

GUJARAT ELECTRICITY REGULATORY COMMISSION



Multi Year Tariff Order: Truing up for 2009-10,
Annual Performance Review for 2010-11,
Aggregate Revenue Requirement for the MYT 2011-16 and
Determination of Tariff for 2011-12

For
Gujarat State Electricity Corporation Limited
(GSECL)

Case No. 1061 of 2011

11th April 2011

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**GUJARAT ELECTRICITY REGULATORY COMMISSION
(GERC)**

AHMEDABAD

Multi Year Tariff Order: Truing up for 2009-10,
Annual Performance Review for 2010-11,
Aggregate Revenue Requirement for the MYT 2011-16 and
Determination of Tariff for 2011-12

**For
Gujarat State Electricity Corporation Limited
(GSECL)**

**Case No. 1061 of 2011
11th April 2011**

CONTENTS

1.	Background and Brief History	1
1.1	Background	1
1.2	Gujarat State Electricity Corporation Limited (GSECL)	2
1.3	Commission's Order for the first control period	2
1.4	Admission of current petition and public hearing process	3
1.5	Contents of this order	4
1.6	Approach of this order	5
1.7	Business Plan	6
2	Summary of GSECL Tariff Petition for the FY 2011-12 to FY 2015-16	7
2.1	Summary of GSECL tariff petition	7
2.2	Summary of fixed and variable costs projected by GSECL	7
3	Brief outline of objections raised, response from GSECL and Commission's view	10
3.1	Public response to the petition	10
3.2	Name of the Objector 1: Consumer Education and Research Society	10
3.3	Name of Objector 2: Gondal Chamber of Commerce and Industry	19
4	Truing up for FY 2009-10	23
4.1	Generating stations of GSECL	23
4.2	Operating performance parameters	25
4.2.1	Plant availability factor (PAF)	25
4.2.2	Plant load factor (PLF)	28
4.2.3	Auxiliary consumption	29
4.2.4	Station heat rate (SHR)	32
4.2.5	Secondary fuel oil consumption (Specific oil consumption)	33
4.2.6	Transit loss.....	35
4.2.7	Summary of performance parameters approved for FY 2009-10	37
4.3	Gross and net generation	37
4.4	Cost parameters	38
4.4.1	Wt. Av. Gross calorific value (GCV) of fuels	38
4.4.2	Mix of coal	39
4.4.3	Wt. Av. prices of fuel	39
4.5	Fuel Costs	40
4.5.1	Variation between actual costs and approved Costs	41



4.5.2	Gains and losses in fuel costs due to controllable factors	42
4.6	Fixed Charges	43
4.6.1	Depreciation for FY 2009-10	43
4.6.2	Interest and finance charges for FY 2009-10	45
4.6.3	Return on equity for FY 2009-10	48
4.6.4	O&M Expenses for FY 2009-10	50
4.6.5	Interest on working capital for FY 2009-10.....	52
4.6.6	Commission Analysis	53
4.6.7	Insurance charges for FY 2009-10 (Truing up)	54
4.6.8	SLDC charges for FY 2009-10 (Truing up)	55
4.6.9	Income Tax for FY 2009-10	56
4.7	Approved ARR and Sharing of Gains and Losses	58
4.8	Sharing of gain and losses and entitlement for FY 2008-09	62

5 Annual Performance Review for FY 2010-11 76

5.1	Generating stations of GSECL	76
5.2	Operative performance parameters	77
5.2.1	Plant availability factor (PAF)	78
5.2.2	Plant load factor (PLF)	80
5.2.3	Auxiliary consumption	81
5.2.4	Station heat rate (SHR)	84
5.2.5	Secondary fuel oil consumption	86
5.2.6	Transit loss	88
5.2.7	Performance Parameters Considered for FY 2010-11	89
5.2.8	Gross and Net generation	90
5.2.9	Cost parameters	90
5.2.10	Wt. Av. Gross calorific value (GCV) of fuels	91
5.2.11	Mix of coal	91
5.2.12	Wt. Av. Prices of fuel	92
5.3	Fuel costs	93
5.4	Fixed charges	94
5.4.1	Depreciation for FY 2010-11	94
5.4.2	Interest and finance charges for FY 2010-11 (APR)	95
5.4.3	Return on equity for FY 2010-11 (APR)	97
5.4.4	O&M charges for FY 2010-11	99
5.4.5	Interest on working capital for FY 2010-11	101
5.4.6	Insurance charges for FY 2010-11	102
5.4.7	SLDC charges for FY 2010-11	103
5.4.8	Income tax for FY 2010-11	105



6	GSECL Generating Stations and their Performance for MYT Period FY 2011-12 to FY 2015-16	119
6.1	Generating stations of GSECL	119
6.2	Performance of Generation Stations, GSECL's projections for the MYT period and Commission's analysis and decisions	121
6.2.1	Plant availability	122
6.2.2	Plant load factor	123
6.2.3	Auxiliary consumption	124
6.2.4	Station heat rate (SHR)	126
6.2.5	Secondary fuel oil consumption	127
6.2.6	Transit loss of coal	129
6.2.7	Performance parameters approved for the control period FY 2011-12 to FY 2015-16	130
6.3	Gross and net generation	131
6.3.1	The gross and net generation for different stations as approved by the Commission based on the approved PLF and auxiliary consumption	131
7	Generation Costs – for the control period FY 2011-12 to FY 2015-16	132
7.0	Generation Costs - Variable (Energy) and Capacity (Fixed) Charges	132
7.1	Variable Costs (Energy Charge)	132
7.1.1	Mix of coal	132
7.1.2	Wt. Av. Gross calorific value (GCV) of fuel	133
7.1.3	Wt. Av. Price of fuel	136
7.1.4	Performance Parameters	138
7.1.5	Fuel costs	139
7.1.6	Fuel costs per unit (kWh)	140
7.1.7	Fuel costs per G. Calories	140
7.2	Capital expenditure	141
7.2.1	Capital expenditure for new projects	142
7.3	Projected fixed costs for the control period (FY 2011-12 to 2015-16)	144
7.3.1	Depreciation	144
7.3.2	Interest and Finance charges for FY 2011-12 to 2015-16	146
7.3.3	Return on equity	149
7.3.4	Operation and Maintenance (O&M) expenses	151
7.3.5	Water charges for FY 2011-12 to 2015-16	156
7.3.6	Insurance charges for FY 2011-12 to 2015-16	158
7.3.7	Interest on working capital for FY 2011-12 to 2015-16	159
7.3.8	Tax on income for FY 2010-11 to 2015-16	160



7.3.9	SLDC charges for FY 2011-12 to 2015-16	162
7.3.10	Non-tariff income	164
7.3.11	Projected fixed cost	165
7.3.12	Approved fixed cost	168
8	Compliance of Directives	189
8.1	Compliance of directives issued by the Commission	189
8.2	Directives	189
8.2.1	Directive 1: Renovation and Modernization (R&M) of Thermal Plant	189
8.2.2	Directive 2: Energy Audit	190
8.2.3	Directive 3: Quality of Coal	190
8.2.4	Directive 4 : Transit Loss of Coal	191
8.2.5	Directive 5: Power Purchase Agreement between GSECL & GUVNL	192
8.2.6	Directive 6: Submission of Financial Figures in Rupees crore ..	192
8.2.7	Directive 7: Calculation of Depreciation	193
8.3	New Directives	194
8.3.1	Business Plan.....	194
8.3.2	Sikka TPS	194
8.3.3	KLTPS Unit- 4	195
8.3.4	Water Charges	195
8.3.5	Cost Audit of generating stations	195
	Commission's Order	196

TABLES

Table	Title	Page
2.1	Total Fixed cost for FY 2011-12 to 2015-16	8
2.2	Energy charges for FY 2011-12 to 2015-16	8
4.1	Capacity, COD & Age of GSECL generating stations as on 1 st April 2009	23
4.2	Plant Availability Factor for FY 2009-10	25
4.3	Plant Availability Factor approved for truing up for FY 2009-10	27
4.4	Plant Load Factor for FY 2009-10	28
4.5	Plant Load Factor FY 2009-10 for truing up	29
4.6	Auxiliary consumption for FY 2009-10	29
4.7	Auxiliary consumption approved for FY 2009-10 for truing up	31
4.8	Station heat rates for FY 2009-10	32
4.9	Station heat rates approves for FY 2009-10 for truing up	33
4.10	Secondary fuel oil consumption for FY 2009-10	34
4.11	Secondary fuel oil consumption approved for FY 2009-10 for truing up ...	35
4.12	Transit loss for FY 2009-10	36
4.13	Transit loss approved for FY 2009-10 for truing up	36
4.14	Performance parameters approved for truing up purpose for the FY 2009-10	37
4.15	The gross and net generation for FY 2009-10 for truing up purpose	38
4.16	Wt. Av. Gross Calorific Value (GCV) of fuels for different stations for FY 2009-10	39
4.17	The Mix of Different Types of Coal for FY 2009-10	39
4.18	Wt. Av. Price / Unit of Fuels for 2009-10 (Actual)	40
4.19	Approved Fuel Cost of Different Stations for FY 2009-10 for Truing up ...	41
4.20	Cost of different fuels as per audited annual accounts and as approved for Truing up for FY 2009-10	42
4.21	Approved gains / losses from fuel expenses for FY 2009-10	42
4.22	Depreciation for FY 2009-10	43
4.23	Gains / losses from depreciation claimed for FY 2009-10	43
4.24	Approved station-wise depreciation charges and gains / loss from depreciation for FY 2009-10	45
4.25	Interest and finance charges claimed in truing up for FY 2009-10	46
4.26	Gains / losses from Interest & finance charges claimed for FY 2009-10	46
4.27	Approved interest and finance charges & gains/losses for FY 2009-10 ...	47
4.28	Return on equity for FY 2009-10	48
4.29	Gains / losses from return on equity claimed for FY 2009-10	48
4.30	Approved return on equity and gains/losses for FY 2009-10	49
4.31	O&M expenses for FY 2009-10 (Truing up)	50
4.32	Gains / losses from O&M expenses for FY 2009-10	50
4.33	Approved from O&M expenses gains / loss for FY 2009-10	52
4.34	Interest on working capital claimed by GSECL in truing up for FY 2009-10	53
4.35	Gains / losses from Interest on working capital claimed for FY 2009-10 ..	53
4.36	Approved gains/losses from interest from working capital for FY 2009-10 ..	54
4.37	Insurance charges for FY 2009-10 (Truing up)	55
4.38	SLDC charges for FY 2009-10	55
4.39	Approved SLDC charges gains/losses for FY 2009-10	56
4.40	Income tax for FY 2009-10 (True-up)	57



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

4.41	Approved income tax gains/losses from MAT for FY 2009-10	57
4.42	ARR approved in the Truing up for FY 2009-10	58
4.43	Sharing of Gains/losses due to fuel cost as controllable factors	59
4.44	Sharing of Gains/losses due to controllable O&M Expenses	60
4.45	Gain/(loss) due to uncontrollable factors	60
4.46	Consolidated gains/(loss) to be included in ARR for FY 2011-12	61
5.1	Capacity, COD & age of GSECL generating stations as on 1 st April 2010	76
5.2	Plant availability factor for FY 2010-11	78
5.3	PAF considered for FY 2010-11 for the purpose of APR	80
5.4	Plant load factor for FY 2010-11	80
5.5	PLF considered for APR for FY 2010-11	81
5.6	Auxiliary consumption for FY 2010-11	82
5.7	Auxiliary consumption considered for the purpose of APR for FY 2010-11	83
5.8	Station heat rates for FY 2010-11	84
5.9	Station heat rates considered for APR for FY 2010-11	86
5.10	Secondary fuel oil consumption for FY 2010-11	87
5.11	Secondary fuel oil consumption considered for APR for FY 2010-11	88
5.12	Transit loss of coal for FY 2010-11	88
5.13	Transit loss of coal considered for APR for FY 2010-11	89
5.14	Performance parameters considered for the purpose of APR for FY 2010-11	89
5.15	Gross and net generation for FY 2010-11 for the purpose of APR	90
5.16	Wt. Av. Gross calorific value (GCV) (RE) of fuels for different stations for FY 2010-11	91
5.17	The mix of different types of coal for FY 2010-11 (RE)	92
5.18	Wt. Av. Price / unit of fuels for FY 2010-11 (RE)	92
5.19	Fuel cost of different stations considered for FY 2010-11 for APR	93
5.20	Depreciation charges projected by GSECL for FY 2010-11	94
5.21	Depreciation charges considered by Commission in the Review for FY 2010-11	95
5.22	Interest and Finance charges projected by GSECL for FY 2010-11	96
5.23	Interest and Finance charges considered in APR for FY 2010-11.....	97
5.24	Return on equity projected by GSECL for FY 2010-11.....	97
5.25	Return on equity considered in APR for FY 2010-11	98
5.26	O&M expenses projected by GSECL for FY 2010-11 (APR)	99
5.27	O&M expenses considered in APR for FY 2010-11	100
5.28	Interest on working capital projected by GSECL for FY 2010-11	101
5.29	Interest on working capital considered in APR for FY 2010-11	102
5.30	Insurance charges projected by GSECL for FY 2010-11 (APR)	102
5.31	Insurance charges considered in APR for FY 2010-11	103
5.32	SLDC charges projected by GSECL for FY 2010-11 (APR)	104
5.33	SLDC charges considered in APR for FY 2010-11	104
5.34	Fixed charges considered in the performance review for FY 2010-11	105
6.1	Capacity, COD and age of GSECL generating stations as on 01/04/11 ..	119
6.2	Future capacity additions of GSECL	120
6.3	Projected plant availability factors for control period FY 2011-12 to FY 2015-16	122
6.4	Approved plant availability factors for control period 2011-12 to 2015-16	123
6.5	Projected load factor for control period 2011-12 to 2015-16	123



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

6.6	Approved plant load factor for control period 2011-12 to 2015-16	124
6.7	Projected auxiliary consumption for the control period FY 2011-12 to FY 2015-16	125
6.8	Approved auxiliary consumption for the control period FY 2011-12 to FY 2015-16	126
6.9	Projected station heat rates for the control period FY 2011-12 to FY 2015-16	126
6.10	Approved station heat rates for the control period FY 2011-12 to FY 2015-16	127
6.11	Projected secondary fuel oil consumption for the control period FY 2011-12 to FY 2015-16	127
6.12	Approved secondary fuel oil consumption for the control period FY 2011-12 to FY 2015-16	128
6.13	Projected transmit loss of coal for the control period FY 2011-12 to FY 2015-16	129
6.14	Transit loss of coal approved for the control period FY 2011-12 to FY 2015-16	129
6.15	Approved parameters of PAF, PLF, Auxiliary consumption, heat rate, specific oil consumption and heat rates for FY 2011-12 to FY 2015-16 ...	130
6.16	Projected gross and net generation for the control period FY 2011-12 to FY 2015-16	131
6.17	Approved gross and net generation for the control period FY 2011-12 to FY 2015-16	131
7.1	Projected percentage of mix of coal for the control period FY 2011-12 to FY 2015-16	133
7.2	Approved percentage of mix of coal for the control period FY 2011-12 to FY 2015-16	133
7.3	Projected Wt. Av. GCV of different Fuels for the control period FY 2011-12 to FY 2015-16	134
7.4	Computation of Wt. Av. GCV of coal for the control period FY 2011-12 to FY 2015-16	135
7.5	Wt. Av. GCV of different fuel approved for the control period FY 2011-12 to FY 2015-16	135
7.6	Projected Wt. Av. Price of coal for the control period 2011-12 to 2015-16	136
7.7	Projected Wt. Av. Price of secondary fuel oil for the control period FY 2011-12 to FY 2015-16	136
7.8	Projected Wt. Av. Price of gas for control period FY 2011-12 to FY 2015-16	137
7.9	Approved Wt. Av. Price per unit of different fuels for control period FY 2011-12 to FY 2015-16	137
7.10	Approved performance parameters for control period FY 2011-12 to FY 2015-16	138
7.11	Approved fuel costs for the control period FY 2011-12 to FY 2015-16 along with projected costs	139
7.12	Approved fuel costs per unit for the control period for FY 2011-12 to FY 2015-16	140
7.13	Approved fuel cost per G.Cal for control period FY 2011-12 to FY 2015-16	140
7.14	Capital expenditure projected by GSECL for the control period for FY 2011-12 to FY 2015-16	141
7.15	Capital expenditure for new projects	143



