

# **GUJARAT ELECTRICITY REGULATORY COMMISSION**



## **Mid-term Review of Business Plan**

**For**

**Torrent Power Limited – Generation  
Ahmedabad**

**Case No. 1368 of 2013**

**29<sup>th</sup> April 2014**

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**GUJARAT ELECTRICITY REGULATORY COMMISSION  
(GERC)**

**GANDHINAGAR**

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of  
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## **ABBREVIATIONS**

A&G	Administration and General Expenses
ARR	Aggregate Revenue Requirement
CAPEX	Capital Expenditure
CERC	Central Electricity Regulatory Commission
Control Period	FY 2011-12 to FY 2015-16
DGVCL	Dakshin Gujarat Vij Company Limited
DISCOM	Distribution Company
EA	Electricity Act, 2003
EHV	Extra High Voltage
FPPPA	Fuel and Power Purchase Price Adjustment
FY	Financial Year
GEB	Gujarat Electricity Board
GERC	Gujarat Electricity Regulatory Commission
GETCO	Gujarat Energy Transmission Corporation Limited
GFA	Gross Fixed Assets
GoG	Government of Gujarat
GSECL	Gujarat State Electricity Corporation Limited
GUVNL	Gujarat Urja Vikas Nigam Limited
HT	High Tension
JGY	Jyoti Gram Yojna
kV	Kilo Volt
kVA	Kilo Volt Ampere
kVAh	Kilo Volt Ampere Hour
kWh	Kilo Watt Hour
LT	Low Tension Power
MGVCL	Madhya Gujarat Vij Company Limited
MTR	Mid-term review
MU	Million Units (Million kWh)
MW	Mega Watt
MYT	Multi-Year Tariff
O&M	Operations & Maintenance
PF	Power Factor
PGCIL	Power Grid Corporation of India Limited
PGVCL	Paschim Gujarat Vij Company Limited
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
RLDC	Regional Load Despatch Centre
SBI	State Bank of India
SLDC	State Load Despatch Centre
UGVCL	Uttar Gujarat Vij Company Limited
WRLDC	Western Regional Load Despatch Centre



# Before the Gujarat Electricity Regulatory Commission at Gandhinagar

**Case No. 1368 of 2013**

**Date of the Order: 29/04/2014**

## **CORAM**

Shri Pravinbhai Patel, Chairman

Dr. M. K. Iyer, Member

## **ORDER**

### **1. Introduction**

#### **1.1 Background**

Section 16.2 of GERC (MYT) Regulations, 2011, of GERC provides for submission of the Business Plan for each Control Period by the Generating Company, Transmission Licensee, Distribution Wires Business and Retail Supply Business. Based on the Business Plan, the applicant shall submit the forecast of Aggregate Revenue (ARR) for the entire control period and the expected revenue from the existing Tariffs for the first year of the control period, and the Commission shall determine ARR for the entire control period and the tariff of the first year of the control period for the Generating Company, Transmission Licensee and distribution Wires Business Plan and Retail Supply Business.



Section 16.2 of the Regulations also lays down that the Generating Company, Transmission Licensee and Distribution Licensee may seek a Mid-term Review of the Business Plan through an application filed three (3) months prior to the filing of the Petition for Truing up for the second year of the control period and tariff determination for the fourth year of the control period.

Regulation 17.2 of the Regulations, 2011, states that in case of Mid-term Review of Business Plan under Regulation 16.2, the Petition shall comprise of modification, if any, of the ARR for the remaining years of the control period, with adequate justification for the same.

Regulation 19.1 of GERC (MYT) Regulations, 2011 also stipulates that Mid-term Review of the Business Plan/ Petition may be sought by the Generating Company, Transmission Licensee and Distribution licensee through an application filed three (3) months prior to the specified date of filing of petition for truing up for the second year of the control period and Tariff determination for the fourth year of the control period.

## **1.2 Petition of TPL-G for Mid-term Review of the Business Plan**

As per GERC (MYT) Regulations, 2011, the Petition is to be filed three months prior to the specified date for filing the petition. However, the Petitioner has requested the Commission to grant extension till 30<sup>th</sup> November, 2013 for filing Mid-term Review Petition vide its letter dated 27<sup>th</sup> August, 2013. In turn, the Commission has granted extension vide its letter no. GERC/Tariff/3513/1722 dated 31<sup>st</sup> August, 2013.

In accordance with Regulation 16.2 of GERC (MYT) Regulation, 2011, the TPL-D has filed the Petition for Mid-term Review of the Business Plan and Revision of ARR for the remaining years of the control period, i.e., FYs 2014-15 and 2015-16.

## **1.3 Admission of the Petition and the Public Hearing Process**

The TPL-G has submitted the current Petition for Mid-term Review of the Business Plan and Revision of ARR for the balance years for FY 2014-15 and FY 2015-16 of the control period. The Commission admitted the above Petition (Case No. 1368/2013) on 4<sup>th</sup> December, 2013.

In accordance with Section 64 of the Electricity Act, 2003, the Commission directed TPL-G to publish its application in an abridged form, to ensure public participation. The Public Notice, inviting objections / suggestions from its stakeholders on the Mid-term Review Petition filed by it, was issued in the following newspapers on 11<sup>th</sup> December, 2013.

**Torrent Power Limited – Generation, Ahmedabad  
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Sl. No.	Name of the Newspaper	Language	Date of publication
1	Times of India	English	11.12.2013
2	Divya Bhaskar	Gujarati	11.12.2013

The petitioner also placed the public notice and the petition on the website ([www.torrentpower.com](http://www.torrentpower.com)) for inviting objections and suggestions on its Petition. The interested parties/stakeholders were asked to file their objections / suggestions on the petition, on or before 10<sup>th</sup> January, 2014.

The Commission received objections / suggestions from 2 stakeholder viz. Shri Amarsinh Chavda and Utility Users' Welfare Association. The Commission examined the objections / suggestions received and fixed the date for public hearing for the petition on 21<sup>st</sup> February, 2014 at the Commission's Office, Gandhinagar, and subsequently a communication was sent to the objectors to take part in the public hearing process for presenting their views in person before the Commission. The public hearing was conducted in the Commission's Office at Gandhinagar as scheduled on the above date. Out of above mentioned two objectors, only Utility Users' Welfare Association participated in the public hearing and presented its objections.

A short note on the main issues raised by the objector in the submissions in respect to the Petition, along with the response of TPL-G (APP) and the Commission's views on the response, are briefly given in Chapter 3.

#### **1.4 Contents of this Order**

The order is divided into four chapters, as under:

1. The **First** Chapter provides the background of the Petition and details of the public hearing process.
2. The **Second** Chapter outlines the summary of TPL-G's Mid-term Review Petition.
3. The **Third** Chapter provides a brief account of the public hearing process, including the objections raised by various stakeholders, TPL-G's response and the Commission's views on the response.
4. The **Fourth** Chapter deals with Mid-term Review of the Business Plan and Revision of ARR for FYs 2014-15 and 2015-16.



## 2. Summary of TPL-G's Petition

The TPL-G has projected its Revised Aggregate Revenue Requirement for FYs 2014-15 and 2015-16, as part of Mid-term Review process for the remaining years of the control period in respect of Generation pertaining to Ahmedabad.

### 2.1 Mid-term Review for FY 2014-15 and FY 2015-16

The comparison of revised projections for FY 2014-15 and FY 2015-16 in the Mid-term Review, vis-à-vis the costs approved by the Commission in the MYT Order dated 6<sup>th</sup> September, 2011, are given as below:

**Table 2.1: Mid-term Review for FY 2014-15 and FY 2015-16**

(Rs. Crore)

Particulars	FY 2014-15		FY 2015-16	
	MYT Order	Revised Estimates in MTR	MYT Order	Revised Estimates in MTR
Variable Cost	673.06	932.12	654.98	788.80
O&M Expenses	156.28	153.78	165.22	161.75
Water Charges	8.59	9.28	8.59	10.21
Depreciation	51.48	49.94	52.44	52.68
Interest on Loan	29.29	41.05	25.12	42.25
Interest on Working Capital	12.14	20.70	11.86	18.18
Return on Equity	64.63	63.88	63.33	64.88
Income Tax	26.45	18.51	26.45	18.51
Less: Non-Tariff Income	14.18	12.00	14.18	12.00
Total	1007.74	1277.26	993.81	1145.26

### 2.2 TPL-G has requested the Commission to:

- a) Admit the petition for Mid-term Review of the Business Plan and approval of the resultant ARR.
- b) Approve the revised Business plan and approve the resultant ARR for FYs 2014-15 and 2015-16.
- c) Allow additions/ alterations/ changes/ modifications to the application at a future date.
- d) Permit the Petitioner to file all necessary pleadings and documents in the proceedings and documents from time to time, to facilitate effective consideration of the proceedings.
- e) Condone the delay in filing the present Petition.
- f) Allow any other relief, order or direction, which the Commission may deem fit.
- g) Condone any inadvertent omissions / errors / rounding-off differences / shortcomings.



## 3. Brief outline of objections raised, response from TPL-G and the Commission's View

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### 3.0 Public Response to Petition

In response to the public notice inviting objections / suggestions from stakeholders on the Petition filed by TPL for Mid-term Review of Business Plan for FY 2014-15 and FY 2015-16, a number of consumers / organizations filed their objections / suggestions in writing. Some of these objectors participated in the public hearing also. The Commission has addressed the objections / suggestions issue-wise rather than objector-wise. The objections / suggestions by the consumer / consumer organizations, the response from the Petitioner and the view of the Commission are as given below:

#### 3.1 Retiring of Vatva Stations

##### Objection

The Petitioner has proposed to retire the gas based generating station at Vatva. It is suggested to install a new generating station of more than 200 MW at Sabarmati.

##### Response of TPL

The Vatva generating station is on the verge of completion of its useful life. Further operation of the generating station would necessitate the capital expenditure for renovation and modernization. Additionally, the allocation of gas by the Govt. of India to Vatva plant has been reduced to zero from March 2013 due to reduction in availability of gas in KG basin. In the above background and considering the higher cost of generation of electricity using RLNG, the Petitioner has proposed to retire the Vatva generating station. However, regarding the Objector's suggestion for installing a new generating station of 200 MW capacity at Sabarmati, the Petitioner would like to submit that the existing environmental norms and the limitation of chimney height do not allow to install new generating unit at Sabarmati.

##### Commission's View

The response of the petitioner is noted.

### **3.2 Capital Investment for C-Station**

#### **Objection**

The Objector has raised concern regarding the capital investment proposed to keep C Station working. The C Station should be retired as per the CEA report and should be replaced with a new station of higher capacity.

