

GUJARAT ELECTRICITY REGULATORY COMMISSION



Annual Performance Review for FY 2009-10 & Annual Tariff Determination for FY 2010-11

For

Gujarat State Electricity Corporation Limited

Case No. 989/2010

31st March 2010

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**GUJARAT ELECTRICITY REGULATORY COMMISSION
(GERC)**

AHMEDABAD

**Annual Performance Review for FY 2009-10
&
Annual Tariff Determination for FY 2010-11**

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ABBREVIATIONS

1	APR	Annual Performance Review
2	ARR	Aggregate Revenue Requirement
3	Avg.	Average
4	CAGR	Compounded Annualized Growth Rate
5	CAPEX	Capital Expenditure
6	CEA	Central Electricity Authority
7	CERC	Central Electricity Regulatory Commission
8	Control Period	FY 2008-09, FY 2009-10, FY 2010-11
9	DGVCL	Dakshin Gujarat Vij Company Limited
10	FPPPA	Fuel Price and Power Purchase Adjustment
11	FY	Financial Year
12	GCV	Gross Calorific Value
13	GDP	Gross Domestic Product
14	GEB	Gujarat Electricity Board
15	GERC	Gujarat Electricity Regulatory Commission
16	GSECL	Gujarat State Electricity Corporation Limited
17	GUVNL	Gujarat Urja Vikas Nigam Limited
18	kCal	Kilocalorie
19	kWh	Kilowatt Hour
20	MGVCL	Madhya Gujarat Vij Company Limited
21	MYT	Multi Year Tariff
22	NCV	Net Calorific Value
23	O&M	Operation & Maintenance
24	PAF	Plant Availability Factor
25	PGCIL	Power Grid Corporation of India Limited
26	PGVCL	Paschim Gujarat Vij Company Limited
27	PLF	Plant Load Factor
28	RE	Revised Estimates
29	R&M	Repairs & Maintenance
30	SHR	Station Heat Rate
31	SLDC	State Load Dispatch Center
32	UGVCL	Uttar Gujarat Vij Company Limited
33	YoY	Year on Year





BEFORE THE GUJARAT ELECTRICITY REGULATORY COMMISSION AT AHMEDABAD

Case No. 989 / 2010

Date of the Order: 31st March 2010

CORAM

Dr. P. K. Mishra, Chairman
Shri Pravinbhai Patel, Member

ORDER

1 Background and brief history

1.1 Background

Gujarat State Electricity Corporation Limited (herein after referred to as 'GSECL' or 'petitioner') has filed its petition under Section 62 of the Electricity Act, 2003 read with Gujarat Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2005 (hereinafter referred to as 'Terms & Conditions of Tariff') and Gujarat Electricity Regulatory Commission (Multi Year Tariff Framework) Regulations, 2007 (hereinafter referred to as 'MYT Regulations') on 22nd December 2009 for annual performance review (APR) of FY 2009-10 and determination of tariff for FY 2010-11 for generation business, under MYT Control Period FY2008-09 to FY2010-11. Subsequent to the filing, the Commission undertook technical validation of the petition and admitted the petition on 4th January 2010.

1.2 Gujarat State Electricity Corporation Limited (GSECL)

The Government of Gujarat unbundled and restructured the Gujarat Electricity Board with effect from 1st April 2005. The Generation, Transmission & Distribution businesses of the erstwhile Gujarat Electricity Board were transferred to seven successor companies. The seven successor companies are listed below:

- i) Gujarat State Electricity Corporation Limited (GSECL) - A Generation Company
- ii) Gujarat Energy Transmission Corporation Limited (GETCO) - A Transmission Company

Four Distribution Companies:



- iii) Dakshin Gujarat Vij Company Limited (DGVCL)
 - iv) Madhya Gujarat Vij Company Limited (MGVCL)
 - v) Uttar Gujarat Vij Company Limited (UGVCL)
 - vi) Paschim Gujarat Vij Company Limited (PGVCL)
- and
- vii) Gujarat Urja Vikas Nigam Limited (GUVNL) – A Holding Company and also responsible for purchase of electricity from various sources and supply to Distribution Companies.

The Government of Gujarat vide notification dated 3rd October 2006 notified the final opening balance sheets of the transferee companies as on 1st April 2005, containing the value of assets and liabilities, which stand transferred from the erstwhile Gujarat Electricity Board to the transferee companies including Gujarat State Electricity Corporation Limited (GSECL). Assets and liabilities (gross block, loans and equity) have been considered by the Commission in line with the Financial Restructuring Plan (FRP) as approved by Government of Gujarat.

1.3 Commission's Order for the first control period

Gujarat State Electricity Corporation Limited filed its petition under the Multi Year Tariff framework for the FY 2008-09, FY 2009-10 and FY 2010-11 on 31st July 2008 in accordance with the Gujarat Electricity Regulatory Commission (Multi Year Tariff Framework) Regulations, 2007 notified by Gujarat Electricity Regulatory Commission (hereinafter referred to as 'GERC' or the 'Commission'). The Commission, in exercise of the powers vested in it under Sections 61 and 62 of the Electricity Act 2003 and all other powers enabling it in this behalf and after taking into consideration the submissions made by GSECL, the objections by various stakeholders, response of GSECL, issues raised during the public hearing and all other relevant material, issued the Multi Year Tariff order on 17th January 2009 for the control period comprising FY 2008-09, FY 2009-10 and FY 2010-11.

1.4 Commission's Order on APR of first year of the control period

The petitioner filed its petition for Annual Performance Review (APR) of FY 2008-09 and for Annual determination of Tariff for FY 2009-10 on 21st August 2009. Based on preliminary scrutiny and evaluation the Commission admitted the petition on 4th September 2009. The Commission in exercise of the powers vested in it under Sections 61 and 62 of the Electricity Act 2003 and other provisions enabling it in this behalf and after taking into consideration the submissions made by the Petitioner, the objections by various stakeholders, response of the Petitioner, issues raised during



the public hearing and all other relevant material, issued the order on APR of FY 2008-09 and tariff determination for FY 2009-10 on 14th December 2009.

The above order was issued based on the provisional accounts for FY 2008-09. The Petitioner has now submitted the audited accounts for FY 2008-09. The Commission has observed that there is no variance between the audited accounts now submitted and the provisional accounts earlier submitted by the Petitioner. The Commission has taken note of the same. Based on this observation, the approved ARR for FY 2008-09 is enclosed as Annexure A to this Order.

1.5 Admission of current petition and public hearing process

The Commission undertook technical validation and admitted the current petition of GSECL for annual performance review (APR) of FY2009-10 and annual tariff review for FY2010-11 for generation business (Case No 989 of 2010) on 4th January 2010.

In accordance with Section 64 of the Electricity Act 2003, the Commission directed GSECL to publish its application in the abridged form to ensure public participation.

The Public Notice was published in the following newspapers on 7th January 2010 inviting objections / suggestions from its stakeholders on the petition filed by it.

1. Indian Express – in English
2. Divya Bhaskar – in Gujarati

The petitioner also placed the public notice and the petition on its website (www.gsecl.in) inviting objections and suggestions on its petition.

The interested parties/stakeholders were asked to file their objections and suggestions on the petition on or before 8th February 2010.

Commission received objections/suggestions from 3 respondents. Some of the objections / suggestions received after the last date but prior to the date of public hearing have also been considered by the Commission.

The Commission thereafter fixed the date of public hearing for GSECL petition on 25th February 2010 and 26th February 2010 and sent communication to the objectors inviting them to take part in the public hearing process for presenting their views on the petition before the Commission. During the course of the hearing the Commission decided to conduct further hearing on the petition on 3rd March 2010.

The issues and concerns raised by various stakeholders during the course of the public hearing as well as the written submission have been carefully examined by the Commission.

1.6 Contents of the Order

The order is arranged into 5 chapters as under:



1. The first chapter provides a background regarding the petitioner, petition, details of the public hearing process and the approach of this order.
2. The second chapter provides detailed account of the public hearing process, including the objections raised by various stakeholders, GSECL responses and the Commission's views on the responses.
3. The third chapter incorporates the annual performance review of the year 2009-10 for the generation business.
4. The fourth chapter analyses the Aggregate Revenue Requirement for generation business for the FY 2010-11.
5. The fifth chapter deals with compliance of directives issued earlier and fresh directives issued in this Order.

1.7 Approach of this Order

In this order the Commission has analyzed the petition with regard to the annual performance review for FY 2009-10 and annual tariff review for FY 2010-11. Under the MYT Framework, the Commission has projected the ARR for the petitioner for each year of the control period in the MYT Order issued on 17th January, 2009. The Regulations provide for annual performance review based on the actual expenses incurred by the petitioner compared with the trajectories approved under the MYT Order.

The petitioner has now approached the Commission for annual performance review for FY 2009-10 and annual tariff review for FY 2010-11. Considering this background the Commission has undertaken an annual performance review for FY 2009-10 based on the actual information submitted for the first six months of the FY 2009-10 and the analysis of the projections submitted by the petitioner for the remaining six months of the FY 2009-10.

In regard to the annual tariff review for FY 2010-11, the Commission has analyzed the projections submitted by the petitioner.

1.7.1 Approach for APR for the FY 2009-10

Regulation 9.1 of the MYT Regulations provides that where the aggregate revenue requirement of a generating company or a licensee is covered under a multi year tariff framework, such licensee shall be subject to an Annual Performance Review (APR) during the control period. With regard to the scope of the APR, Regulation 9.3 of the MYT Regulations provide that the scope of APR shall include a comparison of the audited performance of the generating company or the licensee for previous financial year with the approved forecast of aggregate revenue requirement and expected revenue from tariff and charges for such previous financial year.

Accordingly, the Commission has now undertaken a review of the performance for the FY 2009-10 based on the submission of the petitioner. The petitioner has also



submitted computation of gains and losses for the FY 2009-10. However, the Commission has not undertaken computation of gains/losses for the FY 2009-10. The computation of gains and losses for the FY 2009-10 shall be undertaken based on the audited accounts of the petitioner.

1.7.2 Approach for ARR for the FY 2010-11

For FY 2010-11 which is the third year of the control period, the Petitioner has approached the Commission for revision of the Aggregate Revenue Requirement (ARR) and annual tariff review based on the APR of FY 2009-10 and the revised estimates for the FY 2010-11. The Commission has now reviewed the submission of the petitioner. The Commission has observed that revised components of the ARR for FY 2010-11 are different compared to ARR approved under the MYT Order dated 17th January 2009.

The variance in the submission is primarily on account of the variance in the actual performance for the FY 2008-09 and the first six months of FY 2009-10. In light of this background, the Commission has reviewed and revised the various components of ARR where considered fit. While considering the revision of the ARR the Commission has been primarily guided by the following principles:

- Controllable parameters have been considered at the level approved under the MYT Order unless the Commission considers there are suitable reasons for revision of the same.
- Uncontrollable parameters have been revised based on the actual performance observed for the FY 2008-09 and the first six months of the FY 2009-10.



2 Response from Stakeholders

2.1 Background

In response to the public notice inviting objections / suggestions from stakeholders on the petition filed by GSECL for annual performance review (APR) of FY2009-10 and annual determination of tariff for FY2010-11 for generation business, under MYT Control Period FY2008-09 to FY2010-11, 3 consumers / consumer organizations have filed their objections / suggestions in writing. Out of the 3 consumers / consumer organizations who filed objections / suggestions 2 stakeholders have participated in the public hearings. Details of the consumers / consumer organizations who have submitted their objection is provided in Table 1:

Table 1: List of Objectors

Sr. No.	Name	Participated in Public Hearing
1	Consumer Education and Research Society	Yes
2	Sh.Vipulbhai H. Raiyani	
3	Gondal Chambers of Commerce and Industries	No

The Commission has scrutinized the submissions of the consumers / consumer organizations and has also analyzed the replies of the petitioner on the same. The Commission has thereafter presented its views on the submissions made by the consumers and the petitioner. The details of the submissions made by the consumers, response of the petitioner and the views of the Commission are summarized in the subsequent sections.

2.2 Increase in energy charges

Objections:

Some objectors have submitted that the poor performance of some of the generating plants has put additional burden on the consumers. Objectors have specifically highlighted the poor performance of Gandinagar unit-5 where the energy charges have increased by almost 30%. The objectors have thereafter submitted that energy audit should be carried out for all the stations where poor performance has been observed. Objectors have further submitted that increase in the fuel cost on account of the poor performance should not be passed on to the consumers.

GSECL's Response:

The petitioner has clarified that the actual rate of energy charges approved by the Commission, vide its MYT Order dated January 17, 2009, is considered for the



purpose of billing. This rate is based on the weighted average prices of the actual Fuel Prices from 1st April 2006 to December 2006. The petitioner has further submitted that the Fuel Cost Adjustment thereon is as per the formula approved by the Commission. The petitioner has highlighted that the rise in energy charges is primarily on account of hike in fuel prices during the recent years compared to the actual price of fuel for the base period April-06 to Dec-06.

Commission's view:

The Commission has taken note of the submission made by the petitioner. The Commission is of the view that the energy rate for the purpose of billing should be considered as per the rates approved under the tariff Order and the fuel price adjustment should be carried out as per the FPPPA formula approved by the Commission.

2.3 Performance below target**Objections:**

Some objectors have submitted that though the performance of most of the plants operated by the petitioner has improved, some plants need improvement in their performance. The objectors have specifically highlighted poor performance with regard to the following three parameters:

- Station Heat Rate
- Auxiliary Consumption
- Plant Load Factor

Further, the objectors have highlighted that out of all the poor performing stations KLTPS (1-3) is operating most inefficiently.

The objectors have further submitted that the petitioner should share details of the actual transit loss.

GSECL's Response:

The petitioner has submitted the reasons for deviation in performance parameters in respect of Ukai (1-5) TPS, Gandhinagar (1-4) TPS, KLTPS (1-3) TPS, Dhuvaran Oil TPS and Sikka TPS. The petitioner has submitted that all these stations are having chronic local and site specific problems which are beyond the control of the petitioner. With regard to KLTPS units the petitioner has submitted that the units are facing acute problem of quality of Lignite. Therefore, KLTPS units are being operated with very poor quality of Lignite compared to the design values. The petitioner has further submitted that even after using all coal mills in service, it is difficult to achieve full load resulting in low PAF. The petitioner has clarified that after R&M of KLTPS



Units 1&2, these units were successfully operated with full load. However, during the last two years lignite quality has deteriorated, which has led to poor performance.

With regard to WTPS 1-6 and WTPS-7 the petitioner has indicated the following reasons for their poor performance:

- In WTPS stage II units, the units are required to be operated with maximum SH spray to maintain SH steam temperature.
- In WTPS Stage I / II units the vacuum problems persist.

In the matter of Transit Loss, the petitioner has requested that transit loss be approved on normative basis as approved by CERC i.e. 0.8% for all the Coal Based Plants. The actual transit loss is varying widely which has so many variable factors like location and distance which are more than 1000 Kms. from the railway siding to TPS, quality of coal loaded, seasonal and environment impact etc. which does not remain constant. The petitioner has thereafter submitted that the actual transit loss for Indigenous coal for FY 2008-09 has been around 0.77% and for FY 2009-10 (up to Oct-09) has been around 1.33%.

Commission's view:

The Commission has taken note of the submission made by the petitioner with regard to the poor performance of the stations. The Commission is of the view that the petitioner should undertake adequate R&M activities to minimize inefficient plant operations. The Commission has further noted that the variable charges of the plants are computed on the basis of the normative operating parameters and therefore the poor operating parameter does not have impact on the applicable energy charges for the respective stations and hence would not have direct pecuniary implications for the consumers. Nevertheless, poor performance brings in inefficiency and increases the cost of operations for the petitioner which when disallowed over long period impacts the petitioner's financial health. The petitioner should therefore undertake adequate measures to contain the poor performance of its stations.

With regard to the transit loss the Commission has observed that the petitioner has considered transit loss as per the CERC regulations, which is lower than the trajectory approved under the MYT Order. For FY 2008-09 the Commission has observed that the actual transit loss is lower than the approved transit loss. For FY 2009-10 the Commission has observed that for part of the year the petitioner has achieved a lower transit loss compared to approved transit loss. The Commission has taken note of the submission of the petitioner. The Commission appreciates that the petitioner has been able to achieve transit loss level which is lower than the approved trajectory.



2.4 Discrepancy in oil prices

Objections:

Some objectors have submitted that a discrepancy in fuel prices has been observed. Objectors have indicated that though the GCV of Oil is similar in all the generating stations the cost of oil for various stations are different. The objectors have accordingly sought reasons for the variance in the cost.

GSECL's Response:

The petitioner has submitted that the oil prices indicated in the petition are the actual weighted average rates for the FO & LDO consumed at respective power stations. Consumption of FO & LDO at respective Power stations varies from period to period, hence difference is found in weighted average rates, and where the LDO consumption is high, weighted average cost will be higher than that for those stations where LDO consumption is less, as price of LDO is higher than FO/LSHS.

Commission's view:

The Commission has taken note of the submission made by the petitioner.

2.5 Controllable & Uncontrollable Factors

Objections:

Some objectors have submitted that the petitioner has considered factors driving most of the parameters as uncontrollable. The objectors have submitted that the controllable and uncontrollable parameters should be followed as per MYT Regulations.

GSECL's Response:

The petitioner has submitted that with regard to the controllable and uncontrollable parameters the Commission may decide the matter appropriately.

Commission's view:

The Commission is of the view that the classification of parameters as controllable and uncontrollable shall be done keeping in view the framework of the MYT Regulations.



2.6 CEA Recommended parameters

Objections:

Some objectors have drawn reference to the CEA study which was conducted at the instance of the Commission as per the MYT Order issued on January 17, 2009. The objectors have submitted that the recommendation of the CEA is now available and the same should be applied for computing the variable charges. The objectors have submitted that the recommendations of the CEA should be made applicable from the FY 2009-10 onwards.

GSECL's Response:

The petitioner has submitted that the petitioner has received CEA Recommendations from the Commission and has made a submission with regard to the same. The petitioner has further submitted that the entire approval of Performance Parameters vide Tariff Order Dtd. 06.05.06 was based on CEA Operational Norms as ANNEXED and submitted before the Hon'ble Commission along with the second submission on the GSECL Petition No. 861/06, and hence, it was a part of Annexure submitted before the Appellate Tribunal vide GSECL Appeal No. 129/06. Quote from the Tariff Order Dtd. 06.05.06 and Judgment by the Appellate Tribunal refers the CEA recommendations from the CEA Operational Norms as submitted before them. Accordingly, the petitioner has submitted that there was no need for fresh recommendations, as it was available, contested and then accorded Judgment by the Appellate Tribunal.

The petitioner has further submitted that there are various constraints for deviation from the parameters. Parameters for the new machines are the outcome of the performance tests carried out on the machines within a few days of commissioning. Actual operating parameters are dependent on the present condition of machine. The petitioner has concluded that the above factors explain as to why the performance of different machines of same design, make, age etc. is different. The petitioner has finally submitted that the present conditions of the plants are the function of several factors like:

1. Operation & Maintenance regime, Unit is subjected to since commissioning
2. Degradation due to ageing
3. Water Chemistry
4. Condition of the auxiliaries
5. Schedule of maintenance followed
6. Overloading / Partial loading of machines
7. Numbers of Start / Stop



8. Operating frequency range - machines have been subjected to Temperature and Pressure stresses.
9. Automation of C&I.
10. Condenser Vacuum which again depends on the site specific water availability and quality.

To substantiate the variance in SHR, the petitioner has also quoted that it is worth noticing that as per the CEA Thermal Performance Review 2008-09, the national level deviation in SHR is @ 11.51 %.

Commission's view:

The Commission has taken note of the submission made by the petitioner. The Commission has drawn reference to its MYT Order dated January 17, 2009. As per the MYT Order a CEA study was undertaken to evaluate the performance parameters of the generating stations of the petitioner. The recommendations of the CEA study are now available and a copy of the recommendations of the CEA has been shared with the petitioner. The Commission observed that almost three quarters of FY 2009-10 had elapsed when the recommendation of CEA has been made available. The Commission is therefore of the view that it shall not apply the CEA recommendation for FY 2009-10 since a significant portion of the financial year had elapsed. However, for FY 2010-11 the Commission is of the view that the petitioner has been provided adequate notice on the recommendations of the CEA. Further, the Commission has also observed that the CEA study to which the petitioner has drawn reference was a general study which was conducted by the CEA for all thermal stations in India. Whereas, the CEA study of which the Commission has now taken cognizance in this Order is a specific study undertaken for the generating stations of GSECL and TPL.