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

7.16	Depreciation projected for FY 2011-12 to FY 2015-16	144
7.17	Depreciation rates projected by GSECL	145
7.18	Depreciation approved for FY 2011-12 to 2015-16	146
7.19	Proposed interest and finance charges for FY 2011-12 to FY 2015-16 ...	146
7.20	Plant-wise Wt. Av. Interest rates for FY 2009-10 furnished by GSECL ...	147
7.21	Interest and finance charges approved by the Commission for FY 2011-12 to 2015-16	148
7.22	Return on equity projected for FY 2011-12 to FY 2015-16	149
7.23	Details of opening equity projected by GSECL for 2011-12 to 2015-16 ...	150
7.24	Return on equity approved by the Commission for FY 2011-12 to FY 2015-16	150
7.25	Proposed O&M expenses for FY 2011-12 to FY 2015-16	151
7.26	O&M expenses projected for FY 2011-12	152
7.27	O&M expenses projected for FY 2012-13	153
7.28	O&M expenses projected for FY 2013-14	153
7.29	O&M expenses projected for FY 2014-15	154
7.30	O&M expenses projected for FY 2015-16	154
7.31	Approved O&M charges for FY 2011-12 to FY 2015-16	156
7.32	Proposed water charges for FY 2011-12 to FY 2015-16	156
7.33	Water charges approved by the Commission for FY 2011-12 to 2015-16	157
7.34	Proposed insurance charges for FY 2011-12 to FY 2015-16	158
7.35	Proposed interest on working capital for FY 2011-12 to FY 2015-16	159
7.36	Approved interest on working capital for FY 2011-12 to FY 2015-16	160
7.37	Tax on income projected for FY 2011-12 to FY 2015-16	160
7.38	Tax on income approved for FY 2011-12 to FY 2015-16	162
7.39	Projected SLDC charges for FY 2011-12 to FY 2015-16	162
7.40	Approved SLDC charges for FY 2011-12 to FY 2015-16	163
7.41	Non-tariff Income actual for FY 2006-07 to 2009-10	164
7.42	Approved Non-tariff Income for FY 2011-12 to FY 2015-16	165
7.43	Total fixed cost projected for FY 2011-12	165
7.44	Total fixed cost projected for FY 2012-13	166
7.45	Total fixed cost projected for FY 2012-14	166
7.46	Total fixed cost projected for FY 2014-15	167
7.47	Total fixed cost projected for FY 2015-16	167
7.48	Approved fixed charges for FY 2011-12	169
7.49	Approved fixed charges for FY 2012-13	170
7.50	Approved fixed charges for FY 2013-14	171
7.51	Approved fixed charges for FY 2014-15	172
7.52	Approved fixed charges for FY 2015-16	173
7.53	Component wise Fixed cost projected and approved for the MYT period FY 2011-12 to 2015-16	174
7.54	Energy charges projected and approved for the MYT period FY 2011-12 to FY 2015-16	175
7.55	Station-wise fixed cost projected and approved for the MYT period FY 2011-12 to FY 2015-16	176



ANNEXURE

Annexure	Title	Page No.
	Truing up for FY 2009-10	
4.1	Fuel costs (Coal, Lignite & Secondary Oil) - Ukai TPS 1 to 5	63
4.2	Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 1-4	64
4.3	Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 5	65
4.4	Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 1-6	66
4.5	Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 7	67
4.6	Fuel costs (Coal, Lignite & Secondary Oil) - Sikka TPS	68
4.7	Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 1-3	69
4.8	Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 4	70
4.9	Fuel costs (Coal, Lignite & Secondary Oil) - Dhuvaran Oil	71
4.10	Fuel costs (Gas) Dhuvaran Gas 1	72
4.11	Fuel costs (Gas) Dhuvaran Gas 2	73
4.12	Fuel costs (Gas) Utran Gas	74
4.13	Fuel costs (Gas) Utran Extension	75
	Annual Performance Review for FY 2010-11	
5.1	Fuel costs (Coal, Lignite & Secondary Oil) - Ukai TPS 1 to 5	107
5.2	Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 1-4	108
5.3	Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 5	109
5.4	Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 1-6	110
5.5	Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 7	111
5.6	Fuel costs (Coal, Lignite & Secondary Oil) - Sikka TPS	112
5.7	Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 1-3	113
5.8	Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 4	114
5.9	Fuel costs (Gas) - Dhuvaran Gas 1	115
5.10	Fuel costs (Gas) - Dhuvaran Gas 2	116
5.11	Fuel costs (Gas) - Utran Gas	117
5.12	Fuel costs (Gas) - Utran Extension	118
	Control period FY 2011-12 to 2015-16	
7.1	Fuel costs (Coal, Lignite & Secondary Oil) - Ukai TPS 1 to 5	177
7.2	Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 1-4	178
7.3	Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 5	179
7.4	Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 1-6	180
7.5	Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 7	181
7.6	Fuel costs (Coal, Lignite & Secondary Oil) - Sikka TPS	182
7.7	Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 1-3	183
7.8	Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 4	184
7.9	Fuel costs (Coal, Lignite & Secondary Oil) - Dhuvaran Gas 1	185
7.10	Fuel costs (Coal, Lignite & Secondary Oil) - Dhuvaran Gas 2	186
7.11	Fuel costs (Coal, Lignite & Secondary Oil) - Utran Gas	187
7.12	Fuel costs (Coal, Lignite & Secondary Oil) - Utran Extension	188



ABBREVIATIONS

ABT	Availability Based Tariff
Act	Electricity Act, 2003
AOH	Annual Overhauling
APR	Annual Performance Review
ARR	Aggregate Revenue Requirement
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
COH	Capital Overhauling
CUF	Capacity Utilization Factor
CV	Calorific Value
DISCOMs	Distribution Companies
ESP	Electro static precipitator
FPPPA	Fuel and Power Purchase Price Adjustment
FY	Financial Year
GCV	Gross Calorific Value
GEB	Gujarat Electricity Board
GERC	Gujarat Electricity Regulatory Commission
GETCO	Gujarat Energy Transmission Corporation Limited
GFA	Gross Fixed Assets
GoG	Government of Gujarat
GSECL	Gujarat State Electricity Corporation Limited
GUVNL	Gujarat Urja Vikas Nigam Limited
HSD	High Speed Diesel
IPP	Independent power producer
K.Cal	Kilo Calorie
KV	Kilo Volt
KWh	Kilo Watt Hour
LSHS	Low Sulphur Heavy Stock
MW	Mega Watt
MYT	Multi Year Tariff
NCV	Net Calorific Value
O&M	Operation & Maintenance
OEM	Original Equipment Manufacturer
OPEC	Organization of Petroleum Exporting Countries
PAF	Plant Availability Factor
PG test	Performance Guarantee Test
PLF	Plant Load Factor
R & M	Renovation & Modernization
R E	Revised Estimates
ROE	Return on Equity
RSD	Re-start Duration
Scm	Standard cubic meter
SHR	Station Heat Rate
SLDC	State Load Despatch Centre
Wt. Av.	Weighted Average



Before the Gujarat Electricity Regulatory Commission at Ahmedabad

Case No. 1061 of 2011

Date of the Order 11.04.2011

CORAM

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

ORDER

1. Background and Brief History

1.1 Background

The Gujarat State Electricity Corporation Limited (hereinafter 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 and Gujarat Electricity Regulatory Commission (Multi-Year-Tariff Framework) Regulations, 2007 (hereinafter referred to as 'MYT Regulations, 2007) on 30th December 2010 for Truing up of FY 2009-10, Annual Performance Review (APR) for FY 2010-11 and Aggregate Revenue Requirement (ARR) and determination of Tariff for the control period FY 2011-12 to FY 2015-16.

The Commission did a technical validation of the petition and admitted the petition on 3rd January, 2011.



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 and 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 is 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) as on the date mentioned in the notification have been considered by the Commission in line with the Financial Restructuring Plan (FRP) as approved by Government of Gujarat.

1.3 Commission's Orders 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 GERC. The Commission, in exercise of the powers vested in it under sections 61 to 64 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.

The Commission issued the orders on the Annual Performance Review for FY 2008-09 and determination of tariff for FY 2009-10 on 14th December 2009 and Truing up of FY 2008-09, Annual Performance Review for FY 2009-10 and determination of tariff for FY 2010-11 on 31st March 2010.

Subsequently, the Commission issued an order dated 3rd February, 2011 on the review petition filed by the petitioner requesting review of the Commission's order dated 31st March, 2010 seeking review of technical parameters for some generating stations based on local operating conditions. The Commission found that there was some justification for review and accordingly revised (i) PAF of WTPS 1-6, (ii) Auxiliary Consumption of Utran Gas I (iii) SHR of Ukai, Gandhinagar 1-4, Wanakbori 1-6 and Sikka TPS for the year 2010-11.

1.4 Admission of the Current Petition and Public Hearing Process

The GSECL submitted the current petition for 'truing up' of FY 2009-10, Annual Performance Review (APR) for FY2010-11 and the determination of Aggregate Revenue Requirement (ARR) for the generation business for the period FY 2011-12 to FY 2015-16 and determination of tariff for FY 2011-12. The Commission undertook the technical validation of the petition and admitted the petition (Case No.1061 of 2011) on 3rd January 2011.

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, 2011 inviting objections / suggestions from its stakeholders on the ARR petition filed by it.

1. Indian Express (English)
2. Sandesh (Gujarati)

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



The interested parties/stakeholders were asked to file their objections / suggestions on the petition on or before 7th February 2011.

GSECL / Commission received objections / suggestions from two consumer organisations. The Commission examined the objections / suggestions received and fixed the date for public hearing for GSECL to be held at Commission's Office, Ahmedabad on 23rd February. Communication was sent to these objectors to take part in the public hearing process for presenting their views in person before the Commission. The public hearing was conducted in Commission's Office in Ahmedabad as scheduled.

The names of the organizations that filed their objections and the objectors who participated in the public hearing for presenting their objections are given below:

Sr. No.	Name of organization	Participated in the Public Hearing
1.	Consumer Education and Research Society	Yes
2.	Gondal Chamber of Commerce and Industry	No

A short note on the main issues raised by the objectors in the written submissions and also in public hearing in respect of the petition along with the response of GSECL and the Commission's views on the response are briefly given in chapter 3.

1.5 Contents of this Order

This order is divided into **eight** chapters as under:

1. The **first** chapter provides a background of the petitioner, the petition and details of the public hearing process and the approach adopted for this order.
2. The **second** chapter outlines the summary of GSECL's MYT petition.
3. The **third** chapter provides a brief account of the public hearing process, including the objections raised by various stakeholders, GSECL's response and the Commission's views on the response.
4. The **fourth** chapter deals with the 'Truing up' for FY 2009-10.
5. The **fifth** chapter deals with Annual Performance Review (APR) for FY 2010-11
6. The **sixth** chapter deals with the Performance of the Generating Stations for the control period 2011-12 to 2015-16.
7. The **seventh** chapter deals with the Aggregate Revenue Requirement (ARR) for the control period of FY 2011-12 to 2015-16.



8. The **eighth** chapter deals with the compliance of directives.

1.6 Approach of this Order

The Multi-Year Tariff Regulations, 2007 provide for 'truing up' of previous year, Annual Performance Review (APR) for the current year and determination of tariff for the ensuing year. The Commission had approved the ARR for the three years of the first control period FY 2008-09 to FY 2010-11 in the MYT order dated 17th January 2009. The Commission had also approved the 'truing up' of the FY 2008-09 in the tariff order dated 31st March 2010.

The GSECL has approached the Commission with the present petition for 'truing up' of the FY 2009-10, the annual performance review for the FY 2010-11 and determination of ARR for the period FY 2011-12 to FY 2015-16, the control period and determination of tariff for the FY 2011-12.

In this order the Commission has considered the 'truing up' of the FY 2009-10, the annual performance review for the FY 2010-11 and determination of ARR for the period FY 2011-12 to FY 2015-16, the control period and the tariff for the FY 2011-12.

The Commission has undertaken 'Truing up' of the FY 2009-10, performance review for FY 2010-11 based on the submissions of the petitioner. However, the Commission has undertaken the computation of gains and losses for the FY 2009-10 based on the audited annual accounts made available. The Commission has not undertaken the computation of gains and losses for the FY 2010-11 as the audited accounts are not available. The computation of gains and losses would be undertaken for the FY 2010-11 based on audited annual accounts of the petitioner during the FY 2011-12, while finalizing the tariff order for FY 2012-13.

While considering the revision of the ARR the Commission has been primarily guided by the following principles:

1. Controllable parameters have been considered at the level approved under the MYT order unless the Commission considers there are valid reasons for revision of the same.

2. Uncontrollable parameters have been revised based on the actual performance observed.

The truing up of the FY 2009-10 and annual performance review for FY 2010-11 have been considered based on the MYT Regulations-2007. While considering the Review Petition filed by GSECL for review of certain operational parameters approved for the generating stations in the Tariff Order for FY 2010-11 issued on 31st March, 2010 the Commission has revised the norms contained in the order dated 3rd February, 2011. The revised norms have been considered in the Annual Performance Review for FY 2010-11.

The determination of ARR for the period FY 2011-12 to FY 2015-16 and the determination of the tariff for FY 2011-12 have been considered as per GERC (MYT) Regulations, 2011. The first draft of these Regulations along with discussion paper was circulated to all the stakeholders on 14th December, 2010. Based on the comments / suggestions received from the stakeholders the Commission has notified these Regulations as GERC (Multi Year Tariff) Regulations 2011 on 22nd March, 2011.

Regulation 1.4 (a) of these Regulations, 2011 reads as under:

“These Regulations shall be applicable for determination of tariff in all cases covered under these Regulations from 1st April 2011 and onwards”.

1.7 Business Plan

GSECL has submitted the Business Plan for the control period of five (5) years from 1st April 2011 to 31st March 2016 in accordance with the directive of the Commission vide Letter No.GERC/MYT/Tariff-2010/1794 dated 12th November, 2010. It is observed that the assumptions used by the company in the Business Plan are in variance with the provisions of MYT Regulations 2011 based on which the (MYT) order is being issued.

GSECL has therefore, to revise the Business Plan in accordance with the provisions / norms of the (MYT) Regulations, 2011 and submit the same within three months of issue of this order.



Chapter 2

Summary of GSECL ARR and Tariff Petition for the FY 2011-12 to FY 2015-16

2.1 Summary of GSECL Tariff Petition

GSECL in its petition submitted the projected operational parameters and costs for each of the generating stations owned and operated by it. The Operational Parameters pertain to plant availability, plant load factor, station heat rate (SHR), auxiliary consumption, specific oil consumption, transit loss of coal, gross and net generation. The costs cover both variable and fixed costs including O&M expenses.

GSECL has mentioned that all the operational parameters of the stations transferred to it from GEB are based on present operating conditions of plants and overhauling / R&M schedule of the plants.

GSECL has also mentioned that for the PPA based stations, all the parameters are based on the provisions of PPAs. For the thermal power stations of GSECL where the availability factor is less than 80%, such lower availability factor is to be considered as neutralization level for full fixed cost recovery. For the Hydro Stations, the neutralization level for full fixed cost recovery will be availability of machines, irrespective of whether water is released or not, by the State Irrigation Department subject to a ceiling of 80% availability of machines.

GSECL has submitted the Operational Parameters and costs for the approval of the Commission. The approved parameters and costs would be the basis for billing GUVNL- the sole purchaser of power from GSECL.

