

Before the Karnataka Electricity Regulatory Commission,
Bangalore

Order Dated 25th February 2015

Present:

- 1. Sri M.R. Sreenivasa Murthy – Chairman**
- 2. Sri H.D. Arun Kumar – Member**
- 3. Sri D.B. Manival Raju – Member**

Petition No. OP 36/2014

In the matter of Approval of tariff in respect of (a) 42 MW, Shivanasamudram and 17.20 MW, Shimsha (b), 139.20 MW, MGHE Jog and (c) 28 MW, Munirabad Hydro Power Station.

Karnataka Power Corporation Limited (KPCL),

Shakti Bhavan,

Racecourse Road,

Bangalore

...Petitioner

Vs

Bangalore Electricity Supply Company Limited, Bangalore

Mangalore Electricity Supply Company Limited, Mangalore

Chamundeswari Electricity Supply Corporation Limited, Mysore

Hubli Electricity Supply Company Limited, Hubli

Gulbarga Electricity Supply Company Limited, Gulbarga...**Respondents**

ORDER

1. Preamble:

- i.** The Karnataka Power Corporation Ltd (herein after referred to as the 'Petitioner'), is a Government of Karnataka undertaking registered under the

Companies Act, 1956, on 20.07.1970(with a fresh Certificate of Incorporation issued consequent to change of name on 01.10.1980). The petitioner is supplying power to all the Respondent Electricity Supply Companies (ESCOMs) (herein after referred to as 'Respondents'), in the State of Karnataka.

- ii. The petitioner has filed an application under section 61 read with 62 of the Electricity Act, 2003 on 4th April, 2014, for approval of the Power Purchase Agreement (PPA) and determination of tariff in respect of the following hydroelectric power generating stations:

(a) 42 MW, Sir Sheshadri Iyer Hydro Electric Station (Shivanasamudram Hydro Electric Station) and 17.20 MW, Shimsha Hydro Electric Stations,

(b) 139.20 MW, Mahathma Gandhi Hydro Electric Station (MGHE Jog) and

(c) 28 MW, Munirabad Power House,

for a period of 25 years from the financial year 2009-10.

2. Petitioner's submissions:

The petitioner, in its application for approval of the PPA and for determination of tariff in respect of (a) 42 MW, Shivanasamudram and 17.20 MW, Shimsha (b), 139.20 MW, MGHE Jog and (c) 28 MW, Munirabad Hydro Power Station, has made the following submissions:

(a) The above Hydro generating stations were being operated by the erstwhile Karnataka Electricity Board, which has transferred them to M/s Visveswaraya Vidyuth Nigama Limited (VVNL), a wholly owned company of Government of Karnataka on its formation as part of the reforms in the energy sector:

(b) The VVNL, was amalgamated with the petitioner w.e.f. 01.04.2006, as per the scheme of amalgamation approved by the shareholders of the two Companies at the extraordinary General Meeting, held on 22.07.2003 and an order passed u/s 396 of the Companies Act, 1956 vide notification 24/10/2003-CL-III dated 15.12.2006 by the Ministry of Company Affairs, Government of India. Pursuant to this, the entire business and undertaking of the VVNL were vested to the petitioner on 'as is where is' bases, with all the assets, liabilities, rights and obligations.

- (c) Further, the said stations have been renovated and upgraded on the dates and to the installed capacities as indicated below:

Shivasamudram

Renovation	Unit No.	Capacity (MW)
18.08.2003	I	3.00
13.02.2003	II	6.00
11.12.2002	III	3.00
11.12.2002	IV	3.00
22.06.2004	V	3.00
23.06.2004	VI	3.00
16.10.2004	VII	6.00
22.06.2004	VIII	3.00
27.11.2003	IX	6.00
12.04.2003	X	6.00
Total		42.00

Shimsha

Units Commissioned on	Unit No.	Capacity (MW)
30.06.1940	I	8.60
18.04.1940	II	8.60
Total		17.20
Units upgraded (R and M works taken up)		
04.08.2008	I	8.60
11.08.2008	II	8.60
Total		17.20

MGHE Jog

Units commissioned on	Unit No.	Capacity (MW)
16.12.1947	I	12.00
16.10.1949	II	12.00
16.12.1949	III	12.00
20.10.1950	IV	12.00
19.05.1952	V	18.00
18.07.1952	VI	18.00
17.09.1952	VII	18.00
26.09.1952	VIII	18.00
Sub-total		120.00
Up gradation of MGHE, Jog		
15.05.2001	I	1.20
31.05.2001	II	1.20
13.12.2001	III	1.20
02.03.2002	IV	1.20
19.06.2002	V	3.60
03.10.2002	VI	3.60
26.07.2001	VII	3.60

30.06.2001	VIII	3.60
Sub-total		19.20
Total		139.20

Munirabad

Units commissioned on	No.	Capacity (MW)
19.01.1962	I	9.00
26.05.1962	II	9.00
27.11.1965	III	10.00
Total		28.00

3. Notification to the stake holders:

After the application was filed by the petitioner, the Commission has invited comments from the beneficiaries (ESCOMs) and the Power Company of Karnataka Limited, (PCKL) which coordinates the Power Purchase matters on behalf of ESCOMs. PCKL in turn has sought certain clarifications from the petitioner on the tariff application and the petitioner has furnished the details during December, 2014.

