

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 151/TT/2011

Coram:

Shri Gireesh B. Pradhan, Chairman

Shri M. Deena Dayalan, Member

Shri A.K. Singhal, Member

Date of Hearing: 01.04.2014

Date of Order : 11.02.2015

In the matter of:

Approval of transmission tariff for I) 1x500 MW HVDC back to back station at Sasaram (DOCO: 1.12.2002), II) Associated AC switchyard at Sasaram and Allahabad and Auxiliary System including 400 kV Sarnath-Allahabad line with associated bays etc. (DOCO: 1.12.2002) under Eastern-Northern Inter Regional HVDC Transmission System in Eastern Region for tariff block 2009-14 under Regulation-86 of Central Electricity Regulatory Commission (Conduct of Business) Regulations 1999, and Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations 2009.

And In the matter of:

Power Grid Corporation of India Limited
"Saudamini", Plot No.2,
Sector-29, Gurgaon -122 001

.....Petitioner

Vs

1. Rajasthan Rajya Vidyut Prasaran Nigam Limited,
Vidyut Bhawan, Vidyut Marg,
Jaipur- 302 005
2. Ajmer Vidyut Vitran Nigam Limited,
400 kV GSS Building (Ground Floor), Ajmer Road,
Heerapura, Jaipur-302 024



3. Jaipur Vidyut Vitran Nigam Limited,
400 kV GSS Building (Ground Floor), Ajmer Road,
Heerapura, Jaipur-302 024
4. Jodhpur Vidyut Vitran Nigam Limited,
400 kV GSS Building (Ground Floor), Ajmer Road,
Heerapura, Jaipur-302 024
5. Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House Complex Building II,
Shimla-171 004
6. Punjab State Electricity Board,
The Mall, Patiala-147 001
7. Haryana Power Purchase Centre,
Shakti Bhawan, Sector-6,
Panchkula (Haryana)-134 109
8. Power Development Department,
Govt. of Jammu and Kashmir,
Mini Secretariat, Jammu-180 001
9. UP Power Corporation Limited,
Shakti Bhawan, 14, Ashok Marg,
Lucknow-226 001
10. Delhi Transco Limited,
Shakti Sadan, Kotla Road,
New Delhi-110 002
11. BSES Yamuna Power Limited,
BSES Bhawan, Nehru Place,
New Delhi-110 019
12. BSES Rajdhani Power Limited,
BSES Bhawan, Nehru Place,
New Delhi-110 019
13. North Delhi Power Limited,
Power Trading & Load Dispatch Group,
Cennet Building, Adjacent to 66/11kV Pitampura-3,
Grid Building, Near PP Jewellers,
Pitampura, New Delhi-110 034

14. Chandigarh Administration,
Sector-9, Chandigarh-160 009

15. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248 001

16. North Central Railway,
Allahabad-211 003

17. New Delhi Municipal Council,
Palika Kendra, Sansad Marg,
New Delhi-110 002

....**Respondents**

For petitioner: Shri M.G. Ramachandran, Advocate, PGCIL
Ms. Poorva Saigal, Advocate, PGCIL
Ms. Anushree Bardhan, Advocate, PGCIL
Shri S.S. Raju, PGCIL
Shri M.M. Mondal, PGCIL
Shri Piyush Awasthi, PGCIL

For respondents: Shri Padamjit Singh, PSPCL
Shri T. P. S. Bawa, PSPCL
Shri Harimohan Saxena, NDMC

ORDER

The present petition has been filed by Power Grid Corporation of India Limited (PGCIL) seeking approval of transmission charges for I) 1x500 MW HVDC back to back station at Sasaram; and II) Associated AC switchyard at Sasaram and Allahabad and Auxiliary System including 400 kV Sarnath-Allahabad line with associated bays (hereinafter referred to as “transmission assets”) under Eastern-Northern Inter Regional HVDC Transmission System in Eastern Region for the period from 1.4.2009 to 31.3.2014, based on the Central Electricity Regulatory

Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as “the 2009 Tariff Regulations”).

2. The transmission assets covered under the instant petition have been commissioned on 1.12.2002. The annual transmission charges of the instant assets for the period up to 31.3.2009 were approved by the Commission vide order dated 9.5.2006 in Petition No. 64/2005 and were revised by the Commission vide order dated 2.5.2011 in Petition No. 228/2010.

3. The transmission assets were commissioned as under:-

S. No.	Name of the Transmission Assets	Date of Commercial Operation
1	1x500 MW HVDC back to back station at Sasaram (hereinafter referred to as “ Asset-I ”)	1.12.2002
2	Associated AC switchyard at Sasaram and Allahabad and Auxiliary System including 400 kV Sarnath-Allahabad line with associated bays etc (hereinafter referred to as “ Asset-II ”)	1.12.2002

4. The Asset-I covers the HVDC transmission system and Asset-II covers the AC transmission system. The transmission charges for Asset-I and Asset-II for tariff period 2004-09 were collectively approved by the Commission vide order dated 2.5.2011 in Petition No. 228/2010. However, in the instant petition, petitioner has submitted two sets of tariff calculations after bifurcation of HVDC and AC transmission system. The petitioner has submitted that the incentive during the tariff period 2009-14 was based on the annual transmission charges and the availability of HVDC and AC transmission system. The target availability of HVDC and AC

transmission as per the 2009 Tariff Regulations are different, therefore, the transmission charges are to be determined separately for HVDC and AC transmission system. The petitioner, as such has claimed the tariff for HVDC and AC transmission system separately in this petition.

5. The petitioner has claimed the transmission charges for the Asset-I and Asset-II as under:-

Asset-I

(₹ in lakh)					
Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	1467.69	1467.69	1467.69	1470.57	1473.44
Interest on Loan	812.59	715.89	619.33	523.88	446.68
Return on Equity	296.85	296.85	296.85	299.71	302.56
Interest on Working Capital	75.87	75.11	74.45	73.98	73.99
O & M Expenses	443.00	468.00	495.00	523.00	553.00
Total	3096.00	3023.54	2953.32	2891.14	2849.67

Asset-II

(₹ in lakh)					
Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	246.22	246.22	246.22	246.22	246.22
Interest on Loan	136.32	120.10	103.90	87.64	74.49
Return on Equity	49.80	49.80	49.80	49.80	49.80
Interest on Working Capital	34.47	35.59	36.79	38.08	39.52
O & M Expenses	508.91	538.06	568.84	601.38	635.71
Total	975.72	989.77	1005.55	1023.12	1045.74

6. The details submitted by the petitioner in support of its claim for interest on working capital are as overleaf:-

Asset-I

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance Spares	66.45	70.20	74.25	78.45	82.95
O & M expenses	36.92	39.00	41.25	43.58	46.08
Receivables	516.00	503.92	492.22	481.86	474.95
Total	619.37	613.12	607.72	603.89	603.98
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%
Interest	75.87	75.11	74.45	73.98	73.99

Asset-II

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance Spares	76.34	80.71	85.33	90.21	95.36
O & M expenses	42.41	44.84	47.40	50.12	52.98
Receivables	162.62	164.96	167.59	170.52	174.29
Total	281.37	290.51	300.32	310.85	322.63
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%
Interest	34.47	35.59	36.79	38.08	39.52

7. No comments or suggestions have been received from the general public in response to the notices published by the petitioner under section 64 of the Electricity Act, 2003. Respondent No. 7, Punjab State Power Corporation Ltd. (PSPCL) has filed the replies vide affidavits dated 24.5.2012, 3.7.2012, 25.6.2013, and 4.4.2014. Respondent No. 11, BSES Rajdhani Power Limited (BRPL) also filed reply vide affidavit dated 7.5.2012. The petitioner has submitted rejoinders to the reply of PSPCL vide affidavits dated 10.8.2012, 27.9.2012 and 3.10.2013. The petitioner has also submitted rejoinder in reply of BRPL vide affidavit dated 10.8.2012. The submissions made by the respondents and their clarifications have been dealt in relevant paragraphs of this order.