2.7 Addition of new generation capacity

Objections:

An objector has submitted that no new generation capacity has been added during the recent years. The objector has further submitted that the petitioner should share the details of the planned generation capacity.

GSECL's Response:

The Petitioner has submitted details of the augmentation plan for generation capacity. Details of projects which are in implementation stage are summarized below.



- 350+ MW gas based combined cycle power plant at Dhuvaran
- 2X250 MW Coal based extension Unit 3&4 at Sikka
- 500 MW Coal based extension Unit 6 at Ukai TPS

The project mentioned below is in the clearance/ approval stage:

- 800/600 MW coal based extension Unit no. 8 at Wanakbori TPS.

For projects indicated below, feasibility study and preparation of detailed project report is proposed to be undertaken:

- 2X800 MW Coal Based projects at Sinor, Dist. Vadodara
- 4x800 MW Coal based projects at Sarakhadi, Dist. Junagadh (expandable to 6X800 MW units)
- 2X800 MW Coal Based projects at Dahej, Dist. Bharuch
- 1000 MW gas based combined cycle project at Dudhva, Dist. Banaskanta
- 1000 MW gas based combined cycle project at Chandrumana, Dist. Patan

Commission's view:

The Commission has taken note of the submission made by the Petitioner. The Commission appreciates the efforts being put in towards the augmentation of generation capacity. The Commission is of the view that the petitioner should put in continued and concerted efforts towards enhancing its generation capacity.



3 Annual Performance Review for FY 2009-10

3.1 Generating Stations of GSECL

The Petitioner has submitted that it owns and operates the following generating stations:

- Four coal based thermal generating stations;
- One lignite fired thermal station;
- One thermal station with oil and gas fired units;
- One gas based station;
- Two major hydel stations and two mini hydel stations.

The details of these stations in terms of their age and capacity are provided in Table 2.

Table 2: Installed Capacity of GSECL for FY 2009-10

Name of the station	Unit No.	Capacity of the unit (MW)	Date of commissioning	Age (Years)
Ukai	1	120	19/03/76	34
	2	120	23/06/76	34
	3	200	21/01/79	31
	4	200	11/09/79	31
	5	210	30/01/85	25
Sub-Total		850		
Gandhinagar	1	120	13/03/77	33
	2	120	10/04/77	33
	3	210	20/03/90	20
	4	210	20/07/91	19
	5	210	17/03/98	12
Sub-Total		870		
Wanakbori	1	210	23/03/82	28
	2	210	15/01/83	27
	3	210	15/03/84	26
	4	210	09/03/86	24
	5	210	23/09/86	24
	6	210	18/11/87	22
	7	210	31/12/98	11
Sub-Total		1470		
Sikka	1	120	26/03/88	22
	2	120	31/03/93	17
Sub-Total		240		
KLTPS	1	70	29/03/90	20
	2	70	25/03/91	19
	3	75	31/03/97	13



Name of the station	Unit No.	Capacity of the unit (MW)	Date of commissioning	Age (Years)
	4	75	20/12/09	
Sub-Total		290		
Dhuvaran	5 – Oil	110	27/05/72	38
	6 – Oil	110	10/09/72	38
	7 – Gas	106.617	28/01/04	06
	8 – Gas	112.45	01/11/07	02
Sub-Total		439.067		
Utran (New)	GT – 1	30	17/12/92	17
	GT – 2	30	28/12/92	17
	GT – 3	30	07/05/93	16
	STG	45	17/07/93	16
Sub-Total		135		
Utran Extension	GT – 1	375	7/11/2009	1
Total GSECL (Coal + Lignite)		3720		
Total GSECL (Oil)		220		
Total GSECL (Gas)		729.07		
Total GSECL (Thermal)		4669		
Ukai Hydro	1	75	08/07/74	36
	2	75	13/12/74	35
	3	75	22/04/75	35
	4	75	04/03/76	34
Ukai LBC	1	2.5	08/12/87	22
	2	2.5	19/02/88	22
Sub Total		305		
Kadana Hydro	1	60	31/03/90	20
	2	60	02/09/90	20
	3	60	03/01/98	12
	4	60	27/05/98	12
Sub-Total		240		
Panam	1	1	24/03/94	16
	2	1	31/03/94	16
Sub-Total		2		
Total Hydro		547		
Total GSECL as a whole		5216		

The Commission has taken note of the information submitted by the petitioner with regard to the total installed capacity of GSECL. The Commission has also taken note that GSECL has commissioned Utran 375 MW of gas based power plant on 7th November 2009 and KLTPS – 4 on 20th December 2009.

3.2 Operating Parameters

The petitioner has submitted the actual operating performance on Plant Availability Factor (PAF), Station Heat Rate, Coal Transit Loss, Auxiliary Consumption (AC),



Specific Oil Consumption etc. for FY 2008-09 and for the first half of FY 2009-10. The petitioner has also submitted projected operating performance for second half of FY 2009-10 and for full year of FY 2010-11. The Commission has undertaken the annual performance review of the individual operating parameters for FY 2009-10, which is discussed in the following sections.

3.2.1 Plant Availability

Petitioner's Submission

The petitioner has submitted the availability of individual stations for FY 2009-10 along with the comparison with the approved parameter in the MYT Order. The submission of the petitioner is outlined in Table 3.

Table 3: Plant Availability for FY 2009-10 submitted by GSECL (in %)

Sr. No.	Power Station	MYT Approved	GSECL FY 2009-10	
		FY 2009-10	H1 (Actual)	R E
1	Ukai (1-5)	74	63	66
2	Gandhinagar (1-4)	70	80	75
3	Gandhinagar 5*	90	97	94
4	Wanakbori 1-6 TPS	85	78	85
5	Wanakbori 7 TPS*	90	99	94
6	Sikka TPS	75	73	75
7	KLTPS 1-3	75	54	60
8	KLTPS 4*	80	0	60
9	Dhuvaran (Oil)	80	36	45
10	Dhuvaran (Gas 1)*	85	84	80
11	Dhuvaran (Gas 2)*	88	85	85
12	Utran (Gas)*	90	80	85
13	Utran Extension*	87	-	80
14	Ukai Hydro	80	100	94
15	Kadana Hydro	80	100	95

* PPA Based Stations

Commission's Analysis

The Commission has analyzed the submission made by the Petitioner and has observed that the generating stations like Ukai (1-5), KLTPS 1-3, Dhuvaran Oil, Dhuvaran (Gas 1) and Dhuvaran (Gas 2) are projected to achieve Plant Availability Factor lower than the target Plant Availability Factor which is necessary for recovery of the full annual fixed charges.

The Commission thereafter analyzed the Plant Availability Factor considered for the FY 2008-09 which is indicated in Table 4.



Table 4: PAF considered for APR for FY 2008-09 (in %)

Sr. No.	Power Station	MYT Order	GSECL Actual	Considered for APR
1	Ukai (1-5)	72.00	65.09	65.09
2	Gandhinagar (1-4)	65.00	74.90	65.00
3	Gandhinagar 5*	90.00	93.52	80.00
4	Wanakbori 1-6 TPS	80.00	87.02	80.00
5	Wanakbori 7 TPS*	90.00	92.02	80.00
6	Sikka TPS	75.00	67.25	75.00
7	KLTPS 1-3	72.00	66.83	72.00
8	Dhuvaran (Oil)	80.00	71.71	80.00
9	Dhuvaran (Gas 1)*	80.00	61.53	80.00
10	Dhuvaran (Gas 2)*	87.00	82.21	80.00
11	Utran (Gas)*	90.00	88.05	80.00
12	Ukai Hydro	80.00	91.49	80.00
13	Kadana Hydro	80.00	62.98	80.00

* PPA Based Stations

The Commission observes that for FY 2008-09 Ukai (1-5) had achieved a lower Plant Availability Factor which was largely on account of the Stabilization of the Unit 1 after its R&M and forced outage of Unit 3 on account of axial shift. The Petitioner has further submitted that the anticipated R&M benefits have not materialized to fullest extent since the efforts to stabilize the units have not proved to be successful. Based on this submission the Commission considers a lower PAF for Ukai plant for FY 2009-10.

The Commission has now considered the following principle while undertaking the APR for FY 2009-10:

- For PPA based stations PAF has been considered from the respective PPAs.
- The PAF for Ukai has been revised downwards in light of the reasons submitted by the petitioner.
- For Utran Extension and KLTPS 4 which have been commissioned recently, the availability as submitted by the petitioner has been considered.
- For other stations the PAF approved under the MYT Order has been considered. The Commission has found that the reasons submitted for lower PAF for other stations are not tenable and could have been handled with adequate R&M plan.

Based on the analysis of the submission of the petition and the past trend, the Commission approves the plant availability indicated in Table 5.



Table 5: Approved Plant Availability for FY 2009-10 (in %)

Sr. No.	Power Station	MYT Order	GSECL RE	Considered for APR
1	Ukai (1-5)	74	66	66
2	Gandhinagar (1-4)	70	75	75
3	Gandhinagar 5*	90	94	80
4	Wanakbori 1-6 TPS	85	85	85
5	Wanakbori 7 TPS*	90	94	80
6	Sikka TPS	75	75	75
7	KLTPS 1-3	75	60	75
8	KLTPS 4*	80	60	60
9	Dhuvaran (Oil)	80	45	80
10	Dhuvaran (Gas 1)*	85	80	80
11	Dhuvaran (Gas 2)*	88	85	80
12	Utran (Gas)*	90	85	80
13	Utran Extension*	87	80	80
14	Ukai Hydro	80	94	80
15	Kadana Hydro	80	95	80

* PPA based stations

The Commission noted that the fixed cost recovery shall be considered based on the PAF now approved by the Commission. The Commission has also taken note that the availability approved in Table 5 is for the purpose of considering the recovery of fixed charges only and it does not have any direct correlation with the plant load factor approved under this order. The petitioner should strive to enhance its plant load factor in order to improve generation from its plants.

3.2.2 Plant Load Factor

Petitioner's Submission

The petitioner has submitted the actual Plant Load Factor (PLF) for FY2008-09 and first six months of FY 2009-10. The petitioner has projected PLF for second half of FY 2009-10 for each of the stations. The details of the submission of the petitioner are indicated in Table 6.

Table 6: Submitted PLF for GSECL stations for FY 2009-10 (in %)

Sr. No.	Power Station	MYT Approved	GSECL FY 2009-10	
		FY 2009-10	H1 (Actual)	RE
1	Ukai (1-5)	74	63	66
2	Gandhinagar (1-4)	70	80	75



3	Gandhinagar 5	92	97	94
4	Wanakbori 1-6 TPS	85	78	85
5	Wanakbori 7 TPS	92	99	94
6	Sikka TPS	75	73	75
7	KLTPS 1-3	72	54	60
8	KLTPS 4	80	0	60
9	Dhuvaran (Oil)	77	36	45
10	Dhuvaran (Gas 1)	90	84	80
11	Dhuvaran (Gas 2)	90	85	85
12	Utran (Gas)	92	80	85
13	Utran Extension	58	0	80
14	Ukai Hydro	24	13	11
15	Kadana Hydro	9	6	5

Commission's Analysis

The Commission has observed that for the FY 2009-10, stations named in Table 7 have been projected to achieve a lower PLF.

Table 7: GSECL Stations with lower actual PLF for FY 2009-10 (in %)

Sr. No.	Stations	MYT Order	GSECL Actual	Performance
1.	Ukai (1-5)	74	66	Lower
2.	KLTPS 1-3	72	60	Lower
3.	KLTPS 4	80	60	Lower
4.	Dhuvaran (Oil)	77	45	Lower
5.	Dhuvaran (Gas 1)	90	80	Lower
6.	Dhuvaran (Gas 2)	90	85	Lower
7.	Utran (Gas)	92	85	Lower
8.	Ukai Hydro	24	11	Lower
9.	Kadana Hydro	9	5	Lower

The Commission has taken note of the above aspects.

Based on the submission of the petitioner the Commission takes note of the PLF submitted by the petitioner indicated in Table 8.

Table 8: PLF considered for FY 2009-10 (in %)

Sr. No.	Power Station	Considered for APR
1	Ukai (1-5)	66
2	Gandhinagar (1-4)	75



3	Gandhinagar 5	94
4	Wanakbori 1-6 TPS	85
5	Wanakbori 7 TPS	94
6	Sikka TPS	75
7	KLTPS 1-3	60
8	KLTPS 4	60
9	Dhuvaran (Oil)	45
10	Dhuvaran (Gas 1)	80
11	Dhuvaran (Gas 2)	85
12	Utran (Gas)	85
13	Utran Extension	80
14	Ukai Hydro	11
15	Kadana Hydro	5

3.2.3 Auxiliary consumption

Petitioner's Submission

The Petitioner has submitted the actual auxiliary consumption for FY 2008-09 and first half of FY 2009-10. The petitioner has projected the auxiliary consumption for FY 2009-10 for each of the stations which is summarized in Table 9.

Table 9: Submitted auxiliary consumption for FY 2009-10 (in %)

Sr. No.	Power Station	FY 2008-09		FY 2009-10		
		MYT	GSECL (Actual)	MYT	GSECL	
					Apr - Sept (Actual)	R E
1	Ukai (1-5)	9.00	8.88	9.00	8.15	9.00
2	Gandhinagar (1-4)	11.12	10.00	11.12	10.46	10.25
3	Gandhinagar 5	9.00	8.95	9.00	9.07	9.00
4	Wanakbori 1-6 TPS	9.00	8.60	9.00	8.83	9.00
5	Wanakbori 7 TPS	9.00	8.59	9.00	8.67	9.00
6	Sikka TPS	10.70	11.10	10.70	10.51	10.62
7	KLTPS 1-3	12.25	12.87	12.25	14.87	13.80
8	KLTPS 4	12.25	0.00	12.25	0.00	15.00
9	Dhuvaran (Oil)	11.50	11.17	11.50	14.89	13.31
10	Dhuvaran (Gas 1)	3.00	6.01	3.00	5.84	5.39
11	Dhuvaran (Gas 2)	3.00	4.48	3.00	4.35	4.17
12	Utran (Gas)	4.00	4.58	4.00	4.52	4.22
13	Utran Extension	0.00	0.00	4.00	0.00	4.00
14	Ukai Hydro	0.70	0.84	0.70	0.92	0.95
15	Kadana Hydro	1.19	2.95	1.19	1.98	1.99



Commission's Analysis

The Commission has taken note of the submission made by the petitioner with regard to the actual auxiliary consumption. The Commission observes that with regard to PPA based stations auxiliary consumption shall be governed based on the respective PPAs. For the purpose of the annual performance review the Commission has considered the submission of the petitioner with regard to the PPA based stations. For other stations the Commission has considered the approved auxiliary consumption as per the MYT Order. The Commission further noted that for stations where there has been higher auxiliary consumption, the petitioner has indicated that the increase has been largely on account of the old age of the stations. However, the Commission is of the opinion that the submitted reasons are not tenable. The Commission thereafter directed the petitioner during the course of technical validation to provide detailed clarification with regard to the increase in auxiliary consumption. However, the petitioner failed to provide sufficient explanation for the same.

In the absence of detailed explanation the Commission approves the auxiliary consumption indicated in Table 10 for the purpose of the annual performance review:

Table 10: Approved auxiliary consumption for FY 2009-10 (in %)

Sr. No.	Power Station	MYT Order	As per GSECL Projection	Considered for APR
1	Ukai (1-5)	9.00	9.00	9.00
2	Gandhinagar (1-4)	11.12	10.25	11.12
3	Gandhinagar 5*	9.00	9.00	9.00
4	Wanakbori 1-6 TPS	9.00	9.00	9.00
5	Wanakbori 7 TPS*	9.00	9.00	9.00
6	Sikka TPS	10.70	10.62	10.70
7	KLTPS 1-3	12.25	13.80	12.25
8	KLTPS 4*	12.25	15.00	12.25
9	Dhuvaran (Oil)	11.50	13.31	11.50
10	Dhuvaran (Gas 1)*	3.00	5.39	3.00
11	Dhuvaran (Gas 2)*	3.00	4.17	3.00
12	Utran (Gas)*	4.00	4.22	4.00
13	Utran Extension*	4.00	4.00	4.00
14	Ukai Hydro	0.70	0.95	0.70
15	Kadana Hydro	1.19	1.99	1.19

* PPA Based Stations



3.2.4 Station Heat Rate (SHR)

Petitioner's Submission

The petitioner has submitted the details of actual Station Heat Rates (SHR) for FY 2008-09 and first 6 months of FY 2009-10 and projected SHR for FY 2009-10 recorded for all the Stations. The information submitted by the petitioner is indicated in Table 11.

Table 11: Submitted SHR for FY 2009-10 for GSECL Stations

(in kcal/kWh)

Sr. No.	Power Station	FY 2008-09		FY 2009-10		
		MYT Approved	GSECL (Actual)	MYT Approved	GSECL	
					Apr - Sept (Actual)	R E
1	Ukai (1-5)	2775	2771	2775	2754	2775
2	Gandhinagar (1-4)	2855	2739	2855	2873	2855
3	Gandhinagar 5	2460	2499	2460	2572	2460
4	Wanakbori 1-6 TPS	2650	2667	2650	2738	2680
5	Wanakbori 7 TPS	2460	2545	2460	2588	2460
6	Sikka TPS	3100	3184	3100	3153	3150
7	KLTPS 1-3	3300	3422	3300	3652	3650
8	KLTPS 4	3000	0	3000	0	3000
9	Dhuvaran (Oil)	3200	2979	3200	3226	3200
10	Dhuvaran (Gas 1)	1950	2049	1950	1926	1950
11	Dhuvaran (Gas 2)	1950	1945	1950	1921	1950
12	Utran (Gas)	2150	2146	2150	2237	2150
13	Utran Extension	0	0	1850	0	1850

The petitioner has further submitted that GSECL has attempted to maintain the performance of the stations within the approved limit and has submitted that higher SHR wherever observed has been on account of the old age of the plants.

Commission's Analysis

The Commission observes that for PPA based stations, the SHR shall be considered as per the respective PPAs of those stations. In this regard the petitioner has submitted that it has considered the operating parameter for PPA based stations accordingly.

The Commission has thereafter analyzed the actual SHR for non-PPA based stations. In this regard the Commission has observed that actual SHR has been higher for the following non PPA based stations:

- Wanakobri 1-6 TPS
- Sikka TPS



- KLTPS 1-3

The Commission has analyzed the reasons submitted by the petitioner for higher SHR for the above stations and is of the view that the submitted reasons are not tenable. The Commission, thereafter, during the course of the technical validation asked the petitioner to provide appropriate reasons for higher SHR with regard to the above stations. In the absence of any further clarification from the petitioner, the Commission considers the SHR as approved in the MYT Order for all non-PPA based stations.

Accordingly, for the purpose of annual performance review the Commission approves the SHR for non PPA based stations as approved under the MYT Order (the Order of December 14, 2009 had also adopted SHR as per the MYT Order) and for PPA based stations the Commission approves the SHR as per the respective PPAs. The approved SHR for the purpose of annual performance review of FY 2009-10 is indicated in Table 12.

Table 12: Approved SHR for FY 2009-10

(in kcal/kWh)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Considered for APR
1	Ukai (1-5)	2775	2775	2775
2	Gandhinagar (1-4)	2855	2855	2855
3	Gandhinagar 5*	2460	2460	2460
4	Wanakbori 1-6 TPS	2650	2680	2650
5	Wanakbori 7 TPS*	2460	2460	2460
6	Sikka TPS	3100	3150	3100
7	KLTPS 1-3	3300	3650	3300
8	KLTPS 4*	3000	3000	3000
9	Dhuvaran (Oil)	3200	3200	3200
10	Dhuvaran (Gas 1)*	1950	1950	1950
11	Dhuvaran (Gas 2)*	1950	1950	1950
12	Utran (Gas)*	2150	2150	2150
13	Utran Extension*	1850	1850	1850

* PPA based stations

3.2.5 Secondary Fuel Oil Consumption

Petitioner's Submission

The petitioner has submitted the information on the actual secondary fuel oil consumption recorded for each of the generating stations for FY 2008-09 and first 6 months of FY 2009-10 and the projected information for FY 2009-10. The information submitted by the petitioner is provided in Table 13.