#### **Response of TPL**

Considering the vintage and small size of the plant, the performance of C station has been at par with other similarly situated plants. The capital expenditure proposed to be incurred for C station is pertaining to the building refurbishment, bunker house and hot culvert based on the RLA study carried out by M/s TCE. Regarding the Objector's suggestion of replacing C station with new station of higher capacity, the Petitioner would like to reiterate that the existing environmental norms and the limitation of chimney height do not allow to install new generating unit at Sabarmati.

#### **Commission's View**

The response of the petitioner is noted.

### **3.3 Transit Loss**

#### **Objection**

The Petitioner has demanded higher transit loss vis-à-vis normative transit loss of 1.20%.

#### **Response of TPL**

The Petitioner has been making all its efforts to contain the transit loss. In this endeavour, it has reduced the transit loss from one time high of 8% to present 1.99% in FY 2012-13. It has been already brought to the kind notice of the Commission that the Petitioner has been outperforming in most of the operational efficiency parameters being one of the efficient utility. Further, the reduction in the coal transit loss to current levels has become possible only due to the consistent efforts made by the Petitioner.

#### **Commission's View**

The Commission has approved the transit loss of 0.9% for FY 2014-15 and 0.8% for FY 2015-16 in the Mid-term Review of Business Plan in accordance with the GERC (MYT) Regulations, 2011.



### **3.4 Return on Equity**

#### **Objection**

It is not clarified as to how ROE is arrived at.

#### **Response of TPL**

The equity determination and the corresponding RoE computation is as per GERC (MYT) Regulations, 2011. The increase in equity is considered as 30% of capitalization of the asset. Accordingly, the necessary computations have been furnished at Table 14 and Table 20 of the Petition (TPL-G True-up & ARR).

#### **Commission's View**

The return on equity is allowed as per GERC Regulations.

## 4. Mid-term Review of Business Plan for FY 2014-15 and FY 2015-16

### 4.1 Introduction

In terms of Regulation 16.2 (i) of GERC (MYT) Regulations, 2011, a Mid-term Review Business Plan (MTR) may be sought by the Generating company, Transmission Company and Distribution Licensee, through an application filed three months prior to the filing of Petition for Truing up for the second year of the control period and Tariff determination for the fourth year of the control period.

The Generating Company, the Transmission Company and the Distribution Companies shall file the Mid-term Review of the Business Plan three months prior to the filing of Truing up for the FY 2012-13 and determination of Tariff for FY 2014-15.

### 4.2 Submission of TPL-G (APP)

In accordance with the above provisions, the TPL-G (APP) has submitted the Petition for Mid-term Review of Business Plan for the remaining control period for FYs 2014-15 and 2015-16.

### 4.3 Summary of the Petition for Mid-term Review for the remaining control period, FY 2014-15 and FY 2015-16.

TPL-G (APP) has projected its Revised Aggregate Revenue Requirement for FYs 2014-2015 and 2015-16, as part of Mid-term Review process for the remaining years of the control period.

The comparison of the revised projections for FYs 2014-15 and 2015-16, vis-à-vis the figures approved by the Commission in the MYT Order dated 6<sup>th</sup> September, 2011 is given, as under:

**Table 4.1: Mid-term Review for FY 2014-15 and FY 2015-16**

(Rs. Crore)

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		Approved	Revised Projection	Approved	Revised Projection
1	Variable Cost	673.06	932.12	654.98	788.80
2	O&M Expenses	156.28	153.78	165.22	161.75
3	Water Charges	8.59	9.28	8.59	10.21
4	Depreciation	51.48	49.94	52.44	52.68
5	Interest on Loan	29.29	41.05	25.12	42.25
6	Interest on Working Capital	12.14	20.70	11.86	18.18
7	Return on Equity	64.63	63.88	63.33	64.88



Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		Approved	Revised Projection	Approved	Revised Projection
8	Income Tax	26.45	18.51	26.45	18.51
9	Less: Non-Tariff Income	(14.18)	(12.00)	(14.18)	(12.00)
<b>10</b>	<b>Total</b>	<b>1007.74</b>	<b>1277.26</b>	<b>993.81</b>	<b>1145.26</b>

#### 4.4 Estimation of Variable Cost

The revised estimates of ARR, for arriving at the variable costs, are detailed in the following paragraphs.

#### 4.5 Operational Performance Parameters

In the case of Sabarmati C station and Vatva Gas station, TPL-G (APP) has submitted as follows:

**C-Station:** During the MYT period, the retirement of C Station was proposed from FY 2014-15 onwards, subject to review of the operating conditions. Based on the current site conditions and preliminary study, C Station can still remain in operation, by strengthening certain parts of the plants and building. Accordingly, it is proposed to keep C Station in operation in the interest of all stakeholders

**Vatva CCPP:** It has completed 23 years in operation, as against its estimated life of 25 years. Due to non-allocation of domestic gas by the Government and higher cost of RLNG/ Spot Gas, the Vatva CCPP has been kept in wet preservation mode. Hence, due consideration needs to be given to the following factors:

- The station is nearing completion of its life in the next two years. Therefore, the continuation of the existing generating station necessitates major capital expenditure for extending its life.
- The SHR of this old generating station is higher than that of the new gas generating plants equipped with advanced technology. Further, the price of domestic gas is likely to increase and therefore, the implication of difference in SHR is likely to increase further.
- The terms of the existing gas agreements expire on 31.03.2014. The renewal of the gas agreement requires the commitment for Take/ Pay at new gas price, along with Ship/ Pay for gas transportation for the next five years. Considering the financial implications of above factors, it is proposed to retire the Vatva Generation facilities.



**Commission’s Analysis**

In view of the circumstances explained by TPL-G (APP), the Commission considers the submission that C-Station would be in operation during the balance of the MYT period and Vatva Station will be retired.

**4.5.1 Plant Availability Factor (PAF)**

**Petitioner’s Submission**

The TPL has projected the availability of its generating stations as follows:

**Table 4.2: Plant Availability Factor (PAF) of TPL – G (APP), as Approved in the MYT Order and as Projected in the Mid-term Review**

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		As per MYT Order	Revised Projections	As per MYT Order	Revised Projections
1	C Station	-	92.05%	-	84.20%
2	D Station	97.50%	84.14%	87.70%	93.50%
3	E Station	97.50%	94.83%	96.70%	93.50%
4	F Station	97.50%	93.49%	97.50%	94.84%
5	Vatva Gas Station	98.60%	-	94.30%	-

TPL-G (APP) has submitted, as follows, for the variations.

- During FY 2014-15, the lower Plant Availability Factor of D-Station is on account of the requirement of longer shutdowns for boiler refurbishment and major overhauling of the turbines. To reduce the overall downtime, it is planned to club both activities.
- The likely availability of D-Station for FY 2015-16 is expected to be higher than the approved Plant Availability Factor of 87.70%
- For E and F Stations, the availability for both the years has been revised, considering the estimated forced outages, as the same was not considered at the time of making the MYT projections.

**Commission’s Analysis**

The Commission considered the submission of the Petitioner and approves the projected, Plant Availability Factor, as given in the Table below:

**Table 4.3: Approved PAF, for the MTR for FY 2014-15 and FY 2015-16**

Sl. No.	Particulars	FY 2014-15	FY 2015-16 (%)
1	C-Station	92.05	84.20
2	D-Station	84.14	93.50
3	E-Station	94.83	93.50
4	F-Station	93.49	94.84
5	Vatva Gas Station	-	-



#### 4.5.2 Plant Load Factor (PLF)

##### Petitioner's Submission

TPL has projected the Plant Load Factor (PLF) of the different stations, as follows:

**Table 4.4: Plant Load Factor (PLF) of TPL-G (App), as Approved in the MYT Order and as Projected in the Mid-term Review**

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		As per MYT Order	Revised Projections	As per MYT Order	Revised Projections
1	C-Station	-	87.62	-	69.35
2	D-Station	77.56	81.03	70.44	75.12
3	E-Station	78.03	91.54	77.92	76.13
4	F-Station	78.51	91.03	78.89	78.56
5	Vatva Gas Station	76.91	-	76.91	-

TPL- G (APP) has submitted, as follows:

- Considering the requirement of TPL-D, the overall PLF of Sabarmati station is likely to be higher as compared to MYT approved PLF for FY 2014-15, whereas the overall PLF is expected to be lower in FY 2015-16.
- As explained above, the TPL has proposed to retire the Vatva station. Therefore, the availability of Vatva CCPP has not been not considered.

##### Commission's Analysis

The Commission approves the Plant Load Factor of different stations projected by the Petitioner, as given in the Table below:

**Table 4.5: Approved PLF for FY 2014-15 and FY 2015-16, for the Purpose of MTR**

Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	C-Station	87.62	69.35
2	D-Station	81.03	75.12
3	E-Station	91.54	76.13
4	F-Station	91.03	78.56
5	Vatva Gas Station	-	-

#### 4.5.3 Auxiliary Consumption

##### Petitioner's Submission

The Petitioner has projected the Auxiliary Consumption for FYs 2014-15 and 2015-16, for Mid-term Review, as given in the Table below:



**Table 4.6: Auxiliary Consumption of TPL-G (App), as Approved in the MYT Order, and as Projected in the Mid-term Review**

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		As approved in the MYT Order	Revised Projection	As approved in the MYT Order	Revised Projection
1	C-Station	-	10.00	-	10.00
2	D-Station	9.00	9.50	9.00	9.50
3	E-Station	9.00	9.50	9.00	9.50
4	F-Station	9.00	9.50	9.00	9.50
5	Vatva Gas Station	3.00	-	3.00	-

The Petitioner submitted that it has made all efforts to maintain the auxiliary consumption at approved levels, but the Auxiliary consumption is likely to be higher than the approved value, primarily due to the change in the grade of coal being used for its generating stations at Sabarmati. TPL further stated that the proposed increase in auxiliary consumption is in line with the performance parameters of the generating stations of the same vintage and having the same size. Hence, TPL requested the Commission to revise the directions regarding Auxiliary Consumption.

#### **Commission's Analysis**

The Commission, in the MYT Order, approved the Auxiliary Consumption, after analysing the submissions made by the Petitioner on vintage of the machines, past performance, etc., on the basis of the GERC (MYT) Regulations, 2011. The Commission does not see any justification for revision of those norms.