4. Public hearing process:

- i. As per the directions of the Commission, the Petitioner has published Notices of Public Hearing to be held on 23rd January, 2015, in the following English and Kannada newspapers:

Deccan Herald dated 17.01.2015,
Times of India dated 17.01.2015,
Samyuktha Karnataka dated 17.01.2015,
Vijay Karnataka, dated 17.01.2015,
Vijayavani, dated 17.01.2015

- ii. The Commission held a public hearing on 23rd January 2015 and the gist of the submissions made by the petitioner and the Respondents is as under:
- a. The petitioner submitted that, as per the application, the tariff of hydro stations namely Shiva & Shimsha, MGHE Jog and Munirabad generating stations is proposed as per Regulations, 2009, for 25 years, based on the book value of the capital costs. The capital cost is considered as per

the gross block in the books of accounts, after they were transferred to the petitioner by the then VVNL, in the year 2006 on 'as is where basis'.

- b.** The petitioner has furnished the value of the above stations as on 1.04.2009.
- c.** To the Commission's observation that, since these stations are very old, the capital cost must have been fully recovered through the tariff fixed by the government, the petitioner has clarified that, the capital costs mainly comprise of Renovation and Modernization of these old stations and the equity invested has been shown in the PPA.
- d.** The Petitioner further submitted that the loans outstanding are only the cost of R&M works and the depreciation on the capitalized R&M costs has been provided as per the Regulations, 2009.
- e.** There were no objections from ESCOMs and PCKL on the tariff applications made on hydro stations.

5. Applicable Regulations:

The Commission has issued KERC (Terms and Conditions of Generation Tariff) Regulations 2009 (Regulations-2009) under the provisions of the Electricity Act, 2003. The following extract from the Regulations shows the categories of generating stations to which they are applicable:

These regulations shall apply to;

- 2.1.1** all the cases filed after 1.4.2009 for determination of generation of tariff for supply of electricity to a distribution licensee under Section 62 of Electricity Act, 2003,*
- 2.1.2** the state owned generating stations where the capacity is allocated by the State Government either under Section 132 of the Electricity Act, 2003 or under provisions of Karnataka Electricity Reforms Act, 1999,*
- 2.1.3** the new generating units / blocks / stations which have achieved or will achieve commercial operation on or after 1st of April 2009*
- 2.1.4.** the existing stations which have achieved commercial operation before 1st of April 2009 but PPAs are yet to be approved by the Commission;*

provided that the tariff negotiated is as per the then applicable orders / regulations and is being applied shall continue to apply till PPA/s is/are approved by the Commission"

In its Notification dated 30.03.1992, the Ministry of Power, Government of India has issued norms for determination of tariff for sale of electricity by power generating stations to electricity boards and other persons.

As the petitioner's Hydro Generating Stations were commissioned much before the 1992 norms issued by the Ministry of Power, Government of India on 30th March, 1992, the 1992 norms are applicable to these stations for determination of tariff.

As regards the approval of the Power Purchase agreement (PPA), the same will be considered separately after the determination of tariff by the Commission.

Having reviewed the petitioner's application and after hearing the parties concerned, the Commission proceeds to give its decision on the following issues.

6. Date of effect of this Order:

The petitioner has requested for determination of tariff for a period of 25 years from the Financial Year 2009-10. The request being in order, the tariff determined in this Order would be effective from 1st April 2009.