8. PSPCL has submitted that one of the assets covered in the petition i.e. 500 MW HVDC back to back station at Sasaram was proposed to be shifted to Kolhapur as decided in 26th Standing Committee meeting held on 13.10.2008. PSPCL has further submitted, that the dismantling of HVDC station and relocating it at Kolhapur could have been completed in about 6 months after the decision in October, 2008 and 400 kV Bypass of Sasaram could have been implemented immediately/in shortest possible time. The decisions as taken in 26th Standing Committee of CEA were reiterated in the ERPC meeting held on 10.4.2009. PSPCL has also submitted that as was evident from the agenda note and minutes of 31st meeting of CEA Standing Committee on Power System Planning of SR held on 16.11.2010, PGCIL did not shift the HVDC terminal on the plea that total cost of shifting would be about ₹43000 lakh, which was close to the cost of new module and the entire shifting proposal was later on dropped. PSPCL has submitted that due to non implementation of the shifting proposal by the petitioner the HVDC terminal had been taken into by pass mode and was not being utilized and it indicates that there was no coordination on the part of the petitioner.

9. PSPCL has further submitted that as HVDC terminal had been taken into by pass mode and not being utilized, it was also not meeting other objectives as described hereunder:-

“----- (i) There is no coordination since decision of 13.10.2008 was not implemented. Had there been coordination, the terminal would have been shifted to Kolhapur.

(ii) There is no "Economical" system since the full transmission charges are being levied for a system, which is not operational but bypassed for most of the time.

(iii) There is no smooth flow of electricity since under bypass condition there is no flow of electricity in the HVDC terminal.-----“

10. PSPCL has further submitted that due to non-shifting of HVDC terminal from Sasaram due to non-availability of space at Sasaram Sub-station, the 765 kV Gaya-Fatehpur line was not terminated at Sasaram but a line was constructed from Gaya to Fatehpur which is a long line with over-voltage risk on charging. PSPCL submitted that petitioner should disclose how it intends to utilize the remaining useful life of HVDC asset or whether the tariff of this asset is expected to be paid without any benefit at the present location. The loading of a transmission charge on consumers without benefit would not be fair or equitable particularly as the situation has arisen due to non-shifting of terminal to Kolhapur.

11. PSPCL has submitted daily energy import or export by Northern Region from Sasaram HVDC link on sample dates which shows that import of power is from 0 to 9.64 MU and export of power is 0 to 8.59 MU. This data establishes that power flow is taking place in both directions from ER to NR and also from NR to ER. As per the 2009 Tariff Regulations, there is a provision that the transmission charges of an inter-regional asset should be shared 100% by the importing region. This will require a review of the 2009 Tariff Regulations in the case of Sasaram, keeping in view the power flow in both directions. The representative of PSPCL further submitted that as per section 61(C) of Electricity Act 2003, the Sasaram terminal should be relocated

where it can be fully utilized for ensuring optimum investment as it is presently a stranded asset and hence, loading of tariff on NR would not be justified in such circumstances. It may be the easiest option for the petitioner to claim/charge tariff on an idle/stranded/ bypassed asset, but needs to be examined by the Commission, if it is in national interest.

12. BRPL submitted that the petitioner has not furnished the list of assets forming part of the project, but not in use, as the same is required to be taken out of the capital cost for the purpose of determination for the tariff period 2009-14. In view of the submissions of the respondents, the petitioner was directed to submit details regarding present utilization and future plan of utilization of Sasaram HVDC system.

13. In response, the petitioner has submitted that 500 MW Sasaram HVDC back to back was fourth HVDC back to back link, between Eastern and Northern Regions which was planned to facilitate exchange of surplus power among regions arising out of load variation. The need of ER-NR interconnection was felt in year 1997 when NR was facing shortage of 8.28% while ER was facing surplus to the order of 23.36% in terms of energy. It was assessed that NR would have shortfall of 21.5% in peak load and 7.2% in energy while ER would have a 6.9% deficit in peak load and 6.9% surplus in energy at the end of IX plan. The generating companies were facing power evacuation problem. As AC interconnection between ER-NR was technically not feasible, it was planned to interconnect Eastern and Northern Region asynchronously through HVDC line, to achieve a controlled power flow. Sasaram

HVDC was expected to address these problems and hence was proposed for implementation, the assets under consideration in this petition.

14. The petitioner, with regard to issue of sub-optimal utilization of the assets has submitted that there are large capacity AC lines in parallel. While operating the hybrid system of AC and HVDC line, the usage of any parallel HVDC back to back link in normal day to day operation would reduce dependence on the uncontrolled power flow over AC system. According to the petitioner, the presence of the HVDC link as a part of the hybrid network definitely can render valuable support to the grid during certain contingent situation in modulating the loadability of the lines to a certain extent and/or to have some control on the voltages prevailing in certain parts of the grid. The petitioner submitted that though in terms of capacity utilization the usage of Sasaram HVDC back to back link has reduced at present, it is still available for grid operator to use as when the need arises. The petitioner has cited the situations of optimal utilization of the assets under consideration. For example, the HVDC back to back line can be optimally utilized by the operator for the transfer of power from the Singrauli/Anpara generation complex during the outage of one circuit of Anpara-Sarnath 400 kV, when the other circuit gets loaded. The other situation is during the shutdowns/outage of the parallel AC lines in the upper corridor (Gorakhpur/Balia-Lucknow) in Eastern UP network, more power can be forced through this link by keeping it in HVDC mode. The petitioner submitted that Sasaram HVDC back to back link is a useful controllable transmission asset in hands of grid operator and had come to rescue of grid and in particular to NR constituents and

reiterated that Sasaram is available 24x7 for grid operator to use as and when such need arises.

15. The petitioner has rebutted the issue of non utilization of the assets as advanced by the PSPCL. The petitioner has submitted that it may not be fully correct to say that Sasaram 500 MW HVDC back to back is not being utilized at present as it is very much available for use but the usage has reduced and is being used under typical situations. The petitioner has further submitted that the inter-regional link was earlier conceived so as to facilitate exchange of surplus power and at the same time provide control in the hands of the operator. Sasaram HVDC back to back has been commissioned with AC transmission system which includes 500 MW HVDC back to back at Sasaram, Biharshariff-Sasaram (ER) D/C, Sasaram (NR bus)-Allahabad D/C. However, due to growth of the grid, the NR beneficiaries were able to conceive many large capacity inter-regional generations like, Tala, Kahalgaon, etc. in Eastern Region. These projects supplying power to the consumers of Northern Region through firm allotment of capacity leading to requirement of network which transferred bulk quantum of power. Hence, high capacity synchronous link were planned between Eastern Region and Northern Region. The Eastern Region was synchronized with Northern Region with the implementation of the transmission system associated with Tala HEP and Kahalgaon STPP-II. Therefore, to utilize the capacity available in the AC transmission line (Sasaram (NR bus)-Allahabad 400 kV D/C), the HVDC has been bypassed and Sasaram (NR Bus)-Allahabad is connected to the Eastern bus of Sasaram. However, depending upon

the requirement for control of power flow, the Sasaram HVDC back to back is being utilized.