2.2 Summary of fixed and variable costs projected by GSECL

The fixed costs projected by GSECL for FY 2011-12 to FY 2015-16 are given in Table 2.1 and energy charges in Table 2.2 below:

Table 2.1: Total Fixed Costs for FY 2011-12 to FY 2015-16

(Rs. crores)

Sr. No.	Generating Station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	421	329	371	385	385
2.	Gandhinagar (1-4)	273	306	313	321	328
3.	Gandhinagar-5	117	120	122	126	129
4.	Wanakbori 1-6 TPS	550	533	595	625	636
5.	Wanakbori-7	111	113	116	119	122
6.	Sikka TPS	168	130	131	132	134
7.	KLTPS 1-3	264	196	195	193	192
8.	KLTPS-4	144	124	121	118	116
9.	Dhuvaran (Gas-1)	68	64	64	69	67
10.	Dhuvaran (Gas-2)	109	103	99	101	107
11.	Utran Gas*	65	67	69	70	71
12.	Utran Extension	338	331	326	321	318
13.	Ukai Hydro	48	40	40	40	40
14.	Kadana Hydro	74	75	75	74	74
15.	Dhuvaran (Oil)	13	-	-	-	-
	Total	2763	2531	2636	2695	2720

Table 2.2: Energy Charges for FY 2011-12 to FY 2015-16

Sr. No.	Generating Station	2011-12 (Rs/kWh)	2012-13 (Rs/kWh)	2013-14 (Rs/kWh)	2014-15 (Rs/kWh)	2015-16 (Rs/kWh)
1.	Ukai (1-5)	2.10	2.19	2.29	2.40	2.51
2.	Gandhinagar (1-4)	2.95	3.06	3.21	3.37	3.53
3.	Gandhinagar-5	2.54	2.66	2.79	2.93	3.07
4.	Wanakbori 1-6 TPS	2.48	2.60	2.72	2.86	3.00
5.	Wanakbori-7	2.35	2.47	2.59	2.71	2.85
6.	Sikka TPS	3.07	3.21	3.36	3.52	3.69
7.	KLTPS 1-3	1.60	1.67	1.75	1.83	1.92
8.	KLTPS-4	1.67	1.73	1.79	1.87	1.95
9.	Dhuvaran (Gas-1)	3.15	3.37	3.61	3.86	4.13
10.	Dhuvaran (Gas-2)	2.91	3.11	3.33	3.56	3.81
11.	Utran Gas*	3.51	3.75	4.02	4.30	4.60
12.	Utran Extension	2.76	2.95	3.16	3.38	3.62

GSECL has requested the Commission:

1. To admit this Truing up for FY 2009-10, Annual Performance Review for FY 2010-11 and MYT petition for the control period of FY 2011-12 to FY 2015-16.
2. To approve the gains/ losses for the Truing up for FY 2009-10, Annual Performance Review for FY 2010-11 and allow sharing of such gains/ losses as prescribed in the MYT Regulations.



3. To approve gains/losses for FY 2008-09 as approved in Tariff Order dated 14th December, 2009 for Annual Performance Review for FY 2008-09 and Annual Tariff Determination for FY 2009-10.
4. To allow the adjustment related to the Judgment on pending Review Petition No. 1032/2010 filed by GSECL.
5. To approve Aggregate Revenue Requirement and Capital Expenditure for MYT control period FY 2011-12 to 2015-16.
6. To approve the operational and financial parameters as proposed by GSECL considering the vintage and constraints of the old machines, and consider the same for recovery of full fixed cost.
7. To approve the financial parameters and separate water charges at actuals as proposed by GSECL.
8. To approve the Station operating parameters viz. PAF, Auxiliary Consumption, Station Heat Rate, Transit Loss, Specific Oil Consumption and actual fuel rate for each of the stations of GSECL for recovery of variable cost considering the vintage and constraints of the old machines as well as site specific constraints.
9. To approve reimbursement of Tax on Income earned through the sale of power.
10. To approve incentive charges as prayed.
11. To grant any other relief as the Commission may consider appropriate.
12. To allow further submissions, addition and alteration to this Petition as may be necessary from time to time.
13. To pass any other order, as the Commission may deem fit and appropriate under the circumstances of the case and in the interest of justice.



Chapter 3

Brief outline of objections raised, response from GSECL and Commission's view

3.1 Public Response to the Petition

In response to the public notice inviting objections / suggestions from stakeholders on the petition filed by GSECL for True up (ARR) of FY 2009-10, Annual Performance Review (APR) of FY 2010-11 and for approval of Aggregate Revenue Requirement (ARR) for generation business of the control period FY 2011-12 to 2015-16 and determination of tariff for FY 2011-12, two consumer organizations i.e., (i) Gondal Chamber of Commerce and Industry and (ii) Consumer Education and Research Society (CERS) have filed their objections / suggestions in writing. During the public hearing conducted on 23rd February, 2011, only CERS participated. The Gondal Chamber of Commerce and Industry did not participate in the public hearing, however it had requested the Commission to consider its objections already submitted vide letter dated 31st January, 2011.

The Commission has considered the objections / suggestions, the issues presented before the commission and the response of GSECL on the same.

The details of submissions made by the objectors, response of the petitioner and the views of the Commission are summarized in the following sections.

3.2 Name of the Objector 1: Consumer Education and Research Society

Objection 1: Capacity addition in last ten years

The capacity addition in Gujarat by the Petitioner during the last ten years against the de-rated / scrapped units of old plants is as given below:

a) Plants scrapped

(i) Dhuvaran Unit 1-4	67.5x4	=	270 MW
(ii) Dhuvaran Unit 5-6	140x2	=	280 MW
			<u>550 MW</u>



b) The details of new plants installed

(i)	Dhuvaran Unit 7	106.6 MW	28.01.2004
(ii)	Dhuvaran Unit 8	112.4 MW	01.11.2007
(iii)	Utran Extension	375 MW	08.11.2009
(iv)	KLTPS Unit-4	75 MW	20.12.2009
	Total	669 MW	
	Windmills	10 MW	
	Total	679 MW	

Therefore the total capacity addition during last 12 years is only 679-550=129 MW which is a meagre 2.5% of the total Installed capacity. The Petitioner therefore has to purchase power from Independent Power Producers (IPPs) at exorbitant rates putting additional burden on consumers.

Response of GSECL

The addition during the last 10 years, i.e. 2001 -2010, mentioned above is correct. Before unbundling of GEB, there was a huge cash loss, so there was no substantial scope of expansion of the capacity. However, we GSECL added 679 MW in spite of financial constraint. It has to be appreciated that over and above the addition of 679 MW, implementation of about 3775 MW capacity is in the process as given below:

Sr. No.	Name of Station / Unit	Capacity (MW)	Probable COD
1	Ukai TPS Unit No. 6	500	2011-12
2	Sikka TPS Unit Nos. 3&4 (2 x 250 MW)	500	2015-16
3	Dhuvaran CCPP Unit 3	375	2013-14
4	Wanakbori TPS Unit 8	800	2015-16
5	Sinor / Dholera	1600	2016-17
	Total Capacity: MW	3775	

Capacity addition of the company during the last 10 years is as submitted by the Respondent, but during the last 12 years, i.e. since 1998, GSECL has added 1218.838 MW as under:



Sr. No.	Name of Unit	Capacity (MW)	Year of Commissioning
1	Gandhinagar-5	210	1998
2	Wanakbori-7	210	1998
3	Kadana Hydro-3	60	1998
4	Kadana Hydro-4	60	1998
5	Dhuvaran CCPP-I	106.617	2004
6	Dhuvaran CCPP-II	112.45	2007
7	Utran GBPS-II	374.571	2009
8	KLTPS-4	75	2009
	Non-traditional Plant:		
9	Wind Energy	10	2008
	Total MW Capacity Addition	1218.838	Since 1998

Dhuvaran oil unit Nos. 1 to 6 having total capacity of 534 MW were retired because they had served their useful life since long and they were oil fired units with low sulphur heavy stock (LSHS). Because of abnormal generation cost due to price hike in oil as well as discontinuation of supply of high-speed diesel (HSD) by oil company, as informed earlier, R&M was also not worthwhile. Also, because of abnormal hike in LSHS prices during the last few years; these units had hardly any chance to generate power as per the merit order. Hence, firstly, Unit Nos. 1 to 4 were retired after service of 42-43 years and recently Unit Nos. 5 & 6 were retired after completing nearly 38 years i.e. 13 year above the useful life, which is a natural phenomenon and for that it should be considered that capacity addition is 679 (678.838 MW) whereas retirement of the capacity is 534 MW, and both should be treated separately.

So, all efforts are made by the Petitioner to increase the generating capacity. It was known that, capacity addition requires three to four years for installation of the plant. As per the guidelines, all power producers have to enter into Power Purchase Agreement and we have to sell the power to GUVNL as per the PPA, generating company has no powers to purchase the power.

Commission's view

It is true that GEB / GSECL have not added substantial capacity during the last 10 years. As stated by GSECL it is mainly due to resource crunch. The company has taken initiative to install additional capacity of about 3775 MW during the next 5 to 6 years. Addition of this capacity, purchase of power from IPPs and share from central



generating stations will relieve the state from power shortage to a large extent in coming years.

Objection 2: Truing up for FY 2009-10

The Petitioner has incurred an additional loss of Rs.228 crore in this year against the approved loss of Rs. 99 crores as per the tariff order dated 14th December 2009. Thus the total loss carried forward has increased to Rs.327 crores in 2009-10. The Petitioner has suggested to recover Rs.29 crore from consumers under controllable factor as per Multi Year Tariff Regulations. The deficit has increased due to inefficiencies of the Petitioner where Station Heat Rate, Auxiliary Consumption and Specific Fuel Oil Consumption are higher than approved by Commission. The Respondent therefore requests the Commission to reject this deficit and direct the Petitioner to improve the performance of Sikka, Kutch Lignite and Ukai plants, which have put additional burden on electricity consumers of Gujarat.

Response of GSECL

The loss of Rs.99 crore stated by the objector is the approved gap of 2008-09 by the Commission and not the approved loss of 2009-10 (The loss actually is Rs.85.96 crore). Further Rs.228 crore is the revenue gap, which the Petitioner has prayed as per MYT framework for the year 2009-10. So there is no correlation in the contention of the Respondent. The reasons of lower performance have been given in detail in the petition for each plant. However, the present operating parameters are due to several factors like aging, number of starts-stops, automation, condenser vacuum, lower CV of coal supply than the design CV of coal, and many more..

As far as improvement of the plants viz. Ukai, Sikka and Kutch Lignite Power Stations, the reasons have already been submitted in detail. For information the petitioner submits that major problems, in brief, are that all units of Ukai Unit No. 1-4 have completed their useful life, they do not have HP/LP By-pass and irreparable design deficiency which cannot be improved by even R&M. Consequently, high startup time (as much as 36 hours) affects all the parameters badly. Also though R&M of Unit Nos.1&2 have been completed, guaranteed parameters are yet to be achieved and the Original Equipment Manufacturer (OEM) M/s BHEL is trying for the same. It is expected that OEM M/s BHEL will resolve the problem. Further, Sikka Units are being operated at low load due to low tide and less availability of sea water for condenser cooling, due to which the vacuum gets affected and machines have to



run at partial load. After the approval of de-silting of the seawater canal, the problem is expected to be resolved and the machines can be run consistently, provided they are not subjected to Backing Down or Reserve Shut Down under merit order. In case of KLTPS 1-3 units, the major reason is deteriorating quality of lignite, due to which these machines cannot achieve full load. Also, Unit No. 3 have problem in Electro Static Precipitator (ESP) and also 2 stages of turbine are shaved off. The problem of ESP will be resolved in the near future and thereafter, work of turbine will be taken up. After the completion of work of ESP, it is expected to raise load on Unit No. 3. KLTPS 4 is a unit based on CFBC technology, and it is experienced that these machines get stabilized after a long duration. Even the CERC has considered 75% PAF for first 3 years and thereafter approved 80%.

Commission's view

The Commission has noted the explanation of GSECL on the poor performance of the units at Ukai, Sikka & KLTPS stations. Though the Renovation and Modernization (R&M) of units 1-2 at Ukai has been carried out by BHEL, the R&M has not achieved the guaranteed parameters of the units. This should be done on priority, so as to ensure that the units give expected performance. The units at Sikka TPS have inherent problem of low vacuum during low tide period as adequate water is not available for condenser cooling. It is stated that de-silting of sea water canal would solve the problem. This should be expedited. KLTPS 1-3 units have the problem of deteriorating quality of lignite and unit-3 has problem in the ESP and also in turbine. These have to be got attended on priority and ensured that they achieve normal operation. All possible steps are to be taken to see that unit 4 gets stabilized early and gives better performance.

Objection 3: Annual Performance Review for FY 2010-11

The Petitioner has submitted the details of performance of all plants where performance of some of its plants has deteriorated. The Petitioner wants to take shelter of ageing, poor quality of water, condition of auxiliaries etc. which could have been controlled by carrying out preventive maintenance of these plants. It is to be noted that private generating companies have increased the capacity of 30 year old plants by regular preventive maintenance with Plant Load Factor above 90%.

The following table indicates the performance (Financial) of some of the plants being operated by the Petitioner.

Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Name of the Plant	Approved Total Cost	Actual Total Cost	Increase / Decrease Rs. in Crores
Ukai TPS	1183	1231	48
Gandhinagar 1-4	1378	1396	18
Wanakbori 1-6	2281	2726	45
Sikka TPS	468	488	20
KLTPS	448	494	46
Dhuvaran (oil)	51	73	22
Total	5809	6008	199 (3.4%)

Response of GSECL

GSECL has submitted that the details submitted in table 60 are net entitlement for financial year 2010-11. This table shows total fixed cost and fuel cost at approved operational parameters and the actual total fixed and fuel cost for the financial year 2010-11. Over and above, total gain / loss are to be passed on due to controllable factors as well as uncontrollable factors, as per the MYT norms and mechanism provided thereof. So the total net entitlement for 2010-11 is as per the table mentioned above. These expenses increased mainly on account of uncontrollable factors i.e. increase in fuel cost, railway freight, sixth pay commission, water charges and repair and maintenance costs. As we are entitled for the same, it is required to be consider in this financial year. Further, GSECL is a state-owned company and it cannot be operated in the way IPPs operate their plant. They can avail shut-down and maintain as per maintenance schedule and attend the plant defects at the first instance which cannot be done by GSECL. Looking to the public responsibility, it has to observe certain obligations and operate the plant as per the situation and demand for power. Hence, performance of GSECL cannot be compared with private generators. Further, being a state-owned company and having a number of constraints and aged plants, the company has maintained 75% availability with these plants with old technology, for which, earlier, 68% PLF was the bench mark for the good performance.

Commission's view

The table of costs presented by the objector includes both total fixed and fuel costs approved by the Commission and the entitlement based on revised estimates by the company. As stated by the petitioner, there could be an increase in controllable and uncontrollable costs. The gains / losses claimed by the petitioner will be admitted only after prudence check. Moreover this is only a review. Truing up of 2010-11 will be carried out during FY 2011-12 on submission of the Annual Accounts and gains /



losses would be passed on to consumer as per the MYT Regulations. It cannot be denied that the key for better performance is the regular maintenance of plants.

Objection 4: Poor Performance of Plants

The objector has brought out certain operating parameters of the plant to highlight poor performance of the GSECL plant as under:

Plant	SHR (Kcal/Kwh)		Auxiliary Consumption (%)		SP Oil consumption (Ml/kwh)		Transit loss (%)		Energy Cost (Rs. / Kwh)	
	Approved	Actual	Approved	Actual	Approved	Actual	Approved	Actual	Approved	Actual
Ukai	2658	2872	9.1	9.34	1.5	4.87	0.8	0.8	1.82	2.04
Sikka	2750	2958	10.5	12.28	1.5	4.60	0.8	0.8	2.56	2.94
KLTPS 1-3	3300	3533	12.0	14.38	2.5	3.73	0.0	0.3	1.36	1.54
KLTPS- 4	3000	3199	12.0	23.91	2.5	8.72	0.0	0.3	1.28	1.63

It is stated by the objector that it can be observed from the above table that these plants are being operated inefficiently by the Petitioner which puts additional burden on consumers. The Commission should not transfer any burden of Inefficiency of the Petitioner to the consumers. The Performance of KLTPS 4 is most disappointing and deplorable. The Station Heat Rate of most of the plants have Increased by more than 10%. The auxiliary consumption of KLTPS-4 is almost double of what is approved by the Commission. It is shocking that the Petitioner has demanded 0.3% loss for lignite based plants where the cost per unit has increased by 27.3%. The Respondent therefore requests the Commission to reject any increase or concession in operating parameters than approved by GERC. The Petitioner cannot quote the performance of other stations which are performing poor but comparison should be made with plants operating with better efficiency.

Response of GSECL

GSECL has submitted that the reasons affecting the parameters of the GSECL plants are already submitted in detail, which have caused the under performance. Older design, design with high CV of Coal and present availability of coal and CV, no provision of LPHP By-pass, plant specific problems, old technology with less efficiency and high auxiliary consumption are the reasons attributing under performance. Many of the reasons are beyond the control of the Petitioner and for that, the Petitioner should not be blamed for under performance.



