditions for determinations of Hydro Generation Supply Tariff) Regulation, 2011. In case RECs are not traded/sold, the petitioner will get tariff as determined by the Commission for each station during MYT control period and APPC rate shall be admissible for only those quanta of energy against which RECs are actually sold and revenue/proceeds realised.

36. Choice of sale of surplus renewables, as green power or under REC framework:

36.1 State has a huge renewable potentials in its SHPs and therefore it is possible that HPSEBL has net surplus after meeting its RPPO, from its own generation and long term PPA sources. The issue of surpluses has to meet the test of merit order purchase, keeping in view the availability from its own sources as first obligation to purchase. Therefore, if there is any surplus renewable, it is the costliest renewable power at the margin in the merit order, which could have been avoided from purchase. However, this does not happen because the licensee has to have long term PPAs to meet future long-term demands.

36.2 While disposing surplus power, if any, cost of such power needs to be taken in to account. Its cost to HPSEBL for disposal is not only the long term PPA rate i.e. tariff approved by Commission at interconnection point, but also the transit cost for disposal, which include wheeling charges and losses, transmission charges and losses, administrative costs etc. Hence, the actual cost at inter State/inter Region point has to be arrived at and kept in to consideration. This factual position is also applicable to purchases under APPC beyond the annual energy requirement because such surpluses also have to be sold and full costs recovered.

36.3 While it is the choice of generator to sell power in any manner including under REC framework, it is also the option of the licensee to buy in any manner subject to

being competitive in the ultimate interest of the consumer. Therefore, while HPSEBL is eligible to sell power from its generating stations to its distribution business account under REC framework, yet it has to see whether it is prudent for distribution business to buy under APPC keeping in view the implications to consumers and overall gains, taking in to account various other options available. It does not make a sense for HPSEBL, from the point of view of consumers' interest, to buy cheaper power from its own stations at APPC, which is higher than regulated tariff, unless it is a better commercial option. There is an alternative option of selling to other obligated entities within and outside the State, as green power to meet their RPPOs.

36.4 The levelised tariff of Rs.2.25 per unit applicable to certain stations is almost equal to APPC, which for the year 2013-14 is Rs.2.17 per unit. Therefore, if these stations sell power under REC framework, HPSEBL gains Rs.1.42 per unit if sold at current floor price of Rs.1.50. Tariff of the other 9 stations are comparatively lower i.e. ranging from 67 paise (Andhra) to 199 paise (Gaj). Sale from Andhra project under APPC at Rs.2.17 means HPSEBL (consumer) has to pay Rs. 1.50 per unit more than regulated tariff and recovery by sale of REC is also Rs. 1.50, which makes it a futile exercise. Therefore, even though being eligible, power from its own stations where tariff is much lower than APPC, should not be purchased under REC framework. Where tariff is near equal to APPC or higher than APPC, purchase from such sources under REC framework is prudent.

36.5 The other option available is to sell green power to other obligated entities, within and outside the State. RPPO compliances are likely to be faithfully done and therefore, neighboring State may buy green power or RECs to meet their RPPO till the time local capacities are created. Average cost of power purchase in these states are higher and hence may go for buying either green power or RECs, whichever is more competitive. Therefore, HPSEBL has to exercise prudence before deciding whether to dispose surplus green power under REC framework or as green power as such to obligated entities. Commission is of the view that in event of surpluses, costly power being purchased under long term PPA from SHPs of IPPs should be sold under REC framework to HPSEBL and thereafter if there are surpluses, power from stations which are covered under generic levelised tariff of Rs. 2.25 should be sold under REC framework. Power from other stations of HPSEBL having lower tariff should be sold as green power on premium if there is aggregate surplus of overall availability from all sources, conventional and renewables.

37. **Sharing of Revenue Gains under REC framework:**

HPSEBL has proposed that revenue realized from sale from RECs, shall be passed on to the consumer whereas the revenue on account of difference of APPC and regulated tariff will be retained by HPSEBL in its generation account to be spent on

generation business only. Commission agrees with the proposal that revenue realized from sale of RECs will be passed on to the consumers. However, Commission is of the view that to retain the differential amount between APPC and regulated tariff amounts to loading such amount to tariff to the consumers, which is against the tariff principles and hence should not be resorted to. However, there is a need to incentivise HPSEBL to sustain its initiative to maximize gains through prudent disposal of surplus renewables. Presuming floor price remaining constant at current level and RECs are traded at floor price, the net revenue will be what is left after adjusting gap between higher regulated tariff of such renewables and lower APPC. Tariff for SHPs under 2007 Regulation is about Rs. 2.95 and under 2012 regulation is about Rs.3.34. Gross realization under REC at floor price is $2.17+1.50=3.67$ and therefore, net gains will be 72 paise to 33 paise. Accordingly, Commission allows 20% of the proceeds of sale of RECs realized to be retained as incentive by generation business account of HPSEBL for utilisation in generation business and 80% shall be passed on to the consumer in tariff. This incentive may be reviewed by Commission, based on experience gained, in future.