Table 13: Submitted Secondary fuel oil consumption for FY 2009-10

Sr. No.	Power Station	FY 2008-09		FY 2009-10		
		MYT Approved (ml/KWh)	GSECL (Actual)	MYT Approved (ml/KWh)	GSECL	
					Apr - Sept (Actual) (ml/KWh)	Full Year FY 2009-10 (ml/KWh)
1	Ukai (1-5)	2.00	5.92	2.00	3.64	4.50
2	Gandhinagar (1-4)	3.50	1.49	3.50	1.30	2.00
3	Gandhinagar 5	3.50	0.28	3.50	0.17	3.50
4	Wanakbori 1-6 TPS	1.00	0.50	1.00	1.08	1.04
5	Wanakbori 7 TPS	3.50	0.41	3.50	0.42	3.50
6	Sikka TPS	2.77	5.36	2.77	5.70	4.00
7	KLTPS 1-3	3.00	3.68	3.00	3.81	3.00
8	KLTPS 4	3.00	-	3.00	-	3.50

The petitioner has submitted that the higher specific oil consumption is largely on account of the smaller size of the generating units of GSECL. The petitioner has indicated that certain quantity of specific oil consumption is always fixed irrespective of the size of the generating unit. In the case of GSECL most of the generating units are smaller and hence the specific oil consumption is relatively higher compared to large generating units.

Commission's Analysis

The Commission is of the view that the parameter related to specific oil consumption with regard to PPA based stations should be considered as per the respective PPAs. In this regard the petitioner has indicated that the submission for specific oil consumption for PPA based stations has been made as per the applicable PPAs.

The Commission has thereafter analyzed the actual specific oil consumption for non PPA based stations. In this regard the Commission has observed that actual specific oil consumption has been higher for the following non PPA based stations:

- Ukai (1-5)
- Sikka TPS
- KLTPS 1-3

The Commission has thereafter reviewed the reasons for deviations submitted by the petitioner. The Commission is of the view that higher specific oil consumption brings inefficiency which leads to higher generation cost and ultimately burdens the consumers. The Commission considers that the petitioner should strive to achieve the specified targets for secondary fuel oil consumption. Therefore, for all non PPA stations, for the purpose of annual performance review, the Commission approves the specific oil consumption approved in the MYT Order. For PPA based stations the



Commission approves the specific oil consumption as submitted by the petitioner. The specific oil consumption parameter now approved by the Commission is provided in Table 14.

Table 14: Approved secondary fuel oil consumption for FY 2009-10

(ml/kWh)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Considered for APR
1	Ukai (1-5)	2.00	4.50	2.00
2	Gandhinagar (1-4)	3.50	2.00	3.50
3	Gandhinagar 5*	3.50	3.50	3.50
4	Wanakbori 1-6 TPS	1.00	1.04	1.00
5	Wanakbori 7 TPS*	3.50	3.50	3.50
6	Sikka TPS	2.77	4.00	2.77
7	KLTPS 1-3	3.00	3.00	3.00
8	KLTPS 4*	3.00	3.50	3.00

* PPA based stations

3.2.6 Transit Losses

Petitioner's Submission

The petitioner has submitted the details of the projected transit loss for FY 2009-10 which is summarized in Table 15.

Table 15: Transit Loss for FY 2009-10 submitted by GSECL (in %)

Sr. No.	Power Station	MYT Approved	GSECL Revised
1	Ukai (1-5)	1.20	0.80
2	Gandhinagar (1-4)	1.40	0.80
3	Gandhinagar 5	1.40	0.80
4	Wanakbori 1-6 TPS	1.50	0.80
5	Wanakbori 7 TPS	1.50	0.80
6	Sikka TPS	2.00	0.80

Commission's Analysis

The Commission observed that the projected transit loss for the FY 2009-10 is lower than the approved level. The Commission therefore directed the Petitioner, during the course of the technical validation to submit the computation of the actual transit loss. The petitioner has subsequently submitted the computation of actual transit loss vide its letter dated 20th February 2010.

The Commission has observed that as per the submission the actual transit loss has been lower than the trajectory approved under the MYT Order. The Commission is of the view that the transit loss shall be considered at the same level as approved under



the MYT Order. The transit loss level now approved for the purpose of annual performance review is provided in Table 16.

Table 16: Approved Transit Loss for FY 2009-10 (in %)

Sr. No.	Power Station	MYT Approved	Considered for APR
1	Ukai (1-5)	1.20	1.20
2	Gandhinagar (1-4)	1.40	1.40
3	Gandhinagar 5	1.40	1.40
4	Wanakbori 1-6 TPS	1.50	1.50
5	Wanakbori 7 TPS	1.50	1.50
6	Sikka TPS	2.00	2.00

3.2.7 Gross generation and Net generation

Petitioner's Submission

The petitioner has submitted the projected gross generation and net generation for FY 2009-10 which is provided in Table 17. The petitioner has computed net generation after considering the actual auxiliary consumption recorded.

Table 17: Gross & Net Generation submitted by GSECL

Sr. No.	Station	Actual FY 2008-09			Projected FY 2009-10		
		Gross (MU)	Aux. (MU)	Net (MU)	Gross (MU)	Aux. (MU)	Net (MU)
1	Ukai	4835	429	4406	4914	442	4472
2	Gandhinagar (1-4)	4235	423	3811	4336	444	3892
3	Gandhinagar 5	1731	155	1577	1729	156	1574
4	Wanakbori 1-6 TPS	9417	810	8607	9382	844	8538
5	Wanakbori 7 TPS	1696	146	1550	1729	156	1574
6	Sikka TPS	1410	157	1253	1577	167	1409
7	KLTPS 1-3	1714	221	1493	1524	210	1314
8	KLTPS 4	0	0	0	131	20	111
9	Dhuvaran oil	1188	133	1055	867	115	752
10	Dhuvaran Gas 1	527	32	495	747	40	707
11	Dhuvaran Gas 2	668	30	639	837	35	802
12	Utran gas	870	40	830	1005	42	963
13	Utran Extension	0	0	0	1044	42	1002
14	Ukai Hydro	467	4	463	297	3	294
15	Kadana Hydro	83	2	81	101	2	99
16	Total	28841	2581	26260	30222	2719	27502

Commission's Analysis

The Commission has taken note of the gross and net generation projected by the petitioner for the FY 2009-10. The Commission has thereafter analyzed the generation projected for FY 2009-10 in the MYT Order with the submission of the petitioner which is summarized in Table 18.



Table 18: Gross & Net Generation for FY 2009-10 as per MYT Order

Sr. No.	Station	MYT Approved FY 2009-10			Projected FY 2009-10		
		Gross (MU)	Aux. (MU)	Net (MU)	Gross (MU)	Aux. (MU)	Net (MU)
1	Ukai	5510	496	5014	4914	442	4472
2	Gandhinagar (1-4)	4047	450	3597	4336	444	3892
3	Gandhinagar 5	1692	152	1540	1729	156	1574
4	Wanakbori 1-6 TPS	9382	844	8538	9382	844	8538
5	Wanakbori 7 TPS	1692	152	1540	1729	156	1574
6	Sikka TPS	1577	169	1408	1577	167	1409
7	KLTPS 1-3	1356	166	1190	1524	210	1314
8	KLTPS 4	526	64	461	131	20	111
9	Dhuvaran oil	1484	171	1313	867	115	752
10	Dhuvaran Gas 1	840	25	815	747	40	707
11	Dhuvaran Gas 2	887	27	860	837	35	802
12	Utran gas	1088	44	1044	1005	42	963
13	Utran Extension	1905	76	1829	1044	42	1002
14	Ukai Hydro	641	4	637	297	3	294
15	Kadana Hydro	191	2	189	101	2	99
16	Total	32820	2843	29975	30222	2719	27502

The Commission observes that the aggregate gross and aggregate net generation for most of the stations are projected to be lower than the generation approved under the MYT Order. The Commission has further analyzed that variance in PLF and auxiliary consumption has led to lower aggregate generation. The Commission has taken note of the gross generation and net generation as submitted by the petitioner.

3.2.8 Fuel related parameters

Petitioner's Submission

The Petitioner has submitted the projected information with regard to the weighted average Gross Calorific value of primary fuels and secondary fuel along with the prices of primary & secondary fuel recorded for the FY 2009-10 which is summarized in Table 19 and Table 20.



Table 19: Projected fuel mix & calorific value for FY 2009-10 submitted by GSECL

Sr. No.	Station	Mix of Coal (%)			Wt. Av. GCV of Lignite Coal (Rs/MT)	Wt. Av. GCV of Coal (Kcal/Kg)	Wt. Av. GCV of Gas (Kcal/Scm)	Wt. Av. GCV of Oil (Kcal/L)
		Indigenous	Washed	Imported				
1	Ukai	26.35	73.65	0.00		4126		10400
2	Gandhinagar (1-4)	12.97	66.95	20.08		4454		10400
3	Gandhinagar 5	12.97	66.95	20.08		4454		10400
4	Wanakbori 1-6 TPS	25.57	67.70	6.73		3850		10400
5	Wanakbori 7 TPS	25.57	67.70	6.73		3850		10400
6	Sikka TPS	46.23	35.85	17.92		4451		10400
7	KLTPS 1-3				2478			10735
8	KLTPS 4				2478			10735
9	Dhuvaran oil							10355
10	Dhuvaran Gas 1						9834	
11	Dhuvaran Gas 2						9834	
12	Utran gas						9796	
13	Utran Extension						9796	



Table 20: Projected fuel weighted average cost for FY 2009-10 submitted by GSECL

Sr. No.	Station	Wt. Av. Cost of Indigenous Coal (Rs./MT)	Wt. Av. Cost of Washed Coal (Rs./MT)	Wt. Av. Cost of Imported Coal (Rs./Mt)	Wt. Av. Cost of Lignite Coal (Rs/MT)	Wt. Av. Cost of Gas (Rs/Scm)	Wt. Av. Cost of Oil (Rs/L)
1	Ukai	2,230	2,193	-			23,345
2	Gandhinagar (1-4)	2,640	2,521	6,000			24,297
3	Gandhinagar 5	2,640	2,521	6,000			24,297
4	Wanakbori 1-6 TPS	2,507	2,468	6,100			25,166
5	Wanakbori 7 TPS	2,507	2,468	6,100			25,166
6	Sikka TPS	2,943	2,744	5,650			29,272
7	KLTPS 1-3				733		31,232
8	KLTPS 4				733		31,232
9	Dhuvaran oil						16,950
10	Dhuvaran Gas 1					12.25	
11	Dhuvaran Gas 2					11.00	
12	Utran gas					11.00	
13	Utran Extension					11.00	



Commission's Analysis

The Commission has taken note of the submissions made by the petitioner with regard to the fuel related parameters. The Commission observes that fuel related parameters like fuel calorific value, cost of fuel and fuel mix have been considered uncontrollable by the petitioner. In this regard the Commission is of the view that fuel related parameters should be considered uncontrollable. In regard to the actual calorific value and the price of fuel, the Commission directed the petitioner to submit fuel bills on a sample basis. The petitioner has accordingly submitted copies of the fuel bills. The Commission verified the calorific value of the fuel and the price from the fuel bills submitted by the petitioner.

The Commission further notes that any variance due to fuel related parameters is permissible as a pass through by way of FPPPA. Therefore, the increase in variable cost of generation over and above the energy charges approved by the Commission is recovered by the petitioner through FPPPA.

3.2.9 Variable cost

Petitioner's Submission

The petitioner has submitted details of plant wise expense based on the actual operating and fuel related parameters. Fuel expenses submitted by the petitioner for each of the stations are provided in Table 21.

Table 21: Fuel expense for FY 2009-10 submitted by GSECL

Rs. Cr.

S.No	Name of the Station	FY 09-10 Projection
1	Ukai (1-5)	773
2	Gandhinagar (1-4)	918
3	Gandhinagar 5	321
4	Wanakbori 1-6 TPS	1,808
5	Wanakbori 7 TPS	314
6	Sikka TPS	390
7	KLTPS 1-3	177
8	KLTPS 4	13
9	Dhuvaran (Oil)	454
10	Dhuvaran (Gas 1)	181
11	Dhuvaran (Gas 2)	183
12	Utran (Gas)	243
13	Utran Extension	217
	Total	5,992

Commission's Analysis

The Commission has taken note of the actual fuel expense submitted by the petitioner. The Commission has observed that the actual fuel expense is higher than



the fuel expense approved in the MYT Order. While the MYT Order had approved Rs. 5217.86 Cr (32,820 MUs Gross) towards fuel expense for FY 2009-10 the projected fuel cost by the petitioner is Rs. 5992 Cr. (30,222 MUs Gross) The Commission is of the view that for the purpose of annual performance review the fuel related parameters like calorific value of fuel, cost of fuel and blending ratio should be considered based on the actual. However, the operating parameters like station heat rate, specific oil consumption and auxiliary consumption should be considered based on the parameters now approved by the Commission after the annual performance review. With regard to PLF, the Commission has considered the projected PLF for each of the stations for the FY 2009-10.

For APR of FY 2009-10 the Commission has tried to examine the fuel expense incurred by the petitioner for the first six months of FY 2009-10. The Commission had accordingly directed the petitioner vide its letter dated 13th January 2010 to provide information on actual fuel cost for the first six months of FY 2009-10. However, the petitioner has failed to provide the information. The Commission has further analyzed the trend in the actual fuel cost for the FY 2007-08 and FY 2008-09. The details of the fuel expense claimed for FY 2007-08 and FY 2008-09 are provided in Table 22.

Table 22: Fuel Expense verified from provisional accounts for FY 2008-09

Sr. No.	Particulars	Fuel Expense (Rs. Crores)
1	FY 2007-08 (29,241 MUs Gross)	4950
2	FY 2008-09 (28,387 MUs Gross)	5839

The Commission has analyzed that the fuel cost in FY 2008-09 represents approximately 17% increase over the FY 2007-08 fuel cost. The Commission has analyzed that the fuel expense now projected by the petitioner is approximately 2.5% higher over the fuel cost of FY 2008-09.

The Commission has observed that the petitioner recovers fuel cost at the base fuel price approved under the MYT Order. Any increase in the fuel cost is recovered by the petitioner through the FPPPA mechanism. The Commission has noted that the petitioner has been recovering the FPPPA charges during the FY 2009-10. Based on this approach the Commission approves the fuel cost at the fuel charges approved under the MYT Order.



The fuel cost approved for FY 2009-10 as indicated in Table 23.

Table 23: Approved fuel cost for FY 2009-10

(in Rs. Cr.)

S.No	Name of the Station	Gross Energy Generated	Approved Energy Charges	Approved Fuel Expense
1	Ukai (1-5)	4914	1.37	673.27
2	Gandhinagar (1-4)	4336	1.55	672.11
3	Gandhinagar 5	1729	1.34	231.72
4	Wanakbori 1-6 TPS	9382	1.57	1,472.97
5	Wanakbori 7 TPS	1729	1.49	257.65
6	Sikka TPS	1577	1.78	280.67
7	KLTPS 1-3	1524	0.94	143.28
8	KLTPS 4	131	0.86	11.24
9	Dhuvaran (Oil)	867	3.32	287.92
10	Dhuvaran (Gas 1)	747	2.15	160.64
11	Dhuvaran (Gas 2)	837	2.15	180.02
12	Utran (Gas)	1005	2.08	209.08
13	Utran Extension	1044	1.79	186.88
14	Ukai Hydro	297	-	-
15	Kadana Hydro	101	-	-
	Total	30,222		4,767

3.2.10 Fixed Cost components

The fixed charges comprises of the following components:

- Depreciation
- Interest & Finance Charges
- Income Tax
- Return on Equity
- Operations & Maintenance Cost
- Interest on Working Capital

The details of each of the above items have been dealt in the following sections.

3.2.10.1 Depreciation for FY 2009-10

Petitioner's Submission

The petitioner has projected an amount of Rs.470.88 Crores towards depreciation for the FY 2009-10 explaining that the actual amount of depreciation for the first six months of FY 2009-10 is Rs. 209.70 Crores.



The petitioner has further submitted that the variance in the amount of depreciation should be considered as uncontrollable. Based on this principle the petitioner has submitted that compared to the amount approved under the MYT Order it is projected to incur a loss of Rs 99.65 Crores for FY 2009-10.

The details of the submission made by the petitioner with regard to the amount of depreciation for each of the stations along with the computation of gain / loss are outlined in Table 24.

Table 24: Station wise depreciation for FY 2009-10 submitted by petitioner

(Rs. Crores)

Sr. No.	Power Station	Depreciation (GSECL) Apr - Sep 09	Depreciation (GSECL) RE	Depreciation (MYT Approved)	Gain/(Loss) due to Uncontrollable Factor
1	Ukai (1-5)	35.64	71.27	37.49	(33.78)
2	Gandhinagar (1-4)	28.49	53.76	49.91	(3.85)
3	Gandhinagar 5*	16.80	32.60	33.02	-
4	Wanakbori 1-6 TPS	27.64	69.89	43.82	(26.07)
5	Wanakbori 7 TPS*	16.05	31.73	32.70	-
6	Sikka TPS	13.49	28.99	18.70	(10.29)
7	KLTPS 1-3	28.02	56.59	36.63	(19.96)
8	KLTPS 4*	-	6.66	15.48	-
9	Dhuvaran (Oil)	10.36	8.62	9.16	0.54
10	Dhuvaran (Gas 1)*	5.60	16.74	15.01	-
11	Dhuvaran (Gas 2)*	6.72	22.22	20.76	-
12	Utran (Gas)*	10.32	18.50	13.96	-
13	Utran Extension*	-	31.67	41.52	-
14	Ukai Hydro	3.04	6.40	4.42	(1.98)
15	Kadana Hydro	7.55	15.26	10.99	(4.27)
16	Total	209.70	470.88	383.57	(99.65)

* PPA based stations

Commission's Analysis

The Commission has examined the submission made by the petitioner. The Commission has observed that the total amount of depreciation projected for the last six months of FY 2009-10 is 125% of the amount of actual depreciation incurred for the first six months of FY 2009-10.

The Commission has undertaken a comparison of the amount of depreciation approved in its order dated December 14, 2009 for the year and the amount of depreciation now submitted by the petitioner which is summarized below:



Table 25: Approved depreciation for FY 2009-10 as per December 14, 2009 Order

Sr. No.	Power Station	Depreciation (GSECL) RE	Depreciation (approved as per Dec 14, 09 Order)
1	Ukai (1-5)	71.27	44.99
2	Gandhinagar (1-4)	53.76	60.16
3	Gandhinagar 5	32.60	32.58
4	Wanakbori 1-6 TPS	69.89	68.43
5	Wanakbori 7 TPS	31.73	31.73
6	Sikka TPS	28.99	28.95
7	KLTPS 1-3	56.59	56.78
8	KLTPS 4	6.66	9.61
9	Dhuvaran (Oil)	8.62	12.03
10	Dhuvaran (Gas 1)	16.74	13.79
11	Dhuvaran (Gas 2)	22.22	22.13
12	Utran (Gas)	18.50	15.38
13	Utran Extension	31.67	23.46
14	Ukai Hydro	6.40	6.42
15	Kadana Hydro	15.26	15.26
16	Total	470.88	441.70

The Commission has examined that the overall depreciation submitted by the petitioner for FY 2009 -10 now is 6.61% higher than the aggregate amount of depreciation approved in its order of December 14, 2009. The Commission has observed that this variance is attributed to the variance in the amount of capitalization projected for the FY 2009-10. Further, the Petitioner has considered the revised rates of depreciation as CERC regulations which is higher than the earlier depreciation rates.

The Commission has observed that Clause 17 of CERC (Terms and Conditions of Tariff) Regulations, 2009 specifies that depreciation shall be calculated annually based on Straight Line Method at rates specified in Appendix-III of the said regulations. Provided that, the remaining depreciable value as on 31st March of the year closing after a period of 12 years from date of commercial operation shall be spread over the balance useful life of the assets. It further specifies that in case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2009 from the gross depreciable value of the assets.

In light of the above provision of the CERC regulations with regard to depreciation the Commission is of the view that the petitioner should align its future submissions on depreciation with Clause 17 of CERC Regulations mentioned above.