In respect to Auxiliary Consumption of KLTPS-IV, it is to submit that it has been designed with 12 MW Auxiliary Consumption and hence, its Auxiliary Consumption in terms of percentage will remain high even if the Unit runs at the rated capacity. At present, it is facing teething problem and the Original Equipment Manufacturer (OEM) is trying to resolve the same. As stated earlier, the performance guarantee (PG) Test is also not yet taken. It is expected that the original equipment manufacturer (OEM) will resolve the issue and take Performance Guarantee Test.

Commission's view

The petitioner (GSECL) has been mentioning vintage, technology and other reasons for not being able to achieve the approved operating parameters. The Commission has examined the vintage of the generating plants and certain operating constraints under which the plants of GSECL are working and fixed certain operational parameters for various thermal and hydro plants of GSECL in the MYT Regulations, 2011. GSECL shall meet these operational parameters during the period FY 2011-12 to 2015-16.

Objection 5: Plant Load Factor

The Plant Load Factor broadly indicates the performance of each power plant. The details of Plant Load Factor for 2009-10 (Actual) and 2010-11 projected are appended below:

Plant	Approved by GERC	Actual 2009-10	Projected / Actual 2010-11
Ukai	74	64.85	67.78
Gandhinagar 1-4	75	72.13	80.21
Wanakbori 1-6	85	82.99	78.63
Sikka	75	65.00	65.73
KLTPS 1-3	72	57.05	66.98
KLTPS 4	80	52.15	30.26
Dhuvaran Gas-2	90	78.99	66.32

From above details it is observed that Plant Load Factor of KLTPS 4 which was commissioned one year back (20.12.2009) has dropped to 30.26% from 52.15% of last year. The respondent demands constitution of an Expert Committee to investigate the deteriorating condition of this plant which has not stabilized in the last one year and still has teething problems.



Response of GSECL

It is to submit that Ukai and Sikka have almost achieved the approved PLF with Backing Down/ Reserve Shut down (RSD) during FY 2009-10 and on the basis of the performance from April 2010 to January 2011, it is expected that they will achieve the approved PLF during FY 2010-11 as under:

Power Station	Year 2009-10 PLF (%)				Year 2010-11 PLF (%)				
	GERC Approved	Actual PLF	Backing down + RSD	Total (PLF + Backing down)	GERC Approved	Actual PLF April 10 to January 11	Backing down + RSD April 10 to January 11	Total (PLF+ Backing down April 10 to January 11)	Anticipated for FY 10-11
Ukai	66.0	64.9	0.7	65.6	74.0	70.3	3.0	73.3	74.5
Sikka	75.0	65.0	10.7	75.7	75.0	52.2	19.1	71.2	72.8
KLTPS 1-3	75.0	57.1	0.1	57.2	75.0	66.5	0.2	66.7	67.5
KLTPS – 4	75.0	52.22	0.0	52.2	75.0	24.2	0.0	24.2	26.0

The reasons in respect to KLTPS units are submitted as above as well as in the said Petition. As stated above, after attending the defect of ESP in Unit 3, improvement in PLF is expected. Thereafter the work of turbine will start as it requires long shut down. Also, in case of KLTPS 4, the Original Equipment Manufacturer (OEM) is expected to resolve the problem and offer guaranteed parameters and PG Test accordingly.

Commission's view

The GSECL has achieved the approved PLF for most of the plants except KLTPS 3 & 4, for reasons explained by the petitioner above, GSECL shall expedite the works to be attended and ensure normal operation of the plant on priority.

Objection 6: PPA Based Plants

The Petitioner is the single entity in the field of generation but the following plants are based on Power Purchase Agreement.

1) Gandhinagar	Unit 5	210 MW
2) Wanakbori	Unit 7	210 MW
3) Dhuvaran	Unit 7	107 MW
4) Utran	Gas 1	135 MW
5) Utran	Gas 2	375 MW
Total		1037 MW



From above it is clear that more than 20% of power is being produced by PPA based power plants. PPA based power plants put additional burden on consumers as fixed costs are to be paid to Petitioner even if no power is purchased from such plants. Moreover, Petitioner cannot have status of two sets of power plants; the PPA based plants and also owned by the Petitioner. The Respondent therefore request Commission to scrap PPAs of above plants which put additional burden on electricity consumers of Gujarat.

Response of GSECL

It is to submit that five power plants having capacity of 1037 MW are entered into PPA by erstwhile GEB earlier. As per the directives of the Commission, the Petitioner has entered into PPA for all transferred power stations from erstwhile GEB, and the same is approved by the Commission and hence the PPAs cannot be scrapped.

Commission's view

The Commission has taken a conscious decision to honour the terms and conditions of PPAs entered into, before the Commission was established, irrespective of whether it is between GEB and GSECL or any other party till the agreement term is over.

3.3 Name of Objector: Gondal Chamber of Commerce & Industry

Objection 1:

There is no improvement in the performance of the power plants of GOG undertaking Companies and they give false reason of vintage power plant for more fuel consumption. In the past, during some period the fuel cost was below the market OPEC price. The proposal of present tariff is as per high rate of fuel i.e. \$134 per barrel. GSECL has not given price deduction, but adjusted their loss by profit.

Response of GSECL

GSECL claims fuels cost adjustment every quarter as per the GERC Order. The Fuel Cost Adjustment is charged on the basis of FPPPA formula as approved by the Commission for the relevant period. FPPPA formula covers both price rise as well as fall in price and accordingly, the increase/decrease in fuel price is being submitted for approval of the Commission. According to the approval, fuel cost adjustment is charged by GUVNL and DISCOMs.



Commission's view

The petitioner (GSECL) has no control over the fuel prices. The increase / decrease in fuel prices are passed on to the consumer in accordance with the FPPPA formula approved by the Commission.

Objection 2:

The performance of GSECL power plants is very poor, which puts heavy burden on Companies, Government and consumers. It has also not observed the guidelines of the Supreme Court judgment of 2002 Case No. 3588 dated 3rd October 2002 to all State Commissions relating para No. 86 to 88 and other remarks. We regret to mention that during the last 5 year period in various petitions, the Commission has not considered electricity consumer's interest which has caused heavy economic burden on consumers. Trade and industry has also suffered along with the public.

Response of GSECL

Most of the power plants of GSECL are old and over-aged, but GSECL has achieved high PAF (more than 75%) with these plants and GSECL is making all the required efforts to maintain the stations by minor and major R&M wherever required.

Commission's views

The performance of the GSECL plants is not up to the expectations and is required to be improved as stated earlier.

The paras 86 and 88 of the Supreme Court judgment No.3588 dated 3.10.2002 relate to T&D loss and employee case and closure of the plant.

The extracts of the Supreme Court observation in para 86 of the judgment, are briefly given below:

"while we agree with the Commission that it is the duty of the company to bring down the loss under this head, the same time, we feel that the same cannot be done in its entirety forthwith because of the reasons given by the Commission itself However, the Commission thought the loss should be pegged down to 16.8% for the year 2000-01 as against the actuals claimed by the company at 22.8% which we think is rather on the



lower side the company should be allowed to claim a T&D loss of 19% i.e. 2.2% more than which is allowed by the Commission and should be 18.0% for the year 2001-02..... We do notice that there is an element of adhocism in the fixation of T&D losses by us, but in a situation it is presented to us an element of adhocism cannot be escaped from”

The extracts of Supreme Court observations in para 88 of the judgment are briefly given below:

“We are in agreement with this finding of High Court. Since it is not disputed that payments made to the employees are governed by the terms of the settlement from which it will not be possible for the company to wriggle out during the currency of settlement, therefore for the year 2000-01 the actual amount spent by the company as employee cost will have to be allowed.

However, we agree with the findings of the consultants as also the Commission that the amounts spent towards wages are highly disproportionate to the energy generated as also the amounts paid as overtime to the workmen is wholly unrealistic. We also notice that the two plants are to be economically viable. Therefore the company should take steps either to make the said plants economically viable or to close down if necessary.

In this regard we notice that the Commission has for relevant year not granted the request of the company for introducing VRS by allocating required sums of money on this account which under circumstances seems to be a good one time investment for reducing the cost under the head “employees cost” while considering the tariff revision for the year 2002-03 we direct the Commission to bear this fact in mind.

The plant at Dhuvaran is closed as it is found to be un- economical. The petitioner is trying to improve the performance of other plants by taking Renovation and Modernization etc.

The Commission takes into consideration the interest of consumers while taking decisions on tariffs and other issues.

Objection 3:

If the Company is entitled to apply before the Commission as per Electricity Act, 2003 section 62, MYT Regulation provision for ARR and tariff renewal then why such long and lengthy procedure is applied in functions, time, money, stationary, notification charges which cost economic burden of public money.

Response by GSECL

The Commission may take the appropriate view in the matter.

Commission's view

Multi Year Tariff (MYT) principles are in line with section 61 of the Electricity Act, 2003 and provisions of National Tariff Policy. The MYT Regulations issued by the Commission provide certain procedure for filing the petition and determination of ARR and Tariff. This is being followed. The MYT Framework for tariff determination facilitates the generating company and the licensee to plan the investment and steps to be taken to improve the efficiencies etc. It also provides insight to consumer to know the likely tariffs for the next five years.

Objection-4:

It is suggested that the Commission may appoint 2 more members from State Consumer Forum and Bar Council for hearing along with the current 3 members of the Commission.

Response by GSECL

The Commission may decide as per the prevailing Acts and Rules.

Commission's view

There is no provision for such appointment in the Electricity Act, 2003.

Chapter 4

Truing up of FY 2009-10

4.1 Generating Stations of GSECL

GSECL owns and operates the following generating stations,

- Four coal based thermal generating stations at Ukai, Gandhinagar, Wanakbori and Sikka;
- One lignite fired thermal station at KLTPS;
- One thermal station with oil and gas fired units at Dhuvaran;
- One gas fired station at Utran;
- Two major hydel stations at Ukai and Kadana and two mini hydel stations at Panam and windmills.

The details of the stations existing as on 1st April, 2009 along with their capacities and dates of commissioning are given in Table 4.1 below:

Table 4.1: Capacity, COD & Age of GSECL generating stations as on 1st April, 2009

Name of station	Unit No.	Capacity of the unit (MW)	Date of Commissioning	Age as on 01/04/2009 (Years)
Ukai	1	120	19/03/1976	33
	2	120	23/06/1976	33
	3	200	21/01/1979	30
	4	200	11/09/1979	30
	5	210	30/01/1985	24
Sub total		850		
Gandhinagar	1	120	13/03/1977	32
	2	120	10/04/1977	32
	3	210	20/03/1990	19
	4	210	20/07/1991	18
	5	210	17/03/1998	11
Sub total		870		
Wanakbori	1	210	23/03/1982	27
	2	210	15/01/1983	26
	3	210	15/03/1984	25
	4	210	09/03/1986	23
	5	210	23/09/1986	23
	6	210	18/11/1987	21
	7	210	31/12/1998	10
Sub total		1470		
Sikka	1	120	26/03/1988	21



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Name of station	Unit No.	Capacity of the unit (MW)	Date of Commissioning	Age as on 01/04/2009 (Years)
	2	120	31/03/1993	16
Sub total		240		
KLTPS	1	70	29/03/1990	19
	2	70	25/03/1991	18
	3	75	31/03/1997	12
	4	75	20/12/2009	
Sub total		290		
Dhuvaran	5 - Oil	110	27/05/1972	37
	6 - Oil	110	10/09/1972	37
	7 - Gas	106.617	28/01/2004	5
	8 - Gas	112.45	01/11/2007	1
Sub total		439.067		
Utran	GT - 1	30	17/12/1992	16
	GT - 2	30	28/12/1992	16
	GT - 3	30	07/05/1993	16
	STG	45	17/07/1993	16
Sub total		135		
Utran Extension	GT - 1	375	08/11/2009	
Sub Total GSECL (Coal + Lignite)		3720		
Sub Total GSECL (Oil)		220		
Sub Total GSECL (Gas)		729.067		
Total GSECL (Thermal)		4669		
Ukai Hydro	1	75	08/07/1974	35
	2	75	13/12/1974	34
	3	75	22/04/1975	34
	4	75	04/03/1976	33
Sub total		300		
Ukai LBC	1	2.5	08/12/1987	21
	2	2.5	19/02/1988	21
Sub total		5		
Kadana Hydro	1	60	31/03/1990	19
	2	60	02/09/1990	19
	3	60	03/01/1998	11
	4	60	27/05/1998	11
Sub total		240		
Panam	1	1	24/03/1994	15
	2	1	31/03/1994	15
Sub total		2		
Sub Total GSECL (Hydro)		547		
Wind Mills		10		
Total capacity of GSECL		5226		



4.2 Operating Performance Parameters

The fuel cost of a generation station depends on (i) the performance parameters, such as PLF, Station Heat Rate, Auxiliary Consumption, Secondary Fuel Oil Consumption and Transit Loss of coal (in case of coal station) which are controllable and (ii) cost parameters such as Gross Calorific Value of fuel, type of fuel and price of fuel, which are uncontrollable by the utility.

GSECL has submitted the actual operating performance on Plant Availability Factor (PAF), Plant Load Factor (PLF), Station Heat Rate, Coal transit loss, Auxiliary Consumption (AC) and Specific Oil Consumption etc for FY 2009-10 for the individual stations. The Commission has taken up the truing up of the annual performance parameters for FY 2009-10, which is discussed in the following sections.

4.2.1 Plant Availability Factor (PAF)

Petitioner's Submission

GSECL has submitted the actuals of plant availability of different stations for FY 2009-10. The PAF (i) approved in the MYT order dated 17th January 2009; (ii) considered in the Annual Performance Review (APR) by the Commission in its order dated 31st March 2010 (iii) the actuals as furnished by GSECL in the petition for the period are given in the Table 4.2 below:

Table 4.2: Plant Availability Factors for FY 2009-10

(%)				
S.N	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10
1.	Ukai (1-5)	74	66	65.58
2.	Gandhinagar (1-4)	70	75	76.82
3.	Gandhinagar- 5*	90	80	97.06
4.	Wanakbori 1-6 TPS	85	85	84.92
5.	Wanakbori 7 TPS*	90	80	97.69
6.	Sikka TPS	75	75	75.65
7.	KLTPS 1-3	75	75	57.15
8.	KLTPS 4	80	60	52.15
9.	Dhuvaran (Oil)	80	80	49.45
10.	Dhuvaran (Gas 1)*	85	80	83.67
11.	Dhuvaran (Gas 2)	88	80	85.73
12.	Utran (Gas)*	90	80	88.64
13.	Utran Extension *	87	80	85.16
14.	Ukai Hydro	80	80	99.87
15.	Kadana Hydro	80	80	98.43

* PPA based stations.



It is observed from the above table that the stations - Ukai, KLTPS 1-3, KLTPS 4, Dhuvaran (oil) and Dhuvaran Gas (2) have achieved lower PAF than approved by the Commission in MYT order dated 17th January 2009.

GSECL has submitted the following in respect of PAF in general:

- PAF for PPA based stations for recovery of fixed cost will be 80% as per terms and conditions of PPA and as clarified by the Commission.
- For the thermal power stations of GSECL where the availability factor is less than 80%, such availability factor is proposed to be the neutralization level for full fixed costs recovery as has been earlier approved by the Commission. In all other cases, a PAF of 80% is proposed as the normative level for full fixed cost recovery as per terms and conditions of Tariff.
- For Hydro stations, the neutralization level for full fixed cost recovery will be availability of machines, subject to a ceiling of 80% availability of machines.

GSECL has further submitted the reasons for the deviation of PAF for FY 2009-10 as given below for the stations where the PAF was low.

- Ukai units 1&2 have undergone R&M recently which is not found successful yet. Units run at partial load.
- Ukai unit 3: due to aging affect and old and obsolete technology in automation, instruments and control system causing more dripping.
- KLTPS 1-3: Unit 3 has partial operation as load restricted to 50 MW as 2 stages of turbine shaved off to reduce the down time for repairing of high vibration of turbine; it has also vacuum problem due to brackish water causing low load operations;
- KLTPS 4: Unit has not stabilized yet due to teething problem;
- Dhuvaran (oil) could not achieve the PAF approved due to vintage of the plant etc. However, the units are since withdrawn from service.

GSECL has requested the Commission for relaxation of the availability required for all the stations other than PPA governed stations and approve plant availability as proposed by GSECL.



Commission's analysis

The PAF is less than the approved one in case of Ukai 1-5, KLTPS 1-3, KLTPS 4, Dhuvaran (oil) and Dhuvaran Gas (2) stations. Regarding the units Ukai 1-5, the Commission noted the submission of the petitioner 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.

