

BEFORE H P ELECTRICITY REGULATORY COMMISSION
SHIMLA
(Original Jurisdiction)

Petition No. 173/06

In the matter of:

M/s H.M. Steel Ltd., Trilokpur Road, Kala amb,
Distt.Sirmaur, HP.

... Petitioner.

Versus

Himachal Pradesh State Electricity Board, Vidyut
Bhawan, Shimla-4. (through its Secretary)

.... Respondent

...
Petition under section 62 (4) of the Electricity Act, 2003, for amendment of the tariff for the financial year 2006-07.

Present for: M/s H.M.Steel Ltd. : :Sh Ankush Dass Sood, Aadv.
:Sh Parmesh Sharma, Adv.
:Sh P.C.Dewan, Adv.

HPSEB : :Sh Bimal Gupta, Adv.
:Chief Engineer (Comm.)
:Director (SERC)

ORDER

(Last heard on 24-03-2007 and Order reserved)

1. M/s H.M. Steel Ltd., Trilokpur Road, Kala Amb, Distt. Sirmaur, HP. (hereinafter referred to as the petitioner), having connection on 132 KV line is classified as EHT and power intensive unit. The petitioner has contracted demand of 14,800 KVA and sanctioned load of 19,500 KW. The demand charges have been fixed @ 250/- KVA per month. The petitioner has adequately invested for providing a 132 KV bay in the HPSEB system, 132 KV line from HPSEB sub-station to its factory premises and has also established its own 132 KV sub-station. The equipment installed at the 132 KV Sub-Station of the petitioner is SF₆ breakers, current transformers, potential transformers, isolators, lightening arresters, 132 KV step-down power transformers etc. Further the distribution from 132 KV sub-station of the petitioner is also at the cost of the petitioner.
2. The HPERC, vide its Tariff Order dated 3.7.2006 determined the Annual Revenue Requirement (ARR), Transmission and Bulk Supply Tariff and Distribution and Retail Supply Tariff of the HPSEB for the financial year 2006-07. The said tariff has been determined in accordance with the provisions of the Electricity Act, 2003 and on the basis of the HPERC (Terms and Conditions for Determination of Tariff) Regulations, 2004, guidelines laid down in section 61 of the Electricity Act, 2003, the National Electricity Policy, the National Tariff Policy and the Commission's Tariff Philosophy articulated in its concept paper issued on 18th May, 2006.

3. According to the Tariff Order, Power Intensive Units have been classified under clauses 9.71 & 9.72 which for facility sake are reproduced below :-

“9.71: The Commission has introduced Power Intensive Units (PIUs) category in this tariff order to separate them from Large Industrial Power Supply category. This schedule is applicable to Power intensive industries like mini steel plants, rolling mills, re-rolling mills, mini steel plants with rolling mills, sponge iron plants, ferro alloys/ferro silicon units and arc/induction furnaces.

9.72: The Commission has introduced PIU category in this tariff order by identifying the different nature of energy consumption of the industries in this category from other industries. Energy charges and consumer service charges for this category will be the same as Large Industrial Power Supply category while their Demand Charges will be higher. The Commission is proposing higher demand charges as these industries have significant impact on overall system stability. The tariff approved by the Commission is given in the table below:-

Table 73: Existing proposed and Approved Tariff for PIU Category.

| | Existing | | | Proposed | | | Approved by the Commission | | |
|-----|----------------|----------------|----------------|----------------|-----------------|----------------|----------------------------|----------------|----------------|
| | Energy Charges | Service Charge | Demand Charges | Energy Charges | Service Charges | Demand Charges | Energy Charges | Service Charge | Demand Charges |
| | Rs/kVAh | Rs/con/month | Rs/kVAh/Month | Rs/kVAh | Rs/kVAh/Month | Rs/kVA h/Month | Rs/kVA h/ | Rs/con/month | Rs/kVA h/Month |
| EHT | 2.10 | 300 | 165 | 2.60 | 300 | 210 | 2.00 | 300 | 250 |
| HT | 2.20 | 200 | 240 | 2.70 | 200 | 210 | 2.10 | 200 | 330 |