16. The petitioner submitted that the chronology of planning and development of Indian Power System has followed a certain trajectory, based on requirement and load growth and this is a usual process for any growing system. Hence, it is natural that in such a large and complex system the usage factor of different components may vary with the passage of time. It is however always desirable to have flexibility in transmission system to have some control in power flows. To achieve this various FACTS devices like HVDC, SVC, TCSC, Series Compensation, etc are provided. The power flow can be modulated for smooth operation of AC network with these devices. Sasaram HVDC back to back station is one typical example of such nature and in future also whenever need arises, it can be used by the grid operators in a hybrid manner for controlling power flow on the transmission elements in and around that corridor as it has been of use in past. The HVDC link shall be of immense benefit for grid operation to mitigate the grid eventualities from time to time. Sasaram HVDC shall be operated with one 400 kV circuit towards the Northern Region and other circuit shall be directly connected to the Eastern Region bus. This was deliberated during the 29th Standing Committee Meeting of Northern Region Transmission Planning held on 29.12.2010 and subsequently in 19th NRPC meeting held on 4.1.2011. During the above meetings, the revised configuration has been discussed and agreed by the CEA and other Northern Region constituents. This

arrangement would help in utilizing the available capacity in the AC system while retaining the control feature of HVDC.

17. The petitioner with regards to the issue of shifting the Sasaram HVDC to Kolhapur submitted that it is not correct to say that relocating the Sasaram HVDC terminal at Kolhapur could have been completed in 6 months. Several pre-award activities are required to be carried out before start of work which inter-alia include, preparation of Detailed Project Report, Investment Approval, Tendering, Evaluation of bids and Award of work, etc. These activities typically take considerable time. In addition to shifting, the implementation of 400 kV lines as well as the new terminal was also to be implemented as part of the scheme. Hence, to assume that relocation of HVDC back to back link from Sasaram to Kolhapur could have been carried out just in 6 months time period is possibly only a conjecture without considering the ground realities.

18. The petitioner submitted that shifting of Sasaram HVDC terminal was not pursued further because IPPs in Southern Region did not materialize as expected and at the same time, wind energy generation was planned in a big way in Southern Region. The wind energy generation having nature of infirm injection of power, the need was felt to synchronize NEW/SR grid in near future. Further, the shifting was to be done by the same supplier who had provided Sasaram HVDC terminal, they had quoted very high cost and with this the total project cost, which included two HVDC 500 MW blocks (one through shifting and one new), was going up to about ₹123400

lakh and as the synchronous interconnection was also in advanced stage, the petitioner did not consider prudent to pursue the proposal of shifting of HVDC terminal to Kolhapur as concerns for its utilization after completion of 765 kV interconnection between Southern and Western Region would have arisen again.

19. The petitioner submitted that the decision of not shifting of Sasaram HVDC back to back was not a unilateral decision of CTU. The same was discussed and agreed in Standing Committee and Regional Power Committees. Planning is a continuous evolving process and when the envisaged scenario changed, the transmission system planning is to be reviewed and corrective measures to be taken wherever possible in the interest of coordinated and efficient planning. For example, due to delay in the generation projects in SR, their associated transmission system is not established even though they were approved in Standing Committee. The decision in respect of a transmission element which concerns different regions, the necessary agreement in all the regions is essential.

20. Central Electricity Authority (CEA) through submission dated 12.9.2013 has supported continuous use of HVDC Sasaram System as under:-

".... The 500MW HVDC back to back asynchronous link between ER & NR was installed in 2002 and it was the only interconnection transferring limited quantum of power to NR. Till the time NR grid was synchronized with ER-WR-NER during August 2007, Sasaram back to back HVDC link was being used fully. After synchronization, advantages of HVDC link was more realized not only to transfer power to NR but to modulate/control power flow in AC inter-connecting lines developed progressively, which in turn enabled to enhance the stability of NEW Grid (ER-NER-WR-NR). Our National Grid is expanding rapidly with huge inter-regional power transfer capability, and complexity of grid operation and control seems to have increased manifold. The

dynamic and transient stability of the grid is an issue. In this regard, utility of such an HVDC link across the ER-NR regions seems to provide an additional operational flexibility when either of the regional networks would experience major contingency. Further, AC filters (inherent component of the HVDC link) would provide reactive power support to control system voltage whenever HVDC converter station is not in service. In our view, the Sasaram HVDC link would play an important role to provide better controllability in system operation and enhance stability of the integrated grid. We feel it prudent to continuing the HVDC back to back link at Sasaram."

21. POSOCO vide letter dated 10.6.2013 has submitted the perspective of different stakeholders which is as hereunder:-

"----- a) The system operator has to take full advantage of the transmission assets deployed as per the network rollout plan of the Central Transmission Utility (CTU) and Central Electricity Authority (CEA). There could be some transmission assets which get delayed leading to network constraints. On the other hand there could be many assets commissioned in advance, however non-availability of generation or less load growth can lead to these assets not being loaded fully. System Operator has little control on these aspects, apart from assessing the network capability considering all these assets.

b) Sasaram HVDC back to back station of 500 MW capacity was commissioned in 2002 and therefore put to full use during the 2002-2008 period when its transmission capacity was significant in comparison to the total capacity on the East to North inter-regional link. Even when it was not loaded fully, its capacity of 500 MW provided scope for 1000 MW regulation on the parallel AC lines connecting Eastern region and Northern Region.

c) As more and more AC lines have got commissioned between Eastern Region and Northern Region, the Sasaram HVDC capacity became relatively insignificant and therefore w.e.f. December, 2008, it was decided to operate the same in AC bypass mode under normal conditions. In fact today the East to North transmission capacity is 12130 MW as per the National Electricity Plan of Central Electricity Authority and 500 MW Sasaram capacity is relatively insignificant compared to this capacity. Even if Sasaram is operated on HVDC mode, the high capacity 765 kV Sasaram-Fatehpur and 400 kV Sasaram-Balia quad Moose line emanating from the East Bus to Northern Region virtually amounts to a bypass of the HVDC link. In fact on a number of instances, like during the June to September period when the Northern region demand is high, it may be more beneficial to operate the AC bypass at Sasaram rather than in HVDC mode.

d) The HVDC mode, since available, is used for limited relief under the following conditions:

- i. Controlling loading on 400 kV Anpara-Sarnath section whenever one circuit is out (using HVDC in East to North direction with higher power order).
- ii. Controlling loading on 400 kV Biharsharif-Sasaram section whenever there is an outage of one of the circuits (using HVDC in North to East direction). -----."

22. We have considered the submissions of the petitioner, PSPCL and CEA with regard to the optimum utilization of the 500 MW HVDC back to back system at Sasaram between ER & NR. PSPCL has raised the utilization of the HVDC line subsequent to synchronization of NR grid with ER-WR-NER grid in August, 2007. The Commission in the Record of Proceedings of the hearing dated 20.6.2013 had directed CEA to file its comments on the relevance/advantage of continued use of HVDC back to back system at Sasaram, along with likely constraints in grid operation, if any, in the event of non-availability of the HVDC station. CEA submitted its report vide letter dated 12.9.2013 where it has recommended to continue with the HVDC back to back link at Sasaram. The Commission sought the comments of the constituents of the NR vide letter dated 4.11.2013. In response to the letter, none of the constituents of the NR have filed any reply. However, by an additional affidavit dated 4.4.2014, PSPCL has reiterated its earlier submission of very insignificant use of the HVDC line presently and for re-location of HVDC sub-station where it can be fully utilized. After considering the submissions, we are inclined to accept the comments of CEA according to which the Sasaram HVDC link would play an important role to provide better controllability in system operation and enhanced stability of the integrated grid. Accordingly, the tariff of the HVDC system has been allowed in this order.

CAPITAL COST

23. The last proviso to clause (2) of Regulation 7 of the 2009 Tariff Regulations provides as under:-

“(2) Provided that in case of the existing projects, capital cost admitted by the Commission prior to 1.4.2009 and the additional capital expenditure projected to be incurred for the respective year of the tariff period 2009-14 as may be admitted by the Commission, shall form the basis for determination of tariff.”