7. Tariff determination:

As per Clause 2 of the Notification dated 30th March, 1992, the tariff of Hydro Power Generating stations comprises the recovery of Annual Capacity charges/ Fixed Charges and Energy Charges. Under these heads the following are the various components to be considered for determination of tariff:

(i) Capacity Charges / Fixed charges

- (a) Interest on Loan capital
- (b) Depreciation

(ii) Energy Charges / Variable charge

- (a) O&M expenses
- (b) Return on Equity

- (c) Tax on Income if any
- (d) Interest on Working capital
- (e) Other miscellaneous charges such as cess/ levy on water charges at actuals

The analysis and decisions of the Commission, on each of the issues is given below:

Capacity Charges / Fixed charges:

Capital cost:

The petitioner has submitted that, the opening assets block, as on 1.4.2009 for the three stations are as follows:

Table: 1
The capital cost, as presented by the petitioner

Sl. No.	Stations	Gross Block as on 01.04.2009	Work-in-progress up to 31.03.2013	Total (Rs. In lakhs)
1	Shivasamudram & Shimsha Power Houses	10314.06	260.78	10574.84
2	MGHE	5913.05	185.54	6098.59
3	Munirabad	1121.14	7.98	1129.12

Commission's Analysis and Decisions

As per the Accountant Generals' review, the final value to be incorporated in the books of VVNL was communicated in Government order No: DE 12 PSR 2001 dated 21stNovember, 2001. Thus, the final paid up share capital for these stations, as approved in the said Order is Rs 91.54 Crores, and the same is allocated to the VVNL stations, as under:

Table: 2
Paid up share capital of VVNL stations as on 31.03.2000

Rs in Crores						
Station	Years when commissioned	Capacity MW	Gross block	Acc.Dep	Net block	Equity
Shiva & Shimsha	1902 to 1940	59.2	14.42	7.96	6.46	4.40
MGHE Jog	1947 to 1952	139.2	7.04	3.95	3.09	2.15
Munirabad	1962 to 1965	28.0	6.26	4.02	2.24	1.91
DG Yelahanka		120.0	272.24	141.34	130.9	83.08
Total		346.4	299.96	157.27	142.69	91.54
In case of MGHE Jog, 19.2 MW was upgraded between 2001 to 2002.						
Note: Total share capital is allocated to individual stations on the basis of gross block						

On a review of the Balance Sheet of VVNL, for FY 2006, the value of Gross block, Net block and Equity as on 31.3.2006, which would become the opening balances in the books of the petitioner, is as under:

Table: 3
Details of Gross Block, Net Block and equity of VVNL Stations as on 01.04.2006
Rs in Crores

Station	Gross block	Acc.Dep	Net block	Equity
Shiva & Shimsha	91.36	12.65	78.70	25.10
MGHE Jog	58.24	15.35	42.89	16.00
Munirabad	10.80	5.64	5.16	2.97
DG yelahanka	280.72	229.55	51.17	77.12
Total	441.12	263.19	177.92	121.18

As per the table above, the equity component works out to **27.5%**.

From the annual accounts for the period between FY 01 to FY 06, showing the growth in the gross block of these hydro stations, it is evident that substantial R&M works were carried out in the stations of Shivasamudram & Shimsha and MGHE Jog. The total expenditure on R & M works of these stations during the period works out to Rs 74 Crores. After adjusting the borrowed funds repayments, the outstanding loans as on 31.03.2006 is Rs 37 Crores as per the balance sheet for FY2006.

The gross block as on 31.03.2001, after unbundling is Rs 27.72 Crores and the net block is Rs 11.79 Crores. Between 2001 to 2009, the petitioner has spent on R&M for the 3 hydro stations Rs 146.53 Crores. Thus, as on 1.4.2009, the station-wise gross block is as follows:

Table: 4
Stations wise gross block

As of 1.4.2009		Rs in Crores	
Station	Gross block	Acc. Dep	Net block
Shiva & Shimsha	103.37	21.66	81.71
MGHE Jog	59.19	20.27	38.93
Munirabad	11.70	6.06	5.64
Total	174.25	47.98	126.27

Based on the derived equity, as discussed in the above paragraph, the equity for these stations as on 1.4.2009 has been worked out and is indicated in following table:

Table: 5
Station wise gross block and equity

As of 1.4.2009		Rs in Crores		
Station	Gross block	Acc. Dep	Net block	Equity
Shiva & Shimsha	103.37	21.66	81.71	28.40
MGHE Jog	59.19	20.27	38.93	16.26
Munirabad	11.70	6.06	5.64	3.21
Total	174.25	47.98	126.27	47.87

Debt Equity ratio

The 1992 norms allow debt and equity on the basis of actual costs incurred as approved by the CEA on submission of the project cost. They do not explicitly provide any norm for debt-equity and financing of additional R&M.

As discussed in the preceding paragraphs, equity is allocated to various stations on the basis of their gross block. The Commission notes that the Equity component, as derived above, is 27%. This is lower than the general norms followed by the Commission which is 30% for equity. Hence, the Commission allows the equity as indicated in the following table for determination of tariff in respect of Shiva and Shimsha, MGHE Jog and Munirabad.