4. The petitioners have invoked the provisions of section 62 (4) and section 64(6) for the purpose of amendment of the tariff as according to the petitioner this classification offends the provisions of sub-section (3) of section 62 of Act, for the reasons :-

(a) that clauses 9.71 & 9.72 provide for classification of Power Intensive Units and separate them from Large Industrial Power Supply category. Only mini steel plants, rolling mills and other category of Industrial Units in the category of steel have been grouped together as Power Intensive Units and the demand charges on EHT Transmission @ Rs. 250 per KVA per month have been levied. This is not the case with other Large Power Supply units who have been categorized to pay EHT demand charges @ Rs. 170 kVA per month. The difference between the two works out Rs. 80/- per KVA per month;

(b) that there is no difference in the steel and cement units consuming the same amount of electricity, having the same equipment for maintenance and working with same number of shifts. The petitioner, having connection on 132 KV line with sanctioned load of 19.5 MW, have been classified as EHT and Power Intensive Units, but two other units namely ACC Cement works at Barmana and Gujrat Ambuja at Darlaghat, having their connection on 132 KV line with sanctioned load of 40 MW have not been treated so. There is no justification as the other Industrial units having the same sanctioned load, the same consumption and the same amount of equipment should be placed in different categories. The cement plants have been classified as Large Power Supply units, whereas, the petitioner is classified as power intensive unit, although both are in the 132 KV EHT category;

- (c) that the metering of all these units is on the basis of 132 KV. There is no justification as to why there should be distinction for the purpose of Demand Charges between the two;
- (d) that such classification is irrational and prohibited by section 62 (4) of the Act and violates Article 14 of the Constitution. Further such classification has also not been provided for by the National Electricity Policy, the Tariff Policy or the principles as specified in section 61 of the Act or in the concept paper.
5. To examine the issues raised by the petitioner, the Commission asked the petitioner to submit the proof for not affecting system stability and also the respondent Board to submit the generic statement, stating the relevant factors which normally affect the system stability in the steel and furnace industries and also with special reference to the Baddi and Barotiwala area.
6. The respondent Board filed the generic statement regarding relevant factors which normally affect the system stability in the steel industries, and urged that before passing an order, the adverse effect of the petition on the approved ARR of the Board for FY 2006-07, may be taken into consideration by the Commission.
7. Steel Manufacturers' Association has also filed a separate appeal i.e. Appeal No. 206 of 2006, i.e. the Himachal Steel Manufacturers Association V/s HPERC & others and is still pending for adjudication before the Appellate Tribunal for Electricity.
8. Keeping the above in view the following issues emerges for consideration:-
Issue No.1: Whether the PIUs can be categorized as a separate class from the HT/EHT Industries?
Issue No.2: Whether the tariff order dated 3rd July, 2006 for the FY 2006-07 needs to be amended?
9. The Commission deals with the various issues of the petitioners listed in the preceding para:
Issue No.1 Whether the PIUs can be categorized as a separate class from the other H.T./E.H.T. Industries?
The petitioner has contended that PIUs cannot be categorised as a separate class from the HT/EHT Industries. The impugned Tariff Order treats steel units (like mini steel plants, rolling mills, re-rolling mills, mini steel plants with rolling mills, sponge iron plants, ferro alloys/ ferro silicon units and arc/induction furnaces) as separate from the Large Industrial Power Supply category. By reason of this classification the energy charges and consumer service charges, for this category are the same as are for the Large Industrial Power Supply category, while their demand charges are higher. The petitioner has pleaded that steel units cannot be treated as a distinct class as compared to other high tension industries, for determination of power tariff. There is no justification as to why the Industrial units having the same sanctioned load, the same consumption and the same amount of equipment should be placed in different categories.
10. Shri. Ankush Dass Sood, Advocate, appearing on behalf of the petitioner has stated that it is necessary that there must be substantial basis for making classification and object sought to be achieved. Thus the classification of the PIUs being arbitrary and irrational