24. The assets were commissioned prior to 1.4.2009. The Commission admitted the capital cost of ₹32989.12 lakh as on 31.3.2009, vide order dated 2.5.2010 in Petition No. 228/2010 for determination of tariff for the period 2004-09. The admitted capital cost determined in the order was combined cost of AC and HVDC portion. Hence, in order to determine the separate tariff of AC and HVDC portion in the instant petition, the admitted capital cost needs to be bifurcated between respective HVDC and AC assets i.e. Asset-I and Asset-II respectively.

25. The Commission has also allowed the incentive for 2008-09 based on the equity cost of ₹1618.10 lakh as on 1.4.2008 corresponding to HVDC portion vide order dated 12.12.2013 in Petition No. 162/2009. The total equity as on 1.4.2008 for the subject transmission system was ₹1939.67 lakh. Accordingly, the balance equity pertaining to AC portion has been worked out to ₹321.57 lakh. The admitted capital cost as on 31.3.2009 has been bifurcated between Asset-I and Asset-II in the ratio of corresponding equity of HVDC transmission system and AC transmission system. The details of bifurcation of capital cost are as overleaf:-

(₹ in lakh)

Particulars	Admitted cost as on 31.3.2009 in Petition No. 228/2010	Asset-I (HVDC)	Asset-II (AC)	Total
Equity detail as on 1.4.2008				
Equity admitted in Petition No. 162/2009		1618.10	321.57*	1939.67
		83.42%	16.58%	100.00%
Capital Cost as on 31.3.2009				
Freehold Land	113.11	94.36	18.75	113.11
Leasehold Land	-	-	-	-
Building & Other Civil Works	1160.09	967.77	192.32	1160.09
Transmission Line	8446.96	7046.59	1400.37	8446.96
Sub-Station Equipments	23215.66	19366.87	3848.79	23215.66
PLCC	53.30	44.46	8.84	53.30
Total	32989.12	27520.05	5469.07	32989.12

(*Equity for the AC portion as on 1.4.2008 works out to ₹321.57 lakh (₹1939.67 lakh- ₹1618.10 lakh).

26. The above admitted capital cost of ₹27520.05 lakh for Asset-I and ₹5469.07 lakh for Asset-II as on 31.3.2009 has been considered for determination of transmission tariff for the tariff period 1.4.2009 to 31.3.2014 as per the 2009 Tariff Regulations.

ADDITIONAL CAPITAL EXPENDITURE:

27. The clause (2) of Regulation 9 of the 2009 Tariff Regulations provides as follows:-

“(2) The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:

- (i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;
- (ii) Change in law:
- (iii) Deferred works relating to ash pond or ash handling system in the original scope of work

- (iv) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) including due to geological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation; and
- (v) In case of transmission system any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement of switchyard equipment due to increase of fault level, emergency restoration system, insulators cleaning infrastructure, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system."

28. The petitioner has claimed additional capital expenditure of ₹109.00 lakh during 2012-13 in respect of Asset-I under clause 9(2)(i) and 9(2)(v) of the 2009 Tariff Regulations due to retention payment. The retention payment to M/s. AREVA was against non-completion of tests on HVDC system and to M/s. Techno Electric was against suspension/stay of imposition of entry tax by Hon'ble Supreme Court after cut-off date. No additional capital expenditure has been claimed in respect of Asset-II. The petitioner has submitted the details of the tests which are not completed by M/s. AREVA.

29. As regards the petitioner's claim of additional capital expenditure, sub-clause (1) of clause (2) of Regulation 9 of the 2009 Tariff Regulations provides that additional capital expenditure arising due to award by the court or award of arbitration is allowed subject to the prudence check. In the instant case, the payment is delayed due to lack of clarity on application of Entry Tax which was stayed by the Hon'ble Supreme Court subsequently.

30. PSPCL and BRPL sought details from petitioner on the additional capital claimed. The petitioner has submitted that the additional capital claimed by petitioner was not towards type test and submitted the details of additional capital expenditure.

31. During hearing on 15.5.2012, the representative of the petitioner submitted that the actual payment was released against retention payment. The petitioner submits that out of total amount of ₹109 lakh of balance and retention amount, payment of ₹21.25 lakh has already been made and the rest of the payment was pending.

32. We have considered the factual position and considering uncertainty to fix the exact amount of additional capital expenditure at this stage, the claim of ₹21.25 lakh pertaining to sub-station equipment has been allowed as additional capital expenditure for the purpose of the determination of tariff and the balance additional capital expenditure will be adjusted at the time of truing up based on the actual release of payment after prudence check. The petitioner is directed to submit the actual payment made against the balance and retention payment at the time of truing up.

CAPITAL COST AS ON 31.3.2014

33. Capital cost as on 31.3.2014 has been worked out by considering capital cost as on 1.4.2009 and the additional capital expenditure during 2009-14 period as overleaf:-

(₹ in lakh)

Particulars	Capital cost as on 31.3.2014	
	Asset-I	Asset-II
Freehold Land	94.36	18.75
Leasehold Land	-	-
Building & Other Civil Works	967.77	192.32
Transmission Line	7046.59	1400.37
Sub-Station Equipments	19388.12	3848.79
PLCC	44.46	8.84
Total	27541.30	5469.07

DEBT-EQUITY RATIO:

34. Regulation 12 of the 2009 Tariff Regulations provides as under:-

“12. **Debt-Equity Ratio.** (1) For a project declared under commercial operation on or after 1.4.2009, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff:

Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

Explanation.- The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, provided such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.

(2) In case of the generating station and the transmission system declared under commercial operation prior to 1.4.2009, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2009 shall be considered.

(3) Any expenditure incurred or projected to be incurred on or after 1.4.2009 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation.”

35. The petitioner has claimed tariff based on debt: equity ratio of 93.99:6.01 for transmission assets as admitted on 31.3.2009 vide order dated 2.5.2011 in Petition

No. 228/2010. The same debt: equity ratio has been considered for Asset-I and Asset-II for the corresponding capital expenditure as on 1.4.2009.

36. The details of the Debt: Equity Ratio considered for the purpose of tariff determination as under:-

(₹ in lakh)

Particulars	As on 1.4.2009	
	Amount	(%)
Asset-I		
Debt	25865.80	93.99
Equity	1654.24	6.01
Total	27520.04	100.00
Asset-II		
Debt	5140.33	93.99
Equity	328.75	6.01
Total	5469.08	100.00

37. The details of debt: equity considered for the additional capital expenditure considered for 2012-13 is as follows:-

(₹ in lakh)

Particulars	Additional Capital Expenditure 2012-13	
	Amount	(%)
Asset-I		
Debt	14.88	70.00
Equity	6.38	30.00
Total	21.25	100.00

38. The Debt-Equity Ratio as on 31.3.2014 after considering debt: equity of additional capital expenditure as 70:30 for the assets is worked out as under:-

(₹ in lakh)

Particulars	As on 31.3.2014	
	Amount	(%)
Asset-I		
Debt	25880.68	93.97
Equity	1660.62	6.03
Total	27541.30	100.00

Asset-II		
Debt	5140.33	93.99
Equity	328.75	6.01
Total	5469.08	100.00

RETURN ON EQUITY

39. Regulation 15 of the 2009 Tariff Regulations provides for working out return on equity as under:-

“15. (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% for thermal generating stations, transmission system and run of the river generating station, and 16.5% for the storage type generating stations including pumped storage hydro generating stations and run of river generating station with pondage and shall be grossed up as per clause (3) of this regulation:

Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in **Appendix-II**:

Provided further that the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever.

(3) The rate of return on equity shall be computed by grossing up the base rate with the Minimum Alternate/Corporate Income Tax Rate for the year 2008-09, as per the Income Tax Act, 1961, as applicable to the concerned generating company or the transmission licensee, as the case may be:

(4) Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where t is the applicable tax rate in accordance with clause (3) of this regulation.