Table: 6
The Equity allowed by the Commission

As of 1.4.2009		Rs. in Crores		
Station	Gross block	Acc. Dep	Net block	Equity
Shiva & Shimsha	103.37	21.66	81.71	28.40
MGHE Jog	59.19	20.27	38.93	16.26
Munirabad	11.70	6.06	5.64	3.21
Total	174.25	47.98	126.27	47.87

Loan Capital (Debt):

The details of the loans borrowed as furnished by the Petitioner are as under;

Loans:

Petitioner has submitted that, the outstanding loan for Shiva and Shimsha stations as on 1.4.2009 is Rs 15.83 Crores and the entire loan gets repaid by 15.04.2012 i.e., inFY-13. There is no loan outstanding for other two stations viz MGHE Jog and Munirabad Hydro Power Station. The outstanding loans as on 01.04.2009 and the repayment details as filed by the petitioner are indicated in the following table-7 and table-8 respectively.

Table: 7

Details of outstanding Loans furnished by the petitioner in respect of Shiva and Shimsha stations as on 01.04.2009

Package	Amount Rs in lakhs
Package 1	410.25
Package 2	103.34
Package 3	347.00
Package 4	162.41
Package 5	559.87
Total	15,82.87

Loan repayment:

The loan gets repaid in full by 15.4.2012 i.e. in FY 13.

Table: 8

Details of the Loan repayment as furnished by the petitioner in respect of Shiva and Shimsha stations
Rs in Lakhs

Particulars	FY 10	FY 11	FY 12	FY 13
Loan – Opening	1582.87	1095.84	608.80	121.76
Add Drawal(s) during the Year	0.00	0.00	0.00	0.00
Less Repayment(s) of Loans during the year	487.04	487.04	487.04	121.76
Loan – Closing	1095.84	608.80	121.76	0.00
Average Loan	1339.35	852.32	365.28	60.88
Interest on loan	111.37	66.78	27.58	4.57
Actual interest	104.31	60.82	23.34	2.28
Weighted average Rate of Interest On Loans	8.32%	7.84%	7.55%	7.50%

Commission's Analysis and Decisions

As on the date of amalgamation between VVNL and the petitioner on 1.4.2006, the values of assets and liabilities have been taken over on a pooling of interest method i.e. the assets, liabilities of the two companies are added together and the resultant value is shown in the merged entity.

Thus, the outstanding loans are taken over by the petitioner and have been serviced subsequently by them and the outstanding loan as on 1.4.2009 is presented by the petitioner as follows:

Table: 9

The total loan capital allowed by the Commission

As of 1.4.2009	
Name of the Generating Stations	Rs. in Crores
Shiva & Shimsha	15.83
MGHE Jog	
Munirabad	
Total	15.83

a. Interest on Loan Capital

The details of Loans, Interest on Loan and the actual loan schedule, as submitted by the petitioner are as under:

Table: 10

Interest on Loan in respect of Shiva and Shimsha generating stations (as claimed by the petitioner)

Package	Loan amount outstanding as on 01.04.2009 (Rs in lakhs)	Rate of Interest
Package 1	410.25	10.00%
Package 2	103.34	9.00%
Package 3	347.00	8.50%
Package 4	162.41	8.25%
Package 5	559.87	7.50%
Total	1582.87	

Table: 11

The Loan Schedule in respect of Shiva and Shimsha generating stations (as claimed by the petitioner)

Particulars	Rs in Crores				
	FY-10	FY-11	FY-12	FY-13	Fy-14
Opening balance	15.83	10.96	6.09	1.22	
Additions	0.00	0.00	0.00	0.00	0.00
Repayments	4.87	4.87	4.87	1.22	0.00
Closing balance	10.96	6.09	1.22	0.00	
Average Loan balance	13.39	8.52	3.65	0.61	
Interest	1.11	0.67	0.28	0.05	
Interest Rate	8.32%	7.84%	7.55%	7.50%	0.00%

Commission's Analysis and Decision

Since there is no outstanding loan on MGHE Jog and Munirabad stations, the interest on loans is computed only on the outstanding loans on Shiva and Shimsha generating stations.

The interest on loan capital, applicable to Shivasamudram and Shimsha for the block period from 1.4.2009 to 31.3.2014 is allowed as under:

Table: 12
The interest schedule allowed by the Commission for Shiva and Shimsha generating stations
Rs in Crores

Particulars	FY-10	FY-11	FY-12	FY-13	FY-14
Opening balance	15.83	10.96	6.09	1.22	
Additions	0.00	0.00	0.00	0.00	0.00
Repayments	4.87	4.87	4.87	1.22	0.00
Closing balance	10.96	6.09	1.22	0.00	
Average Loan balance	13.39	8.52	3.65	0.61	
Interest	1.11	0.67	0.28	0.05	
Interest Rate	8.32%	7.84%	7.55%	7.50%	0.00%

b. Depreciation

The petitioner has worked out Depreciation based on the rates specified in the Electricity Supply Act, 1948. Wherever rates are not specified, rates as per Companies Act, 1956 are considered. The Year wise provision made by the petitioner for depreciation is as under:

Table: 13
Provisions made by the petitioner for Depreciation
Rs in Crores

Name of the Generating Station	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	4.87	4.87	4.87	2.88	2.92	2.92	2.92	2.92	2.92	2.92
MGHE Jog	1.30	1.32	1.32	1.33	1.35	1.35	1.35	1.35	1.35	1.35
Munirabad	0.18	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Total	6.35	6.34	6.34	4.36	4.42	4.42	4.42	4.42	4.42	4.42

Commission's Analysis and Decisions

Based on the MoP notification No. 93(E) dated 23 January 1992, for depreciation rates, the individual asset wise depreciation has been worked out and is allowed as under:

Table: 14
Depreciation allowed by the Commission for determination of tariff

Name of the Generating Station	Rs in Crores									
	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	3.59	3.59	3.59	3.59	3.55	3.54	3.54	3.54	3.54	3.54
MGHE Jog	2.33	2.33	2.33	2.33	2.32	2.32	2.32	2.32	2.32	2.32
Munirabad	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43	0.43	0.43
Total	6.36	6.36	6.36	6.36	6.31	6.30	6.30	6.30	6.30	6.30

ii. Energy Charges/ Variable Charges

Energy charges of Hydro stations comprise of O&M expenses, tax on income, ROE, interest on working capital and other miscellaneous charges such as royalty, water charges etc. These charges are discussed in the following paragraphs.

a. O&M expenses

The petitioner has worked out the O & M expenses based on the KERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2009. The details of O& M expenditure as worked out by the petitioner, are as detailed in the following table

Table: 15
O&M expenditure as worked out by the petitioner

Name of the Generating Station	Rs in Crores									
	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	12.12	12.82	13.51	14.20	14.90	15.59	16.28	16.98	17.67	18.37
MGHE Jog	6.20	6.56	6.91	7.27	7.62	7.98	8.33	8.68	9.04	9.39
Munirabad	3.17	3.35	3.54	3.72	3.90	4.08	4.26	4.44	4.62	4.81
Total	21.50	22.73	23.96	25.19	26.42	27.65	28.88	30.11	31.34	32.57

Commission's observations and analysis

On the determination of O & M charges,
Clause 2.8 (a) under 1992 norms specifies as follows:-

"2.8 Total Energy charges for a year shall be computed on the following basis:

(a) Operation and maintenance expenses, inclusive of insurance expenses for the first full year after commissioning of the plant, shall be calculated at 1.5 per cent of the approved capital expenditure or the ceilings on capital expenditure as provided in paragraph 2.3

The expenditure on operation and maintenance, inclusive of insurance expenses, in each subsequent year after the first full year of operation shall be revised as may be mutually agreed upon between the Board and Generating Company on the basis of the weighted price index."

In accordance with the above provision, the petitioner and the beneficiaries have agreed upon the O & M Expenses to be determined based on Regulations, 2009. Clause 20(d) of the Regulations-2009 specifies the following on the determination of O&M expenses for hydro generating stations:

"d) Hydro generating station

- (i)** Operation and maintenance expenses, for the existing generating stations which have been in operation for 5 years or more in the base year of 2007-08, shall be derived on the basis of actual operation and maintenance expenses for the years 2003-04 to 2007-08, based on the audited balance sheets, excluding abnormal operation and maintenance expenses, if any, after prudence check by the Commission.
- (ii)** The normalized operation and maintenance expenses after prudence check, for the years 2003-04 to 2007-08, shall be escalated at the rate of 5.17% to arrive at the normalized operation and maintenance expenses at the 2007-08 price level respectively and then averaged to arrive at normalized average operation and maintenance expenses for the 2003-04 to 2007-08 at 2007-08 price level. The average normalized operation and maintenance expenses at 2007-08 price level shall be escalated at the rate of 5.72% to arrive at the operation and maintenance expenses for year 2009-10.
- (iii)** The operation and maintenance expenses for the year 2009-10 shall be escalated further at the rate of 5.72% per annum to arrive at permissible operation and maintenance expenses for the subsequent years of the tariff period.
- (iv)** In case of the hydro generating stations, which have not been in commercial operation for a period of five years as on 1.4.2009, operation and maintenance expenses shall be fixed at 2% of the original project cost (excluding cost of rehabilitation & resettlement works). Further, in such case, operation and maintenance expenses in first year of commercial operation shall be escalated @5.17% per annum up to the year 2007-08 and then averaged to arrive at the O&M expenses at 2007-08 price level. It shall be thereafter escalated @ 5.72% per annum to arrive at operation and maintenance expenses in respective year of the tariff period.