Accordingly, the Auxiliary Consumption is approved for different stations for the purpose of Mid-term Review for FYs 2014-15 and 2015-16, as given in the Table below:

**Table 4.7: Approved Auxiliary Consumption for the Purpose of Mid-term Review for FY 2014-15 and FY 2015-16**

Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	C-Station	9.50*	9.50*
2	D-Station	9.00	9.00
3	E-Station	9.00	9.00
4	F-Station	9.00	9.00
5	Vatva Gas Station	-	-

\* As per GERC (MYT) Regulations, 2011

#### **4.5.4 Station Heat Rate (SHR)**

##### **Petitioner's Submission**

The Petitioner has projected the Station Heat Rate (SHR) for FYs 2014-15 and 2015-16 for Mid-term Review of the Business Plan, as given in the Table below:



**Table 4.8: Station Heat Rate (SHR), as Approved in the MYT Order, and as Projected in the Mid-term Review**

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		As approved in the MYT Order	Revised Projection	As approved in the MYT Order	Revised Projection
1	C-Station	-	3150	-	3150
2	D-Station	2450	2450	2450	2450
3	E-Station	2455	2455	2455	2455
4	F-Station	2455	2455	2455	2455
5	Vatva Gas Station	2165	-	2165	-

**TPL-G (APP) has submitted that:**

- For C station, considering the small size and ageing of the plant, the Commission had previously approved the higher SHR. Accordingly, the earlier approved SHR of 3,150 kcal/kWh for FYs 2014-15 and 2015-16 has been considered.
- For FY 2014-15, the TPL has considered the approved SHR for D, E & F stations. For FY 2015-16, looking to the revised requirement of TPL-D and consideration of MOD principle, it appears that backing down of Sabarmati generating station is likely and it would have an impact on the SHR and Auxiliary Consumption. In such circumstances, the likely SHR and Auxiliary Consumption will be higher than the normative parameters approved for normal loading conditions. Such variations in operating parameters are not attributable to the Petitioner, since these are beyond its control. Therefore, the Petitioner requested the Commission to allow such variations in operating parameters as uncontrollable at the time of truing up exercise.

**Commission’s Analysis**

The projected SHRs for different Stations are as approved in the MYT Order for FYs 2014-15 and 2015-16 for D, E and F stations. In the case of C-Station, the projected SHR is approved as per MYT Order. It is, however, proposed to retire Vatva Gas Station, This proposal has been accepted by the Commission.

In view of the position explained above, the Commission approves the SHRs, proposed by TPL, for Mid-term Review of Business Plan, as given in the Table below:



**Table 4.9: Approved Station Heat Rate (SHR) for the Purpose Mid-term Review for FY 2014-15 and FY 2015-16**

Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	C-Station	3150	3150
2	D-Station	2450	2450
3	E-Station	2455	2455
4	F-Station	2455	2455
5	Vatva Gas Station	-	-

Truing up of the SHR will be undertaken in accordance with the Regulations.

#### **4.5.5 Specific Fuel Oil Consumption**

##### **Petitioner's Submission**

The Petitioner has projected the Specific Fuel Oil Consumption for FYs 2014-15 and 2015-16, for Mid-term Review of the Business Plan, as given in the Table below:

**Table 4.10: Secondary Fuel Oil Consumption, as Approved in the MYT Order, and as Projected in the MTR**

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		As approved in the MYT Order	Revised Projection	As approved in the MYT Order	Revised Projection
1	C-Station	-	2.00	-	2.00
2	D-Station	1.00	1.00	1.00	1.00
3	E-Station	1.00	1.00	1.00	1.00
4	F-Station	1.00	1.00	1.00	1.00

(ml/kWh)

TPL- G (APP) has submitted as follows:

- The Commission had approved the Secondary Fuel Consumption (SFC), as per GERC (MYT) Regulations, 2011. In the present working of revised estimates, TPL has considered the approved SFC for FYs 2014-15 and 2015-16.
- It may be noted that in low load conditions, to ensure stable operation, the Petitioner is required to use RFO as a support fuel. This would increase the consumption of the secondary fuel. Hence, the Petitioner requests that such variations be dealt with at the time of truing up, in accordance with the provisions of the GERC (MYT) Regulations, 2011.

##### **Commission's Analysis**

The projections are as approved in the MYT Order for FYs 2014-15 and 2015-16 for D, E and F Stations. In the case of C-Station, the projection is as approved in the GERC (MYT) Regulations, 2011 for the FY 2014-15 and FY 2015-16.

Hence, the Commission approves the Secondary Fuel Oil Consumption for FYs 2014-15 and 2015-16, as projected by TPL for the purpose of Mid-term Review of the





Business Plan, as given in the Table below. The Commission may consider the use of RFO as support fuel at the time of truing up.

**Table 4.11: Approved Secondary Fuel Oil Consumption for the purpose of Mid-term Review for FY 2014-15 and FY 2015-16**

(ml/kWh)			
Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	C-Station	2.00	2.00
2	D-Station	1.00	1.00
3	E-Station	1.00	1.00
4	F-Station	1.00	1.00

The Commission is of the view that there is no need for a review of Secondary Fuel Consumption, during Truing up.

#### **4.5.6 Transit Loss of Coal**

##### **Petitioner's Submission**

The Petitioner has projected the Transit Loss of Coal for FYs 2014-15 and 2015-16, for Mid-term Review of the Business Plan, as given in the Table below:

**Table 4.12: Transit Loss of Coal, as Approved in the MYT Order, and as Projected in the Mid-term Review**

(%)					
Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		As approved in the MYT Order	Revised Projection	As approved in the MYT Order	Revised Projection
1	C-Station	0.9	0.9	0.8	0.8
2	D-Station	0.9	0.9	0.8	0.8
3	E-Station	0.9	0.9	0.8	0.8
4	F-Station	0.9	0.9	0.8	0.8

TPL- G (APP) has submitted, as follows:

- The Commission, in the MYT Order, had approved the decreasing trend for transit loss during the control period. However, the actual transit losses for FYs 2011-12 and 2012-13 were higher than the approved level of transit loss.
- TPL has undertaken various pro-active efforts in this regard and the same have been intimated to the Commission in its earlier submissions. Further, there are various uncontrollable factors, due to which transit losses are expected to be higher for FYs 2014-15 and 2015-16, which are enumerated hereunder:
  - a) Natural Factors, such as evaporation of moisture, windage losses and spill-over of fine coal through the wagon.
  - b) Theft and pilferage, etc., since the coal has to be transported over long distances in open wagons.



However, the Petitioner has considered the approved level of transit loss for FYs 2014-15 and 2015-16, instead of revising the estimates.

#### **Commission's Analysis**

The TPL-G (APP) has projected the transit loss of coal, as approved in the MYT Order for D, E and F Stations. For C-Station also, the projection is the same as for the other stations.

In view of the above, the Commission approves the Transit Loss of Coal, projected by TPL-G (APP), as given in the Table below:

**Table 4.13: Approved Transit Loss for the purpose of Mid-term Review for FY 2014-15 and FY 2015-16**

Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	C-Station	0.9	0.8
2	D-Station	0.9	0.8
3	E-Station	0.9	0.8
4	F-Station	0.9	0.8

#### **4.5.7 Performance Parameters Approved**

Based on the discussions and decisions in the earlier paragraphs, the approved performance parameters are listed in the Table below:

**Table 4.14: Approved Parameters of PAF, PLF, Auxiliary Consumption, Station Heat Rate, Specific oil Consumption and Transit Loss of Coal for FY 2014-15 and FY 2015-16, for the purpose of Mid-term Review of the Business Plan**

Station	PAF (%)		PLF (%)		Auxiliary consumption (%)		Heat Rate (Kcal/kWh)		Secondary fuel oil consumption (ml/kWh)		Transit loss of coal (%)	
	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16
C	92.05	84.20	87.62	69.35	9.50	9.50	3150	3150	2.00	2.00	0.9	0.8
D	84.14	93.50	81.03	75.12	9.00	9.00	2450	2450	1.00	1.00	0.9	0.8
E	94.83	93.50	91.54	76.13	9.00	9.00	2455	2455	1.00	1.00	0.9	0.8
F	93.49	94.84	91.03	78.56	9.00	9.00	2455	2455	1.00	1.00	0.9	0.8

#### **4.5.8 Gross Generation and Net Generation**

Gross Generation and Net Generation projected by TPL approved by the Commission and the projected and approved PLF as well as projected and approved auxiliary consumption for different stations for FYs 2014-15 and 2015-16 are as given in the Table below:



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**Table 4.15: Gross Generation and Net Generation, as Projected by TPL-G (APP), and as approved by the Commission for FY 2014-15 and FY 2015-16, for Mid-term Review of the Business Plan**

Station	Projected							
	FY 2014-15				FY 2015-16			
	Gross Generation (MU)	Auxiliary Consumption (%)	Auxiliary Consumption (MU)	Net Generation (MU)	Gross Generation (MU)	Auxiliary Consumption (%)	Auxiliary Consumption (MU)	Net Generation (MU)
C-Station	460.51	10.00	46.05	414.46	365.48	10.00	36.55	328.93
D-Station	851.24	9.50	80.92	770.83	791.79	9.50	75.22	716.57
E-Station	970.33	9.50	92.18	878.15	809.14	9.50	76.87	732.28
F-Station	964.89	9.50	91.66	873.22	834.96	9.50	79.32	755.63
Total	3247.47		310.81	2936.66	2801.37		267.96	2533.41

Station	Approved							
	FY 2014-15				FY 2015-16			
	Gross Generation (MU)	Auxiliary Consumption (%)	Auxiliary Consumption (MU)	Net Generation (MU)	Gross Generation (MU)	Auxiliary Consumption (%)	Auxiliary Consumption (MU)	Net Generation (MU)
C-Station	460.53*	9.50	43.75	416.78	365.50*	9.50	34.72	330.78
D-Station	851.79*	9.00	76.66	775.12	791.82*	9.00	71.26	720.56
E-Station	970.29*	9.00	87.33	882.96	809.16*	9.00	72.82	736.33
F-Station	964.88*	9.00	86.84	878.04	834.99*	9.00	75.15	759.84
Total	3247.49*		294.40	2952.90	2801.47*		253.95	2547.51

\* There is slight variation in the figures compiled by the Commission compared to those given in the projections.

## 4.6 Cost Parameters

### 4.6.1 Weighted Average GCV and Rates of Fuels

TPL-(G) (App) has projected the following Calorific Values and the rates of different fuels for FY 2014-15 and FY 2015-16.