With regard to the computation of gains / losses the Commission is of the view that the gains/losses for a component shall be computed when the audited accounts are available. Further with regard to the applicability for computation of gains and losses for the amount of depreciation the Commission has observed that the regulation



9.6.2(e) considers depreciation as a controllable expense. In this regard the Commission is of the view that amount of depreciation is dependent on the amount of capitalization. Therefore, any variance in the amount of capitalization, rate of depreciation or the disposal of existing assets would have impact on the amount of depreciation. In light of this the Commission is of the view that the parameters which impact depreciation should be treated as uncontrollable. Accordingly, the Commission accepts the submission of the petitioner with regard to the principle for computation of gains/losses on the amount of depreciation.

Based on the above principle the Commission approves the depreciation for each of the stations for FY 2009-10. As indicated above gains/losses shall be computed once the audited accounts of the petitioner are available. The amount of depreciation now approved for FY 2009-10 is indicated in Table 26.

Table 26: Approved station wise depreciation for FY 2009-10

(Rs. crores)

Sr. No.	Power Station	MYT Depreciation	Dec 14, 09 Order	As per GSECL Projection	Now Approved for FY 2009-10
1	Ukai (1-5)	37.49	44.99	71.27	71.27
2	Gandhinagar (1-4)	49.91	60.16	53.76	53.76
3	Gandhinagar 5	33.02	32.58	32.60	32.60
4	Wanakbori 1-6 TPS	43.82	68.43	69.89	69.89
5	Wanakbori 7 TPS	32.70	31.73	31.73	31.73
6	Sikka TPS	18.70	28.95	28.99	28.99
7	KLTPS 1-3	36.63	56.78	56.59	56.59
8	KLTPS 4	15.48	9.61	6.66	6.66
9	Dhuvaran (Oil)	9.16	12.03	8.62	8.62
10	Dhuvaran (Gas 1)	15.01	13.79	16.74	16.74
11	Dhuvaran (Gas 2)	20.76	22.13	22.22	22.22
12	Utran (Gas)	13.96	15.38	18.50	18.50
13	Utran Extension	41.52	23.46	31.67	31.67
14	Ukai Hydro	4.42	6.42	6.40	6.40
15	Kadana Hydro	10.99	15.26	15.26	15.26
16	Total	383.57	441.70	470.88	470.88

3.2.10.2 Advance against depreciation

Petitioner's Submission

The Petitioner has submitted that it has adopted new depreciation rates as provided by CERC. In view of same it has not considered advance against depreciation. The amount of AAD as projected by the Petitioner for FY 2009-10 is summarized in

Table 27.



Table 27: Advance against depreciation for FY 2009-10 submitted by the petitioner*(Rs. crores)*

Sr. No.	Power Station	MYT Approved	GSECL Revised	Gain/(Loss) due to Uncontrollable Factor
1	Utran Extension	6.92	0.00	0.00
2	Total	6.92	0.00	0.00

Commission's Analysis

The Commission has observed that the petitioner has not considered any AAD for FY 2009-10 since it has adopted the depreciation rates as per the revised CERC norms. The Commission accepts the submission of the petitioner. The Commission has also observed that the Petitioner has not considered any gains/losses on the amount of AAD since Utran Extension is a PPA based plant.

Advance against depreciation now approved for FY 2009-10 by the Commission appears in Table 28.

Table 28: Approved advance against depreciation for FY 2009-10*(Rs. crores)*

Sr. No.	Power Station	MYT AAD	Dec 14, 09 Order	Now Approved for FY 2009-10
1	Utran Extension	6.92	0.00	0.00
2	Total	6.92	0.00	0.00

3.2.10.3 Interest & Finance charges**Petitioner's Submission**

The petitioner has submitted that for the FY 2009 -10 it is projected to incur Rs. 319.46 crores towards interest and finance charges against an approved amount of Rs. 334.69 crores under the MYT Order. The amount of interest and finance charges revised approved under the order of December 14, 2009 was Rs. 387.98.

The petitioner has thereafter drawn reference to the MYT regulations where the Interest and finance charges have been classified as "uncontrollable" to the extent of changes in the applicable interest rates. Taking the above into consideration, the petitioner has segregated the parameters impacting gains/losses on account in interest and finance charges into two parts i.e. one on account of "controllable" factors and the second on account of "uncontrollable" factors i.e. on account of variation in the actual rate of interest and the rate approved by the Commission in its MYT orders.

The petitioner has submitted that based on the above principle it has incurred a net gain of Rs. 24.85 crore during FY 2009-10 which comprises of total gain of Rs. 0.46 crores on account of "controllable" factors and gain of Rs 24.39 crores on account of "uncontrollable" factors.



The detailed submission of the petitioner comparing the value of Interest and Finance Charges actually incurred during FY 2009-10 with the value approved by the Commission in the MYT Order is provided in Table 29.

Table 29: Interest & Finance charges for 2009-10 submitted by petitioner

(Rs. crores)

Sr. No.	Power Station	Interest & Finance Charges (GSECL) RE	Interest & Finance Charges (MYT Approved)	Gain/(Loss) due to Controllable Factor	Gain/(Loss) due to Uncontrollable Factor
1	Ukai (1-5)	49.12	57.68	1.58	6.98
2	Gandhinagar (1-4)	51.13	63.90	8.54	4.23
3	Gandhinagar 5*	-	-	-	-
4	Wanakbori 1-6 TPS	54.98	59.41	(1.08)	5.51
5	Wanakbori 7 TPS*	0.51	0.38	-	-
6	Sikka TPS	21.13	20.57	(1.90)	1.33
7	KLTPS 1-3	44.44	44.33	(4.25)	4.14
8	KLTPS 4*	9.05	23.47	-	-
9	Dhuvaran (Oil)	8.15	10.31	0.40	1.77
10	Dhuvaran (Gas 1)*	8.48	8.86	-	-
11	Dhuvaran (Gas 2)*	14.54	15.59	-	-
12	Utran (Gas)*	7.25	9.05	-	-
13	Utran Extension*	32.66	58.80	-	-
14	Ukai Hydro	5.03	4.48	(0.82)	0.26
15	Kadana Hydro	12.99	11.15	(2.01)	0.17
16	Total	319.46	387.98	0.46	24.39

* PPA based Station

Commission's Analysis

The Commission has examined the submission made by the petitioner. The Commission had approved a total amount of Rs. 376.15 Crores towards interest & finance charges in its order of December 14, 2009. The Commission has observed that the interest & finance charges now projected by the petitioner for FY 2009-10 is lower than the amount approved as per the order dated December 14, 2009.

The Commission thereafter during the course of the technical validation directed the petitioner to submit information with regard to the actual interest & finance charges for the first six months of FY 2009-10. The petitioner accordingly submitted the details of the interest and finance charges for the first six months of FY 2009-10 vide its letter dated January 21, 2010. The details of interest expense for first six months submitted by petitioner are summarized in Table 30:



Table 30: Actual Interest & Finance charges for H1 2009-10 submitted by petitioner

(In Rs, Cr.)

Sr. No.	Power Station	Interest & Finance Charges (GSECL) H1
1	Ukai (1-5)	27.45
2	Gandhinagar (1-4)	22.42
3	Gandhinagar 5	0.00
4	Wanakbori 1-6 TPS	29.09
5	Wanakbori 7 TPS	0.22
6	Sikka TPS	11.13
7	KLTPS 1-3	22.74
8	KLTPS 4	12.49
9	Dhuvaran (Oil)	3.20
10	Dhuvaran (Gas 1)	4.34
11	Dhuvaran (Gas 2)	7.89
12	Utran (Gas)	4.86
13	Utran Extension	0.00
14	Ukai Hydro	2.35
15	Kadana Hydro	6.30
16	Corporate Office	16.41
17	Total	170.89

The Commission has examined that the interest & finance charges projected for H2 of FY 2009-10 are approximately 87% of the expense incurred for H1 of FY 2009-10.

With regard to the computation of gains/losses for FY 2009-10 the Commission is of the view that gains/losses shall be computed based on the submission of audited accounts for FY 2009-10.

Based on above observation the Commission approves amount of interest and finance charges for FY 2009-10 which is summarized in Table 31.

Table 31: Approved interest & finance charges for FY 2009-10

(Rs. crores)

Sr. No.	Power Station	As per Order dated December 14, 09	As per GESECL Projection	Now Approved
1	Ukai (1-5)	58.29	49.12	49.12
2	Gandhinagar (1-4)	60.72	51.13	51.13
3	Gandhinagar 5	-	-	-
4	Wanakbori 1-6 TPS	52.63	54.98	54.98
5	Wanakbori 7 TPS	0.67	0.51	0.51
6	Sikka TPS	20.13	21.13	21.13
7	KLTPS 1-3	37.69	44.44	44.44



8	KLTPS 4	27.38	9.05	9.05
9	Dhuvaran (Oil)	8.72	8.15	8.15
10	Dhuvaran (Gas 1)	12.73	8.48	8.48
11	Dhuvaran (Gas 2)	21.76	14.54	14.54
12	Utran (Gas)	9.56	7.25	7.25
13	Utran Extension	49.36	32.66	32.66
14	Ukai Hydro	4.87	5.03	5.03
15	Kadana Hydro	11.65	12.99	12.99
16	Total	376.15	319.46	319.46

3.2.10.4 Return on Equity

Petitioner's Submission

The petitioner has projected a revised amount of return on equity for FY 2009-10. In this regard the petitioner has submitted that there has been a gain of Rs 43.98 crores. The petitioner has considered that the above gains have arisen on account of controllable parameters. The details of the submissions made by the petitioner are summarized in Table 32.

Table 32 : Return on Equity for FY 2009-10 projected by petitioner

(Rs. crores)

Sr. No.	Power Station	Return on Equity (GSECL) RE	Return on Equity (MYT Approved)	Gain/(Loss) due to Controllable Factor
1	Ukai (1-5)	19.53	28.16	8.63
2	Gandhinagar (1-4)	31.52	47.01	15.49
3	Gandhinagar 5*	26.84	26.84	-
4	Wanakbori 1-6 TPS	53.03	64.02	10.99
5	Wanakbori 7 TPS*	26.03	26.23	-
6	Sikka TPS	20.42	21.02	0.60
7	KLTPS 1-3	42.88	46.66	3.78
8	KLTPS 4*	4.66	18.07	-
9	Dhuvaran (Oil)	7.08	7.15	0.07
10	Dhuvaran (Gas 1)*	12.87	12.52	-
11	Dhuvaran (Gas 2)*	15.92	15.46	-
12	Utran (Gas)*	10.51	10.30	-
13	Utran Extension*	20.68	36.33	-
14	Ukai Hydro	7.82	7.72	(0.10)
15	Kadana Hydro	28.05	32.55	4.50
16	Total	327.83	400.04	43.98

* PPA based Stations

Commission's Analysis



The Commission has examined the submission made by the petitioner. The Commission has observed that the petitioner has revised the return on equity for FY 2009-10 downwards. Return on equity for FY 2009-10 approved by the Commission in its order dated December 14, 2009 is Rs. 351.28 crores.

The Commission has examined that the return on equity submitted by the petitioner is lower than the amount approved under the MYT Order and also the amount revised by the Commission vide its order dated December 14, 2009. The Commission has observed that the lower amount of return on equity projected by the petitioner is on account of the lower amount of capitalization projected by the petitioner.

The Commission further observes that the Regulation 9.6.2(e) of the MYT regulations considers the parameters impacting the variance in the return on equity as controllable. However, the Commission is of the view that the return on equity depends on the amount of capitalization as well as the debt to equity ratio considered during the financial year and these parameters are uncontrollable in nature. Accordingly, the gains arising on account of the variance in the amount of return on equity submitted by the petitioner and the amount approved under the MYT Order should be treated as uncontrollable. However, the Commission is of the opinion that gains/losses for FY 2009-10 shall be computed based on the audited accounts. Accordingly the Commission has not computed the gains/losses on the projected return on equity for FY 2009-10.

The return on equity approved for FY 2009-10 by the Commission is provided in Table 33.

Table 33: Approved return on equity for FY2009-10

(Rs. crores)

Sr. No.	Power Station	December 14, 2009	As per GESECL Projection	Now Approved
1	Ukai (1-5)	21.31	19.53	19.53
2	Gandhinagar (1-4)	34.80	31.52	31.52
3	Gandhinagar 5	26.84	26.84	26.84
4	Wanakbori 1-6 TPS	51.93	53.03	53.03
5	Wanakbori 7 TPS	26.03	26.03	26.03
6	Sikka TPS	20.33	20.42	20.42
7	KLTPS 1-3	42.80	42.88	42.88
8	KLTPS 4	12.22	4.66	4.66
9	Dhuvaran (Oil)	6.91	7.08	7.08
10	Dhuvaran (Gas 1)	12.87	12.87	12.87
11	Dhuvaran (Gas 2)	15.92	15.92	15.92
12	Utran (Gas)	10.49	10.51	10.51
13	Utran Extension	32.97	20.68	20.68
14	Ukai Hydro	7.82	7.82	7.82
15	Kadana Hydro	28.05	28.05	28.05
16	Total	351.28	327.83	327.83



3.2.10.5 Operations & Maintenance charges**Petitioner's Submission**

The petitioner has submitted revised operations & maintenance expense for the FY 2009-10. The revised O&M expense is higher than the amount approved under the MYT Order. The petitioner has further submitted a net loss of Rs.88.38 crores. The submission of the petitioner is summarized in Table 34.

Table 34: O&M expenses for FY 2009-10 submitted by petitioner*(Rs. crores)*

Sr. No.	Power Station	O&M Expenses (GSECL RE)	O&M Expenses (MYT Approved)	Gain/(Loss) due to Controllable Factor	Gain/(Loss) due to Uncontrollable Factor
1	Ukai (1-5)	125.68	110.10	0.60	(16.17)
2	Gandhinagar (1-4)	112.78	85.49	(14.72)	(12.57)
3	Gandhinagar 5*	33.69	20.33	-	-
4	Wanakbori 1-6 TPS	180.03	163.21	(1.60)	(15.22)
5	Wanakbori 7 TPS*	27.41	20.11	-	-
6	Sikka TPS	39.90	31.09	(2.84)	(5.97)
7	KLTPS 1-3	44.50	27.85	(8.85)	(7.81)
8	KLTPS 4*	9.66	9.71	-	-
9	Dhuvaran (Oil)	29.79	28.50	(1.29)	-
10	Dhuvaran (Gas 1)*	9.99	7.61	-	-
11	Dhuvaran (Gas 2)*	8.09	10.93	-	-
12	Utran (Gas)*	15.26	9.95	-	-
13	Utran Extension*	36.42	21.04	-	-
14	Ukai Hydro	10.06	7.74	1.10	(3.42)
15	Kadana Hydro	11.73	12.11	0.38	-
16	Total	694.98	565.77	(27.23)	(61.15)

* PPA based station

Commission's Analysis

The Commission has examined the submission made by the petitioner. The Commission has observed that the submission made by the petitioner for O&M Expense is higher than the amount approved under the MYT Order. In its Order dated December 14, 2009 the Commission has considered the same amount as approved under the MYT Order. The Commission observes that the petitioner has projected higher O&M expense considering revision in employee expense on account of impact of implementation of sixth pay Commission.

The Commission is of the view that the O&M expense should be considered at the same level as approved under the MYT Order. Impact of sixth pay commission shall be considered based on the actual amount considered as per the audited accounts.

Based on the above approach, the Commission approves the O&M expenses for FY 2009-10 as indicated in Table 35.



Table 35: Approved O&M charges for FY 2009-10

(Rs. crores)

Sr. No.	Power Station	December 14, 2009 Order	As per GSECL Projection	Now Approved
1	Ukai (1-5)	110.10	125.68	110.10
2	Gandhinagar (1-4)	85.49	112.78	85.49
3	Gandhinagar 5	20.33	33.69	20.33
4	Wanakbori 1-6 TPS	163.21	180.03	163.21
5	Wanakbori 7 TPS	20.11	27.41	20.11
6	Sikka TPS	31.09	39.90	31.09
7	KLTPS 1-3	27.85	44.50	27.85
8	KLTPS 4*	9.71	9.66	3.61
9	Dhuvaran (Oil)	28.50	29.79	28.50
10	Dhuvaran (Gas 1)	7.61	9.99	7.61
11	Dhuvaran (Gas 2)	10.93	8.09	10.93
12	Utran (Gas)	9.95	15.26	9.95
13	Utran Extension*	21.04	36.42	14.46
14	Ukai Hydro	7.74	10.06	7.74
15	Kadana Hydro	12.11	11.73	12.11
16	Total	565.77	694.98	553.09

* Approved figure adjusted based on actual date of Commissioning

3.2.10.6 Interest on working capital

Petitioner's Submission

The petitioner has projected an amount of Rs. 253.38 crores towards interest on working capital for FY 2009-10 compared to Rs. 229.55 crores approved under the MYT Order.

The petitioner has further drawn reference to the MYT Regulations where the parameters impacting interest on working capital has been categorized as controllable parameters. In this regard the petitioner has submitted that the interest on working capital is derived based on other factors and hence is not directly controllable. Further, the variation in the rate of interest on working capital loans is also not controllable.

Based on the above explanation the petitioner has submitted that it has made an under recovery of Rs 13.68 crores which is summarized in

Table 36. The petitioner has computed the amount of under recovery only for non PPA based stations. Further, the petitioner has also computed the gains/losses considering the interest on working capital as an uncontrollable parameter based on the principle as mentioned in the previous paragraph.



Table 36: Interest on working capital for FY 2009-10 submitted by petitioner

(Rs. crores)

Sr. No.	Power Station	MYT Approved	GSECL	Gains/losses Uncontrollable
1	Ukai (1-5)	34.67	33.62	1.05
2	Gandhinagar (1-4)	31.59	38.44	(6.85)
3	Gandhinagar 5*	8.82	13.82	-
4	Wanakbori 1-6 TPS	67.84	72.25	(4.41)
5	Wanakbori 7 TPS*	8.24	13.37	-
6	Sikka TPS	13.93	16.53	(2.60)
7	KLTPS 1-3	7.96	10.39	(2.43)
8	KLTPS 4*	2.83	4.11	-
9	Dhuvaran (Oil)	19.41	17.18	2.23
10	Dhuvaran (Gas 1)*	4.95	6.05	-
11	Dhuvaran (Gas 2)*	8.17	7.65	-
12	Utran (Gas)*	6.29	7.80	-
13	Utran Extension*	13.10	9.75	-
14	Ukai Hydro	0.48	0.75	(0.27)
15	Kadana Hydro	1.27	1.67	(0.40)
	Total	229.55	253.38	(13.68)

* PPA based station

Commission's Analysis

The Commission has examined the submission of the petitioner and has found that the computation of interest on working capital has been done on the basis of normative working capital and the interest rate has been considered at the approved level of 10.25%.

The Commission has further observed that the petitioner has considered a lower amount of interest on working capital compared to the amount approved in the order of December 14, 2009. In the order of December 14, 2009 the Commission had approved an amount of Rs. 262.64 crores whereas the petitioner has now submitted an amount of Rs. 253.38 crores.

The Commission is of the view that the amount of interest on working capital should be considered at the same level as approved under the order of December 14, 2009. The revision in the amount of interest in working capital and the computation of gains/losses shall be done based on the audited accounts.

However, the Commission has adjusted the amount of interest on working capital approved towards the KLTPS 4 and Utran Extension based on the actual date of Commissioning of the respective generating plants.

With regard to the petitioner's submission that interest on working capital should be considered as uncontrollable, the Commission is of the view that the interest on working capital should be considered as controllable. However, the gains/losses shall



be computed based on the submission of the audited accounts as indicated in the previous paragraph. Accordingly, the Commission approves the amount of working capital as indicated in the Table 37.

Table 37: Approved interest on working capital for FY 2009-10

(Rs. crores)

Sr. No.	Power Station	As per GSECL Projection	Now Approved
1	Ukai (1-5)	33.62	34.59
2	Gandhinagar (1-4)	38.44	38.39
3	Gandhinagar 5	13.82	14.17
4	Wanakbori 1-6 TPS	72.25	64.42
5	Wanakbori 7 TPS	13.37	12.50
6	Sikka TPS	16.53	16.14
7	KLTPS 1-3	10.39	9.63
8	KLTPS 4*	4.11	1.25
9	Dhuvaran (Oil)	17.18	23.34
10	Dhuvaran (Gas 1)	6.05	7.65
11	Dhuvaran (Gas 2)	7.65	8.38
12	Utran (Gas)	7.80	11.52
13	Utran Extension*	9.75	10.69
14	Ukai Hydro	0.75	1.23
15	Kadana Hydro	1.67	1.77
	Total	253.38	255.67

* Approved Figure adjusted based on actual date of Commissioning of the plant





Annual Tariff Determination for FY 2010-11

3.3 Approach

This section deals with the annual tariff determination for FY 2010-11. Regulation 9.7 of the MYT Regulations provides that the Commission shall, subsequent to the annual performance review, revise the forecast for the remaining period of the control period. Accordingly, after undertaking the annual performance review for FY 2009-10, the Commission has considered the tariff determination for the FY 2010-11.