(5) The generating company or the transmission licensee as the case may be, shall recover the shortfall or refund the excess Annual Fixed charge on account of Return on Equity due to change in applicable Minimum Alternate/ Corporate Income Tax Rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission;

Provided further that Annual Fixed charge with respect to the tax rate applicable to the generating company or the transmission licensee, as the case may be, in line with the provisions of the relevant Finance Acts of the respective financial year during the tariff period shall be trued up in accordance with Regulation 6 of these regulations".

40. The petitioner has claimed the return on equity as per Regulation 15 of the 2009 Tariff Regulations. Accordingly, the return on equity has been computed as under:-

Asset-I

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Equity	1654.24	1654.24	1654.24	1654.24	1660.62
Addition due to Additional Capitalisation	-	-	-	6.38	-
Closing Equity	1654.24	1654.24	1654.24	1660.62	1660.62
Average Equity	1654.24	1654.24	1654.24	1657.43	1660.62
Return on Equity (Base Rate)	15.50%	15.50%	15.50%	15.50%	15.50%
Tax rate for the year 2008-09 (MAT)	11.330%	11.330%	11.330%	11.330%	11.330%
Rate of Return on Equity (Pre Tax)	17.481%	17.481%	17.481%	17.481%	17.481%
Return on Equity (Pre Tax)	289.18	289.18	289.18	289.74	290.29

Asset-II

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Equity	328.75	328.75	328.75	328.75	328.75
Addition due to Additional Capitalization	-	-	-	-	-
Closing Equity	328.75	328.75	328.75	328.75	328.75
Average Equity	328.75	328.75	328.75	328.75	328.75
Return on Equity (Base Rate)	15.50%	15.50%	15.50%	15.50%	15.50%
Tax rate for the year 2008-09 (MAT)	11.330%	11.330%	11.330%	11.330%	11.330%
Rate of Return on Equity (Pre Tax)	17.481%	17.481%	17.481%	17.481%	17.481%
Return on Equity (Pre Tax)	57.47	57.47	57.47	57.47	57.47

41. The petitioner's prayer for recovery of the shortfall or refund the excess Annual Fixed Charges, on account of RoE due to change in applicable Minimum

Alternate/Corporate Income Tax rate as per the Income Tax Act, 1961 of the respective financial year directly without making any application before the Commission shall be dealt with Regulation 15 (3) of 2009, Tariff Regulation. RoE has been computed @ 17.481% p.a on average equity as per Regulation 15 of the 2009 Tariff Regulations.

INTEREST ON LOAN

42. Regulation 16 of the 2009 Tariff Regulations provides that;

“16. (1) The loans arrived at in the manner indicated in regulation 12 shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2009 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2009 from the gross normative loan.

(3) The repayment for the year of the tariff period 2009-14 shall be deemed to be equal to the depreciation allowed for that year:

(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed,

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the project:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:

Provided that the beneficiary or the transmission customers shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan.”

43. The interest on loan has been worked out as detailed below:-

a) Gross amount of loan, repayment of instalments & rate of interest and weighted average rate of interest on actual average loan have been considered as per the petition;

b) The repayment for the tariff period 2009-14 shall be deemed to be equal to the depreciation allowed for that period;

c) Notwithstanding moratorium period availed by the transmission licensee, the repayment of the loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed;

d) Weighted average rate of interest on actual average loan worked out as per (i) above is applied on the notional average loan during the year to arrive at the interest on loan.

44. The detailed calculations in support of the weighted average rate of interest on loan are attached at Annexure-I and II to this order.

45. The interest on loan has been calculated on the basis of prevailing rate of actual loan available as on 1.4.2009. Any change in rate of interest subsequent to 1.4.2009 will be considered at the time of truing up.

46. Detail of the interest on normative loan is as follows:-

Asset-I

	(₹ in lakh)				
Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Gross Normative Loan	25865.80	25865.80	25865.80	25865.80	25880.68
Cumulative Repayment upto Previous Year	7857.91	9287.68	10717.45	12147.22	13577.55
Net Loan-Opening	18007.89	16578.12	15148.35	13718.58	12303.13
Addition due to Additional Capitalisation	-	-	-	14.88	-
Repayment during the year	1429.77	1429.77	1429.77	1430.33	1430.89
Net Loan-Closing	16578.12	15148.35	13718.58	12303.13	10872.24
Average Loan	17293.00	15863.23	14433.47	13010.85	11587.68
Weighted Average Rate of Interest on Loan	4.5827%	4.4006%	4.1833%	3.9156%	3.7382%
Interest	792.49	698.08	603.80	509.46	433.17

Asset-II

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Gross Normative Loan	5140.33	5140.33	5140.33	5140.33	5140.33
Cumulative Repayment upto Previous Year	1561.61	1845.75	2129.89	2414.02	2698.16
Net Loan-Opening	3578.72	3294.58	3010.44	2726.30	2442.16
Addition due to Additional Capitalisation	-	-	-	-	-
Repayment during the year	284.14	284.14	284.14	284.14	284.14
Net Loan-Closing	3294.58	3010.44	2726.30	2442.16	2158.02
Average Loan	3436.65	3152.51	2868.37	2584.23	2300.09
Weighted Average Rate of Interest on Loan	4.5528%	4.3757%	4.1649%	3.9059%	3.7345%
Interest	156.46	137.94	119.46	100.94	85.90

DEPRECIATION

47. Regulation 17 of the 2009 Tariff Regulations provides for computation of depreciation in the following manner:-

“17. (1) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission.

(2) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.

Provided that in case of hydro generating stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciable value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff.

(3) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(4) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-III to these regulations for the assets of the generating station and transmission system:

Provided that, the remaining depreciable value as on 31st March of the year closing after a period of 12 years from date of commercial operation shall be spread over the balance useful life of the assets.

(5) In case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31.3.2009 from the gross depreciable value of the assets.

(6) Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.”

48. Clause 17 (4) of the 2009 Tariff Regulations provides that depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-III to these regulations for the assets of the generating station and transmission system. It further provides that the remaining depreciable value as on 31th March of the year closing after a period of 12 years from date of commercial operation shall be spread over the balance useful life of the asset. The transmission assets in the instant petition were put on commercial operation as on 1.12.2002 and accordingly will complete 12 years in 2014-15. Accordingly, the depreciation has been calculated as follows:-

Asset-I

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Gross Block as on 1.4.2009	27520.04	27520.04	27520.04	27520.04	27541.29
Projected Additional Capitalization	-	-	-	21.25	-
Closing Gross Block	27520.04	27520.04	27520.04	27541.29	27541.29
Average Gross Block	27520.04	27520.04	27520.04	27530.67	27541.29
Rate of Depreciation	5.1954%	5.1954%	5.1954%	5.1954%	5.1954%
Depreciable Value	24683.12	24683.12	24683.12	24692.68	24702.24
Remaining Depreciable Value	16825.20	15395.44	13965.67	12545.46	11124.69
Depreciation	1429.77	1429.77	1429.77	1430.33	1430.89

Asset-II

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Gross Block as on 1.4.2009	5469.08	5469.08	5469.08	5469.08	5469.08
Projected Additional Capitalization	-	-	-	-	-
Closing Gross Block	5469.08	5469.08	5469.08	5469.08	5469.08
Average Gross Block	5469.08	5469.08	5469.08	5469.08	5469.08
Rate of Depreciation	5.1954%	5.1954%	5.1954%	5.1954%	5.1954%
Depreciable Value	4905.29	4905.29	4905.29	4905.29	4905.29
Remaining Depreciable Value	3343.68	3059.54	2775.41	2491.27	2207.13
Depreciation	284.14	284.14	284.14	284.14	284.14

OPERATION AND MAINTENANCE EXPENSES (O&M Expenses)

49. Clause (g) of Regulation 19 of the 2009 Tariff Regulations prescribes norms for O&M Expenses for transmission system based on type of sub-stations and the transmission line. Norms specified in respect of O&M Expenses for assets covered in the petition are as follows:-