For KLTPS 1-3 the GSECL has submitted that two stages of turbine of unit no. 3 have been shaved off and there is vacuum problem due to brackish water. The submission has been noted.

For KLTPS 4 and Utran extension stations, which have been commissioned recently, the availability as per actual is noted.

The lower PAF of 49.45% for Dhuvaran (oil) station is noted as the same is a very old station and has been decommissioned during December 2009.

The Plant Availability Factor is considered as a controllable, hence for truing up purpose the PAF as approved in MYT order is considered.

The PAF approved for truing up purpose for FY 2009-10 for each station is given in Table 4.3 below:

Table 4.3: Plant Availability Factors approved for truing up for FY 2009-10

(%)					
S.N	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals FY 2009-10	Approved for truing up purpose
1.	Ukai (1-5)	74	66	65.58	74
2.	Gandhinagar (1-4)	70	75	76.82	70
3.	Gandhinagar- 5*	90	80	97.00	90
4.	Wanakbori 1-6 TPS	85	85	84.92	85
5.	Wanakbori 7 TPS*	90	80	97.69	90
6.	Sikka TPS	75	75	75.65	75
7.	KLTPS 1-3	75	75	57.15	75
8.	KLTPS 4	80	60	52.15	80
9.	Dhuvaran (Oil)	80	80	49.45	80
10.	Dhuvaran (Gas 1)*	85	80	83.67	85
11.	Dhuvaran (Gas 2)	88	80	85.73	88
12.	Utran (Gas)*	90	80	88.64	90
13.	Utran Extension *	87	80	85.16	87
14.	Ukai Hydro	80	80	99.87	80
15.	Kadana Hydro	80	80	98.43	80

* PPA based stations.



4.2.2 Plant Load Factor (PLF)

Petitioner's Submission

GSECL has submitted the actuals of Plant Load Factor of different stations for FY 2009-10. The PLF (i) approved in the MYT order 17th January 2009 (ii) considered in the Annual Performance Review (APR) by the Commission in its order dated 31st March 2010 and (iii) the actuals as furnished by GSECL in the petition for the period are given in Table 4.4 below:

Table 4.4: Plant Load Factors for FY 2009-10

S.N	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10 (%)
1.	Ukai (1-5)	74	66	64.85
2.	Gandhinagar (1-4)	70	75	72.13
3.	Gandhinagar- 5*	92	94	94.89
4.	Wanakbori 1-6 TPS	85	85	82.99
5.	Wanakbori 7 TPS*	92	94	96.13
6.	Sikka TPS	75	75	65.00
7.	KLTPS 1-3	72	60	57.05
8.	KLTPS 4	80	60	52.15
9.	Dhuvaran (Oil)	77	45	23.70
10.	Dhuvaran (Gas 1)*	90	80	62.09
11.	Dhuvaran (Gas 2)	90	85	78.99
12.	Utran (Gas)*	92	85	73.21
13.	Utran Extension *	58	80	74.74
14.	Ukai Hydro	24	11	12.74
15.	Kadana Hydro	9	5	5.45

* PPA based stations

GSECL has submitted that the PLF for earning incentives for all stations is 80% as per the Terms and Conditions of Tariff.

Commission's analysis

The Commission has analyzed the submissions made by the petitioner in Table 4.4 above.

It is observed that the stations Ukai 1-5, Wanakbori 1-6, Sikka TPS, KLTPS 1-3, KLTPS 4, Dhuvaran oil, Dhuvaran gas 1, Dhuvaran gas 2 and Ukai hydro stations achieved less PLF for the FY 2009-10 than approved in the MYT order and considered in the APR for 2009-10. The Commission has taken note of the above and approved the PLF for FY 2009-10 for truing up purpose as given in the Table 4.5 below:



Table 4.5: PLF Approved for FY 2009-10 for truing up purpose

(%)

Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10	Approved for truing up purpose
1.	Ukai (1-5)	74	66	64.85	64.85
2.	Gandhinagar (1-4)	70	75	72.13	72.13
3.	Gandhinagar- 5*	92	94	95.00	95.00
4.	Wanakbori 1-6 TPS	85	85	82.99	82.99
5.	Wanakbori 7 TPS*	92	94	96.13	96.13
6.	Sikka TPS	75	75	65.00	65.00
7.	KLTPS 1-3	72	60	57.05	57.05
8.	KLTPS 4	80	60	52.15	52.15
9.	Dhuvaran (Oil)	77	45	23.70	23.70
10.	Dhuvaran (Gas 1)*	90	80	62.09	62.09
11.	Dhuvaran (Gas 2)	90	85	78.99	78.99
12.	Utran (Gas)*	92	85	73.21	73.21
13.	Utran Extension *	58	80	74.74	74.74
14.	Ukai Hydro	24	11	12.74	12.74
15.	Kadana Hydro	9	5	5.45	5.45

* PPA based stations

The incentive will be allowed only for those stations which exceed 80% PLF or the trajectory approved by the Commission in the tariff order for FY 2009-10 as given in Table 4.5 above.

4.2.3 Auxiliary Consumption

Petitioner's Submission

GSECL has submitted the actuals of auxiliary consumption of different stations for FY 2009-10. The auxiliary consumption (i) approved in the MYT order dated 17th January 2009 (ii) considered in the Annual Performance Review (APR) in the order dated 31st March 2010 (iii) the actuals as furnished by GSECL in the petition for the period are given in Table 4.6 below:

Table 4.6: Auxiliary consumption for FY 2009-10

(%)

Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10
1.	Ukai (1-5)	9.00	9.00	8.00
2.	Gandhinagar (1-4)	11.12	11.12	10.46
3.	Gandhinagar- 5*	9.00	9.00	9.13
4.	Wanakbori 1-6 TPS	9.00	9.00	8.77
5.	Wanakbori 7 TPS*	9.00	9.00	8.77
6.	Sikka TPS	10.70	10.70	10.93
7.	KLTPS 1-3	12.25	12.25	14.63
8.	KLTPS 4	12.25	12.25	21.05
9.	Dhuvaran (Oil)	11.50	11.50	14.50
10.	Dhuvaran (Gas 1)*	3.00	3.00	5.85
11.	Dhuvaran (Gas 2)	3.00	3.00	4.32



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10
12.	Utran (Gas)*	4.00	4.00	4.64
13.	Utran Extension *	4.00	4.00	2.32
14.	Ukai Hydro	0.70	0.70	0.92
15.	Kadana Hydro	1.19	1.19	1.73

* PPA based stations

GSECL has further submitted that the consumption of gas booster compressor is to be considered at Utran and Dhuvaran stations as per actuals as approved earlier by the Commission.

GSECL also stated that the following are the reasons for deviation of the auxiliary consumption for the stations where auxiliary consumption is high during the FY 2009-10.

- Sikka TPS : Partial operation - Backing down and vacuum problems during low tide period
- KLPTS 1-3: Partial operation - Unit 3 has partial operation as load is restricted to 50 MW as 2 stages of turbine shaved off in order to reduce the down time for repairing of high vibrations of turbine;
- KLTPS 4: Designed auxiliary consumption of the unit is 18%
- Dhuvaran oil could not achieve the auxiliary consumption due to vintage of the units and partial operation of the plant.
- Dhuvaran Gas 2: Partial operation - Frequent backing down adversely affects the auxiliary consumption.
- As a matter of fact all the old machines are designed for high CV of coal viz. 4400-4700 K.cal/Kg. whereas nowadays, indigenous coal is received with CV around 3000 K.cal/Kg. which leads to high auxiliary consumption as well as deterioration in heat rate as well.

Commission's analysis

The Commission has taken note of the submissions made by the petitioner with regard to the actual auxiliary consumption. The Commission observes that with regard to PPA governed stations, the auxiliary consumption is based on the respective PPAs and accordingly, the auxiliary consumption as considered in the MYT Order is approved for FY 2009-10. In the case of Ukai 1-5, G'nagar 1-4 and



Wanakbori 1-6, the actual auxiliary consumption is less than what was considered in the MYT order.

The actual auxiliary consumption in the case of Sikka, KLTPS 1-3, KLTPS 4, Dhuvaran oil, Dhuvaran gas 2, Ukai hydro and Kadana hydro stations is higher than approved in the MYT order. Though the GSECL has indicated the reasons in its petition for the higher auxiliary consumption, the Commission is of the opinion that the reasons are not acceptable as the Commission had taken all the factors into consideration while approving auxiliary consumption in the MYT order for FY 2009-10.

The Commission approves the auxiliary consumption for various stations as approved in the MYT order for FY 2009-10, for truing up purpose as it is a controllable parameter. In the case of Dhuvran and Utran stations where gas boosters are installed, additional auxiliary consumption as per actuals is allowed for the consumption of the booster.

The auxiliary consumption approved for different stations for the purpose of truing up for FY 2009-10 are as given in Table 4.7 below:

Table 4.7: Auxiliary consumption approved for FY 2009-10 for truing up

(%)

Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10	Approved for truing up
1.	Ukai (1-5)	9.00	9.00	8.00	9.00
2.	Gandhinagar (1-4)	11.12	11.12	10.46	11.12
3.	Gandhinagar- 5*	9.00	9.00	9.13	9.00
4.	Wanakbori 1-6 TPS	9.00	9.00	8.77	9.00
5.	Wanakbori 7 TPS*	9.00	9.00	8.77	9.00
6.	Sikka TPS	10.70	10.70	10.93	10.70
7.	KLTPS 1-3	12.25	12.25	14.63	12.25
8.	KLTPS 4	12.25	12.25	21.05	12.25
9.	Dhuvaran (Oil)	11.50	11.50	14.50	11.50
10.	Dhuvaran (Gas 1)*	3.00	3.00	5.85	3.00
11.	Dhuvaran (Gas 2)	3.00	3.00	4.32	3.00
12.	Utran (Gas)*	4.00	4.00	4.64	4.00
13.	Utran Extension *	4.00	4.00	2.32	4.00
14.	Ukai Hydro	0.70	0.70	0.92	0.70
15.	Kadana Hydro	1.19	1.19	1.73	1.19

* PPA based stations



4.2.4 Station Heat Rate (SHR)

Petitioner's Submission

GSECL has furnished the actual SHR attained for different stations during FY 2009-10.

The station heat rates (i) approved by the Commission in the MYT order of 17th January, 2009 (ii) considered in the Annual Performance Review (APR) in the order dated 31st March 2010 (iii) the actuals as furnished by GSECL in the petition for the period are given in Table 4.8 below:

Table 4.8 : Station Heat Rate for FY 2009-10

(Kcal/kWh)				
Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10
1.	Ukai (1-5)	2775	2775	2729
2.	Gandhinagar (1-4)	2855	2855	2875
3.	Gandhinagar- 5*	2460	2460	2582
4.	Wanakbori 1-6 TPS	2650	2650	2659
5.	Wanakbori 7 TPS*	2460	2460	2552
6.	Sikka TPS	3100	3100	3062
7.	KLTPS 1-3	3300	3300	3564
8.	KLTPS 4	3000	3000	3253
9.	Dhuvaran (oil)	3200	3200	3253
10.	Dhuvaran (Gas 1)*	1950	1950	1935
11.	Dhuvaran (Gas 2)	1950	1950	1911
12.	Utran (Gas)*	2150	2150	2227
13.	Utran Extension *	1850	1850	1968

* PPA based stations

GSECL has stated that the following are the reasons for exceeding the Station Heat Rate during FY 2009-10.

- Gandhinagar 1-4: Partial operation because of backing down;
- KLTPS 1-3: Partial operation – Unit 3 has partial operation as load restricted to 50 MW, as 2 stages of turbine shaved off, to reduce the down time for repairing of high vibrations of turbine;
- KLTPS 4: Unit is not stabilized yet as it has teething problems;
- Dhuvaran (Oil) due to vintage of the plant and partial operation;
- All the old machines are designed for burning on high CV coal viz. 4400-4700 K.cal./Kg. whereas nowadays, indigenous coal is received with CV around 3000



K.cal./Kg. which leads to high auxiliary consumption as well as deterioration in heat rate.

Commission's analysis

The Commission observes that :

- For PPA governed stations, the SHR is approved as per the respective PPA terms.

In the case of Wanakbori 1-6 the actual heat rate is marginally higher than the one considered in the MYT order of FY 2009-10. In the case of G'nagar 1-4, KLTPS 1-3, KLTPS 4 and Dhuvaran oil, the actual SHR is more than what were considered in the MYT order of FY 2009-10. The Commission has analyzed the reasons submitted by the petitioner for these stations and is of the view that the reasons put forward are not acceptable.

For the purpose of truing up for FY 2009-10, the Commission approves the SHR as considered in the MYT order FY 2009-10 as given in the Table 4.9 below:

Table 4.9: Station Heat Rate approved for FY 2009-10 for truing up

(Kcal/kWh)					
Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10	Approved for truing up purpose
1.	Ukai (1-5)	2775	2775	2729	2775
2.	Gandhinagar (1-4)	2855	2855	2875	2855
3.	Gandhinagar- 5*	2460	2460	2582	2460
4.	Wanakbori 1-6 TPS	2650	2650	2659	2650
5.	Wanakbori 7 TPS*	2460	2460	2552	2460
6.	Sikka TPS	3100	3100	3062	3100
7.	KLTPS 1-3	3300	3300	3564	3300
8.	KLTPS 4	3000	3000	3253	3000
9.	Dhuvaran (oil)	3200	3200	3253	3200
10.	Dhuvaran (Gas 1)*	1950	1950	1935	1950
11.	Dhuvaran (Gas 2)	1950	1950	1911	1950
12.	Utran (Gas)*	2150	2150	2227	2150
13.	Utran Extension *	1850	1850	1668	1850

* PPA based stations

4.2.5 Secondary Fuel Oil Consumption (Specific Oil Consumption)

Petitioner's Submission

GSECL has furnished the actuals of secondary fuel oil consumption for different stations during the FY 2009-10. The secondary fuel oil consumption (i) approved by



the Commission for the MYT order 17th January 2009 (ii) considered in the Annual Performance Review (APR) in the order dated 31st March 2010 (iii) the actuals as furnished by GSECL in the petition for the period are given in Table 4.10 below:

Table 4.10: Secondary Fuel Oil Consumption for FY 2009-10

(ml/kWh)

Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10
1.	Ukai (1-5)	2.00	2.00	3.68
2.	Gandhinagar (1-4)	3.50	3.50	1.16
3.	Gandhinagar- 5*	3.50	3.50	0.21
4.	Wanakbori 1-6 TPS	1.00	1.00	0.73
5.	Wanakbori 7 TPS*	3.50	3.50	0.56
6.	Sikka TPS	2.77	2.77	4.49
7.	KLTPS 1-3	3.00	3.00	3.36
8.	KLTPS 4	3.00	3.00	5.26

* PPA based stations

GSECL stated that following are the reasons for higher specific oil consumption for FY 2009-10 for the following stations.

- Ukai TPS: Partial operation - load on unit No. 1 & 2 could not be increased beyond 100-105 MW due to initial teething problems after major R&M; backing down problems and no HP/LP by pass system in Unit No. 3 & 4.
- Sikka TPS : Partial Operation - Backing down and vacuum problems during low tide period
- KLTPS 1-3: Partial operation - Unit 3 has partial operation as load was restricted to 50 MW and the 2 stages of turbine shaved off to reduce the down time for repairing of high vibrations of turbine and
- KLTPS 4: Unit is not stabilized yet as it has teething problem

Commission's analysis

For PPA governed stations, the secondary fuel oil consumption is approved as per the respective PPAs.

In the case of Gandhinagar 1-4 and Wanakbori 1-6 the actual secondary fuel oil consumption is less than what was considered by the Commission in the MYT order FY 2009-10.



In the case of Ukai 1-5, Sikka TPS, KLTPS 1-3 and KLTPS 4 stations, the secondary fuel oil consumption was more than what was considered in the MYT order for FY 2009-10. The Commission analyzed the reasons submitted by GSECL for higher secondary oil consumption for these stations and feels that GSECL should have strived harder to achieve the specified targets for secondary fuel oil consumption, as higher consumption leads to higher generation cost. Therefore, for all non-PPA stations and for the purpose of truing up for FY 2009-10, the Commission approves the specific oil consumption as considered in the MYT order FY 2009-10.