With regard to the review of the components for tariff determination, the Commission is of the view that controllable items should be considered as per the level approved under the MYT Framework, unless there are justifiable reasons to revise the same. Reasons for revision of the controllable parameters would be analyzed within the framework of Regulation 9.6 of the MYT Regulations.

With regard to the uncontrollable parameters the Commission is of the view that such parameters may be revised based on the analysis and verification of the submissions made by the petitioner and the provisional annual performance review undertaken for the FY 2009-10.

3.4 Operational parameters

The petitioner has estimated the station wise operating parameters for the FY 2010-11. The petitioner has estimated the performance parameters based on the actual operation during the first six months of FY 2009-10. The Commission has taken note of the submissions made by the petitioner in this regard.

The Commission has further taken reference of its MYT Order where it was observed that a study be undertaken to analyse the operating parameters of all the stations of GSECL. The Commission had subsequently initiated a CEA study for evaluating the performance parameters of the generating stations in Gujarat including those which are being operated by GSECL. In the MYT Order the Commission had also indicated, "Pending the study, the station heat rates proposed by GSECL to all the units / stations are accepted. These values will be reviewed during truing up of 2008-09 based on the recommendations of the Consultant (CEA) and the trajectory of these parameters for the control period will be fixed accordingly."

The recommendation of the CEA study was submitted in December 2009 and the same was shared with the petitioner. The petitioner has subsequently approached the Commission with its comments vide its letter dated February 6, 2010. The petitioner has drawn reference to an earlier judgment of the Appellate Tribunal on an earlier study by CEA, whereby the Appellate Tribunal had opined that the full effect of the CEA Operational Norms and content thereon was not given by the Hon'ble Commission while issuing Tariff Order Dtd. 06.05.06. The petitioner has raised specific objection with regard to the SHR of the stations where in it has submitted



that as per the Appellate Tribunal the SHR has to be allowed considering the vintage and present condition of the generating stations in view of the CEA recommendations and treatment given by CERC for similarly placed stations. The petitioner has finally concluded that adoption of the CEA recommendations based on the new study now undertaken shall be contrary to the earlier Appellate Tribunal Judgment.

The Commission has taken note of the submission made by the petitioner. The Commission is of the view that the CEA recommendations now available with the Commission are based on a separate study conducted by the CEA. Since, operational parameters play a significant role in the determination of fuel cost, it is therefore pertinent that the operational parameters should be managed with utmost efficiency and any inefficiency should not be passed on to the Consumers. The Commission is therefore of the view that the operational parameters for the GSECL stations shall now be considered based on the recommendations of the fresh CEA study. The Commission has now analyzed the performance with respect to each of the operating parameters in the subsequent sections.

3.4.1 Availability

Petitioner's submission

The petitioner has submitted the projected plant availability for FY 2010-11. The petitioner has indicated that the projection is based on the plant availability observed historically and also the actual plant availability observed for the first six months of FY 2009-10. The submission of the petitioner is summarized in Table 38.

Table 38: Plant availability factor for FY 2010-11 as estimated by petitioner (in %)

Sr. No.	Power Station	MYT Approved	GSECL
1	Ukai (1-5)	74	74
2	Gandhinagar (1-4)	80	70
3	Gandhinagar 5	90	80
4	Wanakbori 1-6 TPS	90	80
5	Wanakbori 7 TPS	90	80
6	Sikka TPS	75	70
7	KLTPS 1-3	78	70
8	KLTPS 4	80	75
9	Dhuvaran (Oil)	80	50
10	Dhuvaran (Gas 1)	85	80
11	Dhuvaran (Gas 2)	88	80
12	Utran (Gas)	90	80
13	Utran Extension	87	90
14	Ukai Hydro	80	80
15	Kadana Hydro	80	80

The petitioner has submitted that the plant availability factor for all stations other than the PPA based stations should be relaxed and approved as per the submission.



The petitioner has submitted the following justifications in regard to the suggested changes in the PAF:

- For all the PPA governed stations of GSECL (viz. Gandhinagar V, Wanakbori 7, Dhuvaran Gas 1, Dhuvaran Gas 2 and Utran) which are relatively newer plants, the petitioner has proposed 80% or above availability factor which is as per the applicable PPA and regulations.
- Apart from Gandhinagar-5, Wanakbori-7, Dhuvaran Gas-1, Dhuvaran Gas-2, Utran and other recent capacity addition; all the other stations are old and many of them have already exceeded the normative life. Considering that old stations are easily susceptible to the frequent outages the petitioner has revised the PAF of old stations.
- Recovery of fixed charges for hydro stations should be allowed at 80% of machine availability, irrespective of the operation during the peak hours as has been approved vide tariff order dated 31st March 2007.

Commission's analysis

The Commission has reviewed the submission with regard to PAF made by the petitioner for the FY 2010-11. Commission is of the view that the recommendations of the CEA study are now available and the same should be considered for the FY 2010-11. The approved level of PAF is indicated in Table 39. The approved PAF shall be considered for the purpose of recovery the fixed charges only. This will have no correlation with the PLF approved by the Commission. The petitioner should strive to achieve a higher PLF so as to increase its generation.

Table 39: Approved plant availability factor for FY 2010-11 (in %)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Revised
1	Ukai (1-5)	74	74	74
2	Gandhinagar (1-4)	80	70	80
3	Gandhinagar 5*	90	80	80
4	Wanakbori 1-6 TPS	90	80	85
5	Wanakbori 7 TPS*	90	80	80
6	Sikka TPS	75	70	75
7	KLTPS 1-3	78	70	75
8	KLTPS 4*	80	75	75
9	Dhuvaran (Oil)	80	50	80
10	Dhuvaran (Gas 1)*	85	80	80
11	Dhuvaran (Gas 2)*	88	80	80
12	Utran (Gas)*	90	80	80
13	Utran Extension*	87	90	80
14	Ukai Hydro	80	80	80
15	Kadana Hydro	80	80	80

*PPA based stations



3.4.2 Plant Load Factor (PLF)

Petitioner's submission

The revised PLF estimated by the petitioner for FY 2010-11 for each of the generating stations is indicated in Table 40.

Table 40: Revised plant load factor for FY 2010-11 estimated by petitioner (in %)

Sr. No.	Power Station	MYT Approved	GSECL
1	Ukai (1-5)	74	74
2	Gandhinagar (1-4)	75	70
3	Gandhinagar 5	92	80
4	Wanakbori 1-6 TPS	85	80
5	Wanakbori 7 TPS	92	80
6	Sikka TPS	75	70
7	KLTPS 1-3	72	70
8	KLTPS 4	80	75
9	Dhuvaran (Oil)	77	50
10	Dhuvaran (Gas 1)	90	80
11	Dhuvaran (Gas 2)	90	80
12	Utran (Gas)	92	80
13	Utran Extension	80	90
14	Ukai Hydro	24	11
15	Kadana Hydro	9	5

With regards to the reduction in PLF the petitioner has submitted that PLF varies with plant availability and system demand. The revision in PLF for FY 2010-11 is on account of revised PAF which is based on the estimated outage schedule for FY 2010-11.

Commission's analysis

The Commission has reviewed the submission with regard to PLF made by the petitioner for the FY 2010-11. Commission has observed that the petitioner has estimated a lower plant load factor for all stations except for Utran Extension and for Ukai (1-5). The Commission is of the view that the plant load factor should be considered as per its MYT Order of January 17, 2009. Accordingly, the Commission approves the plant load factor as indicated in Table 41.

Table 41: Approved plant load factor for FY 2010-11 (in %)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Revised
1	Ukai (1-5)	74	74	74
2	Gandhinagar (1-4)	75	70	75
3	Gandhinagar 5	92	80	92
4	Wanakbori 1-6 TPS	85	80	85



5	Wanakbori 7 TPS	92	80	92
6	Sikka TPS	75	70	75
7	KLTPS 1-3	72	70	72
8	KLTPS 4	80	75	80
9	Dhuvaran (Oil)	77	50	77
10	Dhuvaran (Gas 1)	90	80	90
11	Dhuvaran (Gas 2)	90	80	90
12	Utran (Gas)	92	80	92
13	Utran Extension	80	90	80
14	Ukai Hydro	24	11	24
15	Kadana Hydro	9	5	9

3.4.3 Auxiliary Consumption

Petitioner's submission

The petitioner has estimated the revised auxiliary consumption for FY 2010-11 which is indicated in Table 42.

Table 42: Revised auxiliary consumption for FY 2010-11 estimated by petitioner (in %)

Sr. No.	Power Station	MYT Approved	GSECL
1	Ukai (1-5)	9.00	9.00
2	Gandhinagar (1-4)	11.12	10.75
3	Gandhinagar 5	9.00	9.00
4	Wanakbori 1-6 TPS	9.00	9.00
5	Wanakbori 7 TPS	9.00	9.00
6	Sikka TPS	10.70	10.70
7	KLTPS 1-3	12.25	13.25
8	KLTPS 4	12.25	15.00
9	Dhuvaran (Oil)	11.50	13.00
10	Dhuvaran (Gas 1)	3.00	3.00
11	Dhuvaran (Gas 2)	3.00	3.00
12	Utran (Gas)	4.00	4.00
13	Utran Extension	4.00	4.00
14	Ukai Hydro	0.70	0.70
15	Kadana Hydro	1.19	1.19

The petitioner has submitted that the auxiliary consumption for KLTPS 1-4 and Dhuvaran Oil are projected higher than the approved parameter on account of the old age of the plants.

Commission's analysis

The Commission has taken note of the submission made by the petitioner. The Commission is of the view that the auxiliary consumption should now be considered based on the recommendation of the CEA except for the PPA based stations.



Auxiliary consumption for PPA based stations shall be governed as per the respective PPA.

The Commission has further observed that the petitioner has made a separate submission with regard to auxiliary consumption for KLTPS -4. The petitioner has submitted that the actual auxiliary consumption of the KLTPS-4 is 18% where as the submission made in the petition is 15%. According to the manufacturers prescription the auxiliary connected with this unit is of 12 MW (16%). The petitioner has requested that the auxiliary consumption for KLTPS-4 should be considered at 18% based on the actual auxiliary consumption observed.

The Commission has taken note of the submission made by the petitioner. The Commission is of the view that as per the CEA recommendation the auxiliary consumption of the station should be considered at 12%. The Commission has been guided by the CEA recommendations in approving the auxiliary consumption for all the stations.

Based on the above principle the Commission approves the auxiliary consumption as indicated in Table 43.

Table 43: Approved auxiliary consumption for FY 2010-11 (in %)

Sr. No.	Power Station	MYT Approved	As per GSECL projection	Now Revised
1	Ukai (1-5)	9.00	9.00	9.10
2	Gandhinagar (1-4)	11.12	10.75	10.27
3	Gandhinagar 5*	9.00	9.00	9.00
4	Wanakbri 1-6 TPS	9.00	9.00	9.00
5	Wanakbri 7 TPS*	9.00	9.00	9.00
6	Sikka TPS	10.70	10.70	10.50
7	KLTPS 1-3	12.25	13.25	12.00
8	KLTPS 4*	12.25	15.00	12.00
9	Dhuvaran (Oil)	11.50	13.00	9.50
10	Dhuvaran (Gas 1)*	3.00	3.00	3.00
11	Dhuvaran (Gas 2)*	3.00	3.00	3.00
12	Utran (Gas)*	4.00	4.00	3.00
13	Utran Extension*	4.00	4.00	3.00
14	Ukai Hydro	0.70	0.70	0.70
15	Kadana Hydro	1.19	1.19	1.19

* PPA Based Stations

3.4.4 Station Heat Rate

Petitioner's submission

The petitioner has submitted the station heat rate for each of the stations which is indicated in Table 44. The petitioner has considered the station heat rate at the same level as approved in the MYT Order except for Wanakbri 1-6, Sikka TPS and



KLTPS 1-3. The petitioner has submitted that the increased SHR for Wanakobri 1-6, Sikka TPS and KLTPS 1-3 are on account of the old age of the plants.

Table 44: Station heat rate for FY 2010-11 submitted by petitioner

(Kcal/Kwh)

Sr. No.	Power Station	MYT Approved	GSECL
1	Ukai (1-5)	2,775	2,775
2	Gandhinagar (1-4)	2,855	2,855
3	Gandhinagar 5	2,460	2,460
4	Wanakbori 1-6 TPS	2,650	2,680
5	Wanakbori 7 TPS	2,460	2,460
6	Sikka TPS	3,100	3,150
7	KLTPS 1-3	3,300	3,650
8	KLTPS 4	3,000	3,000
9	Dhuvaran (Oil)	3,200	3,200
10	Dhuvaran (Gas 1)	1,950	1,950
11	Dhuvaran (Gas 2)	1,950	1,950
12	Utran (Gas)	2,150	2,150
13	Utran Extension	1,850	1,850

Commission's analysis

The Commission has taken note of the submission made by the petitioner. The Commission is of the view that the station heat rate should be considered as per the recommendations of the CEA which are now available. With regard to the PPA based stations, the Commission is of the view that the SHR for PPA based stations should be considered as per their respective PPA.

Based on the above observation the Commission approves the SHR for FY 2010-11. The approved station heat rate for FY 2010-11 is provided in Table 45.

Table 45: Approved station heat rate for FY 2010-11

(Kcal/Kwh)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Revised
1	Ukai (1-5)	2,775	2,775	2,658
2	Gandhinagar (1-4)	2,855	2,855	2,673
3	Gandhinagar 5*	2,460	2,460	2,460
4	Wanakbori 1-6 TPS	2,650	2,680	2,600
5	Wanakbori 7 TPS*	2,460	2,460	2,460
6	Sikka TPS	3,100	3,150	2,750
7	KLTPS 1-3	3,300	3,650	3,300
8	KLTPS 4*	3,000	3,000	3,000
9	Dhuvaran (Oil)	3,200	3,200	3,000
10	Dhuvaran (Gas 1)*	1,950	1,950	1,950
11	Dhuvaran (Gas 2)*	1,950	1,950	1,950



12	Utran (Gas)*	2,150	2,150	2,150
13	Utran Extension*	1,850	1,850	1,850

* PPA Based Stations

3.4.5 Secondary Fuel Oil Consumption

Petitioner's submission

The petitioner has submitted the estimated specific oil consumption for each of the stations for the FY 2010-11 which is provided in the Table 46.

Table 46: Estimated specific oil consumption for FY 2010-11

Sr. No.	Power Station	MYT Approved (ml/kWh)	GSECL (ml/kWh)
1	Ukai (1-5)	2.00	3.00
2	Gandhinagar (1-4)	3.50	3.50
3	Gandhinagar 5	3.50	3.50
4	Wanakbori 1-6 TPS	1.00	1.00
5	Wanakbori 7 TPS	3.50	3.50
6	Sikka TPS	2.77	2.77
7	KLTPS 1-3	3.00	3.00
8	KLTPS 4	3.00	3.00

The petitioner has submitted that specific oil consumption is calculated in terms of percentage of total calorific requirement of the power generating unit and has relation with the size of the generating unit. The petitioner has indicated that for lower size generating units specific oil consumption remains higher as compared to larger size generating units since a certain amount of specific oil consumption remains fixed irrespective of the size of the generating unit. The petitioner has further submitted that since most of the generating units of GSECL are smaller the specific oil consumption of these plants generally high.

Commission's analysis

The Commission has observed that the petitioner has revised the secondary fuel oil consumption for Ukai 1-5 compared to the specific oil consumption approved under the MYT Order. The Commission has also examined the reasons and justifications submitted by the petitioner. The Commission has further drawn reference to the recommendations of the CEA with regard to the specific oil consumption. The Commission is of the view that the specific oil consumption should be considered as per the recommendations of the CEA study.

Based on the above approach the Commission approves the secondary fuel oil for FY 2020-12 as indicated in Table 47.

Table 47: Approved secondary fuel oil consumption for FY 2010-11



Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Revised
1	Ukai (1-5)	2.00	3.00	1.50
2	Gandhinagar (1-4)	3.50	3.50	1.50
3	Gandhinagar 5	3.50	3.50	3.50
4	Wanakbori 1-6 TPS	1.00	1.00	1.00
5	Wanakbori 7 TPS	3.50	3.50	3.50
6	Sikka TPS	2.77	2.77	1.50
7	KLTPS 1-3	3.00	3.00	2.50
8	KLTPS 4	3.00	3.00	2.50

3.4.6 Transit Losses

Petitioner's submission

The petitioner has revised the transit loss for the FY 2010-11 downwards. The trajectory for transit loss submitted by the petitioner is indicated in Table 48.

Table 48: Transit loss for FY 2010-11 submitted by the petitioner (in %)

Sr. No.	Power Station	MYT Approved	GSECL Revised
1	Ukai (1-5)	1.20	0.80
2	Gandhinagar (1-4)	1.40	0.80
3	Gandhinagar 5	1.40	0.80
4	Wanakbori 1-6 TPS	1.50	0.80
5	Wanakbori 7 TPS	1.50	0.80
6	Sikka TPS	2.00	0.80

Commission's analysis

The Commission has examined the submission of the petitioner with regard to the transit losses and has observed that the petitioner has considered the level of transit loss for FY 2010-11 lower than the trajectory approved under the MYT Order. The Commission therefore approves the submission of the petitioner which is indicated in Table 49.

Table 49: Approved Transit loss for FY 2010-11 (in %)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Revised for FY 2010-11
1	Ukai (1-5)	1.20	0.80	0.80
2	Gandhinagar (1-4)	1.40	0.80	0.80
3	Gandhinagar 5	1.40	0.80	0.80
4	Wanakbori 1-6 TPS	1.50	0.80	0.80
5	Wanakbori 7 TPS	1.50	0.80	0.80
6	Sikka TPS	2.00	0.80	0.80



3.4.7 Net Generation

Petitioner's Submission

The petitioner has submitted the net generation based on the projected operating parameters which is indicated in Table 50.

Table 50: Net Generation for FY 2010-11 submitted by the petitioner

Sr. No.	Power Station	Gross Generation (in MU)	Aux. Consumption (in MU)	Net Generation (in MU)
1	Ukai (1-5)	5510	496	5014
2	Gandhinagar (1-4)	4047	435	3612
3	Gandhinagar 5	1472	132	1339
4	Wanakbori 1-6 TPS	8830	795	8035
5	Wanakbori 7 TPS	1472	132	1339
6	Sikka TPS	1472	157	1314
7	KLTPS 1-3	1778	236	1543
8	KLTPS 4	493	74	419
9	Dhuvaran (Oil)	964	125	838
10	Dhuvaran (Gas 1)	747	22	725
11	Dhuvaran (Gas 2)	788	24	764
12	Utran (Gas)	946	38	908
13	Utran Extension	2957	118	2838
14	Ukai Hydro	297	2	295
15	Kadana Hydro	101	1	100
	Total	31873	2788	29084

Commission's Analysis

The Commission has taken note of the submissions made by the petitioner. However, the Commission has observed that the projected generation should be based on the operating parameters which are now being revised based on the recommendation of the CEA. The Commission has now analysed the projected generation based on the revised operating parameters for all thermal plants. For hydro plants the Commission has accepted the submission of the petitioner. The projected generation is summarized in Table 51.

Table 51: Net Generation for FY 2010-11 estimated based on CEA recommendations

(in MUs)

Sr. No.	Power Station	Gross Generation	Aux. Consumption	Net Generation
1	Ukai (1-5)	5510	501	5009
2	Gandhinagar (1-4)	4336	445	3891
3	Gandhinagar 5	1692	152	1540
4	Wanakbori 1-6 TPS	9382	844	8538



5	Wanakbori 7 TPS	1692	152	1540
6	Sikka TPS	1577	166	1411
7	KLTPS 1-3	1356	163	1193
8	KLTPS 4	526	63	463
9	Dhuvaran (Oil)	1484	141	1343
10	Dhuvaran (Gas 1)	841	25	815
11	Dhuvaran (Gas 2)	887	27	860
12	Utran (Gas)	1088	44	1044
13	Utran Extension	2628	105	2523
14	Ukai Hydro	641	4	637
15	Kadana Hydro	191	2	189
	Total	33831	2835	30995

3.4.8 Energy Charges

Petitioner's Submission

The petitioner has projected fuel related parameters such as GCV of fuel, fuel mix and fuel cost for computation of variable cost for FY 2010-11. The petitioner has submitted that the projections are based on the price trends observed in the recent past, the fuel mix being used in power stations and GCV of fuel recently received.