Elements	2009-10	2010-11	2011-12	2012-13	2013-14
Sasaram HVDC back to back (₹ lakh per 500 MW)	443.00	468.00	495.00	523.00	553.00
D/C twin conductor T/L (₹ lakh per km)	0.627	0.663	0.701	0.741	0.783
D/C single conductor T/L (₹ lakh per km)	0.269	0.284	0.301	0.318	0.336
400 kV bays (₹ lakh per bay)	52.40	55.40	58.57	61.92	65.46
132 kV & below bays (₹ lakh per bay)	26.20	27.70	29.28	30.96	32.73

50. Accordingly, the petitioner's entitlement to O & M Expenses has been worked out as overleaf:-

(₹ in lakh)

Elements	2009-10	2010-11	2011-12	2012-13	2013-14
Sasaram HVDC back to back	443.00	468.00	495.00	523.00	553.00
Total DC system	443.00	468.00	495.00	523.00	553.00
142 km, 400 kV D/C twin conductor T/L	89.03	94.15	99.54	105.22	111.19
2.5 km, 400 kV D/C single conductor T/L	0.67	0.71	0.75	0.80	0.84
7 no, 400 kV Bays	366.80	387.80	409.99	433.44	458.22
2 no, 132 kV& below Bays	52.40	55.40	58.56	61.92	65.46
Total AC system	508.90	538.06	568.84	601.38	635.71

51. We have considered the replies of the respondents, the submissions of the petitioner and all three statutory organizations namely CTU, CEA and POSOCO, who have stated that the asset is useful. Therefore, the Commission while agreeing to allow tariff for the asset for 2009-14, directs that the utilization of this asset may be discussed first in NRPC and then in NPC. CTU is directed to explore the possibility of utilizing this asset in ER-WR/SR-WR to mitigate congestion and put-up the proposal in the Standing Committee. The final view in this matter may be taken within six months of issue of the order. The petitioner is advised to submit the outcome of the Standing Committee by 1.9.2015.

52. The petitioner has submitted that O&M Expenses for the year 2009-14 had been arrived at on the basis of normalized actual O&M Expenses during the period 2003-04 to 2007-08 and by escalating it by 5.72% per annum for arriving at norms for the years of tariff period. The wage link of 50% on account of pay revision of the employees of public sector undertaking has also been considered while calculating the O&M Expenses for the tariff period 2009-14. The petitioner has further submitted that it would approach the Commission for suitable revision in norms for O&M

Expenses in case the impact of wage hike with effect from 1.1.2007 is more than 50%. BRPL has submitted that any further increase in the employee cost due to wage revision should be taken care of by the petitioner by improving its productivity levels. The petitioner in its rejoinder has reiterated the submission made in the petition.

53. While specifying the norms for the O & M Expenses, the Commission has in the 2009 Tariff Regulations, given effect to impact of pay revision by factoring 50% on account of pay revision of the employees of PSUs after extensive consultations with the stakeholders, as one time compensation for employee cost. We do not see any reason why the admissible amount is inadequate to meet the requirement of the employee cost. In this order, we have allowed O&M Expenses as per the existing norms.

INTEREST ON WORKING CAPITAL

54. The petitioner is entitled to claim interest on working capital as per the 2009 Tariff Regulations. The components of the working capital and the petitioner's entitlement to interest thereon are discussed hereunder:-

(i) Receivables

As per Regulation 18(1) (c) (i) of the 2009 Tariff Regulations, receivables as a component of working capital will be equivalent to two months of fixed cost.

The petitioner has claimed the receivables on the basis of 2 months of annual transmission charges claimed in the petition. In the tariff being allowed,

receivables have been worked out on the basis of 2 months transmission charges.

(ii) Maintenance Spares

Regulation 18 (1) (c) (ii) of the 2009 Tariff Regulations provides for maintenance spares @ 15% per annum of the O & M Expenses as part of the working capital from 1.4.2009. The value of maintenance spares has accordingly been worked out.

(iii) O & M Expenses

Regulation 18(1) (c) (iii) of the 2009 Tariff Regulations provides for O&M Expenses for one month to be included in the working capital. The petitioner has claimed O&M expenses for 1 month of the respective year. This has been considered in the working capital.

(iv) Rate of Interest on Working Capital

In accordance with clause (3) of Regulation 18 of the 2009 Tariff Regulations, as amended, rate of interest on working capital shall be on normative basis and shall be equal to State Bank of India Base Rate @ 12.25% (Base rate as on 1.4.2009 and 350 basis points) for asset. The interest on working capital for the assets covered in the petition has been worked out accordingly.

55. The necessary computation in support of the interest on working capital is as overleaf:-

Asset-I

Particulars	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance Spares	66.45	70.20	74.25	78.45	82.95
O & M expenses	36.92	39.00	41.25	43.58	46.08
Receivables	516.00	503.92	492.22	480.87	473.01
Total	619.37	613.12	607.72	602.91	602.05
Interest	75.87	75.11	74.45	73.86	73.75
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%

Asset -II

Particulars	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance Spares	76.34	80.71	85.33	90.21	95.36
O & M expenses	42.41	44.84	47.40	50.12	52.98
Receivables	162.62	164.96	167.59	170.52	174.29
Total	281.37	290.51	300.32	310.84	322.62
Interest	34.47	35.59	36.79	38.08	39.52
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%

TRANSMISSION CHARGES

56. The transmission charges allowed for the transmission assets are as under:-

Asset-I

Particulars	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	1429.77	1429.77	1429.77	1430.33	1430.89
Interest on Loan	792.49	698.08	603.80	509.46	433.17
Return on Equity	289.18	289.18	289.18	289.74	290.29
Interest on Working Capital	74.50	73.79	73.17	72.63	72.56
O & M Expenses	443.00	468.00	495.00	523.00	553.00
Total	3028.93	2958.81	2890.92	2825.15	2779.92

Asset-II

(₹ in lakh)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	284.14	284.14	284.14	284.14	284.14
Interest on Loan	156.46	137.94	119.46	100.94	85.90
Return on Equity	57.47	57.47	57.47	57.47	57.47
Interest on Working Capital	35.84	36.91	38.06	39.31	40.71
O & M Expenses	508.91	538.06	568.84	601.38	635.71
Total	1042.82	1054.52	1067.98	1083.23	1103.92

Filing Fee and the Publication Expenses

57. The petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses. The BRPL submitted that the filling fee shall be governed as per the Commission's order. The petitioner has clarified that reimbursement of expenditure has been claimed in terms of Regulation 42 of the 2009 Tariff Regulations. The petitioner shall be entitled for reimbursement of the filing fees and publication expenses in connection with the present petition, directly from the beneficiaries on *pro-rata* basis in accordance with Regulation 42 A (1) (a) of the 2009 Tariff Regulations.

Licence Fee

58. The petitioner has submitted that the petitioner may be allowed to bill and recover license fee separately from the respondents as provided in the 2009 Tariff Regulations. The petitioner shall be entitled for reimbursement of licence fee in accordance with Regulation 42A (1) (b) of the 2009 Tariff Regulations.

Service Tax

59. The petitioner has made a prayer to be allowed to bill and recover the service tax on transmission charges separately from the respondents, if it is subjected to such service tax in future. The BRPL has objected to recovery of service tax from the beneficiaries in future as petitioner has clarified that if notification regarding granting of exemption to transmission service is withdrawn at a later date, the beneficiaries shall have to share the service tax paid by the petitioner. We consider petitioner's prayer pre-mature and accordingly this prayer is rejected.

Sharing of Transmission Charges

60. The transmission charges allowed shall be recovered on monthly basis in accordance with Regulation 23 and shared by the beneficiaries in accordance with Regulation 33 of the 2009 Tariff Regulation up to 30.6.2011. With effect from 1.7.2011, the billing, collection and disbursement of the transmission charges shall be governed by the provision of Central Electricity Regulatory Commission (Sharing of Inter-state Transmission Charges and Losses) Regulations, 2010 as amended from time to time.