- (v) In case of the hydro generating stations declared under commercial operation on or after 1.4.2009, operation and maintenance expenses shall be fixed at 2% of the original project cost (excluding cost of rehabilitation & resettlement works) and shall be subject to annual escalation of 5.72% per annum for the subsequent years. ”

Accordingly, the Commission has worked out the actual O&M expenses for FY09 and escalated the same by 5.72% annually over the baseyear.

Table: 16
The O&M expenditure allowed by the Commission for calculation of the tariff
Rs in Crores

Name of the Generating Stations	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	10.77	11.39	12.04	12.73	13.46	14.23	15.04	15.90	16.81	17.77
MGHE Jog	5.28	5.58	5.90	6.24	6.59	7.33	7.74	8.19	8.66	9.15
Munirabad	2.83	2.99	3.16	3.34	3.54	3.74	3.95	4.18	4.42	4.67
Total	18.88	19.96	21.10	22.31	23.59	25.29	26.74	28.27	29.88	31.59

b. Return on Equity

The petitioner has computed Return on Equity on pre-tax basis at the base rate of 15.50% to be grossed up by the prevailing Corporate tax rate at 30% plus Surcharge at 10% and Education Cess at 3% (effective rate at 33.99%) for all the stations.

Table: 17
The details of Return on Equity, as claimed by the petitioner
Rs in Crores

Name of the Generating Station	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	6.55	6.50	6.54	6.62	7.06	7.06	7.06	7.06	7.06	7.06
MGHE Jog	4.14	4.23	4.19	4.25	4.53	4.53	4.53	4.53	4.53	4.53
Munirabad	0.88	0.78	0.69	0.60	0.56	0.56	0.56	0.56	0.56	0.56
Total	11.57	11.51	11.41	11.47	12.14	12.14	12.14	12.14	12.14	12.14

Commission's Analysis and Decision

According to Clause 2.8 (c) of the 1992 norms, Return on Equity is to be allowed at 16 percent of the paid up capital.

The Commission accordingly allows a return on equity at the rate on 16% as detailed below (share capital and reserves and surplus) for determination of tariff for the VVNL Hydro stations.

Table: 18
Year wise Return on equity allowed by the Commission
Rs in Crores

Name of the Generating Station	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54
MGHE Jog	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Munirabad	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66	7.66

c. Cess/ levy on water

The Royalty claimed by the petitioner is asfixed by the GOK, which is presently at 4 paise per Kwh, for the energy sold from the stations having an installed capacity of 20 MW and above. The year wise Royalty worked out by the petitioner is as under:

Table: 19
Year wise Royalty worked out by the petitioner
Rs in Crores

Name of the Generating Station	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shivanasamudram	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
MGHE Jog	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Munirabad	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Total	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46

Commission's Analysis and Decisions

The Commission has reviewed the calculations and noted that, the royalty has not been claimed by the petitioner for Shimsha Generating station having an installed capacity of 17.2 MW. Thus, the Commission allows the Royalty for all the hydro stations except Shimsha, as under:

Table: 20
The Royalty charges allowed by the Commission
Rs in Crores

Name of the Generating Station	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shivanasamudram	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
MGHE Jog	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Munirabad	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Total	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46

d. Interest on working capital

The petitioner has worked out interest on working capital as per the Regulations, 2009 and furnished the details as under:

Table: 21
Interest on Working Capital for Shiva and Shimsha generating Stations as per the petitioner
Rs in Crores

Particulars	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Maintenance spares	1.82	1.92	2.03	2.13	2.23	2.34	2.44	2.55	2.65	2.75
receivables (2 months)	4.24	4.28	4.35	4.11	4.30	4.43	4.55	4.67	4.79	4.91
O & M expenses	1.01	1.07	1.13	1.18	1.24	1.30	1.36	1.41	1.47	1.53
Total Working Capital	7.07	7.27	7.50	7.42	7.78	8.06	8.35	8.63	8.91	9.20
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Working Capital	0.87	0.89	0.92	0.91	0.95	0.99	1.02	1.06	1.09	1.13

Table: 22
Interest on Working Capital for MGHE Jog station as per the petitioner
Rs in Crores

Particulars	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Maintenance spares	0.93	0.98	1.04	1.09	1.14	1.20	1.25	1.30	1.36	1.41
receivables (2 months)	2.01	2.09	2.15	2.22	2.33	2.40	2.46	2.52	2.58	2.65
O & M expenses	0.52	0.55	0.58	0.61	0.64	0.66	0.69	0.72	0.75	0.78
Total Working Capital	3.46	3.62	3.76	3.92	4.11	4.26	4.40	4.55	4.69	4.84
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Working Capital	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.57	0.59