The petitioner has further submitted that based on the revised projections for fuel parameters there is a change in the fuel cost and the revised projected fuel cost is higher than the fuel cost approved for FY 2010-11 under the MYT Order. The projected energy charge submitted by the petitioner is indicated in Table 52.

Table 52: Revised Energy Charges for FY 2010-11 submitted by the petitioner

Sr. No.	Power Station	MYT Approved (Rs/Kwh)	GSECL (Rs/Kwh)
1	Ukai (1-5)	1.50	1.70
2	Gandhinagar (1-4)	1.75	2.40
3	Gandhinagar 5	1.47	2.04
4	Wanakbori 1-6 TPS	1.73	2.12
5	Wanakbori 7 TPS	1.64	1.99
6	Sikka TPS	1.99	2.74
7	KLTPS 1-3	1.07	1.34
8	KLTPS 4	0.98	1.14
9	Dhuvaran (Oil)	3.76	6.02
10	Dhuvaran (Gas 1)	2.21	2.50
11	Dhuvaran (Gas 2)	2.21	2.25
12	Utran (Gas)	2.16	2.51
13	Utran Extension	1.86	2.16



The petitioner has further submitted that as per the agreement between GUVNL and GSECL, the wind energy charge of Rs.3.37/kWh for 10 MW wind farm has been considered which is in line with the Hon'ble Commission's regulation in this matter.

Commission's Analysis

The Commission has examined the submissions made by the petitioner with regard to the energy charges. The Commission has observed that the petitioner has projected energy charges based on following principles:

- Operating parameters revised by GSECL for FY 2010-11
- Fuel related parameters based on the actual fuel parameters observed for first six months of FY 2009-10.

However, the Commission is of the view that the operating parameters should be considered based on the CEA recommendations and fuel related parameters should be considered at the level approved under the MYT Order. The Commission has observed that the variance in fuel related parameters is available to the petitioner through the mechanism of 'Fuel Price Adjustment' and the cost is a 'pass through' component.

Based on the recommendation of the CEA study with regard to the operating parameters and the fuel related parameters approved under the MYT Order, the Commission has now analyzed the energy charges for each of the generating stations of GSECL.

Accordingly, the Commission approves the energy charges based on the above principle which is summarized in Table 53. The computation of the Energy charges for the respective stations is provided under Annexure 1 to Annexure 13 (for 13 generating stations of GSECL).

Table 53: Energy Charges for FY 2010-11 approved by the Commission

Sr. No.	Power Station	MYT Approved (Rs/Kwh)	As per GSECL Projection	Now Approved (Rs/Kwh)
1	Ukai (1-5)	1.50	1.70	1.43
2	Gandhinagar (1-4)	1.75	2.40	1.59
3	Gandhinagar 5	1.47	2.04	1.48
4	Wanakbori 1-6 TPS	1.73	2.12	1.69
5	Wanakbori 7 TPS	1.64	1.99	1.63
6	Sikka TPS	1.99	2.74	1.72
7	KLTPS 1-3	1.07	1.34	1.05
8	KLTPS 4	0.98	1.14	0.96
9	Dhuvaran (Oil)	3.76	6.02	3.44
10	Dhuvaran (Gas 1)	2.21	2.50	2.21



11	Dhuvaran (Gas 2)	2.21	2.25	2.21
12	Utran (Gas)	2.16	2.51	2.16
13	Utran Extension	1.86	2.16	1.86

The Commission has further observed that the petitioner has considered energy charge of Rs.3.37/kWh for 10 MW wind energy farm towards wind energy charges. The Commission has examined that the wind energy charges are as per the applicable regulation. The Commission accordingly approves the wind energy charge of Rs.3.37/Kwh.

3.4.9 Projected Fixed Cost for FY 2010-11

Petitioner's Submission

The petitioner has revised the fixed cost approved for FY 2010-11 under the MYT order. In its submission the petitioner has submitted that it has bifurcated the total fixed cost for FY 2010-11 into the following components:

- Depreciation
- Advance Against Depreciation
- Interest & Financing Charges
- Return on Equity
- O&M Expenses
- Water Charges
- Interest on Working Capital
- Tax on Income
- SLDC Charges

The petitioner has submitted that based on the revised projections the fixed charges for FY 2010-11 computed now is higher than the fixed charges approved under the MYT order.

The details of each of the above items have been dealt in the following sections.

3.4.9.1 Depreciation for FY 2010-11

Petitioner's Submission

The petitioner has submitted the revised estimation of depreciation for FY 2010-11. The petitioner has estimated that the depreciation for FY 2010-11 would be Rs. 537.93 crores.

The petitioner has submitted that the revised estimate is based on the provisional estimates for FY 2009-10.

The petitioner has submitted that for PPA based stations the depreciation rates have been considered as per the respective PPAs. For non PPA based stations, the depreciation rates have been considered as per the revised depreciation rates issued



by the CERC. For new stations where PPA has not been signed the depreciation rates have been considered according to the applicable norms.

The details of the submission made by the petitioner in regard to the amount of depreciation for each of the stations for FY 2010-11 are outlined in Table 54.

Table 54: Station wise depreciation for FY 2010-11 submitted by petitioner

(Rs. Crores)

Sr. No.	Power Station	Depreciation (Approved)	Depreciation (Projected)
1	Ukai (1-5)	48.72	51.20
2	Gandhinagar (1-4)	53.18	62.89
3	Gandhinagar 5	33.02	32.62
4	Wanakbori 1-6 TPS	52.81	72.72
5	Wanakbori 7 TPS	32.70	31.73
6	Sikka TPS	19.59	30.23
7	KLTPS 1-3	37.80	57.60
8	KLTPS 4	15.48	28.25
9	Dhuvaran (Oil)	9.16	8.77
10	Dhuvaran (Gas 1)	15.01	16.98
11	Dhuvaran (Gas 2)	20.76	22.45
12	Utran (Gas)	13.96	19.04
13	Utran Extension	71.82	81.10
14	Ukai Hydro	4.42	6.92
15	Kadana Hydro	10.99	15.44
16	Total	439.42	537.93

Commission's Analysis

The Commission has examined the submission made by the petitioner. The Commission has observed that the depreciation for FY 2010-11 now submitted by GSECL is different compared to the amount approved under the MYT Order. This variance has been on account of the difference in the capital addition earlier projected for MYT Order and now considered based on the performance for FY 2008-09 & projected performance for FY 2009-10. In addition the change in the depreciation rates have also increased the amount of depreciation. The Commission has noted that change in the amount of depreciation for FY 2008-09 and FY 2009-10 shall impact the amount of depreciation approved for FY 2010-11 under the MYT Order. The Commission has observed that the petitioner has now considered the revised rate of depreciation as per the CERC Regulations which is higher than the earlier rate of depreciation.

With regard to the depreciation rates as per the revised CERC Regulations the Commission has observed that Clause 17 of CERC (Terms and Conditions of Tariff) Regulations, 2009 specifies that depreciation shall be calculated annually based on Straight Line Method at rates specified in Appendix-III of the said regulations.



Provided that, the remaining depreciable value as on 31st March of the year closing after a period of 12 years from date of commercial operation shall be spread over the balance useful life of the assets. It further specifies that in case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2009 from the gross depreciable value of the assets.

In light of the above provision of the CERC regulations with regard to depreciation the Commission is of the view that the petitioner should align its future submissions on depreciation with Clause 17 of CERC Regulations mentioned above.

The Commission has analyzed that the amount of depreciation for FY 2010-11 now estimated by the petitioner is Rs. 98.51 crores higher than the amount approved under the MYT Order.

The Commission has observed that the petitioner has considered the applicable depreciation rates for PPA based stations and other stations.

Based on the above observation, the Commission approves the revised depreciation for each of the stations. The amount and depreciation revised for FY 2010-11 is indicated in Table 55.

Table 55: Revised station wise depreciation for FY 2010-11

(Rs. crores)

Sr. No.	Power Station	Depreciation (Approved)	As per GSECL Projection	Now Approved
1	Ukai (1-5)	48.72	51.20	51.20
2	Gandhinagar (1-4)	53.18	62.89	62.89
3	Gandhinagar 5	33.02	32.62	32.62
4	Wanakbori 1-6 TPS	52.81	72.72	72.72
5	Wanakbori 7 TPS	32.70	31.73	31.73
6	Sikka TPS	19.59	30.23	30.23
7	KLTPS 1-3	37.80	57.60	57.60
8	KLTPS 4	15.48	28.25	28.25
9	Dhuvaran (Oil)	9.16	8.77	8.77
10	Dhuvaran (Gas 1)	15.01	16.98	16.98
11	Dhuvaran (Gas 2)	20.76	22.45	22.45
12	Utran (Gas)	13.96	19.04	19.04
13	Utran Extension	71.82	81.10	81.10
14	Ukai Hydro	4.42	6.92	6.92
15	Kadana Hydro	10.99	15.44	15.44
16	Total	439.42	537.93	537.93



3.4.9.2 Advance against depreciation**Petitioner's Submission**

The petitioner has submitted that it is considering depreciation at the rates now revised by the CERC. Accordingly, it is not considering any AAD for the FY 2010-11.

Commission's Analysis

The Commission has examined the submission of the petitioner. The Commission has observed that the petitioner has submitted that the AAD should no longer be considered since it is considering the revised depreciation rates provided by the CERC. The Commission has observed that under the revised CERC guidelines, AAD is no longer permissible.

In light of the above the Commission approves the submission of the petitioner. The revised AAD approved by the Commission for the FY 2010-11 is summarized in Table 56.

Table 56: Approved advance against depreciation for FY 2010-11*(Rs. crores)*

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Approved
1	KLTPS 4	-	0.00	0.00
2	Utran Extension	7.13	0.00	0.00
2	Total	7.13	0.00	0.00

3.4.9.3 Interest & Finance charges**Petitioner's Submission**

The petitioner has submitted the revised interest & finance charges for the FY 2010-11. The petitioner has projected a lower interest & finance charge of Rs. 400.15 crore compared to Rs. 419.99 crores approved for FY 2010-11 under the MYT Order. The submission made by the petitioner is summarized in Table 57.

Table 57: Revised Interest & Finance charges for 2010-11 submitted by petitioner*(Rs. crores)*

Sr. No.	Power Station	MYT Approved	GSECL (Projected)
1	Ukai (1-5)	72.81	51.53
2	Gandhinagar (1-4)	63.80	61.61
3	Gandhinagar 5	-	-
4	Wanakbori 1-6 TPS	71.47	53.35
5	Wanakbori 7 TPS	-	0.46
6	Sikka TPS	20.33	20.67
7	KLTPS 1-3	42.52	40.78
8	KLTPS 4	21.24	35.63
9	Dhuvaran (Oil)	9.33	8.16



10	Dhuvaran (Gas 1)	7.30	8.05
11	Dhuvaran (Gas 2)	14.11	13.50
12	Utran (Gas)	8.19	7.41
13	Utran Extension	74.75	81.83
14	Ukai Hydro	4.06	5.36
15	Kadana Hydro	10.08	11.82
16	Total	419.99	400.15

Commission's Analysis

The Commission has examined the submission made by the petitioner. The Commission has observed that the petitioner has now revised interest & finance charges for FY 2010-11 downwards as compared to the amount approved under the MYT Order.

The Commission has analyzed the submissions made by the petitioner and has observed that for loan up to FY 2010-11 the petitioner has considered the weighted average rate of interest for the respective generating stations (ranging from 8.55% to 10.50%). For additional loans the petitioner has considered an interest rate of 10.50%. The Commission has observed that this rate is in line with the recent borrowings made by GSECL. The Commission has also observed that the petitioner has also considered the guarantee charges while projecting the total interest and finance charges for FY 2010-11.

Based on the above observation the Commission approves the revised interest & finance charges for FY 2010-11. The amount of interest and finance charges approved by the Commission for FY 2010-11 is indicated in Table 58.

Table 58: Revised interest & finance charges approved for FY 2010-11

(Rs. crores)

Sr. No.	Power Station	MYT Approved	As per GESECL Projection	Now Approved
1	Ukai (1-5)	72.81	51.53	51.53
2	Gandhinagar (1-4)	63.80	61.61	61.61
3	Gandhinagar 5	-	-	-
4	Wanakbori 1-6 TPS	71.47	53.35	53.35
5	Wanakbori 7 TPS	-	0.46	0.46
6	Sikka TPS	20.33	20.67	20.67
7	KLTPS 1-3	42.52	40.78	40.78
8	KLTPS 4	21.24	35.63	35.63
9	Dhuvaran (Oil)	9.33	8.16	8.16
10	Dhuvaran (Gas 1)	7.30	8.05	8.05
11	Dhuvaran (Gas 2)	14.11	13.50	13.50
12	Utran (Gas)	8.19	7.41	7.41
13	Utran Extension	74.75	81.83	81.83
14	Ukai Hydro	4.06	5.36	5.36
15	Kadana Hydro	10.08	11.82	11.82
16	Total	419.99	400.15	400.15



3.4.9.4 Return on Equity

Petitioner's Submission

The petitioner has revised the return on equity for FY 2010-11 downwards. Compared to the approved return on equity of Rs.421.13 crores under the MYT Order for FY 2010-11, the petitioner has submitted a revised amount of Rs. 386.80 crores. The details of the submissions made by the petitioner are summarized in Table 59.

Table 59 : Revised Return on Equity for FY 2010-11 submitted by petitioner

(Rs. crores)

Sr. No.	Power Station	MYT Approved	GSECL
1	Ukai (1-5)	32.74	20.98
2	Gandhinagar (1-4)	47.70	36.86
3	Gandhinagar 5	26.84	26.84
4	Wanakbori 1-6 TPS	74.95	53.82
5	Wanakbori 7 TPS	26.23	26.03
6	Sikka TPS	22.17	20.75
7	KLTPS 1-3	47.64	43.14
8	KLTPS 4	18.07	19.81
9	Dhuvaran (Oil)	7.15	7.26
10	Dhuvaran (Gas 1)	12.52	12.94
11	Dhuvaran (Gas 2)	15.46	15.99
12	Utran (Gas)	10.30	10.65
13	Utran Extension	39.09	55.67
14	Ukai Hydro	7.72	7.95
15	Kadana Hydro	32.55	28.10
16	Total	421.13	386.80

Commission's Analysis

The Commission has examined the submission made by the petitioner. The Commission has observed that the petitioner has estimated a lower return on equity for FY 2010-11 compared to the amount approved under the MYT Order. In this regard the Commission has also observed that the return on equity computed for FY 2009-10 based on the revised estimates are lower than the amount approved under the MYT Order.

The Commission has analyzed that the petitioner has considered the applicable rate of return on equity for PPA based stations as well as non PPA based stations. Further, the Commission has observed that the petitioner has projected a lower asset addition during the FY 2010-11. Also the equity portion has been considered at less than 30% as prescribed on a normative basis.



Based on the above observation, the Commission approves the revised return on equity as submitted by the petitioner. The amount of return on equity approved for FY 2010-11 for each of the station is summarized in Table 60.

Table 60: Return on equity approved for FY 2010-11

(Rs. crores)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Approved
1	Ukai (1-5)	32.74	20.98	20.98
2	Gandhinagar (1-4)	47.70	36.86	36.86
3	Gandhinagar 5	26.84	26.84	26.84
4	Wanakbori 1-6 TPS	74.95	53.82	53.82
5	Wanakbori 7 TPS	26.23	26.03	26.03
6	Sikka TPS	22.17	20.75	20.75
7	KLTPS 1-3	47.64	43.14	43.14
8	KLTPS 4	18.07	19.81	19.81
9	Dhuvaran (Oil)	7.15	7.26	7.26
10	Dhuvaran (Gas 1)	12.52	12.94	12.94
11	Dhuvaran (Gas 2)	15.46	15.99	15.99
12	Utran (Gas)	10.30	10.65	10.65
13	Utran Extension	39.09	55.67	55.67
14	Ukai Hydro	7.72	7.95	7.95
15	Kadana Hydro	32.55	28.10	28.10
16	Total	421.13	386.80	386.80

3.4.9.5 Operations & Maintenance expense

Petitioner's Submission

The petitioner has submitted the revised estimates for O&M Charges for FY 2010-11. The petitioner has submitted the O&M Charges by claiming the amount towards water charges separately. The petitioner has submitted that the water charges have been increasing over the recent years and the amount approved under the MYT Order is insufficient to meet the increasing outgo on this account. The petitioner has accordingly submitted separate claim towards water charges. The detail of the petitioner's submission is indicated in Table 61.

Table 61: O&M expenses & Water Charges for FY 2010-11 submitted by petitioner

(Rs. crores)

Sr. No.	Power Station	MYT Approved	GSECL Projection	
			O&M Expense	Water Charges
1	Ukai (1-5)	114.33	129.98	-
2	Gandhinagar (1-4)	88.78	75.46	44.73
3	Gandhinagar 5	21.15	24.35	11.19
4	Wanakbori 1-6 TPS	169.48	150.86	38.96
5	Wanakbori 7 TPS	20.92	22.31	7.58



6	Sikka TPS	32.28	34.48	7.29
7	KLTPS 1-3	28.92	45.71	0.25
8	KLTPS 4	10.09	10.04	-
9	Dhuvaran (Oil)	29.59	29.70	1.20
10	Dhuvaran (Gas 1)	7.92	9.70	0.60
11	Dhuvaran (Gas 2)	11.35	7.77	0.60
12	Utran (Gas)	10.35	13.86	2.40
13	Utran Extension	37.79	37.84	-
14	Ukai Hydro	8.50	10.38	-
15	Kadana Hydro	13.30	12.12	-
16	Total	604.75	614.58	114.80

Commission's Analysis

The Commission has observed that the petitioner has revised the O&M expenses upwards. Further, the Commission has also observed that the petitioner has prayed that the water charges should be considered separately.

In regard to the water charges, the Commission directed the petitioner to provide historical trend for water consumption. Accordingly, based on the submission of the petitioner, the Commission has observed that while in FY 2007-08 the amount of water charges was Rs. 64.09 crores (based on audited accounts), in FY 2008-09, it increased to Rs. 96.90 crores (based on provisional accounts), indicating an year on year increase of 51.20%. The Commission has thereafter observed that the actual water charges for first 6 months of FY 2009-10 is Rs. 51.70 crores which is approximately 53% of the actual water charges incurred for the FY 2008-09.

In regard to O&M expense of FY 2010-11 other than water charges, the Commission has observed that the revised estimates are higher than the amount approved under the MYT Order.

The Commission is of the view that O&M expenses are approved on a normative basis. Any revision in the same can only be considered where there are regulatory/legal stipulations. With regard to the water charges the Commission is of the view that the petitioner has no control on cost of water charges since the charges are being determined by an external agency. The Commission has accordingly considered the submission of the petitioner and has provisionally approved the amount towards water charges as submitted by the Petitioner. The cost of water charges shall be finally approved based on the submission of the audited accounts with regard to O&M charges.

Based on this approach the Commission approves the O&M expense for FY 2010-11 which is summarized in Table 62.



Table 62: Approved O&M expenses for FY 2010-11

(Rs. crores)

Power Station	MYT Approved	Water Charges GSECL	O&M Excluding Water Charges	Total O&M Now Approved
Ukai (1-5)	114.33	-	114.33	114.33
Gandhinagar (1-4)	88.78	44.73	74.80	119.53
Gandhinagar 5	21.15	11.19	21.15	32.34
Wanakbori 1-6 TPS	169.48	38.96	135.80	174.76
Wanakbori 7 TPS	20.92	7.58	14.78	22.35
Sikka TPS	32.28	7.29	31.07	38.37
KLTPS 1-3	28.92	0.25	27.60	27.85
KLTPS 4	10.09	-	10.09	10.09
Dhuvaran (Oil)	29.59	1.20	26.15	27.35
Dhuvaran (Gas 1)	7.92	0.60	6.20	6.80
Dhuvaran (Gas 2)	11.35	0.60	9.63	10.23
Utran (Gas)	10.35	2.40	9.48	11.89
Utran Extension	37.79	-	37.79	37.79
Ukai Hydro	8.50	-	8.50	8.50
Kadana Hydro	13.30	-	13.30	13.30
Total	604.75	114.80	540.66	655.46

3.4.9.6 Interest on working capital

Petitioner's Submission

The petitioner has submitted a revised interest on working capital of Rs. 269.47 crores compared to Rs. 237.78 crores approved under the MYT Order for FY 2010-11. The details for each of the stations are summarized in Table 63.