61. This order disposes of Petition No. 151/TT/2011.

sd/-
(A. K. Singhal)
Member

sd/-
(M. Deena Dayalan)
Member

sd/-
(Gireesh B. Pradhan)
Chairperson



ANNEXURE-I
(₹ in lakh)

CALCULATION OF WEIGHTED AVERAGE RATE OF INTEREST ON LOAN						
	Details of Loan	2009-10	2010-11	2011-12	2012-13	2013-14
1	Bond- VII					
	Gross loan opening	89.26	89.26	89.26	89.26	89.26
	Cumulative Repayment upto DOCO/previous year	89.26	89.26	89.26	89.26	89.26
	Net Loan-Opening	0.00	0.00	0.00	0.00	0.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	0.00	0.00	0.00	0.00	0.00
	Net Loan-Closing	0.00	0.00	0.00	0.00	0.00
	Average Loan	0.00	0.00	0.00	0.00	0.00
	Rate of Interest	0.00%	0.00%	0.00%	0.00%	0.00%
	Interest	0.00	0.00	0.00	0.00	0.00
	Repayment Schedule	5 Annual instalments from 4.8.2003				
2	Bond- IX					
	Gross loan opening	3748.13	3748.13	3748.13	3748.13	3748.13
	Cumulative Repayment upto DOCO/previous year	2248.88	2623.69	2998.51	3373.32	3748.13
	Net Loan-Opening	1499.25	1124.44	749.63	374.81	0.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	374.81	374.81	374.81	374.81	0.00
	Net Loan-Closing	1124.44	749.63	374.81	0.00	0.00
	Average Loan	1311.85	937.03	562.22	187.41	0.00
	Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%
	Interest	160.70	114.79	68.87	22.96	0.00
	Repayment Schedule	10 annual instalments from 22.8.2003				
3	Bond- X					
	Gross loan opening	878.43	878.43	878.43	878.43	878.43
	Cumulative Repayment upto DOCO/previous year	366.01	439.21	512.42	585.62	658.82
	Net Loan-Opening	512.42	439.21	366.01	292.81	219.61
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	73.20	73.20	73.20	73.20	73.20
	Net Loan-Closing	439.21	366.01	292.81	219.61	146.40
	Average Loan	475.82	402.61	329.41	256.21	183.01
	Rate of Interest	10.90%	10.90%	10.90%	10.90%	10.90%
	Interest	51.86	43.88	35.91	27.93	19.95
	Repayment Schedule	12 annual instalments from 21.6.2004				
4	Bond- XIII-Option-II					
	Gross loan opening	69.24	69.24	69.24	69.24	69.24
	Cumulative Repayment upto DOCO/previous year	69.24	69.24	69.24	69.24	69.24
	Net Loan-Opening	0.00	0.00	0.00	0.00	0.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	0.00	0.00	0.00	0.00	0.00

	Net Loan-Closing	0.00	0.00	0.00	0.00	0.00
	Average Loan	0.00	0.00	0.00	0.00	0.00
	Rate of Interest	0.00%	0.00%	0.00%	0.00%	0.00%
	Interest	0.00	0.00	0.00	0.00	0.00
	Repayment Schedule	6 annual instalments from 31.7.2003				
5	ICICI					
	Gross loan opening	1148.72	1148.72	1148.72	1148.72	1148.72
	Cumulative Repayment upto DOCO/previous year	689.23	804.10	918.97	1033.84	1148.72
	Net Loan-Opening	459.49	344.61	229.74	114.87	0.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	114.87	114.87	114.87	114.87	0.00
	Net Loan-Closing	344.61	229.74	114.87	0.00	0.00
	Average Loan	402.05	287.18	172.31	57.44	0.00
	Rate of Interest	7.32%	7.32%	7.32%	7.32%	0.00%
	Interest	29.43	21.02	12.61	4.20	0.00
	Repayment Schedule	10 annual instalments from 2003-04				
6	Corporation Bank					
	Gross loan opening	44.21	44.21	44.21	44.21	44.21
	Cumulative Repayment upto DOCO/previous year	24.32	28.74	33.16	37.58	42.00
	Net Loan-Opening	19.90	15.47	11.05	6.63	2.21
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	4.42	4.42	4.42	4.42	2.21
	Net Loan-Closing	15.47	11.05	6.63	2.21	0.00
	Average Loan	17.69	13.26	8.84	4.42	1.11
	Rate of Interest	11.40%	11.40%	11.40%	11.40%	11.40%
	Interest	2.02	1.51	1.01	0.50	0.13
	Rep Schedule	20 half yearly instalments from 10.3.2004				
7	PNB-I					
	Gross loan opening	89.26	89.26	89.26	89.26	89.26
	Cumulative Repayment upto DOCO/previous year	53.56	62.48	71.41	80.33	89.26
	Net Loan-Opening	35.70	26.78	17.85	8.93	0.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	8.93	8.93	8.93	8.93	0.00
	Net Loan-Closing	26.78	17.85	8.93	0.00	0.00
	Average Loan	31.24	22.32	13.39	4.46	0.00
	Rate of Interest	9.41%	9.41%	9.41%	9.41%	0.00%
	Interest	2.94	2.10	1.26	0.42	0.00
	Rep Schedule	10 annual instalments from 30.3.2004				
8	BOI (foreign currency) (1\$=₹44.31)					
	Gross loan opening	1415.36	1415.36	1415.36	1415.36	1415.36
	Cumulative Repayment upto DOCO/previous year	372.46	447.94	523.42	598.91	674.39
	Net Loan-Opening	1042.89	967.41	891.93	816.45	740.97
	Additions during the year	0.00	0.00	0.00	0.00	0.00

Repayment during the year	75.48	75.48	75.48	75.48	75.48
Net Loan-Closing	967.41	891.93	816.45	740.97	665.49
Average Loan	1005.15	929.67	854.19	778.71	703.23
Rate of Interest	3.3163%	3.3163%	3.3163%	3.3163%	3.3163%
Interest	33.33	30.83	28.33	25.82	23.32
Rep Schedule	38 Equal half yearly instalments from 10.6.2004				
9 IBRD-II (\$) (1\$= ₹ 44.31)					
Gross loan opening	18071.38	18071.38	18071.38	18071.38	18071.38
Cumulative Repayment upto DOCO/previous year	3717.10	4498.84	5330.88	6216.61	7159.61
Net Loan-Opening	14354.28	13572.54	12740.50	11854.77	10911.77
Additions during the year	0.00	0.00	0.00	0.00	0.00
Repayment during the year	781.75	832.04	885.73	943.00	1003.67
Net Loan-Closing	13572.54	12740.50	11854.77	10911.77	9908.10
Average Loan	13963.41	13156.52	12297.64	11383.27	10409.94
Rate of Interest	3.64%	3.64%	3.64%	3.64%	3.64%
Interest	508.27	478.90	447.63	414.35	378.92
Rep Schedule	30 Equal half yearly instalments from 15.12.2006				
Total Loan					
Gross loan opening	25553.99	25553.99	25553.99	25553.99	25553.99
Cumulative Repayment upto DOCO/previous year	7630.06	9063.52	10547.27	12084.72	13679.43
Net Loan-Opening	17923.93	16490.47	15006.72	13469.27	11874.56
Additions during the year	0.00	0.00	0.00	0.00	0.00
Repayment during the year	1433.46	1483.75	1537.44	1594.72	1154.57
Net Loan-Closing	16490.47	15006.72	13469.27	11874.56	10719.99
Average Loan	17207.20	15748.60	14238.00	12671.92	11297.27
Rate of Interest	4.5827%	4.4006%	4.1833%	3.9156%	3.7382%
Interest	788.55	693.03	595.62	496.19	422.32