Accordingly, the secondary fuel oil consumption approved for FY 2009-10 for various stations is as given in Table 4.11 below:

Table 4.11: Secondary Fuel Oil Consumption approved for FY 2009-10 for truing up

(ml/kWh)					
Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the Tariff Order for FY 2009-10	Actuals for FY 2009-10	Approved for truing up purpose
1.	Ukai (1-5)	2.00	2.00	3.68	2.00
2.	Gandhinagar (1-4)	3.50	3.50	1.16	3.50
3.	Gandhinagar- 5*	3.50	3.50	0.21	3.50
4.	Wanakbori 1-6 TPS	1.00	1.00	0.73	1.00
5.	Wanakbori 7 TPS*	3.50	3.50	0.56	3.50
6.	Sikka TPS	2.77	2.77	4.49	2.77
7.	KLTPS 1-3	3.00	3.00	3.36	3.00
8.	KLTPS 4	3.00	3.00	5.26	3.00

* PPA based stations

4.2.6 Transit Loss

Petitioner's Submission

GSECL furnished the actuals for transit loss of coal for different stations for the FY 2009-10.

The transit loss (i) approved by the Commission in the MYT order 17th January 2009 (ii) considered in the Annual Performance Review (APR) in the order dated 31st March 2010 (ii) the actuals as furnished by GSECL in the petition for the period are given in the Table 4.12 below:



Table 4.12: Transit Loss for FY 2009-10

(%)

Sr.No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the APR for FY 2009-10	Actuals for FY 2009-10
1.	Ukai (1-5)	1.20	1.20	1.34
2.	Gandhinagar (1-4)	1.40	1.40	0.48
3.	Gandhinagar- 5*	1.40	1.40	0.48
4.	Wanakbori 1-6 TPS	1.50	1.50	1.50
5.	Wanakbori 7 TPS*	1.50	1.50	1.50
6.	Sikka TPS	2.00	2.00	0.00
7.	KLTPS 1-3	0.00	0.00	0.00
8.	KLTPS 4	0.00	0.00	0.00

* PPA based station

Commission's analysis

The transit loss as per actuals is less than that approved in the MYT order for FY 2009-10 in the case of Gandhinagar 1-4 and Sikka stations. For the PPA governed stations, the transit loss is approved as per the PPA conditions. In the case of Ukai 1-5, the transit loss is marginally more than that approved in the MYT order FY 2009-10.

The transit loss considered in the tariff order for FY 2009-10, is approved for all stations for truing up purpose for FY 2009-10 as given in the table 4.13 below:

Table 4.13: Transit Loss approved for FY 2009-10 for truing up

(%)

Sr. No.	Power stations	Approved for FY 2009-10 in the MYT Order	Considered in the Tariff order for FY 2009-10	Actuals for FY 2009-10	Approved for truing up purpose
1.	Ukai 1-5	1.20	1.20	1.34	1.20
2.	Gandhinagar 1-4	1.40	1.40	0.48	1.40
3.	Gandhinagar- 5*	1.40	1.40	0.48	1.40
4.	Wanakbori 1-6 TPS	1.50	1.50	1.50	1.50
5.	Wanakbori 7 TPS*	1.50	1.50	1.50	1.50
6.	Sikka TPS	2.00	2.00	0.00	2.00
7.	KLTPS 1-3	0.00	0.00	0.00	0.00
8.	KLTPS 4	0.00	0.00	0.00	0.00

* PPA based station

The transit loss is to be considered only in the case of indigenous coal other than washed coal in the MYT Order FY 2008-11.



4.2.7 Summary of Performance Parameters Approved for FY 2009-10

The performance parameters approved for different stations for the FY 2009-10 after the analysis in the preceding paras for the purpose of truing up for the FY 2009-10 are listed in the Table 4.14 below:

Table 4.14: Performance parameters approved for truing up purpose for the FY 2009-10

Sr. No.	Power stations	PAF (%)	PLF (%)	Auxiliary consumption (%)	Station Heat rate (Kcal/kWh)	Secondary fuel oil consumption (ml/kWh)	Transit loss of coal (%)
1.	Ukai 1-5	74	64.85	9.00	2775	2.00	1.20
2.	Gandhinagar 1-4	70	72.13	11.12	2855	3.50	1.40
3.	Gandhinagar-5*	90	95.00	9.00	2460	3.50	1.40
4.	Wanakbori 1-6 TPS	85	82.99	9.00	2650	1.00	1.50
5.	Wanakbori 7 TPS*	90	96.13	9.00	2460	3.50	1.50
6.	Sikka TPS	75	65.00	10.70	3100	2.77	2.00
7.	KLTPS 1-3	75	57.05	12.25	3300	3.00	0.00
8.	KLTPS 4	80	52.15	12.25	3000	3.00	0.00
9.	Dhuvaran (Oil)	80	23.70	11.50	3200	-	-
10.	Dhuvaran (Gas 1)*	85	62.09	3.00	1950	-	-
11.	Dhuvaran (Gas 2)	88	78.99	3.00	1950	-	-
12.	Utran (Gas)*	90	73.21	4.00	2150	-	-
13.	Utran Extension *	87	74.14	4.00	1850	-	-
14.	Ukai Hydro	80	12.74	0.70	-	-	-
15.	Kadana Hydro	80	5.45	1.19	-	-	-

* PPA governed stations

4.3 Gross and Net Generation

The gross and net generation of different stations, as per actual, as furnished by GSECL and as approved for truing up purpose for the FY 2009-10, are given in Table 4.15 below:

Table 4.15 : The gross and net generation for FY 2009-10 for truing up purpose



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power stations	As per actuals submitted by GSECL				As approved by the Commission			
		Gross generation (MU)	Aux Cons. (%)	Aux. cons. (MU)	Net generation (MU)	Gross generation (MU)	Aux Cons. (%)	Aux. cons. (MU)	Net generation (MU)
1.	Ukai 1-5	4829	8.00	387	4442	4829	9.00	435	4394
2.	Gandhinagar 1-4	4171	10.46	436	3734	4171	11.12	464	3707
3.	Gandhinagar- 5*	1746	9.16	160	1586	1746	9.00	157	1589
4.	Wanakbori 1-6 TPS	9160	8.77	803	8357	9160	9.00	824	8336
5.	Wanakbori 7 TPS*	1768	8.77	155	1613	1768	9.00	159	1609
6.	Sikka TPS	1367	10.93	149	1217	1367	10.7	146	1221
7.	KLTPS 1-3	1074	14.63	157	917	1074	12.25	132	942
8.	KLTPS 4	96	21.05	20	76	96	12.25	12	84
9.	Dhuvaran (Oil)	457	14.50	67	390	457	11.50	53	404
10.	Dhuvaran (Gas 1)*	580	5.86	34	546	580	3.00	17	563
11.	Dhuvaran (Gas 2)	778	4.32	34	744	778	3.00	23	755
12.	Utran (Gas)*	866	4.60	40	826	866	4.00	35	831
13.	Utran Extension *	967	2.28	22	945	967	4.00	39	928
14.	Ukai Hydro	341	0.92	3	338	341	0.70	2	339
15.	Kadana Hydro	116	1.73	2	114	116	1.19	1	115
	Total	28316			25845	28316			25817

* PPA governed stations

4.4 Cost Parameters

The cost parameters include GCV of fuel, mix of fuel and price of fuel. GSECL generating stations run on coal, lignite, oil and gas as base fuel. For some coal based stations, a mix of indigenous, washed and imported coal is used.

GSECL submitted the details of actual Wt Av GCV, mix of coal and Wt Av price of fuel for different stations as discussed below: However, the details for PPA governed stations were not given in the petition but obtained from GSECL subsequently.

4.4.1 Wt. Av. Gross Calorific value (GCV) of fuels

GSECL has furnished the actuals of Wt Av Gross Calorific Values of different fuels (as fed into the boiler in the case of usage of mix of coal) for FY 2009-10 as given in the Table 4.16 below:

Table 4.16: Wt. Av. Gross Calorific Value (GCV) of fuels for different stations



for FY 2009-10

S.N	Power stations	Wt Av GCV of coal, lignite or mix of coal (Kcal/kg)	Wt Av GCV of Secondary fuel (Kcal/liter)	Wt Av GCV of gas (Kcal/SCM)
1.	Ukai 1-5	3948	10469	-
2.	Gandhinagar 1-4	4288	10509	-
3.	Gandhinagar- 5*	4288	10509	-
4.	Wanakbori 1-6 TPS	3844	10526	-
5.	Wanakbori 7 TPS*	3844	10526	-
6.	Sikka TPS	3804	10269	-
7.	KLTPS 1-3	2542	10603	-
8.	KLTPS 4	2542	10900	-
9.	Dhuvaran (Oil)	-	10360	-
10.	Dhuvaran (Gas 1)*	-	-	9606
11.	Dhuvaran (Gas 2)	-	-	9700
12.	Utran (Gas)*	-	-	9460
13.	Utran Extension *	-	-	9208

* PPA governed stations

4.4.2 Mix of Coal

GSECL has furnished the actuals of percentage of the mix of different types of coal used for the stations during the FY 2009-10 as given in Table 4.17 below:

Table 4.17 : The Mix of Different Types of Coal for FY 2009-10

S.N	Power stations	Indigenous coal (%)	Washed coal (%)	Imported coal (%)
1.	Ukai 1-5	32.84	67.16	0.00
2.	Gandhinagar 1-4	15.08	66.66	18.26
3.	Gandhinagar 5	15.08	66.66	18.26
4.	Wanakbori 1-6	32.35	60.55	7.10
5.	Wanakbori 7	32.35	60.55	7.10
6.	Sikka	46.32	38.97	14.71

4.4.3 Wt. Av. Prices of Fuel

GSECL has furnished the actuals of Wt Av price per unit of different fuels for different stations, for FY 2009-10, as per Table 4.18 below:



Table 4.18 : Wt. Av. Price / Unit of Fuels for 2009-10 (Actual)

S.N	Power stations	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/Kl)
1.	Ukai 1-5	2042	2186				25775
2.	Gandhinagar 1-4	3033	2500	5696			25063
3.	Gandhinagar- 5*	3039	2498	5791			25063
4.	Wanakbori 1-6 TPS	2853	2469	5474			26053
5.	Wanakbori 7 TPS*	2846	2465	5429			26053
6.	Sikka TPS	3267	2734	4577			33352
7.	KLTPS 1-3				730		33560
8.	KLTPS 4				730		41155
9.	Dhuvaran (Oil)						16428
10.	Dhuvaran (Gas 1)*					11.52	
11.	Dhuvaran (Gas 2)					11.52	
12.	Utran (Gas)*					10.00	
13.	Utran Extension*					10.00	

* PPA governed stations

The Commission after due validation, approved the Wt. Av. GCVs of fuels, percentage of mix of coal and prices of fuel (actuals), as furnished by GSECL for truing up purpose for FY 2009-10 as they are uncontrollable items.

4.5 Fuel Costs

Based on the performance and cost parameters the approved fuel costs for each of the stations for the year FY 2009-10 for truing up purpose along with the actuals furnished by GSECL are given in Table 4.19 below:

Table 4.19: Approved Fuel Cost of different Stations for FY 2009-10 for Truing up



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power stations	As per actuals furnished by GSECL					As approved by the Commission					
		Gross generation (MU)	Net generation (MU)	Fuel cost (Rs. cr.)	Fuel cost per unit gross (Rs/kWh)	Fuel cost per unit net (Rs/kW)	Gross Generation (MU)	Net generation (MU)	Fuel cost (Rs. cr.)	Fuel cost per unit Gross (Rs/kWh)	Fuel cost per unit net (Rs/kW)	Fuel cost as Rs./G.cal)
1.	Ukai 1-5	4829	4442	759	1.57	1.71	4829	4394	748	1.55	1.7	558
2.	Gandhinagar 1-4	4171	3734	896	2.15	2.4	4171	3707	906	2.17	2.44	761
3.	Gandhinagar 5*	1746	1586	336	1.92	2.12	1746	1589	330	1.89	2.08	768
4.	Wanakbori 1-6 TPS	9160	8357	1814	1.98	2.17	9160	8336	1798	1.96	2.16	741
5.	Wanakbori 7 TPS*	1768	1613	335	1.89	2.08	1768	1609	330	1.86	2.05	758
6.	Sikka TPS	1367	1217	370	2.71	3.04	1367	1221	375	2.74	3.07	885
7.	KLTPS 1-3	1074	917	121	1.13	1.32	1074	942	112	1.04	1.18	315
8.	KLTPS 4	96	76	11	1.15	1.44	96	84	9	0.98	1.11	325
9.	Dhuvaran (Oil)	457	390	236	5.16	6.03	457	404	232	5.07	5.73	1586
10.	Dhuvaran (Gas 1) *	580	546	135	2.33	2.47	580	563	136	2.34	2.41	1199
11.	Dhuvaran (Gas 2)	778	744	177	2.28	2.37	778	755	180	2.32	2.39	1188
12.	Utran (Gas)*	866	826	201	2.32	2.43	866	831	197	2.27	2.37	1057
13.	Utran Extension *	967	945	176	1.82	1.86	967	928	194	2.01	2.09	1086
	Total	27859	25393	5567			27859	25363	5546			

* PPA governed stations

The detailed calculations for each station for arriving at the above costs are given in Annexures 4.1 to 4.13.

GSECL has considered transit loss for washed coal also in its calculations for arriving at the fuel cost, which is not accepted. The transit loss is considered only in the case of the indigenous coal (other than washed coal) by the Commission.

4.5.1 Variation between Actual Costs and Approved Costs

The approved fuel costs, for most of the stations are less than actuals, as GSECL failed to achieve the performance parameters approved by the Commission. However, for some stations, the actual fuel costs are less than the approved ones for truing up and the reasons are discussed below:



- Gandhinagar 1-4: The actual specific oil consumption is much less (1.16ml/kWh) than the approved one (3.50ml/kWh).
- Sikka TPS: This station achieved a better Station Heat Rate (3062Kcal/kWh) than the approved one (3100Kcal/kWh).
- Dhuvran Gas 2: Achieved marginally less SHR than the approved one.
- Utran extension: This station has achieved a remarkably low Station Heat Rate (1650 K.Cal/kWh) than the approved one (1850 K.Ca./kWh)

The comparison between the fuel costs of all stations put together as per audited annual accounts for FY 2009-10 and the cost approved for truing up purpose is given in Table 4.20 below:

Table 4.20 : Cost of different fuels as per audited annual accounts and as approved for Truing up for FY 2009-10

(Rs. crore)

Item	Cost as per annual accounts	Costs as approved
Total Fuel Cost	5635	5546

The station-wise fuel costs are not given in the audited annual accounts.

4.5.2 Gains and Losses in fuel costs due to controllable factors

GSECL has derived fuel expenses incurred for FY 2009-10 considering the actual operational performance parameters such as, station heat rate, auxiliary consumption, specific oil consumption and transit loss of coal. The Commission has compared the fuel expenses so derived by the GSECL with the fuel expenses arrived with the now approved operational performance parameters and for actual net generation for identification of gains / losses on account of variation in these parameters and approves the gains / losses station-wise for non-PPA stations as given in Table 4.21 below:

Table 4.21: Approved Gains / losses from Fuel Expenses for FY 2009-10

(Rs. crore)

Sr. No.	Power Station	Actual Fuel cost	Fuel cost arrived with approved parameters for actual net generation for FY 2009-10	Gains / (losses) due to controllable factors
1	Ukai 1-5	759	756	(3)
2	Gandhinagar 1-4	896	912	16
3	Wanakbori 1-6	1814	1803	(11)



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power Station	Actual Fuel cost	Fuel cost arrived with approved parameters for actual net generation for FY 2009-10	Gains / (losses) due to controllable factors
4	Sikka	370	374	4
5	KLTPS 1-3	121	109	(12)
6	KLTPS-4	11	8	(3)
7	Dhuvaran (oil)	236	224	(12)
8	Dhuvaran (Gas-2)	177	178	1
	Total	4384	4364	(20)

4.6 Fixed Charges

4.6.1 Depreciation for FY 2009-10

Petitioner's submission

GSECL has claimed Rs. 516.00 crore towards depreciation charges in the Truing up for FY 2009-10. The depreciation approved for FY 2009-10 by the Commission in MYT order dated 17th January, 2009, in the Tariff Order for FY 2009-10, in the APR for FY 2009-10 and now claimed by GSECL are as given in the Table 4.22 below:

Table 4.22: Depreciation for FY 2009-10

(Rs. crore)				
Particulars	MYT approved FY 2009-10	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (Truing up) FY 2009-10
Depreciation	390.50	441.70	470.88	516.00

GSECL has proposed Rs. 48 crore towards loss attributing to uncontrollable factors because of difference in the actual capitalization during FY 2009-10.