Table 63: Revised Interest on working capital for FY 2010-11 submitted by petitioner

(Rs. crores)

Sr. No.	Power Station	MYT Approved	GSECL Revised
1	Ukai (1-5)	35.57	37.46
2	Gandhinagar (1-4)	31.98	38.10
3	Gandhinagar 5	8.88	13.05
4	Wanakbori 1-6 TPS	69.10	69.27
5	Wanakbori 7 TPS	8.25	12.29
6	Sikka TPS	14.11	15.18
7	KLTPS 1-3	8.04	12.30
8	KLTPS 4	2.80	3.95
9	Dhuvaran (Oil)	20.09	19.07
10	Dhuvaran (Gas 1)	4.93	6.10
11	Dhuvaran (Gas 2)	8.14	7.37



12	Utran (Gas)	6.29	7.49
13	Utran Extension	17.83	25.16
14	Ukai Hydro	0.49	0.90
15	Kadana Hydro	1.28	1.79
16	Total	237.78	269.47

Commission's Analysis

The Commission has taken note of the submission of the petitioner. The Commission has observed that the petitioner has revised the O&M expense and has accordingly revised the interest on working capital.

The Commission has now observed that the O&M expense has been revised considering the increase in water charges. Since O&M expense is one of the components of total working capital hence a revision in the O&M expense results in to a revision in the total working capital which finally impacts the permissible interest on working capital. The Commission has therefore now worked out the revised interest on working capital.

Based on this approach the Commission now approves the revised working capital for FY 2010-11 which is summarized in Table 64.

Table 64: Revised interest on working capital approved for FY 2010-11

(Rs. crores)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Approved
1	Ukai (1-5)	35.57	37.46	31.18
2	Gandhinagar (1-4)	31.98	38.10	32.86
3	Gandhinagar 5	8.88	13.05	14.13
4	Wanakbori 1-6 TPS	69.10	69.27	60.95
5	Wanakbori 7 TPS	8.25	12.29	13.75
6	Sikka TPS	14.11	15.18	12.06
7	KLTPS 1-3	8.04	12.30	10.14
8	KLTPS 4	2.80	3.95	4.04
9	Dhuvaran (Oil)	20.09	19.07	24.23
10	Dhuvaran (Gas 1)	4.93	6.10	6.66
11	Dhuvaran (Gas 2)	8.14	7.37	8.06
12	Utran (Gas)	6.29	7.49	8.37
13	Utran Extension	17.83	25.16	23.02
14	Ukai Hydro	0.49	0.90	0.88
15	Kadana Hydro	1.28	1.79	1.80
	Total	237.78	269.47	252.13

3.4.9.7 Insurance Charges

Petitioner's Submission



The petitioner has estimated the insurance charges for the PPA based stations for FY 2010-11. While estimating the insurance charges the petitioner has considered the insurance charges paid during the previous year. The insurance charges estimated for FY 2010-11 is indicated in Table 65.

Table 65: Insurance Charges for FY 2010-11 submitted by the petitioner

(Rs. crores)

Sr. No.	Power Station	MYT Approved	GSECL Estimate
1	Ukai (1-5)	-	-
2	Gandhinagar (1-4)	-	-
3	Gandhinagar 5	2.48	0.86
4	Wanakbori 1-6 TPS	-	-
5	Wanakbori 7 TPS	2.39	0.86
6	Sikka TPS	-	-
7	KLTPS 1-3	-	-
8	KLTPS 4	-	-
9	Dhuvaran (Oil)	-	-
10	Dhuvaran (Gas 1)	1.76	0.48
11	Dhuvaran (Gas 2)	-	-
12	Utran (Gas)	2.08	0.47
13	Utran Extension	-	-
14	Ukai Hydro	-	-
15	Kadana Hydro	-	-
	Total	8.71	2.68

Commission's Analysis

The Commission has observed that the petitioner has revised the insurance expense downwards. The Commission is of the view that the insurance expense has to be considered based on the actual payout for the previous year. The Commission accordingly, approves the submission of the petitioner. The amount of insurance charges approved for FY 2010-11 is indicated in Table 66.

Table 66: Approved Insurance Charges for FY 2010-11

(Rs. crores)

Sr. No.	Power Station	MYT Approved	As per GSECL Projection	Now Revised
1	Ukai (1-5)	-	-	-
2	Gandhinagar (1-4)	-	-	-
3	Gandhinagar 5	2.48	0.86	0.86
4	Wanakbori 1-6 TPS	-	-	-
5	Wanakbori 7 TPS	2.39	0.86	0.86
6	Sikka TPS	-	-	-
7	KLTPS 1-3	-	-	-
8	KLTPS 4	-	-	-



9	Dhuvaran (Oil)	-	-	-
10	Dhuvaran (Gas 1)	1.76	0.48	0.48
11	Dhuvaran (Gas 2)	-	-	-
12	Utran (Gas)	2.08	0.47	0.47
13	Utran Extension	-	-	-
14	Ukai Hydro	-	-	-
15	Kadana Hydro	-	-	-
	Total	8.71	2.68	2.68

3.4.9.8 SLDC Fees & Charges

Petitioner's Submission

The petitioner has estimated SLDC charges and SLDC fees for FY 2010-11 which is summarized below:

- SLDC Charges: Rs. 534.21 / MW / Month
- SLDC Fees: Rs.327.90 / MW / Half Year

The petitioner has prayed that the same may be approved.

Commission's Analysis

The Commission has analyzed the submission of the petitioner. The Commission has also observed that SLDC has filed its petition for SLDC Charges and SLDC fees for FY 2009-10. Based on the analysis of the Commission following amount is payable:

- SLDC Charges: Rs. 520 / MW / Month
- SLDC Fees: Rs.375 / MW / Half Year

Based on the above observation the Commission approves the amount of SLDC Charges and SLDC Fees which is summarized in Table 67.

Table 67: Approved SLDC Charges/Fees for FY 2010-11

(in Rs. Cr.)

Sr. No.	Station	Now Approved
1	Ukai (1-5)	0.59
2	Gandhinagar (1-4)	0.46
3	Gandhinagar 5	0.15
4	Wanakbori 1-6 TPS	0.88
5	Wanakbori 7 TPS	0.15
6	Sikka TPS	0.17
7	KLTPS 1-3	0.20
8	KLTPS 4	0.05
9	Dhuvaran (Oil)	0.15
10	Dhuvaran (Gas 1)	0.07
11	Dhuvaran (Gas 2)	0.08



12	Utran (Gas)	0.09
13	Utran Extension	0.26
14	Ukai Hydro	0.21
15	Kadana Hydro	0.17
	Total	3.68

3.4.9.9 Income Tax

Petitioner's Submission

The petitioner has estimated income tax for FY 2010-11 at the MAT rate of 15%. The petitioner has submitted that since the Return on Equity has been revised downwards, the income tax should also be revised accordingly. In this regard the petitioner has estimated an income tax amount of Rs. 58.02 crore.

Commission's Analysis

The Commission has analyzed the submission and is of the view that since the amount of return on equity has been revised the amount of income tax should also be revised. The Commission has observed that the petitioner has projected a lower return on equity. The Commission accordingly, approves an amount of Rs. 58.02 crores towards income tax for FY 2010-11. The amount of income tax now approved by the Commission is summarized in Table 68.

Table 68: Approved Income Tax for FY 2010-11

(in Rs. Crore)

Sr. No.	Power Station	Now Approved
1	Return on Equity	386.80
2	Tax Rate	15%
	Total Tax Amount	58.02



3.4.10 Projected Fixed Cost for FY 2010-11

The revised charges submitted by the petitioner is summarized in Table 69

Table 69: Revised fixed charges for FY 2010-11 submitted by the petitioner*(Rs. crores)*

Sr. No.	Power Station	Depreciation	Interest & Finance Charges	Return on Equity	Interest on Working Capital	O&M Expenses	Water Charges	Insurance Charges	MAT	SLDC Fees & Charges	Total Fixed Cost (Projected)
1	Ukai (1-5)	51.20	51.53	20.98	37.46	129.98	-	-	3.15	0.60	294.89
2	Gandhinagar (1-4)	62.89	61.61	36.86	38.10	75.46	44.73	-	5.53	0.47	325.64
3	Gandhinagar 5	32.62	-	26.84	13.05	24.35	11.19	0.86	4.03	0.15	113.08
4	Wanakbori 1-6 TPS	72.72	53.35	53.82	69.27	150.86	38.96	-	8.07	0.89	447.94
5	Wanakbori 7 TPS	31.73	0.46	26.03	12.29	22.31	7.58	0.86	3.90	0.15	105.31
6	Sikka TPS	30.23	20.67	20.75	15.18	34.48	7.29	-	3.11	0.17	131.88
7	KLTPS 1-3	57.60	40.78	43.14	12.30	45.71	0.25	-	6.47	0.15	206.42
8	KLTPS 4	28.25	35.63	19.81	3.95	10.04	-	-	2.97	0.05	100.72
9	Dhuvaran (Oil)	8.77	8.16	7.26	19.07	29.70	1.20	-	1.09	0.16	75.41
10	Dhuvaran (Gas 1)	16.98	8.05	12.94	6.10	9.70	0.60	0.48	1.94	0.08	56.87
11	Dhuvaran (Gas 2)	22.45	13.50	15.99	7.37	7.77	0.60	-	2.40	0.08	70.16
12	Utran (Gas)	19.04	7.41	10.65	7.49	13.86	2.40	0.47	1.60	0.10	63.01
13	Utran Extension	81.10	81.83	55.67	25.16	37.84	-	-	8.35	0.26	290.21
14	Ukai Hydro	6.92	5.36	7.95	0.90	10.38	-	-	1.19	0.22	32.92
15	Kadana Hydro	15.44	11.82	28.10	1.79	12.12	-	-	4.21	0.17	73.65
	Total	537.93	400.15	386.80	269.47	614.58	114.80	2.68	58.02	3.69	2,388.11



Commission's Analysis

The Commission has examined the submission of the petitioner. It has found that compared to the approved fixed cost of Rs.2186.62 Crore, the petitioner has now submitted a revised fixed cost of Rs.2388.11 crores indicating a proposed increase of Rs.201.49 Crores. The increase in the fixed charges is largely attributed to the Depreciation and O&M Expenses. The Commission has observed that the petitioner has segregated water charges from the O&M Expense and claimed it separately.

The Commission is of the view that the fixed charges have been approved under the MYT Order after considering probable scenarios. However, in view of the revision in the components which are related to capital expenditure like depreciation etc. the Commission has computed the revised amount of Rs. 2296.87 crores towards fixed charges.



The fixed charges now computed by the Commission is indicated in Table 70.

Table 70: Approved fixed charges for FY 2010-11

(Rs. crores)

Sr. No.	Power Station	Depreciation	Interest & Finance Charges	Return on Equity	Interest on Working Capital	O&M Expenses	Income Tax	SLDC Charges	Insurance Charges	Total Fixed Cost
1	Ukai (1-5)	51.20	51.53	20.98	31.18	114.33	3.15	0.59	-	272.96
2	Gandhinagar (1-4)	62.89	61.61	36.86	32.86	119.53	5.53	0.46	-	319.74
3	Gandhinagar 5	32.62	-	26.84	14.13	32.34	4.03	0.15	0.86	110.97
4	Wanakbori 1-6	72.72	53.35	53.82	60.95	174.76	8.07	0.88	-	424.55
5	Wanakbori 7 TPS	31.73	0.46	26.03	13.75	22.35	3.90	0.15	0.86	99.23
6	Sikka TPS	30.23	20.67	20.75	12.06	38.37	3.11	0.17	-	125.36
7	KLTPS 1-3	57.60	40.78	43.14	10.14	27.85	6.47	0.20	-	186.18
8	KLTPS 4	28.25	35.63	19.81	4.04	10.09	2.97	0.05	-	100.84
9	Dhuvaran (Oil)	8.77	8.16	7.26	24.23	27.35	1.09	0.15	-	77.01
10	Dhuvaran (Gas 1)	16.98	8.05	12.94	6.66	6.80	1.94	0.07	0.48	53.92
11	Dhuvaran (Gas 2)	22.45	13.50	15.99	8.06	10.23	2.40	0.08	-	72.71
12	Utran (Gas)	19.04	7.41	10.65	8.37	11.89	1.60	0.09	0.47	59.52
13	Utran Extension	81.10	81.83	55.67	23.02	37.79	8.35	0.26	-	288.02
14	Ukai Hydro	6.92	5.36	7.95	0.88	8.50	1.19	0.21	-	31.01
15	Kadana Hydro	15.44	11.82	28.10	1.80	13.30	4.22	0.17	-	74.85
	Total	537.94	400.16	386.79	252.13	655.48	58.02	3.68	2.67	2296.87



4 Compliance of Directives

4.1 Compliance of directives issued by the Commission

The Commission in its order of December 14, 2009 had issued the following directives to the petitioner. The petitioner has now submitted the status of the compliance of Directives issued by the Commission.

1. Directive No. 1- Renovation and Modernization (R&M) of Thermal plants:

The programme for R&M given is noted. The status of implementation may be reported quarterly. R&M works shall be taken up on priority to improve the performance of the generating units.

Compliance to the Directive no. 1:

The unit wise status of ongoing R&M works are as under:

(A) Status of R&M and LE Works of 2X120 MW Ukai TPS Unit – 1&2

(As on 06.01.2010)

Description	Unit-1	Unit-2
Zero Date (Date of 10% advance)	29.03.05	29.03.05
Completion Schedule	27 months from Zero date i.e. 28.06.07	
Shut down period (Planned)	April 06 to Oct. 06	Dec. 06 to June 07
Shut down given for execution of work	06-09-06	12-08-08
Unit first time rolled but newly supplied HP rotor was bent	16-09-07	-
Unit second time synchronized with old HP rotor but stopped due to mill & feeder problem and subsequently tripped on Generator Differential Protection	05-02-08	-
Unit third time synchronized with repaired new HP rotor but stopped due to high Temp. of Bearing and non availability of BFPs.	24-05-08	-



Remarks:**Unit 1 :**

1. □ Shut down was taken on 06.09.2006. Machine □ Synchronized on 24.05.08.
2. Yet full load of 120 MW is not achieved. BHEL is yet to give PG Test.
3. M/c is running at 105-110 MW with BFPs having old cartridge in two BFPs.

Unit 2 :

1. Unit 2 shut down taken on 12.08.08.
2. Boiler lit up activity under progress
3. Generator Air leakage test & Turbine box up work under progress.

BOP:

Work of AHS and CHP is under progress.

Unit #2 is likely to be re-commissioned by end of January, 2010.

(B) Present Status and Schedule Programme for R&M/LE Works of Gandhinagar TPS Unit no.1 & 2 for Major R&M.**Quarterly Progress Report (3rd Quarter.-Oct-09 to Dec-09)**

- LOI/ Detailed order (A/T) for R&M/LE of Main Plant Auxiliaries is issued to M/s BHEL on 12.10.06/29.06.07 for which about 60% of materials have been received. LOI /Detailed order for 4 Nos of BOP packages are issued to different agencies, works for which are under progress.
- Due to poor work performance of R&M/LE works and excessive time taken by BHEL at Ukai TPS resulting in loss to GSECL, GSECL management has decided to discontinue all the activities for R&M/LE works of Gandhinagar TPS Unit No.1 & 2. Accordingly BHEL have been informed to stop all the related activities for R&M/LE works of Gandhinagar TPS Unit No.1 & 2. viz. Design, Engineering, Manufacture and Supply etc. Moreover all the R&M activities for the 'Balance of Plant' (BOP) have also been stopped, except 4 Nos. of BOP packages where the orders have been placed and works for which are under progress.

Commission's Comment: The program for R&M is noted. The petitioner should continue to report the status of implementation quarterly. R&M Works shall be taken up on priority to improve the performance of the generating units. The petitioner



should also continue to report the measures taken up for life extension of these plants as indicated by CEA.

2. Directive No. 2- Energy Audit:

Energy Audit of all the generating units of GSECL may be taken up in a planned way and the reports on the Energy Audit should be submitted to the Commission.

Compliance to the Directive no. 2:

GSECL has already submitted the Energy Audit Reports for GTPS, KLTPS 2 & 4, and Dhuvaran CCPP 2 along with the Benefits thereof. Energy savings details for the following units for the period April '09 to September '09 are as under:

Details of energy saving measures implemented in following units in brief:

Energy saving details for the period April'09 to September'09 for the following units:

Sr. No.	Station/Unit No. (Reports Already submitted)	Savings in Item	Expected saving in Kwh/Annum	Expected Saving in Rs. Lakhs./Annum
1	UKAI TPS #3	-	213127	4.25
2	UKAI TPS #5	-	376067	7.533
3	WTPS # I	967.33 T Coal	185644	18.218
4	WTPS#3	21834.20 T Coal	26004	328.02
5	WTPS#5	16349.00 T Coal	16200	245.55
	Grand Total	39150.53 T Coal	817042	603.571

The status of other units for which the order is placed by GSECL is as under:

(A) Order Placed for the Year 2008-09:

Sr. No.	Name of TPS	Unit No.	Status
1	Gandhinagar TPS	4	Report Submitted to Hon'ble Commission
2	Wanakbori TPS	6	
3	Wanakbori TPS	7	
4	KLTPS	2	
5	Dhuvaran	CCPP - II	

(B) Order Placed for the Year 2009-10:

No	Name of TPS	Unit No.	Field Measurement work
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1	Ukai	1, 2 & 4	#1 Main Plan Electrical field measurement work completed. #2 under R&M. #4 Main Plant and BOP electrical field measurement work completed.
2	G'nagar	1 & 2	Electrical, Thermal & Insulation field Measurement work completed.
3	WTPS	2 & 4	Electrical, Thermal & Insulation field Measurement work completed.
4	UTRAN GBPS	135 MW	Electrical Field measurement work up.

Commission's Comment:

Commission has taken note of the submission made by the petitioner.

3. Directive No. 3- Quality of Coal:

GSECL shall make all possible efforts to obtain adequate and better quality mine coal and adequate quantity of washed coal.

Compliance to the Directive no. 3:

- (i) GSECL has executed modified Fuel Supply Agreements with the Coal Companies – M/s. South Eastern Coalfields Ltd. (SECL) and M/s. Western Coalfields Ltd. (WCL).
- (ii) The Annual Contracted Quantities (ACQ's) of 16.44 MTPA and 0.93 MTPA have been allocated by SECL and WCL. The ACQ's have been decided by MoC/CIL/CEA. However, GSECL had demanded enhancement in the ACQ's of @ 1.5 MTPA, but the same is not considered due to demand-supply gap of indigenous coal.
- (iii) GSECL is pursuing the matter with MoC/ CIL/ CEA for enhancement in the ACQ's.
- (iv) GSECL has started using washed coal at Sikka TPS after execution of the FSA.
- (v) Matter regarding more allocation of Indigenous coal is taken up with Hon'ble MoP, GOI during visit of MoP, Gol.



- (vi) GSECL has increased the washed coal quantity to achieve almost 100% replacement of Mainline Coal by Washed coal being issued at present by SECL.
- (vii) Against the total Indigenous Coal requirements of @ 14-15 lakh Mt per month of GSECL TPSs, GSECL is getting @ 9 lakh Mt per month of Washed coal and major quantity of the balance coal requirement from the better quality – Korea rewa coal from SECL and WCL coal

Commission's Comment:

The Commission has taken note of the submission made by the petitioner. The petitioner should continue to improve upon its feedstock strategy so as to minimize its fuel cost and improve the quality of fuel obtained. An annual report in this regard summarizing the actions taken during the year should be submitted by the petitioner along with its petition for annual tariff determination.

4. Directive No. 4- Performance of Stations:

Action shall be taken to improve the performance by better maintenance and taking up R&M of units.

Compliance to the Directive no. 4:

Actions - as per R&M Works under progress for improving the performance - are provided in the submission made for the Compliance of Directive No. 1.

Commission's Comment:

The Commission has taken note of the submission made by the petitioner.

5. Directive No. 5- Transit Loss of Coal:

GSECL shall reduce the transit loss to normative level.