ANNEXURE-II
(₹ in lakh)

CALCULATION OF WEIGHTED AVERAGE RATE OF INTEREST ON LOAN						
Details of Loan	2009-10	2010-11	2011-12	2012-13	2013-14	
1 Bond- VII						
Gross loan opening	17.74	17.74	17.74	17.74	17.74	
Cumulative Repayment upto DOCO/previous year	17.74	17.74	17.74	17.74	17.74	
Net Loan-Opening	0.00	0.00	0.00	0.00	0.00	
Additions during the year	0.00	0.00	0.00	0.00	0.00	
Repayment during the year	0.00	0.00	0.00	0.00	0.00	
Net Loan-Closing	0.00	0.00	0.00	0.00	0.00	
Average Loan	0.00	0.00	0.00	0.00	0.00	
Rate of Interest	0.00%	0.00%	0.00%	0.00%	0.00%	
Interest	0.00	0.00	0.00	0.00	0.00	
Rep Schedule	5 Annual instalments from 4.8.2003					
2 Bond- IX						
Gross loan opening	744.87	744.87	744.87	744.87	744.87	
Cumulative Repayment upto DOCO/previous year	446.92	521.41	595.89	670.38	744.87	
Net Loan-Opening	297.95	223.46	148.97	74.49	0.00	
Additions during the year	0.00	0.00	0.00	0.00	0.00	
Repayment during the year	74.49	74.49	74.49	74.49	0.00	
Net Loan-Closing	223.46	148.97	74.49	0.00	0.00	
Average Loan	260.70	186.22	111.73	37.24	0.00	
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%	
Interest	31.94	22.81	13.69	4.56	0.00	
Rep Schedule	10 annual instalments from 22.8.2003					
3 Bond- X						
Gross loan opening	174.57	174.57	174.57	174.57	174.57	
Cumulative Repayment upto DOCO/previous year	72.74	87.29	101.83	116.38	130.93	
Net Loan-Opening	101.83	87.29	72.74	58.19	43.64	
Additions during the year	0.00	0.00	0.00	0.00	0.00	
Repayment during the year	14.55	14.55	14.55	14.55	14.55	
Net Loan-Closing	87.29	72.74	58.19	43.64	29.10	
Average Loan	94.56	80.01	65.46	50.92	36.37	
Rate of Interest	10.90%	10.90%	10.90%	10.90%	10.90%	
Interest	10.31	8.72	7.14	5.55	3.96	
Rep Schedule	12 annual instalments from 21-06-2004					
4 Bond- XIII-Option-II						
Gross loan opening	13.76	13.76	13.76	13.76	13.76	
Cumulative Repayment upto DOCO/previous year	13.76	13.76	13.76	13.76	13.76	
Net Loan-Opening	0.00	0.00	0.00	0.00	0.00	
Additions during the year	0.00	0.00	0.00	0.00	0.00	
Repayment during the year	0.00	0.00	0.00	0.00	0.00	

	Net Loan-Closing	0.00	0.00	0.00	0.00	0.00
	Average Loan	0.00	0.00	0.00	0.00	0.00
	Rate of Interest	0.00%	0.00%	0.00%	0.00%	0.00%
	Interest	0.00	0.00	0.00	0.00	0.00
	Rep Schedule	6 annual instalments from 31.7.2003				
5	ICICI					
	Gross loan opening	228.28	228.28	228.28	228.28	228.28
	Cumulative Repayment upto DOCO/previous year	136.97	159.80	182.63	205.46	228.28
	Net Loan-Opening	91.31	68.49	45.66	22.83	0.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	22.83	22.83	22.83	22.83	0.00
	Net Loan-Closing	68.49	45.66	22.83	0.00	0.00
	Average Loan	79.90	57.07	34.24	11.41	0.00
	Rate of Interest	7.32%	7.32%	7.32%	7.32%	0.00%
	Interest	5.85	4.18	2.51	0.84	0.00
	Rep Schedule	10 annual instalments from 2003-04				
6	Corporation Bank					
	Gross loan opening	8.79	8.79	8.79	8.79	8.79
	Cumulative Repayment upto DOCO/previous year	4.83	5.71	6.59	7.47	8.35
	Net Loan-Opening	3.95	3.08	2.20	1.32	0.44
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	0.88	0.88	0.88	0.88	0.44
	Net Loan-Closing	3.08	2.20	1.32	0.44	0.00
	Average Loan	3.51	2.64	1.76	0.88	0.22
	Rate of Interest	11.40%	11.40%	11.40%	11.40%	11.40%
	Interest	0.40	0.30	0.20	0.10	0.03
	Rep Schedule	20 half yearly instalments from 10.3.2004				
7	PNB-I					
	Gross loan opening	17.74	17.74	17.74	17.74	17.74
	Cumulative Repayment upto DOCO/previous year	10.64	12.42	14.19	15.97	17.74
	Net Loan-Opening	7.10	5.32	3.55	1.77	0.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	1.77	1.77	1.77	1.77	0.00
	Net Loan-Closing	5.32	3.55	1.77	0.00	0.00
	Average Loan	6.21	4.43	2.66	0.89	0.00
	Rate of Interest	9.41%	9.41%	9.41%	9.41%	0.00%
	Interest	0.58	0.42	0.25	0.08	0.00
	Rep Schedule	10 annual instalments from 30.3.2004				
8	BOI (foreign currency) (1\$= ₹44.31)					
	Gross loan opening	281.27	281.27	281.27	281.27	281.27
	Cumulative Repayment upto DOCO/previous year	74.02	88.82	103.63	118.43	133.24
	Net Loan-Opening	207.25	192.45	177.65	162.84	148.04
	Additions during the year	0.00	0.00	0.00	0.00	0.00

	Repayment during the year	14.80	14.80	14.80	14.80	14.80
	Net Loan-Closing	192.45	177.65	162.84	148.04	133.24
	Average Loan	199.85	185.05	170.25	155.44	140.64
	Rate of Interest	3.3163%	3.3163%	3.3163%	3.3163%	3.3163%
	Interest	6.63	6.14	5.65	5.15	4.66
	Rep Schedule	38 Equal half yearly instalments from 10.6.2004				
9	IBRD-II (1\$= ₹44.31)					
	Gross loan opening	3591.34	3591.34	3591.34	3591.34	3591.34
	Cumulative Repayment upto DOCO/previous year	623.60	785.22	957.25	1140.37	1335.34
	Net Loan-Opening	2967.74	2806.11	2634.09	2450.97	2256.00
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	161.63	172.02	183.12	194.96	207.51
	Net Loan-Closing	2806.11	2634.09	2450.97	2256.00	2048.49
	Average Loan	2886.93	2720.10	2542.53	2353.48	2152.25
	Rate of Interest	3.64%	3.64%	3.64%	3.64%	3.64%
	Interest	105.08	99.01	92.55	85.67	78.34
	Rep Schedule	30 Equal half yearly instalments from 15.12.2006				
	Total Loan					
	Gross loan opening	5078.36	5078.36	5078.36	5078.36	5078.36
	Cumulative Repayment upto DOCO/previous year	1401.22	1692.17	1993.51	2305.95	2630.24
	Net Loan-Opening	3677.14	3386.19	3084.85	2772.41	2448.12
	Additions during the year	0.00	0.00	0.00	0.00	0.00
	Repayment during the year	290.94	301.34	312.44	324.28	237.30
	Net Loan-Closing	3386.19	3084.85	2772.41	2448.12	2210.82
	Average Loan	3531.67	3235.52	2928.63	2610.27	2329.47
	Rate of Interest	4.5528%	4.3757%	4.1649%	3.9059%	3.7345%
	Interest	160.79	141.58	121.97	101.95	87.00