**Table 4.16: Projected Calorific Value of Fuels for FY 2014-15 and 2015-16**

Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	Indigenous Coal (Kcal/Kg)	3938	3938
2	Imported Coal (Kcal/Kg)	4782	4782
3	Secondary Fuel Oil (Kcal/L)	9912	9912

**Table 4.17: Projected Prices of Fuels for FY 2014-15 and FY 2015-16**

Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	Indigenous Coal (Rs./MT)	4021.48	4025.54
2	Imported Coal (Rs./MT)	5830.00	5830.00
3	Secondary Fuel Oil (Rs./KL)	50,857.92	50,857.92

### Commission's Analysis

Vide its e-mail dated 9<sup>th</sup> January, 2014, TPL-G (APP) furnished the details of blending ratio of Coal, Weighted Average GCV of the mix of Coal, as fed into the boilers for different Stations, as follows:



**Table 4.18: Projected blending ratio of Coal, Weighted Average GCV of the mix of Coal for FY 2014-15 and FY 2015-16**

Sl. No.	Particulars	Blend of Coal (Ingenuous: Imported)		Weighted Average GCV of the Mix of Coal	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
1	C-Station	100:0.00	100:0.00	3938.31	3938.31
2	D-Station	55.82:44.18	67.40:32.60	4310.87	4310.87
3	E-Station	55.82:44.18	67.40:32.60	4310.87	4310.87
4	F-Station	55.82:44.18	67.40:32.60	4310.87	4310.87

The blending ratio of coal and GCV of Fuels and the unit cost of fuels projected by TPL-(G) (APP) are different from the actuals of FY 2012-13.

The Commission considers it reasonable to approve these parameters as per actuals of FY 2012-13. Any variation in Fuel Costs, because of variations in these uncontrollable parameters, can be passed on through FPPPA.

Thus, the cost parameters approved for the purpose of Mid-term Review of the Business Plans for FYs 2014-15 and 2015-16, for arriving at the Fuel Costs, are as given in the Table below:

**Table 4.19: Cost Parameters Approved for the purpose of Mid-term Review for FY 2014-15 and FY 2015-16**

Particulars	Blending ratio of coal	Weighted Average GCV of Mix of Coal (Kcal/Kg)	Weighted Average GCV of Secondary Fuel Oil (Kcal/L)	Weighted Average Price of indigenous Coal (Rs./MT)	Weighted Average Price of Imported Coal (Rs./MT)	Weighted Average Price of Secondary Fuel Oil (Rs./KL)
C-Station	100:0.00	3782.47	9955.69	3810.46	0.00	47219.79
D-Station	56.54:43.46	4328.14	9934.29	3822.69	6210.88	41651.06
E-Station	62.29:37.71	4249.00	9940.61	3812.26	6204.56	40772.11
F-Station	58.07:41.93	4288.11	9919.22	3781.50	6411.19	42394.51

#### 4.7 Fuel Cost

Based on the performance and cost parameters approved, the station-wise Fuel Costs and cost per unit net approved for FYs 2014-15 and 2015-16 are as given in the Tables below:

**Table 4.20: Projected Fuel Costs for FY 2014-15 & FY 2015-16**

Station	FY 2014-15			FY 2015-16		
	Net Generation (MU)	Fuel Cost (Rs. Cr.)	Rate per unit net (Rs./ kWh)	Net Generation (MU)	Fuel Cost (Rs. Cr.)	Rate per unit net (Rs./ kWh)
C-Station	414.46			328.93		
D-Station	770.83			716.57		
E-Station	878.15			732.28		
F-Station	873.22			755.63		
<b>Total</b>	<b>2936.66</b>	<b>932.12</b>	<b>3.174</b>	<b>2533.41</b>	<b>788.80</b>	<b>3.114</b>



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**Table 4.21: Approved Fuel Costs for FY 2014-15 & FY 2015-16**

Station	FY 2014-15			FY 2015-16		
	Net Generation (MU)	Fuel Cost (Rs. Cr.)	Rate per unit net (Rs./ kWh)	Net Generation (MU)	Fuel Cost (Rs. Cr.)	Rate per unit net (Rs./ kWh)
C-Station	416.78	150.88	3.62	330.78	119.63	3.62
D-Station	775.12	237.90	3.07	720.56	221.05	3.07
E-Station	882.96	268.39	3.04	736.34	223.71	3.04
F-Station	878.04	273.90	3.12	759.84	236.92	3.12
<b>Total</b>	<b>2952.90</b>	<b>931.07</b>	<b>3.153</b>	<b>2547.51</b>	<b>801.31</b>	<b>3.145</b>

The detail calculation for arriving at the above values are given vide annexure 4.1 to 4.8.

#### 4.8 Capital Expenditure Plan

TPL (G) APP has projected the capital expenditure in the MTR of Rs. 48.74 Crore for FY 2014-15 and Rs. 56.30 Crore for FY 2015-16, as against Rs. 7.11 Crore and Rs. 22.35 Crore approved for FYs 2014-15 and 2015-16 respectively in the MYT Order.

The details are as given in the Table below:

**Table 4.22: Capital Expenditure of TPL-G (APP) in FY 2014-15 & FY 2015-16**

(Rs. Crore)

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		Approved in MYT Order	Projected in the Mid-term Review	Approved in the MYT Order	Projected in the Mid-term Review
1	Pollution Control Scheme (Waste Water Management)	-	-	-	16.88
2	Installation of New Conveyor N4B Discharge end/Modification in CHP	-	-	-	3.86
3	Boiler Refurbishment of D Station	-	9.60	-	-
4	Construction of new Cooling Tower/Refurbishment of Cooling Tower– D Station	-	3.00	-	-
5	Replacement of Cooling Tower – F Station	-	-	12.00	-
6	Refurbishment of C Station Building	-	4.00	-	8.00
7	Normal Capital Expenditure - Sabarmati	4.11	28.45	10.25	25.07
8	Normal Capital Expenditure– Vatva	2.91	-	0.01	-
9	Miscellaneous Items	0.09	3.69	0.09	2.49
<b>10</b>	<b>Total Cost</b>	<b>7.11</b>	<b>48.74</b>	<b>22.35</b>	<b>56.30</b>

#### Petitioner's Submission

TPL-G (APP) has submitted that the variation in capital expenditure is mainly on account of deferment of schemes from FYs 2011-12 and 2012-13. The new scheme of C-station building refurbishment and completion of refurbishment of the cooling tower of F station in FY 2013-14. The capital expenditure for Vatva has not been considered, since it is proposed to retire this station.



The Petitioner has submitted the following reasons for the variance in the capital expenditure against the approved items:

- a) Pollution Control Scheme (Waste Water Management):- The scheme was finalised with M/s Tata Consulting Engineers (TCE) and offers invited for execution. However, the bids received were of higher cost. Further, the bidders have raised the issue of space constraints. There is also a requirement of Right of Way to lay a return water pipeline from the ash pond to the plant. Therefore, TPL-G (APP) is evaluating the different possible options and has deferred the project to FY 2015-16.
- b) Modification in CHP: - TPL-G (APP) has planned a new conveyor from N4B discharge point to the reclaim hopper-2D and a conveyor belt from the old crusher house to conveyors 7A/7B, to eliminate the underground operation below the old crusher house. Further, it had also made a provision for crusher bypass and interconnection. However, subsequent to the studies carried out by the TCE and discussion with the OEM, there is no clear feasibility of the project, due to space constraints. TPL-G (APP) is evaluating the other options and has deferred the project to FY 2015-16.
- c) Boiler Refurbishment of D station: - TPL-G (APP) will require shutdown of at least 50 days for D station to carry out the boiler refurbishment. Since major shutdown was availed for F station and E station in FYs 2012-13 and 2013-14, this project has been deferred to 2014-15.
- d) Refurbishment of cooling tower of D station: - the scope of the project was changed from construction of the new cooling tower to refurbishment, due to the space constraints. The activity of refurbishment was initiated in FY 2012-13 and is being executed in a phased manner. It is expected that the project shall be completed during FY 2014-15.
- e) Refurbishment of C station building: - this is a new scheme, which was not originally envisaged in the MYT. The building and structure of C station at Sabarmati Power Station is very old. RLA study has been carried out by TCE to access the required measures of refurbishment to enhance their lives. Extensive repair/refurbishment have been planned to strengthen this building, based on the outcome of the RLA studies. Accordingly, TPL-G (APP) needs to renovate the damaged portion of C station office building and the external surface of the turbine building, bunker house and hot culvert. A total capital expenditure of Rs. 12 Crore is proposed to be incurred in FYs 2014-15 and 2015-16.

- f) Refurbishment of cooling tower of F station: - The expenditure for new cooling tower of Rs. 12 Crore was proposed in FY 2015-16. However, after RLA studies and since TPL-G (APP) had been under a long shutdown during FY 2012-13 for R&M work, TPL-G initiated the work of refurbishment of the existing cooling tower at F station. The work is going to be completed in FY 2013-14.
- g) Normal capital expenditure – Sabarmati: - TPL-G (APP) is required to incur the normal capital expenditure, to ensure the efficient and reliable operations of its power plants. The expenditure proposed under this head consists of expenditure incurred for Electrical, Mechanical, Control and Instrumentation systems and ancillary works. Some of the major expenses proposed are detailed as under:
- Electrical System – TPL-G (APP) proposes to implement the programme to achieve energy conservation of Rs. 2 Crore. The Voltage Regulator at D station is proposed to be replaced with state-of-the-art regulator, having communication and self-diagnostic features, which will facilitate prompt analysis of faults. This is likely to cost Rs. 4 Crore. Three numbers of 145 kV ABB make SF6 circuit breakers are proposed to be procured (at a cost of Rs. 1.5 Crore) for replacement at D/E/F station's generator circuit breaker in a phased manner and power cable for 6.6 kV switchgears ( at a cost of Rs. 0.5 Crore).
  - Turbine system – TPL-G (APP) proposes to procure new valves (at a cost of Rs. 2 Crore) with actuators for D & E stations, since frequent leakages are observed in boiler and turbine stop valves, due to deformed body and internal parts). The hangers and support for critical piping need to be replaced, based on RLA studies conducted by BHEL. This is likely to cost Rs. 2 Crore.
  - Boiler System – Presently, C, D, E & F stations are equipped with their individual compressor stations. Due to ageing, the performance of these compressors has deteriorated and the cost of spares/maintenance is also increasing. Therefore, the existing compressors are required to be replaced. TPL-G (APP) proposes to replace D, E & F station compressors at a cost of Rs. 10 Crore. Further, TPL-G (APP) also intends to re-route ash lines with new pipes of cast basalt longer life (costing Rs. 2.2 Crore) and Pressure Reducing and De-Superheating system (PRDS) (at a cost of Rs. 1 Crore).
  - C & I system – It is proposed to replace CO analysers with the latest state-of-the-art analysers and proven technology for online combustion as



well as emission monitoring. This is likely to cost Rs. 1.20 Crore. It is also proposed to upgrade absolute HMI stations of DCS during year 2014-15 (at a cost of Rs. 1 Crore). TPL-G (APP) proposes to upgrade the ash handling PLC system by upgrading its processors, HMI equipment & communication network components (at a cost of Rs. 1 Crore) and flue Gas Opacity Analysers (costing Rs. 0.60 Crore).