Compliance to the Directive no. 5:

GSECL has tried to bring down the transit loss up to the normative level.

Commission's Comment:



The Commission has observed that the petitioner has been able to minimize the transit loss and has managed to contain it below the prescribed normative levels. The Commission appreciates the efforts of the petitioner and is of the view that the petitioner should continue to manage its transit loss and bring in efficiency in fuel handling process. Further, the petitioner should submit annually, along with its filing for annual tariff determination, computation of the actual transit loss. Additionally, the petitioner should also submit along with the computation for transit loss detail of fuel cost segregated in to pure fuel cost, freight and other cost (other cost should be segregated in to its respective components).

6. Directive No. 6- Power Purchase Agreement between GSECL & GUVNL:

The conclusion of PPA between GUVNL and GSECL shall be expedited and reported to the Commission.

Compliance to the Directive no. 6:

Power Purchase Agreement in respect to Stations transferred from erstwhile GEB is signed between GSECL and GUVNL. The same shall be submitted by GUVNL before the Hon'ble Commission for approval.

Commission's Comment:

The Commission has taken note of the submission of the petitioner.

7. Directive No. 7- Submission of financial figures in Rupees Crores:

GSECL is directed to submit all financial figures in its future ARR and APR petitions in units of rupees crores.

Compliance to the Directive no. 7:

As the APR Application No. 989/10 was prepared prior to issuance of APR Order Dtd. 14.12.09, GSECL hereby undertakes to submit all financial figures in Rs. Crores next ARR and APR Petitions.

Commission's Comment:



The Commission has taken note of the submission of the petitioner. The Commission has observed that the petitioner has expressed inability to comply with the directive due to paucity of time between the submission of the ARR petition for FY 2010-11 and the issue of the directive under the tariff order dated December 14, 2009. However, the Commission directs the petitioner that it should submit all financial figures in its future ARR and APR petitions in units of rupees crores.

4.2 New Directive

The Petitioner should submit details of depreciation in all its future submissions in accordance with Clause 17 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009.



COMMISSION'S ORDER

The Commission approves the components of fixed charges and energy charges for FY 2010-11 as outlined in the table below.

Sr. No.	Power Station	Annual Fixed Charges for FY 2010-11	Variable Charges FY 2010-11 (Rs/kWh)
1	Ukai (1-5)	272.96	1.43
2	Gandhinagar (1-4)	319.74	1.59
3	Gandhinagar 5	110.97	1.48
4	Wanakbori 1-6 TPS	424.55	1.69
5	Wanakbori 7 TPS	99.23	1.63
6	Sikka TPS	125.36	1.72
7	KLTPS 1-3	186.18	1.05
8	KLTPS 4	100.84	0.96
9	Dhuvaran (Oil)	77.01	3.44
10	Dhuvaran (Gas 1)	53.92	2.21
11	Dhuvaran (Gas 2)	72.71	2.21
12	Utran (Gas)	59.52	2.16
13	Utran Extension	288.02	1.86
14	Ukai Hydro	31.01	-
15	Kadana Hydro	74.85	-
16	Total	2296.87	-

The order shall come into force with effect from 1st April 2010.

Sd/-

Sd/-

DR. P K MISHRA
 Chairman

SHRI PRAVINBHAI PATEL
 Member

Date: 31st March 2010

Ahmedabad



Annexure A: Approved ARR for FY 2008-09

Sr. No.	Particulars	Amt in Rs. Crores
1.	Fuel Cost based on approved operational parameters	5686.28
2.	Depreciation	333.74
3.	Advance Against Depreciation	0.00
4.	Interest & Finance Charges	278.59
5.	Return on Equity	297.32
6.	Operation & Maintenance Charges	660.09
7.	Interest on Working Capital	238.45
8.	Total	7494.47



Annexure 1: Fuel Cost – Ukai 1-5

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	5,510
2	Auxiliary Consumption	B	MUs	501
3	Net Generation	$Y=A - B$	MUs	5,009
4	Auxiliary Consumption	C	%	9.10%
5	Station Heat Rate	D	kcal/kWh	2,658
6	Sp. Oil Consumption	E	ml/kWh	1.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,102
8	Calorific Value of Oil	G	kcal/l	10,400
9	Overall Heat	$H=A \times D$	G Cal	14,645,686
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	85,957
11	Heat from Coal	$J=H-I$	G Cal	14,559,730
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	31.00%
15	B) Washed Coal	X2	%	69.00%
16	c) Imported Coal	X3	%	0.00%
17	Actual Oil Consumption	$L=A \times E$	kl	8,265
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	3,549,422
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-k)$	MT	1,109,194
20	B) Washed Coal	$Q2=M^* \times X2$	MT	2,449,101
21	c) Imported Coal	$Q3=M^* \times X3$	MT	-
22	Specific Coal Consumption		kg/kWh	0.64
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	1,963.00
25	B) Washed Coal	P2	Rs/MT	1,976.00
26	c) Imported Coal	P3	Rs/MT	-
27	Price of Oil	P4	Rs/kl	19,934.00
28	Coal Cost			
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	21,773
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	48,394
31	c) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	-
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	70,558
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1,648
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	72,206
35	Fuel Cost/Unit Gross	$O/(A \times 10)$	Rs/kWh	1.30
36	Fuel Cost/Unit Net	$O/(Y \times 10)$	Rs/kWh	1.43



Annexure 2: Fuel Cost – Gandhinagar 1-4

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	4,336
2	Auxiliary Consumption	B	MUs	445
3	Net Generation	$Y=A - B$	MUs	3,891
4	Auxiliary Consumption	C	%	10.27%
5	Station Heat Rate	D	kcal/kWh	2,673
6	Sp. Oil Consumption	E	ml/kWh	1.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,711
8	Calorific Value of Oil	G	kcal/l	10,400
9	Overall Heat	$H=A \times D$	G Cal	11,589,480
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	67,645
11	Heat from Coal	$J=H-I$	G Cal	11,521,835
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	28.00%
15	B) Washed Coal	X2	%	49.00%
16	c) Imported Coal	X3	%	23.00%
17	Actual Oil Consumption	$L=A \times E$	kl	6,504
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	2,445,730
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-k)$	MT	690,327
20	B) Washed Coal	$Q2=M^* \times X2$	MT	1,198,408
21	c) Imported Coal	$Q3=M^* \times X3$	MT	562,517.96
22	Specific Coal Consumption		kg/kWh	0.56
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2,511.00
25	B) Washed Coal	P2	Rs/MT	2,232.00
26	c) Imported Coal	P3	Rs/MT	2,917.00
27	Price of Oil	P4	Rs/kl	19,967.00
28	Coal Cost			
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	17,334
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	26,748
31	c) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	16,409
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	60,707
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1,299
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	62,006
35	Fuel Cost/Unit Gross	$O/(A^*10)$	Rs/kWh	1.42
36	Fuel Cost/Unit Net	$O/(Y^*10)$	Rs/kWh	1.59



Annexure 3: Fuel Cost – Gandhinagar 5

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	1,692
2	Auxiliary Consumption	B	MUs	152
3	Net Generation	$Y=A - B$	MUs	1,540
4	Auxiliary Consumption	C	%	9.00%
5	Station Heat Rate	D	kcal/kWh	2,460
6	Sp. Oil Consumption	E	ml/kWh	3.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,714
8	Calorific Value of Oil	G	kcal/l	10,400
9	Overall Heat	$H=A \times D$	G Cal	4,163,383
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	61,605
11	Heat from Coal	$J=H-I$	G Cal	4,101,778
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	28.00%
15	B) Washed Coal	X2	%	51.00%
16	c) Imported Coal	X3	%	21.00%
17	Actual Oil Consumption	$L=A \times E$	kl	5,924
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	870,127
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-k)$	MT	245,600
20	B) Washed Coal	$Q2=M^* \times X2$	MT	443,765
21	c) Imported Coal	$Q3=M^* \times X3$	MT	182,726.65
22	Specific Coal Consumption		kg/kWh	0.51
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2,511.00
25	B) Washed Coal	P2	Rs/MT	2,232.00
26	c) Imported Coal	P3	Rs/MT	2,917.00
27	Price of Oil	P4	Rs/kl	24,297.10
28	Coal Cost			
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	6,167
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	9,905
31	c) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	5,330
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	21,482
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1,439
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	22,921
35	Fuel Cost/Unit Gross	$O/(A^*10)$	Rs/kWh	1.35
36	Fuel Cost/Unit Net	$O/(Y^*10)$	Rs/kWh	1.48



Annexure 4: Fuel Cost – Wanakbori 1-6

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	9,382
2	Auxiliary Consumption	B	MUs	844
3	Net Generation	$Y=A - B$	MUs	8,538
4	Auxiliary Consumption	C	%	9.00%
5	Station Heat Rate	D	kcal/kWh	2,600
6	Sp. Oil Consumption	E	ml/kWh	1.00
7	Gross Calorific Value of Coal	F	kcal/kg	3,793
8	Calorific Value of Oil	G	kcal/l	10,400
9	Overall Heat	$H=A \times D$	G Cal	24,393,096
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	97,572
11	Heat from Coal	$J=H-I$	G Cal	24,295,524
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	54.00%
15	B) Washed Coal	X2	%	46.00%
16	c) Imported Coal	X3	%	0.00%
17	Actual Oil Consumption	$L=A \times E$	kl	9,382
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	6,405,358
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-k)$	MT	3,486,788
20	B) Washed Coal	$Q2=M^* \times X2$	MT	2,946,465
21	c) Imported Coal	$Q3=M^* \times X3$	MT	-
22	Specific Coal Consumption		kg/kWh	0.68
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2,178.00
25	B) Washed Coal	P2	Rs/MT	2,242.00
26	c) Imported Coal	P3	Rs/MT	-
27	Price of Oil	P4	Rs/kl	25,165.98
28	Coal Cost			
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	75,942
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	66,060
31	c) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	-
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	142,535
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	2,361
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	144,896
35	Fuel Cost/Unit Gross	$O/(A^*10)$	Rs/kWh	1.54
36	Fuel Cost/Unit Net	$O/(Y^*10)$	Rs/kWh	1.69



Annexure 5: Fuel Cost – Wanakbori 7

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	1,692
2	Auxiliary Consumption	B	MUs	152
3	Net Generation	$Y=A - B$	MUs	1,540
4	Auxiliary Consumption	C	%	9.00%
5	Station Heat Rate	D	kcal/kWh	2,460
6	Sp. Oil Consumption	E	ml/kWh	3.50
7	Gross Calorific Value of Coal	F	kcal/kg	3,816
8	Calorific Value of Oil	G	kcal/l	10,400
9	Overall Heat	$H=A \times D$	G Cal	4,163,383
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	61,605
11	Heat from Coal	$J=H-I$	G Cal	4,101,778
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	53.00%
15	B) Washed Coal	X2	%	47.00%
16	c) Imported Coal	X3	%	0.00%
17	Actual Oil Consumption	$L=A \times E$	kl	5,924
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	1,074,889
19	A) Indigenous Coal	$Q1=M \times X1/(1-k)$	MT	574,286
20	B) Washed Coal	$Q2=M \times X2$	MT	505,198
21	c) Imported Coal	$Q3=M \times X3$	MT	-
22	Specific Coal Consumption		kg/kWh	0.64
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2,178.00
25	B) Washed Coal	P2	Rs/MT	2,242.00
26	c) Imported Coal	P3	Rs/MT	-
27	Price of Oil	P4	Rs/kl	21,564.00
28	Coal Cost			
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	12,508
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	11,327
31	c) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	-
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	23,926
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1,277
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	25,203
35	Fuel Cost/Unit Gross	$O/(A \times 10)$	Rs/kWh	1.48
36	Fuel Cost/Unit Net	$O/(Y \times 10)$	Rs/kWh	1.63



Annexure 6: Fuel Cost – Sikka TPS

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	1,577
2	Auxiliary Consumption	B	MUs	166
3	Net Generation	$Y=A - B$	MUs	1,411
4	Auxiliary Consumption	C	%	10.50%
5	Station Heat Rate	D	kcal/kWh	2,750
6	Sp. Oil Consumption	E	ml/kWh	1.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,905
8	Calorific Value of Oil	G	kcal/l	10,400
9	Overall Heat	$H=A \times D$	G Cal	4,336,200
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	24,598
11	Heat from Coal	$J=H-I$	G Cal	4,311,602
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	75.00%
15	B) Washed Coal	X2	%	0.00%
16	c) Imported Coal	X3	%	25.00%
17	Actual Oil Consumption	$L=A \times E$	kl	2,365
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	879,022
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-k)$	MT	664,583
20	B) Washed Coal	$Q2=M^* \times X2$	MT	0
21	c) Imported Coal	$Q3=M^* \times X3$	MT	219,755.45
22	Specific Coal Consumption		kg/kWh	0.56
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2,833.00
25	B) Washed Coal	P2	Rs/MT	-
26	c) Imported Coal	P3	Rs/MT	2,193.00
27	Price of Oil	P4	Rs/kl	27,194.00
28	Coal Cost			
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	18,828
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	-
31	c) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	4,819
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	23,647
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	643
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	24,290
35	Fuel Cost/Unit Gross	$O/(A \times 10)$	Rs/kWh	1.54
36	Fuel Cost/Unit Net	$O/(Y \times 10)$	Rs/kWh	1.72



Annexure 7: Fuel Cost – KLTPS 1-3

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	1,356
2	Auxiliary Consumption	B	MUs	163
3	Net Generation	$Y=A - B$	MUs	1,193
4	Auxiliary Consumption	C	%	12.00%
5	Station Heat Rate	D	kcal/kWh	3,300
6	Sp. Oil Consumption	E	ml/kWh	2.50
7	Gross Calorific Value of Lignite	F	kcal/kg	2,946
8	Calorific Value of Oil	G	kcal/l	10,735
9	Overall Heat	$H=A \times D$	G Cal	4,474,958
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	36,393
11	Heat from Lignite	$J=H-I$	G Cal	4,438,565
12	Actual Oil Consumption	$L=A \times E$	kl	3,390
13	Actual Lignite Coal Consumption	$M=(J \times 1000)/F$	MT	1,506,641
14	Specific Lignite Coal Consumption		kg/kWh	1.11
15	Price of Lignite	P1	Rs/MT	780
16	Price of Oil	P2	Rs/kl	24,129
17	Cost of Lignite	$N1=M \times P1$	Rs Lakh	11,752
18	Oil Cost	$N2=P2 \times L/10^5$	Rs Lakh	818
19	Total Fuel Cost	$O=N1 + N2$	Rs Lakh	12,570
20	Fuel Cost/Unit Gross	$O/(A \times 10)$	Rs/kWh	0.93
21	Fuel Cost/Unit Net	$O/(Y \times 10)$	Rs/kWh	1.05



Annexure 8: Fuel Cost – KLTPS 4

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	526
2	Auxiliary Consumption	B	MUs	63
3	Net Generation	$Y=A - B$	MUs	463
4	Capacity		MW	75
5	Availability Factor		%	75.00%
6	Plant Load Factor		%	80.00%
7	Auxiliary Consumption	C	%	12.00%
8	Station Heat Rate	D	kcal/kWh	3,000
9	Sp. Oil Consumption	E	ml/kWh	2.50
10	Gross Calorific Value of Lignite	F	kcal/kg	2,946
11	Calorific Value of Oil	G	kcal/l	10,735
12	Overall Heat	$H=A \times D$	G Cal	1,576,800
13	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	14,106
14	Heat from Lignite	$J=H-I$	G Cal	1,562,694
15	Actual Oil Consumption	$L=A \times E$	kl	1,314
16	Actual Lignite Coal Consumption	$M=(J \times 1000)/F$	MT	530,446
17	Specific Lignite Coal Consumption		kg/kWh	1.01
18	Price of Lignite	P1	Rs/MT	780
19	Price of Oil	P2	Rs/kl	24,129
20	Cost of Lignite	$N1=M \times P1$	Rs Lakh	4,137
21	Oil Cost	$N2=P2 \times L/10^5$	Rs Lakh	317
22	Total Fuel Cost	$O=N1 + N2$	Rs Lakh	4,455
23	Fuel Cost/Unit Gross	$O/(A \times 10)$	Rs/kWh	0.85
24	Fuel Cost/Unit Net	$O/(Y \times 10)$	Rs/kWh	0.96



Annexure 9: Fuel Cost – Dhuvaran Oil

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	1,484
2	Auxiliary Consumption	B	MUs	141
3	Net Generation	$Y=A - B$	MUs	1,343
4	Auxiliary Consumption	C	%	9.50%
5	Station Heat Rate	D	kcal/kWh	3,000
6	Calorific Value of Oil	F	kcal/l	10,355
7	Overall Heat from Oil	$H=A \times D$	G Cal	4,451,832
8	Actual Oil Consumption	$M=(H \times 1000)/F$	kl	429,921
9	Price of Oil	P1	Rs/kl	10,754
10	Cost of Oil	$N5=P1 \times M/10^5$	Rs Lakh	46,234
11	Total Fuel Cost	N5	Rs Lakh	46,234
12	Fuel Cost/Unit Gross	$O/(A \times 10)$	Rs/kWh	3.12
13	Fuel Cost/Unit Net	$O/(Y \times 10)$	Rs/kWh	3.44



Annexure 10: Fuel Cost – Dhuvaran Gas 1

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	841
2	Auxiliary Consumption	B	MUs	25
3	Net Generation	$Y=A - B$	MUs	815
4	Auxiliary Consumption	C	%	3.00%
5	Station Heat Rate	D	kcal/kWh	1,950
6	Calorific Value of Gas	F	kcal/scm	9,834
7	Overall Heat from Gas	$H=A \times D$	G Cal	1,639,108
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	167
9	Price of Gas	P1	Rs/scm	10.82
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	18,035
11	Total Fuel Cost	N5	Rs Lakh	18,035
12	Fuel Cost/Unit Gross	$O/(A*10)$	Rs/kWh	2.15
13	Fuel Cost/Unit Net	$O/(Y*10)$	Rs/kWh	2.21



Annexure 11: Fuel Cost – Dhuvaran Gas 2

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	887
2	Auxiliary Consumption	B	MUs	27
3	Net Generation	$Y=A - B$	MUs	860
4	Auxiliary Consumption	C	%	3.00%
5	Station Heat Rate	D	kcal/kWh	1,950
6	Calorific Value of Gas	F	kcal/scm	9,834
7	Overall Heat from Gas	$H=A \times D$	G Cal	1,728,784
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	176
9	Price of Gas	P1	Rs/scm	10.82
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	19,021
11	Total Fuel Cost	N5	Rs Lakh	19,021
12	Fuel Cost/Unit Gross	$O/(A*10)$	Rs/kWh	2.15
13	Fuel Cost/Unit Net	$O/(Y*10)$	Rs/kWh	2.21



Annexure 12: Fuel Cost – Utran Gas

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	1,088
2	Auxiliary Consumption	B	MUs	44
3	Net Generation	$Y=A - B$	MUs	1,044
4	Auxiliary Consumption	C	%	4.00%
5	Station Heat Rate	D	kcal/kWh	2,150
6	Calorific Value of Gas	F	kcal/scm	9,796
7	Overall Heat from Gas	$H=A \times D$	G Cal	2,339,183
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	239
9	Price of Gas	P1	Rs/scm	9.46
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	22,589
11	Total Fuel Cost	N5	Rs Lakh	22,589
12	Fuel Cost/Unit Gross	$O/(A*10)$	Rs/kWh	2.08
13	Fuel Cost/Unit Net	$O/(Y*10)$	Rs/kWh	2.16



Annexure 13: Fuel Cost – Utran Extension

Sr. No.	Item	Derivation	Units	FY 2010-11
1	Gross Generation	A	MUs	2,628
2	Auxiliary Consumption	B	MUs	105
3	Net Generation	$Y=A - B$	MUs	2,523
4	Auxiliary Consumption	C	%	4.00%
5	Station Heat Rate	D	kcal/kWh	1,850
6	Calorific Value of Gas	F	kcal/scm	9,796
7	Overall Heat from Gas	$H=A \times D$	G Cal	4,861,800
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	496
9	Price of Gas	P1	Rs/scm	9.46
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	46,950
11	Total Fuel Cost	N5	Rs Lakh	46,950
12	Fuel Cost/Unit Gross	$O/(A*10)$	Rs/kWh	1.79
13	Fuel Cost/Unit Net	$O/(Y*10)$	Rs/kWh	1.86