and not based on intelligible differentia is violative of Article 14 of the Constitution of India. In support of his contention he has cited the Supreme Court decision in Laxmi Khandsari V/s State of U.P. AIR 1981 S.C 873. He has further stated that M/S A.B. Power System Solutions, Pune, were approved to carry out the harmonic studies of various Industrial Units in the State of Himachal Pradesh and the report prepared by the said firm was submitted to the HPSEB and no comments there on were sent to the petitioner, thus the petitioners assumed that the report was correct and is as per satisfaction of the field staff and as also of the Board. The harmonic distortion in the case of the petitioner is only 2.5% and has not exceeded the permissible limit of 3%. The learned Counsel has further stated that this is a major connection of 19,500 KW power. The 132 KV connection was released almost two years back and at that time details of all the equipments alongwith test certificates of the manufacturers were given to the officers of the respondent Board, who further carried out the tests required before the commissioning of the equipment installed at the works of the petitioner took place and also verified the test reports given by the manufacturers to the petitioner.

11. In reply the respondent Board have relied upon section 62(3) of the Electricity Act, 2003, which provides for differentiations on account of load factor, power factor, voltage, total consumption of electricity during any specified period, nature of supply and purpose for which it is supplied. Thus the Commission has the power to classify the PIUs for separate treatment.
12. Shri. Bimal Gupta, Advocate appearing on behalf of the respondent Board has stated that the classification of the Steel Manufacturing Industry as Power Industry Unit is not arbitrary and is most reasonable classification. Similar classifications exists in other States i.e. the State of Punjab and Uttranchal.
13. The respondent Board have stated that the Steel Mills, arc furnaces and induction furnaces are Energy users and their real and reactive power demands vary substantially with the period of time. On the other hand other industrial plants purchase as much or more power but their power drawl does not change to same extent. Further according to the pleadings of the Board the effect of steel mills on system operation is as under:
 - fluctuation in voltage : Intermittent and variable current drawl causes fluctuation in voltage;
 - generation of harmonics interferes with the operation of customer equipment;
 - the unbalanced loads and fluctuating current created by steel mills over-heat the power system transformers, generators and increase the potential power system instability;
 - the harmonic and inter harmonic current generated by steel mills stimulates torsional response, a sense of stress and fatigue on power system elements which causes pre-mature aging of Electrical Insulations;
 - there is increased thermal loading of power system elements, and increase in the voltage regulation problem on the net work due to large power requirement of steel mills;

The effect of harmonic distortion includes overheating of transformers, motors, generators, cables switch gears and other equipment leading to their pre-mature failure, malfunctioning of electrical and electronic controls of equipment, PLC, UPS and other sensitive electronic devices, spurious tripping of C.B and relays,

excessive neutral current and consequent heating of neutral conductor, higher neutral to ground voltage (Common mode noise), premature failure of capacitors, reduction in power factor, harmonic resource in the power system and interference in communication network.

Harmonic current flowing in the system causes energy loss. Harmonic current increases $I^2 R$ loss in cables, transformers, motors and other equipments. Since harmonic increases the skin effect, the effective resistance of the conductor increases, leading to high $I^2 R$ loss in the system. Harmonics also increase the eddy current and hysteresis losses in transformers and motors etc.