38. Conclusion:

Gist of the decisions on various issues are as under:-

- (1) Based on all the relevant factors, including hydrological potential, techno-economic viabilities, social benefits etc., project is designed and executed with planned energy output as per design and therefore, design energy should not be changed during its useful life. Lower generation is no ground for review of design energy. Review with intent to ensure adequate recovery to generator is against the tariff principles. However, those stations which have completed useful lives of 40 years do involve capital investment for modernization and life extension and such investment may necessitate either rerating capacity or restating design energy. Accordingly, Commission orders restatement of design energy in accordance with normative CUF of 45% in cases of Chamba and Nogli projects. Commission orders retaining current design energy, although HPSEBL has suggested marginal increase, in case of Chaba project.
- (2) While design energy shall not be restated for the projects, for the purposes of working out energy availability for distribution business, normative CUF of 45% shall be taken for all the projects which are eligible for generic levelised tariff. This is tariff neutral and realistic for procurement planning. Performance accountability in accordance with approved design energy of each project is the concern of the HPSEBL management. Commission will consider aggregate generation from all these SHPs for performance monitoring instead of project wise performance. However, incentive for generation beyond aggregate target will be allowed to generation business

account, which may be utilized in generation or transferred to distribution business as income from Other Business. Tariff for secondary energy for specific station will be admissible for its additional generation, after adjusting surplus to meet deficit of other station(s).

- (3) In accordance with Govt. of HP notification dated 22.11.1994 and notification dated 13.08.1999 read with notification dated 29.12.2000, reference date for applicability of tariff with respect to projects in private sector is date of MOU or PPA signing and not the commissioning date. Principles applicable to private and joint sector projects shall be followed for Boards own projects also. Deemed date of signing MOU or PPA for all the projects of Board are before the year 1999, because they were allotted much before this date. Hence, all the projects commissioned after 1994, up to 5 MW, are eligible for levelised tariff of Rs. 2.25 per unit. Ghanvi and Khauli projects above 5 MW are eligible for levelised tariff of Rs.2.25 in line with Patikari project. Commission allows tariff of Rs. 2.25 per unit for all the projects, except Gaj and Baner (which are not micro hydro projects and hence are not covered under notification dated 22.11.1994) commissioned after 1994 and such tariff shall be applicable w.e.f. 01.04.2014 for the balance useful lives of these projects. All the other 9 projects i.e. Gaj, Baner and 7 pre-1990 SHPs will be subject to project specific tariff determinations, for which HPSEBL shall file petition for the MYT control period of FY15-FY19 in continual to tariff order for 2011-14.
- (4) Any surplus energy from renewable sources, both from own generation and long term PPA with IPPs, after meeting RPPO are eligible for sale/purchase under REC framework by HPSEBL. However, such purchase at APPC rate should not encumber the consumers of HPSEBL, particularly where regulated tariff is much lower than the APPC and REC sales revenue is not adequate to benefit consumer. Hence, only those sources should be considered under REC framework where tariff is higher than APPC. APPC shall be allowed only to the extent RECs are traded and revenue realized and for the balance surplus energy regulated tariff shall be applicable.
- (5) HPSEBL shall pursue sale of green power to other obligated entities, within and outside the State, where such transactions give better returns than sale under REC framework.
- (6) To incentivise sales under REC framework, HPSEBL is allowed to retain 20% of sales realizations of RECs to its generation business account for utilization in generation business. Balance 80% of revenue from REC sales will be passed on to the consumers in tariff.

- (7) The gist of Commission's approval of design energy, energy availability, and tariff, in accordance with this order is as under:

Project wise Design Energy (DE); Energy availability based on approved design energy or normative CUF of 45%, as applicable; and tariff.

Sr. No.	SHP COD	Capacity (MW)	DE (MU)	CUF %	Energy Availability	Aux. Con. (MU)	Free Power (MU)	Net Saleable Energy	Tariff Rs/Unit
1	Ghanvi 2000	22.50	93.34	47.36	93.34	1.12	11.07	81.15	2.25
2	Andhra 1987	16.85	87.30	58.80	87.30	0.87	Nil	86.43	Project Specific
3	Baner 1996	12.00	60.67	57.72	60.67	0.61	7.21	52.85	Project Specific
4	Khauri 2006	12.00	49.95	47.52	49.95	0.35	5.95	43.65	2.25
5	Gaj 1996	10.50	38.31	41.65	38.31	0.38	4.55	33.38	Project Specific
6	Binwa 1984	6.00	29.25	55.65	29.25	0.20	Nil	29.05	Project Specific
7	Thirot 1995	4.50	23.44	59.46	17.74	0.16	Nil	17.58	2.25
8	Bhaba Aug 2011	4.50	23.44	59.46	17.74	0.16	Nil	17.58	2.25
9	Gumma 2000	3.00	18.11	68.88	11.83	0.12	Nil	11.71	2.25
10	Holi 2004	3.00	17.52	66.70	11.83	0.12	Nil	11.71	2.25
11	Nogli 1963	2.50	9.85	45.00	9.85	0.10	Nil	9.75	Project Specific
12	Sal-II 1999	2.00	12.52	71.50	7.88	0.09	Nil	7.79	2.25
13	Chaba 1913	1.75	7.67	50.00	7.67	0.08	Nil	7.59	Project Specific
14	Rongtong 1986	2.00	7.64	43.62	7.64	0.08	Nil	7.56	Project Specific
15	Rukti 1979	1.50	6.54	49.80	6.54	0.07	Nil	6.47	Project Specific
16	Chamba 1938	0.45	1.77	45.00	1.77	0.02	Nil	1.75	Project Specific
17	Kilar 1995	0.30	1.16	44.25	1.16	0.01	Nil	1.15	2.25
	Total	105.35	488.48		460.47	4.54	28.78	427.15	

39. Commission orders accordingly.

--sd--
(Subhash C Negi)
Chairman.