Table: 23
Interest on Working Capital for Munirabad Generating Station as per the petitioner
Rs in Crores

Particulars	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19	FY-20
Maintenance spares	0.48	0.50	0.53	0.56	0.58	0.61	0.64	0.67	0.69	0.72	0.75
receivables (2 months)	0.74	0.75	0.76	0.78	0.80	0.83	0.87	0.90	0.93	0.96	0.99
O & M expenses	0.26	0.28	0.29	0.31	0.32	0.34	0.36	0.37	0.39	0.40	0.42
Total Working Capital	1.48	1.53	1.59	1.65	1.71	1.79	1.86	1.94	2.01	2.08	2.16
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Working Capital	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.26

Commission's Analysis and Decisions

The Commission is of the view that the interest allowable on working capital should be determined as per the 1992 norms issued by Government of India which provide for interest on working capital as follows:

"2.8 (d) Interest on Working Capital covers:

(i) The operation and maintenance expenses for one month;

(ii) Maintenance spares at actuals but not exceeding one year's requirements less value of one fifth of initial spares already capitalized; and

(iii) Receivables equivalent to two months of average billing for sale of electricity"

The Commission has worked out the normative working capital based on the above norms. The rate of interest, on this working capital is allowed as filed by the petitioner as it reflects the short term lending rate of SBI as on 01.04.2009.

Table: 24
Details of Working Capital and the interest allowed by the Commission for Shiva and Shimsha Generating stations

Rs in Crores										
Particulars	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Maintenance spares - as % of O&M	0	0	0	0	0	0	0	0	0	0
Receivables of 2 months	3.83	3.86	3.90	3.98	4.22	4.36	4.51	4.67	4.83	4.09
O&M & Royalty of one month	1.62	1.67	1.73	1.79	1.91	1.98	2.05	2.13	2.21	1.85
Total Working capital	5.45	5.53	5.63	5.77	6.13	6.34	6.56	6.79	7.04	5.94
Interest rate for WC as of 1 st April -12.25%	0.67	0.68	0.69	0.71	0.75	0.78	0.80	0.83	0.86	0.73

Table: 25
Details of Working capital and the interest allowed by the Commission for MGHE Jog

Rs in Crores										
Particulars	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Maintenance spares - as % of O&M	0	0	0	0	0	0	0	0	0	0
Receivables of 2 months	1.99	2.04	2.09	2.15	2.21	2.34	2.41	2.49	2.57	2.65
O&M & Royalty of one month	0.92	0.94	0.97	1.00	1.03	1.09	1.12	1.16	1.20	1.24
Total Working capital	2.90	2.98	3.06	3.15	3.24	3.43	3.53	3.65	3.76	3.89
Interest rate for WC as of 1 st April -12.25%	0.36	0.37	0.38	0.39	0.40	0.42	0.43	0.45	0.46	0.48

Table: 26

Details of Working capital and the interest allowed by the Commission for Munirabad Generating Station
Rs in Crores

Particulars	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Maintenance spares - as % of O&M	0	0	0	0	0	0	0	0	0	0
Receivables of 2 months	0.73	0.76	0.79	0.82	0.85	0.88	0.92	0.96	1.00	1.04
O&M & Royalty of one month	0.49	0.51	0.52	0.54	0.55	0.57	0.59	0.61	0.63	0.65
Total Working capital	1.22	1.26	1.31	1.35	1.40	1.45	1.51	1.56	1.63	1.69
Interest rate for WC as of 1 st April -12.25%	0.15	0.15	0.16	0.17	0.17	0.18	0.18	0.19	0.20	0.21

e. Taxes

The petitioner has submitted that, the prevailing Corporate tax rate at 30% plus Surcharge at 10% plus Education Cess at 3% (effective rate at 33.99%) for all the stations is considered for determining the tariff. No separate line item is provided in the filing.

Commission's analysis and decision

The petitioner has grossed up the RoE with the tax rate, as per Regulations, 2009. Clause 2.8(b) of the 1992 norms issued by GOI has the following provision relating to tax on RoE.

“(b) Tax on income, if any, shall be computed as expense at actuals. Any over recoveries or under recoveries of tax on income shall be adjusted every year on the basis of a certificate of Auditors.”

Accordingly, the Commission allows the tax on income on actuals as under and directs that any over recoveries or under recoveries of tax on income shall be adjusted every year on the basis of a certificate of auditors.

Table: 27
Tax on income allowed

Name of the Generating Stations	Rs in Crores									
	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
MGHE Jog	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Munirabad	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Total	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60

I. Operation norms considered in the petition

The petitioner has considered the operational norms as under.