14. The Commission had introduced PIU category in the Tariff Order by identifying the different nature of energy consumptions of the industries in this category from the other industries. The Commission had proposed higher demand charges on the assumption that these industries have the impact on overall system stability.
15. In *Ferro Alloys Corporation Ltd V/S APSE Board AIR 1993 AP 183* the question of classification of PIU has been considered wherein it has been laid down that classification of "Power Intensive Industries" is not hit by Article 14 of the Constitution. The classification of Power Intensive Industries is not only founded on an intelligible differentia distinguishing the HT category-I consumers but the differentia has also its rational relation to the object sought to be achieved by Section 49 (3) the Electricity (Supply) Act, 1948. Section 49(3) (ibid) which corresponds to Section 62 (3) of the Electricity Act, 2003, is the enabling provision to classify the consumers and to fix differential tariffs. As long as the classification is not invalid and fixation of tariff is not arbitrary, the classification and the fixation are immune from challenge. The classification is based upon a reasonable differentia and bears rational relationship to the object sought to be achieved by exercising the power vested under Section 62(3) of the Act and thus it is a valid one. The PIUs come under a separate category different from H.T category consumers and, therefore, fixation of separate tariff for them, whether it is less or more than for the consumers under HT category I, cannot be discriminatory, much less arbitrary because the classification as held supra has a rational nexus sought to be achieved by virtue of the powers vested in the Commission under Section 62(3) of the Act which corresponds to section 49(3) of the Electricity (Supply) Act, 1948.
16. The question of classification of PIUs as a separate class from other HT Industries has also been considered by the Hon'ble Appellate Tribunal for Electricity in Appeal Nos 124, 125, 177 of 2005 and 18 of 2006, directed against the orders of the Uttaranchal Electricity Regulatory Commission (UERC) and the Appellate Tribunal for Electricity vide its Judgement dated 2nd June, 2006, has agreed with the UERC that the Steel Units can be placed as separate category. The said Commission (UERC) has also justified separate categorization of steel units on the plea that in the induction/ arc furnaces, the magnitude of current changes abruptly and sometimes periodically cause changes, large swings in power and consequent voltage fluctuations. In order to insulate other consumers from the problems that Commission has even suggested to supply units through independent feeders not below 33KV.

17. After careful consideration of the views and arguments of both sides and the decisions referred to in the foregoing paras, the Commission is of the firm view that the steel units can be placed as a separate category.

Issue No.2: Whether the Tariff Order dated 3rd July, 2006, for the FY 2006-07, needs to be amended?

18. The Commission now proceeds to deal with the need for an amendment in the tariff order based on the inculcation of a higher demand charges on a separate PIU classification. The tariff order unambiguously states that the Commission has introduced PIU category to separate it from the Large Industrial Power Supply category. This schedule is applicable to power intensive industry like mini steel mills, rolling mills and large induction furnaces etc. The tariff order also states that the high demand charges are proposed for the PIU category as these industries have significant impact on the overall system stability.
19. The above tariff order was issued in July, 2006. Subsequently the Appellate Tribunal for Electricity in its judgement dated 21-8-2006 in case No.175/05 pertaining to the HPERC had held that the Commission had no authority to levy harmonic injection penalty and that the levy of the said penalty by the tariff order needed to be set aside. The question, therefore, arises whether the additional demand charges as prescribed in the tariff order should be treated as a penalty in view of the fact that it was ab initio based on the need for assessing the negative impact of this industry on the grid system per se.
20. The H.P. State Electricity Board in its submissions has stated that the steel mills or furnaces etc. are high energy users and their real and reactive power demand vary substantially over time whereas the skews do not get affected as markedly in other industrial plants. The Utility is of the view that the steel industry generates harmonics, which interfere with the grid, with the operation of the customers' equipment, over-heat power system transformers and generators and increase the potential power system instability, increase thermal loading of power system elements and stimulate stress fatigue of power system elements which cause pre-mature aging of electrical insulations. The said Utility has concluded that in view of the Commission's directions in the Tariff Order for the FY 2004-05 the Board had been directed to conduct a study in accordance with IEEE Standards 519 and in compliance to the above directions the Board had short listed/authorised M/s AB Power System Solution, Pune to conduct the harmonic study at the petitioner's premises as a sample case. Subsequently on recommendations of the M/s AB Power System Solution, Pune the harmonic filters were installed at the premises of a number of consumers who were generating harmonic distortions within the system.
21. The Board's observations on system stability were responded to by a system stability report on behalf of the petitioner which indicated that "harmonics were being suppressed by installing capacitors on each furnace, that no fault of over-current had appeared on the main 132 kv Majri – Kala Amb line for more than 6 months, the line is presently loaded upto about 60 MVA against a capacity of about 75 MVA, with back up protection provided by 11 KV VCB and 132 kv SF₆ breakers etc." The Commission questioned respondents whether there is any anecdotal evidence or any reliable data which would seek to prove impact on system stability, since the higher demand charges did penalise such industry based purely on an unstable system scenario. The statement submitted by the Utility in this case has nowhere been able to prove any negative impact on the grid system because of the harmonic distortions created by the petitioner's unit. The Board

was only able to give general theoretical statements about the impacts but was unable to follow this up with evidence which showed distortions above the acceptable limits and impact on system stability.