The station-wise depreciation claimed by GSECL as actual and the computation of gains/losses on account of controllable and uncontrollable factors are given in the Table 4.23 below:

Table 4.23: Gains / Losses from Depreciation claimed for FY 2009-10

(Rs. crore)					
Sr. No.	Power Station	Depreciation (Actual)	Depreciation (APR FY 2009-10)	Gain / (Loss) due to controllable factor	Gain / (Loss) due to uncontrollable factor
1.	Ukai (1-5)	89	71		(17)
2.	Gandhinagar 1-4	54	54		0



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power Station	Depreciation (Actual)	Depreciation (APR FY 2009-10)	Gain / (Loss) due to controllable factor	Gain / (Loss) due to uncontrollable factor
3.	Gandhinagar-5*	34	33		
4.	Wanakbori 1-6 TPS	73	70		(3)
5.	Wanakbori-7*	32	32		
6.	Sikka TPS	28	29		1
7.	KLTPS 1-3	56	57		1
8.	KLTPS 4	10	7		(3)
9.	Dhuvaran (Gas-1)*	17	17		
10.	Dhuvaran (Gas-2)	23	22		0
11.	Utran Gas*	21	19		
12.	Utran Extension*	26	32		
13.	Ukai Hydro	6	6		0
14.	Kadana Hydro	15	15		0
15.	Dhuvaran (Oil)	35	9		(26)
	Total	516	471		(48)

* PPA governed stations.

Commission's Analysis

The Commission has noted from the audited annual accounts in respect of GSECL that the actual depreciation for FY 2009-10 is Rs. 511.52 crore (Rs. 514.41 crore – Rs. 2.89 related to wind turbine generators) against Rs. 516 crore claimed by GSECL in the truing up as per the audited annual accounts for FY 2009-10. It is found that GSECL claimed higher depreciation rate for Ukai (1-5) and Dhuvaran Oil, then the average depreciation rate.

The Commission has recomputed the allowable depreciation in the Truing up at Rs. 444.77 crore against Rs. 516 crore claimed by GSECL. The major variations are observed for Ukai (1-5) and Dhuvaran (Oil) stations. In respect of Ukai (1-5), GSECL has claimed Rs. 89 crore against Rs. 47.17 crore as computed by considering depreciation rate of 5.15% and in respect of Dhuvaran (Oil), GSECL has claimed Rs.35 crore against Rs.8.29 crore computed for the year 2009-10 by considering depreciation rate of 5.15%.

Gains / Losses

The Regulation 9.62 (e) of GERC MYT Regulations 2007 considers depreciation as a controllable expense. However, the Commission is of the view that the amount of depreciation is dependent on the quantum of capitalization, rate of depreciation and disposal of existing assets if any. The Commission is therefore of the view that the parameters which impact depreciation should be treated as uncontrollable.

GSECL has not claimed any gain / loss in respect of PPA governed stations.



The Commission, accordingly approves the depreciation charges (and the gain / loss) on account of depreciation station-wise in the Truing up for FY 2009-10 as detailed in the Table 4.24 below:

Table 4.24: Approved station-wise depreciation charges and gains/(loss) from Depreciation for FY 2009-10

(Rs. crore)

Sr. No.	Power Station	Tariff order FY 2009-10 (1)	Actual claimed by GSECL (2)	Approved in true up (3)	Deviation (3-1)	Gain/(loss) due to controllable factor	Gain/(loss) due to uncontrollable factor
1	Ukai (1-5)	44.99	89	47.17	2.18		(2.18)
2	Gandhinagar (1-4)	60.16	54	53.22	(6.94)		6.94
3	Gandhinagar 5*	32.58	34	33.51	0.93		0.00
4	Wanakbori 1-6 TPS	68.43	73	77.95	3.52		(3.52)
5	Wanakbori 7*	31.73	32	31.54	(0.19)		0.00
6	Sikka TPS	28.95	28	27.60	(1.35)		1.35
7	KLTPS 1-3	56.78	56	55.19	(1.59)		1.59
8	KLTPS 4	9.61	10	9.86	0.25		(0.25)
9	Dhuvaran (Gas 1)*	13.79	17	16.75	2.96		0.00
10	Dhuvaran (Gas 2)	22.13	23	22.67	0.54		(0.54)
11	Utran Gas*	15.38	21	20.70	5.32		0.00
12	Utran Extension*	23.46	26	25.63	2.17		0.00
13	Ukai Hydro	6.42	6	5.91	(0.51)		0.51
14	Kadana Hydro	15.26	15	14.78	(0.48)		0.48
15	Dhuvaran (Oil)	12.03	35	8.29	(3.74)		3.74
	Total	441.70	516	444.77			8.12

* PPA governed stations.

4.6.2 Interest and Finance charges for FY 2009-10

Petitioner's submission

The GSECL has claimed Rs. 338 crore towards interest and finance charges in the Truing up for FY 2009-10. The interest and finance charges approved for FY 2009-10 by the Commission in the MYT order, in Tariff Order for FY 2009-10, in APR for FY 2009-10 and now claimed by GSECL as actual are tabulated in Table 4.25 below:



Table 4.25 : Interest and Finance Charges claimed in truing up for FY 2009-10

(Rs. crore)

Particulars	MYT approved for FY 2009-10	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (truing up) FY 2009-10
Interest and Finance charges	387.98	376.15	319.46	338.00

GSECL has claimed Rs.11 crore towards loss attributing to uncontrollable factor owing to the difference in the actual capitalization. The station-wise interest and finance charges claimed by GSECL in the truing for FY 2009-10 and the gains / losses are given in the table 4.26 below:

Table 4.26: Gains / Losses from Interest & Finance charges claimed for FY 2009-10

(Rs. crores)

Sr. No.	Power Station	Interest & Finance charges (Actual)	Interest & Finance charges (Approved) in APR 2009-10	Gain / (Loss) due to controllable factor	Gain / (Loss) due to uncontrollable factor
1.	Ukai (1-5)	56	49		(7)
2.	Gandhinagar (1-4)	46	51		6
3.	Gandhinagar-5*	-	-	-	
4.	Wanakbori 1-6 TPS	61	55		(67)
5.	Wanakbori-7*	0	1		
6.	Sikka TPS	23	21		(2)
7.	KLTPS 1-3	50	44		(5)
8.	KLTPS-4	6	9		3
9.	Dhuvaran (Gas-1)*	8	8		0
10.	Dhuvaran (Gas-2)	15	15		0
11.	Utran Gas*	6	7		
12.	Utran Extension*	42	33		
13.	Ukai Hydro	5	5		0
14.	Kadana Hydro	13	13		0
15.	Dhuvaran (Oil)	7	8		1
	Total	338	319		(11)

* PPA governed stations.

Commission's analysis

Commission has obtained the audited annual accounts for FY 2009-10 in respect of GSECL. The plant-wise loans outstanding and the rate of interest for different stations are examined and found to be in order.



Gains / Losses

The Regulation 9.62 (e) of MYT Regulations, 2007 considers interest and finance charges as a controllable expense. However, the Commission is of the view that amount of interest and finance charges are dependent on the quantum of capitalization, and the extent of borrowing considered during the financial year. The Commission is therefore of the view that the parameters which impact interest and finance charges should be treated as uncontrollable.

GSECL has not claimed any gain / loss in respect of PPA governed stations.

The Commission, accordingly approves the interest and finance charges and the gain / loss on account of interest and finance charges station-wise in the Truing up for FY 2009-10 as detailed in the Table 4.27 below:

Table 4.27: Approved interest and finance charges and gain/loss for FY 2009-10

(Rs. crore)

Sr. No.	Power Station	Tariff order FY 2009-10	Actual claimed by GSECL	Approved in Truing up	Deviation (5.3)	Gain/(loss) due to controllable factor	Gain/(loss) due to uncontrollable factor
1	2	3	4	5	6	7	8
1	Ukai (1-5)	58.29	56	56.64	(1.65)		1.65
2	Gandhinagar (1-4)	60.72	46	45.59	(15.13)		15.13
3	Gandhinagar 5*	0	0	0.00	0.00		
4	Wanakbori 1-6 TPS	52.63	61	60.53	7.90		(7.90)
5	Wanakbori 7*	0.67	0	0.00	(0.67)		
6	Sikka TPS	20.13	23	23.00	2.87		(2.87)
7	KLTPS 1-3	37.69	50	49.96	12.27		(12.27)
8	KLTPS 4	27.38	6	6.78	(20.60)		20.60
10	Dhuvaran (Gas 1)*	12.73	8	7.97	(4.76)		
11	Dhuvaran (Gas 2)	21.76	15	14.90	(6.86)		6.86
12	Utran Gas*	9.56	6	6.38	(3.18)		
13	Utran Extension*	49.36	42	42.23	(7.13)		
14	Ukai Hydro	4.87	5	4.60	(0.27)		0.27
15	Kadana Hydro	11.65	13	13.40	1.75		(1.75)
15	Dhuvaran oil	8.72	7	6.93	(1.79)		1.79
	Total	376.16	338	338.91	(37.25)		21.51

* PPA governed stations.



4.6.3 Return on Equity for FY 2009-10

Petitioner's submission

GSECL has claimed Rs. 328 crore towards return on RoE in the Truing up for FY 2009-10. The return on RoE approved for FY 2009-10 by the Commission in the MYT order dated 17th January, 2009, in the Tariff Order for FY 2009-10, in APR for FY 2009-10 and now claimed by GSECL as actual are given in Table 4.28 below:

Table 4.28 : Return on Equity for FY 2009-10

(Rs. crore)				
Particulars	MYT approved for FY 2009-10	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (Truing up) in FY 2009-10
Return on Equity	400.04	351.28	327.83	328.00

GSECL has submitted that the comparison of actual value for return on equity computed on the basis of opening equity for FY 2009-10 and addition to equity during the year on account of funding of capital expenditure against the return on equity approved in the APR for FY 2009-10 in the Tariff Order dated 31st March 2010 resulted in a gain of Rs.1 crore. This variation of Rs. 1 crore has been attributed to uncontrollable factors. The station-wise Return on equity claimed by GSECL in the truing for FY 2009-10 and the controllable gains/losses are given in the Table 4.29 below:

Table 4.29: Gains / Losses from Return on equity claimed for FY 2009-10

(Rs. crore)					
Sr. No.	Power Station	Return on equity (Actual)	APR Return on equity (Approved)	Gain / (Loss) due to controllable factor	Gain / (Loss) due to uncontrollable factor
1.	Ukai (1-5)	19	20	0	
2.	Gandhinagar (1-4)	30	32	2	
3.	Gandhinagar-5*	27	27		
4.	Wanakbori 1-6 TPS	51	53	2	
5.	Wanakbori-7*	26	26		
6.	Sikka TPS	20	20		
7.	KLTPS 1-3	43	43		
8.	KLTPS-4	8	5	(3)	
9.	Dhuvaran (Gas-1)*	13	13		
10.	Dhuvaran (Gas-2)	15	16		
11.	Utran Gas*	10	11		
12.	Utran Extension*	22	21		
13.	Ukai Hydro	8	8		
14.	Kadana Hydro	28	27		
15.	Dhuvaran (Oil)	7	7		
	Total	327	328		

* PPA governed stations.

Commission's Analysis



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

The Commission has observed that GSECL has compared the actual RoE of Rs. 327 crore for FY 2009-10 with the RoE considered in the APR for FY 2009-10 and arrived at a gain of Rs. 1 crore. The RoE approved in the tariff order dated 14th December, 2009 was Rs. 351.28 crore and this has resulted in a gain of Rs. 24.29 crore but not Rs.1 crore as mentioned by GSECL.

Gains / (Losses)

The Regulation 9.6.2 (e) of MYT framework, 2007 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 capitalisation and the debt equity ratio considered during the financial year and these parameters are uncontrollable in nature. The variance in the amount of return on equity is therefore treated as uncontrollable.

The Commission, accordingly approves the return on equity and gain / loss on account of return on equity in the truing up for FY 2009-10 station-wise as detailed in the Table 4.30 below:

Table 4.30: Approved return on equity and gain/loss for FY 2009-10 (Rs. crore)

Sr. No.	Power Station	Tariff order FY 2009-10	Actual claimed by GSECL	Approved in Truing up	Deviation (5-3)	Gain/(loss) due to controllable factor	Gain/(loss) due to uncontrollable factor
1	2	3	4	5	6	7	9
1	Ukai (1-5)	21.31	19	19	(2.31)		2.31
2	Gandhinagar (1-4)	34.8	30	30	(4.8)		4.8
3	Gandhinagar 5*	26.84	27	27	0.16		-
4	Wanakbori 1-6 TPS	51.93	51	51	(0.93)		0.93
5	Wanakbori 7*	26.03	26	26	(0.03)		-
6	Sikka TPS	20.33	20	20	(0.33)		0.33
7	KLTPS 1-3	42.8	43	43	0.2		(0.2)
8	KLTPS 4	12.22	8	8	(4.22)		4.22
9	Dhuvaran (Gas 1)*	12.87	13	13	0.13		-
10	Dhuvaran (Gas 2)	15.92	15	15	(0.92)		0.92
11	Utran Gas*	10.49	10	10	(0.49)		-
12	Utran Extension*	32.97	22	22	(10.97)		-
13	Ukai Hydro	7.82	8	8	0.18		(0.18)
14	Kadana Hydro	28.05	28	28	(0.05)		0.05
15	Dhuvaran (Oil)	6.91	7	7	0.09		(0.09)
	Total	351.29	327	327	(24.29)		13.09

* PPA governed stations.

4.6.4 O&M Expenses for FY 2009-10



Petitioner's submission

GSECL has claimed Rs. 733.00 crore towards actual O&M expenses in the Truing up for FY 2009-10. GSECL submitted that these O&M expenses include e-Urja charges of Rs.12 crore and Sixth Pay Commission arrears amounting to Rs.75 crore. The O&M charges approved for FY 2009-10 by the Commission in the MYT Order dated 17th January, 2009, in the Tariff Order for FY 2009-10, in APR for FY 2009-10 and now claimed by GSECL are as given in Table 4.31 below:

Table 4.31: O&M expenses for FY 2009-10

(Rs. crore)				
Particulars	MYT approved FY 2008-11	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (Truing up) FY 2009-10
O&M expenses	565.77	565.77	553.09	733.00

GSECL has submitted that the water charges have been increasing for the recent years and requested to allow the water charges as per the actuals.

GSECL has categorized O&M expenses as controllable except the impact of Sixth Pay Commission which has been considered as an uncontrollable one and the treatment of gain / losses is proposed accordingly. GSECL has indicated a net loss of Rs.155 crore out of which Rs. 60 crore is due to impact of Sixth Pay Commission. Thus, Rs.60 crore loss is considered as loss on account of uncontrollable factor and the balance Rs. 95 crore is attributed to the loss on account of controllable factor. The station-wise O&M expenses claimed by GSECL in the truing for FY 2009-10 and the controllable gains/losses are given in the table 4.32 below:

Table 4.32: Gains / Losses from O&M expenses for FY 2009-10

(Rs. crore)					
Sr. No.	Power Station	O&M expenses (Actual)	APR - O&M expenses (Approved)	Gain / (Loss) due to controllable factor	Gain / (Loss) due to uncontrollable factor
1.	Ukai (1-5)	128	110	(5)	(12)
2.	Gandhinagar (1-4)	120	85	(25)	(9)
3.	Gandhinagar-5*	32	20		
4.	Wanakbori 1-6 TPS	160	163	21	(18)
5.	Wanakbori-7*	15	20		
6.	Sikka TPS	51	31	(16)	(3)
7.	KLTPS 1-3	91	28	(60)	(3)
8.	KLTPS-4	3	4	1	(1)



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power Station	O&M expenses (Actual)	APR - O&M expenses (Approved)	Gain / (Loss) due to controllable factor	Gain / (Loss) due to uncontrollable factor
9.	Dhuvaran (Gas-1)*	21	8		
10.	Dhuvaran (Gas-2)	21	11	(8)	(2)
11.	Utran Gas*	21	10		
12.	Utran Extension*	7	14		
13.	Ukai Hydro	10	8	2	(4)
14.	Kadana Hydro	10	12	5	(3)
15.	Dhuvaran (Oil)	42	29	(10)	(3)
	Total	733	553	(95)	(58)

* PPA governed stations.