	Parameter	Shiva	Shimsha	MGHEJog	Mu'bad
1	Normative Plant availability factor	90%	90%	90%	90%
2	Installed Capacity – MW capability at FRL	42	17.2	139.2	28
3	Design Energy Mu	183	69	119	65
4	Auxiliary consumption %	1%	1%	1%	1%

As the operational norms considered by the petitioner are in order as per the 1992 norms, the Commission allows the same. The Commission directs the petitioner to obtain and submit certification for the design energy from CEA within one year from the date of this order.

Based on the above discussions, the capacity/ fixed charges allowed by the Commission are worked out as under:

**Table: 28
Capacity Charges allowed by the Commission**

Name of the Generating station	Rs in Crores									
	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19
Shiva & Shimsha	4.70	4.26	3.86	3.63	3.55	3.54	3.54	3.54	3.54	3.54
MGHE Jog	2.33	2.33	2.33	2.33	2.32	2.32	2.32	2.32	2.32	2.32
Munirabad	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43	0.43	0.43
Total	7.47	7.03	6.64	6.41	6.31	6.29	6.29	6.29	6.29	6.29

While recovering the capacity charges, the capacity charges allowed by the Commission shall be subjected to calculations on monthly basis and denominated in Rs / kw / month.

For full recovery of capacity charges, the following stipulation in clause 2.7 of the 1992 norms shall be adhered to:

“2.7 Full capacity charges shall be recoverable in 7,884 hours/year (90 per cent Availability) of operation. Payment of capacity charge below the level of 7,884 hours/year shall be on pro-rata basis. There shall not be any payment of capacity charges for availability level above 7884 hours/year. The capacity charge shall be calculated on monthly basis and denominated in Rs. / kw/ month.”

Computation and payment of energy charges:

Components of Energy charges are discussed in the preceding paragraphs under the headings O & M expenses, Return on Equity, Tax, interest on working capital and other Miscellaneous charges. For the actual calculation of energy charges, the following clauses of 1992 norms shall be adhered to:

“2.9 The per unit cost of primary energy shall be calculated by dividing the total Energy Charges by the Design Energy of the project and shall be denominated as Rupee per Kilo-watt hour. The payment of primary energy charges shall be based on actual generation during the month, limited to the design energy apportioned for the month. For this purpose, the full Design Energy shall be apportioned in the twelve calendar months of the year, as may be mutually agreed between the Board and the Company.

2.10 Incentives:

In addition to the >capacity charge= and >primary energy charge=, the company shall be paid incentive as under:

(i) For >Availability= of installed capacity above normative level of 90 per cent, the rate of incentive shall be mutually agreed upon between the Generating Company and the Board but it shall not exceed 0.7 per cent return on equity for each percentage point increase in availability.

(ii) Energy charges for secondary energy:

The rate of incentive for secondary energy shall be mutually agreed between the Board and the Generating Company. However, the maximum payment on this account in any year shall not exceed 10 per cent return on equity.

The incentive on account of higher Availability and Secondary Energy shall be payable on a monthly basis subject to a cumulative adjustment in each month of the financial year and final adjustment at the end of the year.”

The petitioner and the respondents (beneficiaries) have agreed the secondary energy rate at 15 paisa/ unit and the total cost of which is limited to 3.28% of the equity. The agreed definition of secondary energy is the energy (electricity) in excess of the Tariff design energy. Accordingly, the petitioner is allowed to claim the energy charges based on the above provisions of 1992 norms.

8. Truing up

Based on the tariff determined by the Commission in this order, the petitioner shall file an application, before the Commission, for truing up of the actual costs incurred, at the end of each tariff period. Further, the Commission directs the

petitioner to file an application for truing up for the tariff period FY09 -14 within the next 6 months.

9. Status of PPA

The Power Purchase Agreement was initialled by the petitioner with 5 ESCOMs on 18.12.2010, and was submitted to the Commission on 04.01.2011. Further, the petitioner, vide letter dated 04.12.2013 has submitted a modified Power Purchase Agreement in line with the KERC (Terms and Conditions of Generation Tariff) Regulations 2009, along with payment of processing fee at Rs 5000/- per MW amounting to Rs 11,32,000/- vide cheque dated 04.12.2013.

The Commission directs the petitioner to resubmit the initialled PPA duly incorporating the decisions of the Commission, as approved in this Order. The approval of the PPA would be taken up by the Commission separately.

10. This Order is signed and issued on 25th day of February, 2015.

Sd/-

**(M.R. Sreenivasa Murthy)
CHAIRMAN**

Sd/-

**(H.D. Arun Kumar)
MEMBER**

Sd/-

**(D.B. Manival Raju)
MEMBER**