22. The Commission had during the finalization of the Tariff Order for the FY 2006-07 found it fit to assume that system stability would be negatively impaired by a large PIU structure functional within the grid system. By their very nature, it was assumed, such units would tend to create harmonic distortions and affect system stability. The Commission was of the view
that although a higher charge would not per se help in positively assisting system stability approaches, it might lead to a structure wherein eventually harmonic filters and corresponding capacitor addition would be introduced suo mottu by the units so as to enable them to eventually exit the PIU regime or at least to retard entry of new units in this sub-sector. However, with the advent in August, 2006 of the direction of the Appellate Tribunal which negated penalties based on harmonics/system stability retarders, it became necessary to evaluate de novo whether the application of enhanced demand charges based on system stability parameters would be in direct contradiction to the decision of the Appellate Tribunal.
23. Thus, while dealing with this petition, the basic objective of retarding entry of power intensive industry in the electrical market was nullified in terms of the fact that the rationale of the decision was ipso facto overturned and new methodologies will need to be evolved for carrying out the purposes of the above objectives. It is, therefore, clear that in keeping with the Appellate Tribunal's orders as well as the Utility's inability to establish that PIU's impact on system stability, the higher demand charges prescribed and enshrined as a penalty are needed to be relegated to a level equivalent to cement and other industries.
24. In keeping with that it would, therefore, be prudent for the Tariff Order for the FY 2006-07 to be amended so as to bring PIU demand charges relegated to the equivalent to that of the other Large Industries. The Tariff Order for FY 2006-07 is, therefore, amended to that extent.
25. The Commission is aware that some instruments/measures have to be innovated within the overall structure in the State to ensure that higher energy intensive industry which will draw down a very large chunk of power needs to be dissuaded from entering the industrial set up in the State till such time as the overall generation scenario improves drastically. The Commission is aware that these industries are on the negative list as far as the approval by the Utility is concerned. However, over the passage of time, by a slow process of attrition, a large number of such industrial units have managed to get into the system thereby causing impact on the overall availability of power within the sector. It would, therefore, be essential to evolve ways and means to annul an ingress of more such entities within the industrial population in the State till improvements in the availability of power are noticed. The need for ensuring that more power intensive units are retarded from entering the electrical power market in the State, cannot be over-emphasised.

26. There is also a need as per the suggestion of the Appellate Tribunal in Order No.175/06 to introduce Regulations to deal with the issue of harmonic injection penalties. The Utility has been given directions in the earlier Tariff Order for the FY 2004-05 to assess the quantum of such distortions for this type of industry whereby the Board was to ensure that the loads connected at the inter-connection points do not introduce any harmonic voltage and distort the supply wave form beyond the supply limits and adequate monitoring should be undertaken at regular intervals of 6 months to ensure proper quality of supply. Unfortunately this activity has not been undertaken by the utility. The directions issued in the Tariff Order for the FY 2004-05 are, therefore, reiterated.
27. An issue which also needs to be considered is with regard to the introduction of a compulsory system of installation of harmonic filters across the Board in all high intensive power sub-system. This needs, to be specified and an intensive survey and monitoring be undertaken by the utility in this regard.
28. In the result of the above the Commission orders that;
- a) PIU classification is a valid categorisation and there is no need for the Commission to interfere with the last Tariff Order for FY 2006-07 to this extent on this account;
 - b) There is a need to introduce Regulations as per the Appellate Tribunal's order dated 21-8-2006 so as to deal adequately with the issue of harmonic injection penalties;
 - c) The enhanced demand charges on PIUs are relegated to the level of Large Industry.

Announced in the open court.

The case file be consigned to the Record Room.

Dated: 30-03-2007.

(Yogesh Khanna)
Chairman