- CHP – The new CHP has been in operation for five years. There has been continuous wear and tear of certain components of chain conveyor, feeder breaker, vibrating feeder and crusher. In order to maintain the plant availability, TPL-G (APP) proposes to procure the spares for these items (at a cost of Rs. 2 Crore).
  - Civil - TPL-G (APP) is constructing a Centralised Generation store. The necessary internal infrastructure has to be created in the buildings for proper storage and mechanised handling of the stored inventories. Also, the approach roads, storm water drainage, fencing, gate, area lighting have to be provided. The total Capex proposed for this plan is Rs. 10 Crore. TPL-G (APP) proposes extension of coal stockyard and development of area around diesel garage and warehouse (at a cost of Rs. 2.02 Crore). Additionally, capital expenditure of Rs. 3.50 Crore is proposed for revamping the fire Hydrant System and certain other works.
- h) Miscellaneous Items: - TPL-G (APP) proposes to incur miscellaneous expenditure for providing the better facility for working environment, as well as strengthening the safety and security of the Sabarmati plant.

### **Commission's Analysis**

TPL has projected Rs. 16.88 Crore towards pollution control scheme and Rs. 3.86 Crore towards installation of new conveyor N4B Discharge end/Modification in CHP for FY 2014-15. These works are being projected by TPL since FY 2011-12. But, for some or the other reason the works could not materialise. As submitted by TPL in the MTR petition with regard to both these works, they are in process of evaluating the other options for carrying out these works. Hence, as there is uncertainty in the execution of this work, the Commission decides not to consider the capex related to these schemes during the balance MYT period.

Further, based on the past performance of the TPL-G in achieving the actual capitalisation out of the CAPEX approved in the previous years of the control period,



it is observed that TPL-G has been achieving around 21% of approved CAPEX as capitalisation as shown in the Table below:

**Table 4.23: Approved CAPEX vs. Actual Capitalisation for FY 2011-12 and FY 2012-13  
(Rs. Crore)**

Particulars	FY 2011-12	FY 2012-13
Approved CAPEX in MYT Order	312.58	104.18
Actual capitalisation	18.50	21.36
Achievement in Percentage	5.92%	20.50%

In view of the above, while the Commission approves the capital expenditure of Rs. 48.74 Crore for FY 2014-15 and Rs. 35.56 Crore for FY 2015-16, the capitalisation shall be to the extent of 21% on it. However, actual capitalization shall be considered by the Commission after prudence check.

### **Capitalisation and funding the CAPEX**

The capital expenditure, capitalisation and the sources of funding proposed by TPL (G) and approved by the Commission as discussed above, are given below:

**Table 4.24: Capitalisation and Funding the Capex  
(Rs. Crore)**

Sl. No.	Particulars	Projected in the MTR		Approved in the MTR	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
1	Capital Expenditure	48.74	56.30	48.74	35.56
2	Capitalisation	61.92	60.82	10.24	7.47
3	Debt (70%)	43.35	42.57	7.16	5.23
4	Equity (30%)	(4.00)	18.24	3.07	2.24

The Capitalisation debt and equity will be taken into consideration in the computation of depreciation, interest on normative loan and return on equity.

### **4.9 O&M Expenses**

TPL (G) has projected the O&M expenses of Rs. 153.78 Crore for FY 2014-15 and Rs. 161.75 Crore for FY 2015-16 in the Mid-term Review petition. The O&M expenses approved for these years in the MYT Order dated 6<sup>th</sup> September, 2011 and the revised projections submitted by TPL (G) are given in the following Table:

**Table 4.25: Operations & Maintenance Expenses for TPL-G (APP) in FY 2014-15 & FY 2015-16  
(Rs. Crore)**

Sl. No.	Particulars	Approved in MYT Order for FY 2014-15	Projected in Mid- term Review FY 2014-15	Approved in MYT Order for FY 2015-16	Projected in Mid- term Review FY 2015-16
1	Employee Expenses		67.44		70.60
2	R&M Expenses		65.59		69.10
3	A&G Expenses		20.75		22.05



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Sl. No.	Particulars	Approved in MYT Order for FY 2014-15	Projected in Mid-term Review FY 2014-15	Approved in MYT Order for FY 2015-16	Projected in Mid-term Review FY 2015-16
4	Operations & Maintenance Expenses	156.28	153.78	165.20	161.75

#### **Petitioner's Submission**

The Petitioner has submitted that the actual weighted average inflation rate is substantially higher than the approved escalation factor between FY 2009-10 and FY 2012-13, as detailed below:

**Table 4.26: Actual Inflation versus Approved Escalation Factor**

Sl. No.	Particulars	2009-10	2010-11	2011-12	2012-13
1	Actual Inflation (YOY)	7.54%	9.95%	8.66%	7.52%
2	Approved Escalation Factor	4%	4.00%	5.72%	5.72%

TPL (G) has further submitted that the compounded effect of escalation factor would further widen the gap between the actual and approved expenditure. TPL (G) has mentioned that wage revision of unionized staff is due, with effective from 1<sup>st</sup> April, 2013 but the matter is sub-judice. The Petitioner has considered the revised estimates on the basis of likely O&M activities, after giving due consideration to the present O&M expenses.

#### **Commission's Analysis**

The Commission has examined the O&M expenses incurred by TPL (G) during FY 2012-13. The Commission has approved the O&M expenses, based on the audited accounts for FY 2012-13. GERC (MYT) Regulations, 2011, specified the escalation of O&M expenses at 5.72% per annum for FY 2012-13 onwards.

The Commission, accordingly, approves the O&M expenses, with 5.72% escalation per annum in the MTR for FYs 2014-15 and 2015-16, over the actual O&M expenses approved in the Truing up for FY 2012-13.

**Table 4.27: O&M Expenses Approved in the Mid-term Review For FY 2014-15 and FY 2015-16**

Sl. No.	Particulars	(Rs. Crore)			
		Projected in the MTR		Approved in the MTR	
		2014-15	2015-16	2014-15	2015-16
1	O&M Expenses	153.78	161.75	134.19	141.86

#### **4.10 Water Charges**

TPL -G (APP) has projected the water charges at Rs. 9.28 Crore for FY 2014-15 and Rs. 10.21 Crore for FY 2015-16 in the Mid-term Review. The water charges



approved in the MYT Order dated 6<sup>th</sup> September, 2011 and now projected in the Mid-term Review are as given below:

**Table 4.28: Water Charges Projected in the Mid-term Review**  
(Rs. Crore)

Particulars	FY 2014-15		FY 2015-16	
	Approved in MYT Order	Projected in Mid-term Review	Approved in MYT Order	Projected in Mid-term Review
Water charges	8.59	9.28	8.59	10.21

#### **Commission analysis**

TPL -G (APP) has projected higher water charges in the Mid-term Review than what were approved for these years in the MYT Order. The actual water charges during FY 2012-13 are Rs. 8.37 Crore as per audited accounts, as against Rs. 8.59 Crore approved in MYT Order. The Commission, therefore, retains the water charges, as per actual of FY 2012-13.

**Table 4.29: Approved Water Charges in the Mid-term Review**  
(Rs. Crore)

Particulars	Projected in Mid-term Review		Approved in Mid-term Review	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Water Charges	9.28	10.21	8.37	8.37

#### **4.11 Depreciation**

TPL- G (APP) has projected a depreciation of Rs. 49.94 Crore for FY 2014-15 and Rs. 52.68 Crore for FY 2015-16 in the Mid-term Review Petition. The depreciation approved for these years in the MYT Order dated 6<sup>th</sup> September, 2011 and now projected by TPL in the Mid-term Review are given in the Table below:

**Table 4.30: Depreciation Projected in Mid-term Review**  
(Rs. Crore)

Particulars	FY 2014-15		FY 2015-16	
	Approved in MYT Order	Projected in Mid-term Review	Approved in MYT Order	Projected in Mid-term Review
Depreciation	51.48	49.94	52.44	52.68

#### **Petitioner's Submission**

TPL has submitted that the depreciation rates, as per GERC (Terms and Conditions of Tariff) Regulations, 2004, have been applied on the opening GFA of FY 2009-10 and for addition of assets, from 1<sup>st</sup> April 2009 onwards, the depreciation has been computed at depreciation rates specified in Appendix III to the CERC Tariff Regulations, 2009, and approved by the GERC.

#### **Commission's Analysis**

TPL has given the opening and closing balance of assets and calculation of depreciation asset classification-wise in Form 12 of the Petition. The addition of



assets is as per the capitalisation approved for FYs 2014-15 and 2015-16. TPL has also proposed deletion of assets to the extent of Rs. 75.25 Crore towards Vatva power station during FY 2014-15. After taking into consideration, the approved capitalisation and the deletion of assets of Rs. 75.25 Crore, the allowable depreciation is computed at 3.80% as indicated in Form 12 of the petition.

The Commission, thus, approves the depreciation in the Mid-term Review, as detailed below:

**Table 4.31: Depreciation approved in the Mid-term Review**

(Rs. Crore)			
Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	Gross Block in Beginning of the year	1237.64	1172.63
2	Additions during the year	10.24	7.47
3	Withdrawal during year	75.25	0
3	Closing GFA	1172.63	1180.10
4	Average GFA	1205.14	1176.37
5	Average Rate of Depreciation	3.80%	3.80%
6	Depreciation for the Year	45.80	44.70

#### 4.12 Interest and Finance Charges

TPL -G (APP) has projected the interest and finance charges of Rs. 41.05 Crore for FY 2014-15 and Rs. 42.25 Crore for FY 2015-16 in the Mid-term Review. The interest and finance charges, approved for these years in the MYT Order dated 6<sup>th</sup> September 2011 and now projected by TPL (G) in the MTR, are given in the Table below:

**Table 4.32: Interest charges projected in the Mid-term Review**

(Rs. Crore)					
Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		Approved in MYT Order	Projected in Mid-term Review	Approved in MYT Order	Projected in Mid-term Review
1	Interest charges	29.29	41.05	25.12	42.25

The details of interest charges claimed are as given in the Table below:

**Table 4.33: Projected Interest Expenses for Loans**

(Rs. Crore)			
Sl. No.	Particulars	FY 2014-15	FY 2015-16
I	<b>Interest Expenses for loans till 31<sup>st</sup> March, 2011</b>		
1	<b>LIC I</b>		
	Opening Balance	22.73	17.95
	Repayments	4.79	4.79
	Closing Balance	17.95	13.16
	Interest on Loan	2.41	1.85
2	<b>Bank of Baroda Term Loan</b>		
	Opening Balance	7.34	6.06
	Repayments	1.28	1.28



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Sl. No.	Particulars	FY 2014-15	FY 2015-16
	Closing Balance	6.06	4.79
	Interest on Loan	0.79	0.64
<b>3</b>	<b>IDFC Term Loan</b>		
	Opening Balance	10.59	9.13
	Repayments	1.46	1.46
	Closing Balance	9.13	7.67
	Interest on Loan	0.98	0.83
	<b>Total</b>	<b>4.18</b>	<b>3.33</b>
<b>II</b>	<b>Interest Expenses for loans after 31<sup>st</sup> March, 2011</b>		
	Capitalisation during the year	61.92	60.82
	Normative Debt @ 70%	43.35	42.57
	Opening Balance	306.68	325.55
	New Borrowings	43.35	42.57
	Repayments	24.48	27.53
	Closing Balance	325.55	340.59
	<b>Interest Expenses</b>	<b>36.88</b>	<b>38.92</b>
<b>III</b>	<b>Total Interest Expense</b>	<b>41.05</b>	<b>42.25</b>

**Petitioner's submission**

TPL (G) has submitted that it has considered the interest expenses for the existing loans availed for the earlier capitalisation, based on actuals, and for the capitalisation carried out from 1<sup>st</sup> April 2011 onwards, the Petitioner has calculated the interest expenses by applying the opening weighted average rate of interest on the eligible additional loan component, while repayment has been considered equal to the depreciation for the year.

TPL (G) has further submitted that there is an operational difficulty, especially for green field projects in maintaining and calculating the repayment of loans on normative basis and this creates a difficulty in calculating the interest expenses on normative basis. The Petitioner has, therefore, requested that the interest expenses, as projected in the Mid-term Review, be approved

**Commission's Analysis**

The Commission has examined the interest charges projected in the MTR. The opening loans (actual) for FY 2013-14 have been taken into consideration as approved in the True-up for FY 2012-13. In accordance with Regulation 39 of GERC (MYT) Regulations, 2011, the repayment for the year during the tariff period from FY 2011-12 to FY 2015-16 shall be deemed to be equal to the depreciation allowed for that year (Regulation 39.3) and 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 generating company (Regulation 39.5). The weighted average rate of interest on the loans for FY 2012-13 is 11.38%.

The interest and finance charges for the remaining years of control period, i.e., FY 2014-15 and FY 2015-16 have been arrived at in accordance with Regulation 39 of GERC (MYT) Regulations, 2011, and are as detailed in the Table below:

**Table 4.34: Interest approved in the Mid-term Review**

(Rs. Crore)				
Sl. No.	Particulars	FY 2013-14	FY 2014-15	FY 2015-16
1	Opening loan	33.53	(5.28)	(43.91)
2	Loan addition during the year	15.67	7.16	5.23
3	Repayment during the year	54.48	45.80	44.70
4	Closing loan	(5.28)	(43.91)	(83.38)
5	Average loan		-	-
6	Rate of interest		-	-
7	Interest charges		-	-
8	Other borrowing costs		-	-
9	Total interest over financial charges		Nil	Nil

As can be seen from the above Table, the opening and closing loans are negative and the interest charges are considered as Nil for FYs 2014-15 and 2014-15 in the Mid-term review, since the depreciation available is higher than the normative loan.

#### **4.13 Interest on Working Capital**

TPL (G) has projected the interest on working capital as Rs. 20.70 Crore for FY 2014-15 and Rs. 18.18 Crore for FY 2015-16 in the Mid-term Review. The interest on working capital, approved for these years in the MYT Order dated 6<sup>th</sup> September, 2011 and now projected by TPL in the Mid-term Review, are as given below:

**Table 4.35: Projected interest on Working Capital in the Mid-term Review**

(Rs. Crore)				
Particulars	Approved in MYT Order		Projected in the Mid-term Review	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Interest on working capital	12.14	11.86	20.70	18.18

#### **Petitioner's Submission**

TPL (G) has submitted that the interest on working capital has been arrived at, by applying the interest requirement computed, as per GERC (MYT) Regulations, 2011. TPL has further submitted that the working capital requirement has increased mainly due to an increase in the base coal cost.

#### **Commission analysis**

The Commission has examined the working capital requirement and interest thereon projected by TPL in the Mid-term Review. The interest rate of 14.45% considered by



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TPL is the SBAR as on 1<sup>st</sup> April, 2013. Taking into consideration the approved fuel cost, O&M expenses, the working capital requirement and interest rate thereon have been estimated, as detailed in the Table below:

**Table 4.36: Interest on working capital approved in the Mid-term Review**  
(Rs. Crore)

Sl. No.	Particulars	FY 2014-15		FY 2015-16	
		Projected in the Mid-term Review	Approved in the Mid-term Review	Projected in the Mid-term Review	Approved in the Mid-term Review
1	Coal for 1.5 months	114.16	114.39	96.59	98.46
2	Secondary Fuel for 2 Months	3.14	2.66	2.68	2.26
3	Gas for 1 Month	-		-	
4	O&M Expense for 1 Month	13.59	11.18	14.33	11.82
5	1 % of GFA for Maintenance Spares	12.38	12.38	12.24	11.73
6	Receivables for 1 Month	-	0	-	0
7	Normative Working Capital	143.27	140.61	125.84	124.27
8	Interest Rate (%)	14.45%	14.45%	14.45%	14.45%
9	<b>Interest on Working Capital</b>	<b>20.70</b>	<b>20.32</b>	<b>18.18</b>	<b>17.96</b>

#### 4.14 Return on Equity

TPL (G) has claimed a sum of Rs. 63.88 Crore for FY 2014-15 and Rs. 64.88 Crore for FY 2015-16 in the Mid-term Review Petition. The Return on Equity, approved for these years in the MYT Order dated 6<sup>th</sup> September, 2011 and now projected by the TPL in the Mid-term Review, are as given in the Table below:

**Table 4.37: Return on Equity Projected in the Mid-term Review**  
(Rs. Crore)

Particulars	FY 2014-15		FY 2015-16	
	Approved in MYT Order	Projected in the Mid-term Review	Approved in the MYT Order	Projected in the Mid-term Review
Opening Equity	475.33	458.29	447.95	454.29
Equity Addition	2.13	(4.00)	8.80	18.24
Equity Withdrawn	(29.52)		-	-
Closing Equity	447.95	454.29	456.75	472.54
Average Equity	461.64		452.35	-
Return on Equity @ 14%	64.63	63.88	63.33	64.88

#### Petitioner's Submission

TPL (G) has submitted that the closing balance of equity has been arrived at by considering the additional equity of 30% of the capitalisation during the year. The Return on equity has been computed, by applying a rate of 14% on the average of opening balance and closing balance of equity.



### Commission's Analysis

TPL has considered the equity addition of Rs. 4.00 Crore during FY 2014-15. The Commission has taken note of the proposed withdrawal of Rs. 75.25 Crore worth of assets relating to Vatva Power Station during FY 2014-15. The normative equity addition during FY 2014-15 is Rs. 3.07 Crore and the proposed withdrawal in Rs. 22.58 Crore. The Commission takes into consideration the closing equity of FY 2012-13, as approved in True-up, as the opening equity for FY 2013-14 and the addition of equity for FY 2013-14, as approved in the MYT Order, and equity addition during FY 2014-15 and FY 2015-16, as approved in the above Paras, based on the approved capitalisation.

The estimated return on equity in the Mid-term Review is given in the Table below:

**Table 4.38: Return on Equity approved in the Mid-term Review**  
(Rs. Crore)

Particulars	FY 2013-14	FY 2014-15		FY 2015-16	
		Projected in the Mid-term Review	Approved in the Mid-term Review	Projected in the Mid-term Review	Approved in the Mid-term Review
Opening Equity	332.77	458.29	339.49	454.29	319.98
Equity Addition	6.72	(4.00)	3.07	18.24	2.24
Equity withdrawn	-	-	22.58	-	0.00
Closing Equity	339.49	454.29	319.98	472.54	322.22
Average Equity	-	-	329.74	-	321.10
Return on equity @ 14%	-	63.88	46.16	64.88	44.95

The Commission, accordingly, approves the return on equity at Rs. 46.16 Crore for FY 2014-15, and Rs. 44.95 Crore for FY 2015-16 in the Mid-term Review.

### 4.15 Income Tax

TPL (G) has projected income tax at Rs. 18.51 Crore each for FY 2014-15, and FY 2015-16 in the Mid-term Review. The income tax approved for these years in the MYT Order dated 6<sup>th</sup> September, 2011 and now claimed by TPL in the Mid-term Review are given in the Table below:

**Table 4.39: Income tax approved in MYT Order and projected in the Mid-term Review**  
(Rs. Crore)

Particulars	FY 2014-15		FY 2015-16	
	Approved in MYT Order	Projected in Mid-term Review	Approved in MYT Order	Projected in Mid-term Review
Income Tax	26.45	18.51	26.45	18.51





**Petitioner’s Submission**

TPL (G) has submitted that actual income tax amount of the last Financial Year be considered provisionally as in GERC (MYT) Regulations, 2011 and the actual allowed at the time of truing up. TPL has considered the income tax pertaining to TPL -G (APP) for FY 2012-13 as the provisional income tax for FY 2014-15 and FY 2015-16 in the Mid-term Review.

**Commission’s Analysis**

The income tax approved in the truing up for FY 2012-13, as per audited annual accounts, is Rs. 18.51 Crore. The Commission, therefore, approves the income tax provision at Rs. 18.51 Crore for FY 2014-15, as well as FY 2015-16 in the Mid-term Review, projected by TPL, as detailed below:

**Table 4.40: Approved Income tax in the Mid-term Review  
(Rs. Crore)**

Particulars	FY 2014-15		FY 2015-16	
	Projected in the Mid-term Review	Approved in the Mid-term Review	Projected in the Mid-term Review	Approved in the Mid-term Review
Income Tax	18.51	18.51	18.51	18.51

**4.16 Non-Tariff Income**

TPL (G) has projected the Non-Tariff income of Rs. 12 Crore each for FY 2014-15 and FY 2015-16 in the Mid-term Review. The Non-Tariff income approved for these years in the MYT Order dated 6<sup>th</sup> September, 2011 and now projected by TPL in the Mid-term Review is given in the Table below:

**Table 4.41: Non-Tariff Income Approved in MYT Order and Projected in the Mid-term Review  
(Rs. Crore)**

Particulars	FY 2014-15		FY 2015-16	
	Approved in MYT Order	Projected in the Mid-term Review	Approved in the MYT Order	Projected in the Mid-term Review
Non-Tariff Income	14.18	12.00	14.18	12.00

**Petitioner’s Submission**

TPL (G) has submitted that it has revised the estimates of Non-Tariff income for FY 2014-15 and FY 2015-16, considering the actuals for FYs 2011-12 and 2012-13.

**Commission’s Analysis**

The Non-Tariff income for FY 2012-13, as per audited accounts, is Rs. 25.25 Crore. The Commission approves the Non-Tariff income for FY 2014-15 and Rs. 2015-16 at the level of actual for FY 2012-13, as detailed below:



**Table 4.42: Non- Tariff Income Approved in the Mid-term Review**  
**(Rs. Crore)**

Particulars	FY 2014-15		FY 2015-16	
	Projected in Mid-term Review	Approved in Mid-term Review	Projected in Mid-term Review	Approved in Mid-term Review
Non-Tariff Income	12.00	25.25	12.00	25.25

#### 4.17 Revised ARR for FY 2014-15 and FY 2015-16

As discussed in the above paragraphs, the Commission approves the revised ARR in the Mid-term Review for FYs 2014-15 and 2015-16, as given in the Table below:

**Table 4.43: ARR for TPL-G (APP) in FY 2014-15 & FY 2015-16**  
**(Rs. Crore)**

Sl. No.	Particulars	Approved in MYT Order		Projected in the Mid-term Review		Approved in the Mid-term Review	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
		1	Variable Cost	673.06	654.98	932.12	788.8
2	O&M Expenses	156.28	165.22	153.78	161.75	134.19	141.86
3	Water Charges	8.59	8.59	9.28	10.21	8.37	8.37
4	Depreciation	51.48	52.44	49.94	52.68	45.80	44.70
5	Interest on loan	29.29	25.12	41.05	42.25	0	0
6	Interest on Working Capital	12.14	11.86	20.7	18.18	20.32	17.96
7	Return on Equity	64.63	63.33	63.88	64.88	46.16	44.95
8	Income Tax	26.45	26.45	18.51	18.51	18.51	18.51
9	Less: Non-Tariff Income	14.18	14.18	12.00	12.00	25.25	25.25
<b>10</b>	<b>Total</b>	<b>1007.74</b>	<b>993.81</b>	<b>1277.26</b>	<b>1145.26</b>	<b>1179.17</b>	<b>1052.41</b>

The Commission approves in the ARR at Rs. 1179.17 Crore for FY 2014-15 and Rs. 1052.41 Crore for FY 2015-16 in the Mid-term Review.

**Approved Fuel costs for FY 2014-15 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - C Station**

Sl.No.	Item	Derivation	Unit	2014-15
1	Gross Generation	A	MUs	460.53
2	Auxiliary Consumption	C	%	9.50%
3	Auxiliary Consumption	$B = A * C$	MUs	43.75
4	Net Generation	$Y=A - B$	MUs	416.78
5	Capacity	T	MW	60.00
6	PAF	U	%	92.05
7	PLF	V	%	87.62
8	Station Heat Rate	D	KCal/kWh.	3150.00
9	Sp. Oil Consumption	E	ml/kWh	2.00
10	Gross Calorific Value of Coal	F	kcal/kg	3782.47
11	Calorific value of Oil	G	kcal/l	9955.69
12	Overall Heat	$H=A \times D$	G Cal	1450669.50
13	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	9169.79
14	Heat from Coal	$J=H-I$	G Cal	1441499.71
15	Transit losses	K	%	0.9%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	100.00%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	0.00%
20	Actual Oil Consumption	$L=A \times E$	kg	921.06
21	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	381100.10
22	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	384561.15
23	B) Washed Coal	$Q2=M^* \times X2 / (1-K)$	MT	0
24	C) Imported Coal	$Q3=M^* \times X3$	MT	0.00
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3810.46
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	0.00
29	Price of Oil	P4	Rs./MT	47219.79
30	Coal cost			
31	A) Indigenous Coal	$N1=Q1 \times P1$	Rs. Lakh	14653.55
32	B) Washed Coal	$N2=Q2 \times P2$	Rs. Lakh	0.00
33	C) Imported Coal	$N3=Q3 \times P3$	Rs. Lakh	0.00
34	Total Coal Cost	$N4=N1+N2+N3$	Rs. Lakh	14653.55
35	Oil Cost	$N5=P4 \times L/10^5$	Rs. Lakh	434.92
36	Total Fuel Cost	$O=N4 + N5$	Rs. Lakh	15088.47
37	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs./kWh	3.28
38	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs./kWh	3.62
39	Cost of fuel/G.Cal	$R=(O/H) \times 10^5$	Rs./Gcal	1040.10



**Approved Fuel costs for FY 2014-15 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - D Station**

Sl.No.	Item	Derivation	Unit	2014-15
1	Gross Generation	A	MUs	851.78
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	$B = A * C$	MUs	76.66
4	Net Generation	$Y=A - B$	MUs	775.12
5	Capacity	T	MW	120.00
6	PAF	U	%	84.14
7	PLF	V	%	81.03
8	Station Heat Rate	D	KCal/kWh.	2450.00
9	Sp. Oil Consumption	E	ml/kWh	1.00
10	Gross Calorific Value of Coal	F	kcal/kg	4328.14
11	Calorific value of Oil	G	kcal/l	9934.29
12	Overall Heat	$H=A * D$	G Cal	2086861.00
13	Heat from Oil	$I=(A * E * G)/1000$	G Cal	8461.83
14	Heat from Coal	$J=H-I$	G Cal	2078399.17
15	Transit losses	K	%	0.9%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	56.54%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	43.46%
20	Actual Oil Consumption	$L=A * E$	kg	851.78
21	Actual Coal Consumption	$M=(J * 1000)/F$	MT	480206.09
22	A) Indigenous Coal	$Q1=M * X1 / (1-K)$	MT	273974.29
23	B) Washed Coal	$Q2=M * X2 / (1-K)$	MT	0.00
24	C) Imported Coal	$Q3=M * X3$	MT	208697.57
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3822.69
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	6210.88
29	Price of Oil	P4	Rs./MT	41651.06
30	Coal cost			
31	A) Indigenous Coal	$N1=Q1 * P1$	Rs. Lakh	10473.19
32	B) Washed Coal	$N2=Q2 * P2$	Rs. Lakh	0.00
33	C) Imported Coal	$N3=Q3 * P3$	Rs. Lakh	12961.96
34	Total Coal Cost	$N4=N1+N2+N3$	Rs. Lakh	23435.14
35	Oil Cost	$N5=P4 * L / 10^5$	Rs. Lakh	354.78
36	Total Fuel Cost	$O=N4 + N5$	Rs. Lakh	23789.92
37	Fuel Cost/Unit Gross	$P=O / (A * 10)$	Rs./kWh	2.79
38	Fuel Cost/Unit Net	$Q=O / (Y * 10)$	Rs./kWh	3.07
39	Cost of fuel/G.Cal	$R=(O/H) * 10^5$	Rs./Gcal	1139.99



**Approved Fuel costs for FY 2014-15 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - E Station**

Sl.No.	Item	Derivation	Unit	2014-15
1	Gross Generation	A	MUs	970.29
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	$B = A * C$	MUs	87.33
4	Net Generation	$Y=A - B$	MUs	882.96
5	Capacity	T	MW	121.00
6	PAF	U	%	94.83
7	PLF	V	%	91.54
8	Station Heat Rate	D	KCal/kWh.	2455.00
9	Sp. Oil Consumption	E	ml/kWh	1.00
10	Gross Calorific Value of Coal	F	kcal/kg	4249.00
11	Calorific value of Oil	G	kcal/l	9940.61
12	Overall Heat	$H=A \times D$	G Cal	2382061.95
13	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	9645.27
14	Heat from Coal	$J=H-I$	G Cal	2372416.68
15	Transit losses	K	%	0.9%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	62.29%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	37.71%
20	Actual Oil Consumption	$L=A \times E$	kg	970.29
21	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	558347.06
22	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	350952.96
23	B) Washed Coal	$Q2=M^* \times X2 / (1-K)$	MT	0.00
24	C) Imported Coal	$Q3=M^* \times X3$	MT	210552.68
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3812.26
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	6204.56
29	Price of Oil	P4	Rs./MT	40772.11
30	Coal cost			
31	A) Indigenous Coal	$N1=Q1 \times P1$	Rs. Lakh	13379.24
32	B) Washed Coal	$N2=Q2 \times P2$	Rs. Lakh	0.00
33	C) Imported Coal	$N3=Q3 \times P3$	Rs. Lakh	13063.87
34	Total Coal Cost	$N4=N1+N2+N3$	Rs. Lakh	26443.11
35	Oil Cost	$N5=P4 \times L/10^5$	Rs. Lakh	395.61
36	Total Fuel Cost	$O=N4 + N5$	Rs. Lakh	26838.71
37	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs./kWh	2.77
38	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs./kWh	3.04
39	Cost of fuel/G.Cal	$R=(O/H)*10^5$	Rs./Gcal	1126.70



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**Annexure 4.4**

**Approved Fuel costs for FY 2014-15 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - F Station**

Sl.No.	Item	Derivation	Unit	2014-15
1	Gross Generation	A	MUs	964.88
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	$B = A * C$	MUs	86.84
4	Net Generation	$Y=A - B$	MUs	878.04
5	Capacity	T	MW	121.00
6	PAF	U	%	93.49
7	PLF	V	%	91.03
8	Station Heat Rate	D	KCal/kWh.	2455.00
9	Sp. Oil Consumption	E	ml/kWh	1.00
10	Gross Calorific Value of Coal	F	kcal/kg	4288.11
11	Calorific value of Oil	G	kcal/l	9919.22
12	Overall Heat	$H=A \times D$	G Cal	2368780.40
13	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	9570.86
14	Heat from Coal	$J=H-I$	G Cal	2359209.54
15	Transit losses	K	%	0.9%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	58.07%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	41.93%
20	Actual Oil Consumption	$L=A \times E$	kg	964.88
21	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	550174.68
22	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	322387.93
23	B) Washed Coal	$Q2=M^* \times X2 / (1-K)$	MT	0.00
24	C) Imported Coal	$Q3=M^* \times X3$	MT	230688.24
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3781.50
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	6411.19
29	Price of Oil	P4	Rs./MT	42394.51
30	Coal cost			
31	A) Indigenous Coal	$N1=Q1 \times P1$	Rs. Lakh	12191.10
32	B) Washed Coal	$N2=Q2 \times P2$	Rs. Lakh	0.00
33	C) Imported Coal	$N3=Q3 \times P3$	Rs. Lakh	14789.86
34	Total Coal Cost	$N4=N1+N2+N3$	Rs. Lakh	26980.96
35	Oil Cost	$N5=P4 \times L/10^5$	Rs. Lakh	409.06
36	Total Fuel Cost	$O=N4 + N5$	Rs. Lakh	27390.02
37	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs./kWh	2.84
38	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs./kWh	3.12
39	Cost of fuel/G.Cal	$R=(O/H)*10^5$	Rs./Gcal	1156.29



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Annexure 4.5

**Approved Fuel costs for FY 2015-16 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - C Station**

Sl.No.	Item	Derivation	Unit	2015-16
1	Gross Generation	A	MUs	365.50
2	Auxiliary Consumption	C	%	9.50%
3	Auxiliary Consumption	$B = A * C$	MUs	34.72
4	Net Generation	$Y=A - B$	MUs	330.78
5	Capacity	T	MW	60.00
6	PAF	U	%	84.20
7	PLF	V	%	69.35
8	Station Heat Rate	D	KCal/kWh.	3150.00
9	Sp. Oil Consumption	E	ml/kWh	2.00
10	Gross Calorific Value of Coal	F	kcal/kg	3782.47
11	Calorific value of Oil	G	kcal/l	9955.69
12	Overall Heat	$H=A \times D$	G Cal	1151325.00
13	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	7277.61
14	Heat from Coal	$J=H-I$	G Cal	1144047.39
15	Transit losses	K	%	0.8%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	100.00%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	0.00%
20	Actual Oil Consumption	$L=A \times E$	kg	731.00
21	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	302460.40
22	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	304899.60
23	B) Washed Coal	$Q2=M^* \times X2 / (1-K)$	MT	0.00
24	C) Imported Coal	$Q3=M^* \times X3$	MT	0.00
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3810.46
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	0.00
29	Price of Oil	P4	Rs./MT	47219.79
30	Coal cost			
31	A) Indigenous Coal	$N1=Q1 \times P1$	Rs. Lakh	11618.08
32	B) Washed Coal	$N2=Q2 \times P2$	Rs. Lakh	0.00
33	C) Imported Coal	$N3=Q3 \times P3$	Rs. Lakh	0.00
34	Total Coal Cost	$N4=N1+N2+N3$	Rs. Lakh	11618.08
35	Oil Cost	$N5=P4 \times L/10^5$	Rs. Lakh	345.18
36	Total Fuel Cost	$O=N4 + N5$	Rs. Lakh	11963.25
37	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs./kWh	3.27
38	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs./kWh	3.62
39	Cost of fuel/G.Cal	$R=(O/H)*10^5$	Rs./Gcal	1039.09



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**Annexure 4.6**

**Approved Fuel costs for FY 2015-16 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - D Station**

Sl.No.	Item	Derivation	Unit	2015-16
1	Gross Generation	A	MUs	791.82
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	$B = A * C$	MUs	71.26
4	Net Generation	$Y=A - B$	MUs	720.56
5	Capacity	T	MW	120.00
6	PAF	U	%	93.50
7	PLF	V	%	75.12
8	Station Heat Rate	D	KCal/kWh.	2450.00
9	Sp. Oil Consumption	E	ml/kWh	1.00
10	Gross Calorific Value of Coal	F	kcal/kg	4328.14
11	Calorific value of Oil	G	kcal/l	9934.29
12	Overall Heat	$H=A * D$	G Cal	1939959.00
13	Heat from Oil	$I=(A * E * G)/1000$	G Cal	7866.17
14	Heat from Coal	$J=H-I$	G Cal	1932092.83
15	Transit losses	K	%	0.8%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	56.54%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	43.46%
20	Actual Oil Consumption	$L=A * E$	kg	791.82
21	Actual Coal Consumption	$M=(J * 1000)/F$	MT	446402.57
22	A) Indigenous Coal	$Q1=M * X1 / (1-K)$	MT	254431.47
23	B) Washed Coal	$Q2=M * X2 / (1-K)$	MT	0.00
24	C) Imported Coal	$Q3=M * X3$	MT	194006.56
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3822.69
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	6210.88
29	Price of Oil	P4	Rs./MT	41651.06
30	Coal cost			
31	A) Indigenous Coal	$N1=Q1 * P1$	Rs. Lakh	9726.13
32	B) Washed Coal	$N2=Q2 * P2$	Rs. Lakh	0.00
33	C) Imported Coal	$N3=Q3 * P3$	Rs. Lakh	12049.51
34	Total Coal Cost	$N4=N1+N2+N3$	Rs. Lakh	21775.64
35	Oil Cost	$N5=P4 * L/10^5$	Rs. Lakh	329.80
36	Total Fuel Cost	$O=N4 + N5$	Rs. Lakh	22105.44
37	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs./kWh	2.79
38	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs./kWh	3.07
39	Cost of fuel/G.Cal	$R=(O/H)*10^5$	Rs./Gcal	1139.48





**Approved Fuel costs for FY 2015-16 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - E Station**

Sl.No.	Item	Derivation	Unit	2015-16
1	Gross Generation	A	MUs	809.16
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	$B = A * C$	MUs	72.82
4	Net Generation	$Y=A - B$	MUs	736.34
5	Capacity	T	MW	121.00
6	PAF	U	%	93.50
7	PLF	V	%	76.13
8	Station Heat Rate	D	KCal/kWh.	2455.00
9	Sp. Oil Consumption	E	ml/kWh	1.00
10	Gross Calorific Value of Coal	F	kcal/kg	4249.00
11	Calorific value of Oil	G	kcal/l	9940.61
12	Overall Heat	$H=A * D$	G Cal	1986487.80
13	Heat from Oil	$I=(A * E * )/1000$	G Cal	8043.54
14	Heat from Coal	$J=H-I$	G Cal	1978444.26
15	Transit losses	K	%	0.8%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	62.29%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	37.71%
20	Actual Oil Consumption	$L=A * E$	kg	809.16
21	Actual Coal Consumption	$M=(J * 1000)/F$	MT	465625.85
22	A) Indigenous Coal	$Q1=M * X1/(1-K)$	MT	292377.36
23	B) Washed Coal	$Q2=M * X2 / (1-K)$	MT	0.00
24	C) Imported Coal	$Q3=M * X3$	MT	175587.51
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3812.26
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	6204.56
29	Price of Oil	P4	Rs./MT	40772.11
30	Coal cost			
31	A) Indigenous Coal	$N1=Q1 * P1$	Rs. Lakh	11146.19
32	B) Washed Coal	$N2=Q2 * P2$	Rs. Lakh	0.00
33	C) Imported Coal	$N3=Q3 * P3$	Rs. Lakh	10894.43
34	Total Coal Cost	$N4=N1+N2+N3$	Rs. Lakh	22040.62
35	Oil Cost	$N5=P4 * L/10^5$	Rs. Lakh	329.91
36	Total Fuel Cost	$O=N4 + N5$	Rs. Lakh	22370.53
37	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs./kWh	2.76
38	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs./kWh	3.04
39	Cost of fuel/G.Cal	$R=(O/H)*10^5$	Rs./Gcal	1126.13



**Approved Fuel costs for FY 2015-16 for Mid-term Review of Business Plan  
Fuel costs (Coal, Lignite & Secondary Oil) - F Station**

Sl.No.	Item	Derivation	Unit	2015-16
1	Gross Generation	A	MUs	834.99
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B = A * C	MUs	75.15
4	Net Generation	Y=A - B	MUs	759.84
5	Capacity	T	MW	120.00
6	PAF	U	%	94.84
7	PLF	V	%	78.56
8	Station Heat Rate	D	KCal/kWh.	2455.00
9	Sp. Oil Consumption	E	ml/kWh	1.00
10	Gross Calorific Value of Coal	F	kcal/kg	4288.11
11	Calorific value of Oil	G	kcal/l	9919.22
12	Overall Heat	H=A x D	G Cal	2049900.45
13	Heat from Oil	I=(A x E x G)/1000	G Cal	8282.45
14	Heat from Coal	J=H-I	G Cal	2041618.00
15	Transit losses	K	%	0.8%
16	Coal Blend			
17	A) Indigenous Coal	X1	%	58.07%
18	B) Washed Coal	X2	%	0.00%
19	C) Imported Coal	X3	%	41.93%
20	Actual Oil Consumption	L=A x E	kg	834.99
21	Actual Coal Consumption	M=(J X 1000)/F	MT	476111.39
22	A) Indigenous Coal	Q1=M* x X1/(1-K)	MT	278707.54
23	B) Washed Coal	Q2=M* x X2 / (1-K)	MT	0.00
24	C) Imported Coal	Q3=M* X X3	MT	199633.50
25	Price of Coal			
26	A) Indigenous Coal	P1	Rs./MT	3781.50
27	B) Washed Coal	P2	Rs./MT	0.00
28	C) Imported Coal	P3	Rs./MT	6411.19
29	Price of Oil	P4	Rs./MT	42394.51
30	Coal cost			
31	A) Indigenous Coal	N1=Q1 X P1	Rs. Lakh	10539.33
32	B) Washed Coal	N2=Q2 X P2	Rs. Lakh	0.00
33	C) Imported Coal	N3=Q3 X P3	Rs. Lakh	12798.88
34	Total Coal Cost	N4=N1+N2+N3	Rs. Lakh	23338.21
35	Oil Cost	N5=P4 x L/10^5	Rs. Lakh	353.99
36	Total Fuel Cost	O=N4 + N5	Rs. Lakh	23692.20
37	Fuel Cost/Unit Gross	P=O/(A*10)	Rs./kWh	2.84
38	Fuel Cost/Unit Net	Q=O/(Y*10)	Rs./kWh	3.12
39	Cost of fuel/G.Cal	R=(O/H)*10^5	Rs./Gcal	1155.77



## COMMISSION'S ORDER

The Commission approves the revised Aggregate Revenue Requirement (ARR) for TPL-G (APP) in the Mid-term Review for FY 2014-15 and FY 2015-16, as shown in the Table below:

**Approved ARR for TPL-G (APP) in FY 2014-15 & FY 2015-16**

(Rs. Crore)			
Sl. No.	Particulars	FY 2014-15	FY 2015-16
1	Variable Cost	931.07	801.31
2	O&M Expenses	134.19	141.86
3	Water Charges	8.37	8.37
4	Depreciation	45.80	44.70
5	Interest on loan	0	0
6	Interest on working Capital	20.32	17.96
7	Return on Equity	46.16	44.95
8	Income Tax	18.51	18.51
9	Less: Non-Tariff Income	25.25	25.25
<b>10</b>	<b>Total</b>	<b>1179.17</b>	<b>1052.41</b>

Sd/-

Sd/-

\_\_\_\_\_  
**DR. M.K. IYER**  
Member

\_\_\_\_\_  
**SHRI PRAVINBHAI PATEL**  
Chairman

Place: Gandhinagar  
Date: 29/04/2014