Commission's analysis

The Commission has observed that the O&M expenses i.e Rs.733 crore as claimed by GSECL include water charges. With reference to a query from the Commission GSECL has submitted on 24th January 2011 the actual O&M charges for FY 2009-10 as per the Annual Accounts. The actual O&M charges as per annual accounts are Rs. 732.52 crore including water charges of Rs. 97.23 crore.

GSECL has claimed loss of Rs. 63 crores under O&M expenses in respect of KLTPS(1-3). GSECL has explained that KLTPS is having 4 units of smaller capacity (viz. 70/75 MW) and the staff will not be reduced in arithmetic ratio comparing with units of larger capacity. As such staff required for KLTPS is comparatively more than that required for generating stations with larger units (200/210 MW).

Gains / (Loss)

The Commission observed that the GSECL computed losses of Rs.60 crore due to uncontrollable factors (impact of VI pay commission) and Rs.95 crore due to controllable factors by comparing actual amount with O & M expenses approved in APR order for FY 2009-10. However, the Commission has computed gain/losses by comparing actual amount with the O & M expenses approved in tariff order.

The Regulation 9.6.2 (e) of the MYT Framework Regulations, 2007 considers the parameters impacting variance in the O&M expenses as controllable. However these expenses are relatable to inflation indices and / or Pay Revision agreement. The increase in O&M expenses is mainly on account of increase in employee cost due to 6th Pay Commission impact and increase in the cost of water. The Commission is of the view that the increase in O&M charges due to the impact of 6th Pay Commission



shall be considered as uncontrollable and increase due to other reasons shall be considered as controllable.

The Commission, accordingly approves the O&M expenses including water charges and the gains / loss on account of O&M expenses in the truing up for FY 2009-10 station-wise as detailed in the Table 4.33 below:

Table 4.33: Approved O&M expenses gains/loss for FY 2009-10

(Rs. crore)

Sr. No.	Power Station	Tariff order FY 2009-10	Actual claimed by GSECL	Approved in Truing up	Deviation (5-3)	Gain/(loss) due to controllable factor	Gain/(loss) due to uncontrollable factor
1	2	3	4	5	6	7	8
1	Ukai 1-5	110.10	128	127.71	17.61	(5.61)	(12)
2	Gandhinagar 1-4	85.49	120	121.43	35.94	(26.94)	(9)
3	Gandhinagar 5*	20.33	32	30.36	10.03	-	-
4	Wanakbori 1-6 TPS	163.21	160	160.24	-2.97	20.97	(18)
5	Wanakbori 7*	20.11	15	15.14	-4.97	-	-
6	Sikka TPS	31.09	51	50.51	19.42	(16.42)	(3)
7	KLTPS 1-3	27.85	91	91.56	63.71	(60.71)	(3)
8	KLTPS 4	9.71	3	3.13	-6.58	7.58	(1)
9	Dhuvaran (Gas 1)*	7.61	21	20.18	12.57	-	-
10	Dhuvaran (Gas 2)	10.93	21	20.18	9.25	(7.25)	(2)
11	Utran Gas*	9.95	21	21.45	11.50	-	-
12	Utran Extension*	21.04	7	7.39	-13.65	-	-
13	Ukai Hydro	7.74	10	10.04	2.30	1.70	(4)
14	Kadana Hydro	12.11	10	10.16	-1.95	4.95	(3)
15	Dhuvaran (Oil)	28.5	42	43.04	14.54	(11.54)	(3)
	Total	565.77	732	732.52	166.75	(93.27)	(58)

* PPA governed stations.

4.6.5 Interest on Working Capital for FY 2009-10

Petitioner's submission

GSECL has claimed Rs. 234.00 crore towards interest on working capital actual in the Truing up for FY 2009-10. The interest on working capital approved for FY 2009-10 in the MYT order dated 17th January, 2009, in the Tariff Order for FY 2009-10, in APR for FY 2009-10 and claimed by GSECL in the Truing up are given in the Table 4.34 below:



Table 4.34: Interest on Working Capital Claimed by GSECL in Truing up for FY 2009-10

(Rs. crore)				
Particulars	MYT Order approved for FY 2009-10	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (Truing up) FY 2009-10
Interest on working capital	229.55	262.64	255.67	234.00

GSECL has submitted that the interest on working capital is a purely derived number based on other factors and hence not directly controllable for GSECL. It is further submitted that the variation in the rate of interest on working capital loans affects the same and requested to treat the same as an uncontrollable cost. GSECL has further submitted that the interest on working capital computed in the Truing up for FY 2009-10 indicated a gain of Rs. 10 crore.

Table 4.35: Gains / Losses from Interest on working capital claimed for FY 2009-10

(Rs. crore)					
Sr. No.	Power Station	Interest on working capital (Actual)	Interest on working capital (Approved) APR	Gain / (Loss) due to controllable factor	Gain / (Loss) due to uncontrollable factor
1.	Ukai 1-5	34	35		1
2.	Gandhinagar 1-4	38	38		1
3.	Gandhinagar-5*	14	14		
4.	Wanakbori 1-6 TPS	72	64		(7)
5.	Wanakbori-7*	14	13		
6.	Sikka TPS	16	16		0
7.	KLTPS 1-3	10	10		(0)
8.	KLTPS-4	0	1		1
9.	Dhuvaran (Gas-1)*	6	8		
10.	Dhuvaran (Gas-2)	8	8		1
11.	Utran Gas*	7	12		
12.	Utran Extension*	4	11		
13.	Ukai Hydro	1	1		1
14.	Kadana Hydro	2	2		0
15.	Dhuvaran (Oil)	10	23		13
	Total	234	256		10

* PPA governed stations.

4.6.6 Commission's analysis

The Commission has examined the interest on working capital claimed by GSECL as actual. The Commission has observed that the working capital and the interest on working capital have been worked out as per the GERC Tariff Regulations. The



interest on working capital is calculated at Rs.231.22 crore based on the expenses approved in the truing up for FY 2009-10..

Gain / (losses)

With regard to GSECL's submission that interest on working capital should be considered as uncontrollable, the Commission is of the view that interest on working capital being normative should be considered as uncontrollable.

The Commission accordingly approves interest on working capital at Rs.231.22 crore. The gains / losses on account of interest on working capital in the truing up for FY 2009-10 station-wise as detailed in the Table 4.36 below:

Table 4.36: Approved Gains/Losses from Interest on working capital for FY 2009-10

(Rs. crore)

Sr. No.	Power Station	Tariff order FY 2009-10	Actual claimed by GSECL	Approved in Truing up	Deviation (5-3)	Gain/(loss) due to controllable factor	Gain/(loss) due to uncontrollable factor
1	2	3	4	5	6	7	8
1	Ukai (1-5)	34.59	34	32.35	(2.24)		2.24
2	Gandhinagar 1-4	38.39	38	38.26	(0.13)		0.13
3	Gandhinagar 5*	14.17	14	13.75	(0.42)		0.00
4	Wanakbori 1-6 TPS	64.42	72	71.24	6.82		(6.82)
5	Wanakbori 7*	12.5	14	13.51	1.01		0.00
6	Sikka TPS	16.14	16	16.18	0.04		(0.04)
7	KLTPS 1-3	9.63	10	9.98	0.35		(0.35)
8	KLTPS 4	3.36	0	0.43	(2.93)		2.93
9	Dhuvaran (Gas 1)*	7.65	6	5.05	(2.60)		0.00
10	Dhuvaran (Gas 2)	8.38	8	7.85	(0.53)		0.53
11	Utran Gas*	11.52	7	6.69	(4.83)		0.00
12	Utran Extension*	15.55	4	3.89	(11.66)		0.00
13	Ukai Hydro	1.23	1	0.71	(0.52)		0.52
14	Kadana Hydro	1.77	2	1.60	(0.17)		0.17
15	Dhuvaran (Oil)	23.34	10	9.74	(13.60)		13.60
	Total	262.64	236	231.22	-31.42		12.91

* PPA governed stations.

4.6.7 Insurance Charges for FY 2009-10

Petitioner's submission

GSECL has claimed Rs. 5.00 crore towards insurance charges in the Truing up for FY 2009-10. The insurance charges approved for FY 2009-10 by the Commission in



the MYT order dated 17th January, 2009, in Tariff Order for FY 2009-10 and now claimed by GSECL as actual are given in the Table 4.37 below:

Table 4.37: Insurance charges for FY 2009-10

(Rs. crore)				
Particulars	MYT approved for FY 2009-10	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (Truing up) FY 2009-10
Insurance charges	8.39	8.39	-	5.00

Commission's analysis

The Commission has observed that the actual insurance charges are Rs. 4.15 crore as verified from the audited annual accounts for the FY 2009-10. These insurance charges are already included in the approved O&M expenses as given in para no. 4.6.4.

As such the amount of Rs. 8.39 crores provided in the tariff order has to be considered as uncontrollable gain in truing up.

4.6.8 SLDC Charges for FY 2009-10

Petitioner's submission

GSECL has claimed Rs.0.53 crore towards SLDC charges in the Truing up for FY 2009-10.

The SLDC charges approved for FY 2009-10 by the Commission in the MYT order dated 17th January, 2009, in the Tariff Order for FY 2009-10 and now claimed by GSECL as actual are tabulated in Table 4.38 below:

Table 4.38: SLDC charges for FY 2009-10

(Rs. crore)			
Particulars	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (Truing up) 2009-10
SLDC charges	3.67	-	0.53



Commission's analysis

The Commission approves Rs. 0.53 crore towards SLDC charges in the Truing up for FY 2009-10 as claimed by GSECL against Rs. 3.67 crore approved in the Tariff Order dated 14th December 2009.

The station-wise approved SLDC charges and gains/(losses) are given in table 4.39 below:

Table 4.39: Approved SLDC charges gains/losses for FY 2009-10

(Rs. crore)

Sr. No	Power Station	Tariff order FY 2009-10	Actual claimed by GSECL	Approved in Truing up	Deviation (5-3)	Gain/(loss) due to controllable factor	Gain/(loss) due to uncontrollable factor
1	2	3	4	5	6	7	8
1	Ukai (1-5)	0.6	0.09	0.09	(0.51)		0.51
2	Gandhinagar 1-4	0.46	0.07	0.07	(0.39)		0.39
3	Gandhinagar 5*	0.15	0.02	0.02	(0.13)		0
4	Wanakbori 1-6 TPS	0.89	0.13	0.13	(0.76)		0.76
5	Wanakbori 7*	0.15	0.02	0.02	(0.13)		0
6	Sikka TPS	0.17	0.02	0.02	(0.15)		0.15
7	KLTPS 1-3	0.15	0.02	0.02	(0.13)		0.13
8	KLTPS 4	0.05	0.01	0.01	(0.04)		0.04
9	Dhuvaran (Gas 1)*	0.07	0.01	0.01	(0.06)		0
10	Dhuvaran (Gas 2)	0.08	0.01	0.01	(0.07)		0.07
11	Utran Gas*	0.09	0.01	0.01	(0.08)		0
12	Utran Extension*	0.26	0.04	0.04	(0.22)		0
13	Ukai Hydro	0.21	0.03	0.03	(0.18)		0.18
14	Kadana Hydro	0.17	0.02	0.02	(0.15)		0.15
15	Dhuvaran (Oil)	0.15	0.02	0.02	(0.13)		0.13
	Total	3.65	0.52	0.52	(3.13)		2.51

* PPA governed stations.

4.6.9 Income Tax for FY 2009-10

Petitioner's submission

GSECL has claimed Rs. 25.00 crore towards income tax in the Truing up for FY 2009-10. The income tax approved for FY 2009-10 by the Commission in the MYT order dated 17th January, 2009, in the Tariff Order for FY 2009-10, and now claimed by GSECL as actual are tabulated in Table 4.40 below:



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 4.40: Income Tax for FY 2009-10

(Rs. crore)				
Particulars	MYT approved for FY 2009-10	T.O FY 2009-10	APR FY 2009-10	Claimed by GSECL (Truing up) FY 2009-10
Income Tax	45.32	39.80	-	25.00

Commission's analysis

The Commission has observed that the actual income tax as verified from the annual accounts for FY 2009-10 is Rs. 25.20 crore.

The Commission accordingly approves Rs. 25.20 crore towards income tax, as per the annual accounts for FY 2009-10.

The station-wise approved income tax and gains/(losses) are given in the table 4.41 below:

Table 4.41: Approved income tax and gains/loss for FY 2009-10

(Rs. crore)							
Sr.No.	Power Station	Tariff order FY 2009-10	Actual claimed by GSECL	Approved in Truing up	Deviation (5-3)	Gain/(loss) due to controllable factor	Gain/(loss) due to uncontrollable factor
1	2	3	4	5	6	7	8
1	Ukai (1-5)	2.41	1	1	(1.41)		1.41
2	Gandhinagar 1-4	3.94	2	2	(1.94)		1.94
3	Gandhinagar 5*	3.04	2	2	(1.04)		0
4	Wanakbori 1-6 TPS	5.88	4	4	(1.88)		1.88
5	Wanakbori 7*	2.95	2	2	(0.95)		0
6	Sikka TPS	2.3	2	2	(0.3)		0.3
7	KLTPS 1-3	4.85	3	3	(1.85)		1.85
8	KLTPS 4	1.38	1	1	(0.38)		0.38
9	Dhuvaran (Gas 1)*	1.46	1	1	(0.46)		0
10	Dhuvaran (Gas 2)	1.8	1	1	(0.8)		0.8
11	Utran Gas*	1.19	1	1	(0.19)		0
12	Utran Extension*	3.74	2	2	(1.74)		0
13	Ukai Hydro	0.89	1	1	0.11		(0.11)
14	Kadana Hydro	3.18	2	2	(1.18)		1.18
15	Dhuvaran (Oil)	0.78	1	1	0.22		(0.22)
	Total	39.79	26	26	(13.79)		9.41

* PPA governed stations.



4.7 Approved ARR and Sharing of Gains and Losses

The Commission has reviewed the performance of GSECL under Regulation 9.3 of MYT Regulations, 2007 with reference to audited annual accounts for FY 2009-10.

The Commission has discussed and approved various components of fixed charges for approval of trued up ARR in above paras.

The fixed charges approved in the Tariff Order dated 14th December 2009, claimed by GSECL in Truing up, now approved by the Commission and deviation (gain/loss) with reference to approved values are given in the Table 4.42 below:

Table 4.42: ARR Approved in the Truing up for FY 2009-10

(Rs. in crore)

Sl. No.	Fixed Charges	Tariff Order 2009-10 (14.12.09)	Actual claimed in True up	Approved in True up	Deviation (5-3)
1	2	3	4	5	6
1	Depreciation	441.70	519.00	444.77	3.07
2	Interest & Finance charges	376.16	338.00	338.91	(37.25)
3	Return on equity	351.29	327.00	327.00	(24.29)
4	Interest on working capital	262.64	234.00	231.22	(31.42)
5	O&M expenses	565.77*	635.20	732.52*	166.75
6	Water charges		97.23		
7	Income Tax	39.79	26.00	26.00	(13.79)
8	SLDC charges	3.65	0.52	0.52	(3.13)
9	Insurance charges	8.39	5.00	0.00	(8.39)
10	Total fixed charges	2049.40	2179.05	2100.94	51.55

*Including water charges

Sharing of Gains or Losses for FY 2009-10

The Commission has analyzed the gains / losses on account of controllable and uncontrollable factors.

The relevant Regulations are extracted below:

Regulation 11.1 “ The approved aggregate gain to the Generating Company or Licensee on account of controllable factors shall be dealt with in the following manner:



- (a) One third of the amount of such gain shall be passed on as a rebate in tariffs over such period as may be specified in the Order of the Commission under Regulation 9.7;
- (b) One third of the amount of such gain shall be retained in a special reserve by the Generating Company or Licensee for the purpose of absorbing the impact of any future losses on account of controllable factors under clause (b) of Regulation 11.2 and
- (c) The balance amount of gain may be utilized, at the discretion of the Generating Company or Licensee”.

Regulation 10.1 “ The approved aggregate gain or loss to the Generating Company or Licensee on account of uncontrollable factors shall be passed through as an adjustment in the tariff of the Generating Company or Licensee over such period as may be specified in the Order of the Commission passed under Regulation 9.7 (a)”.

Regulation 11.2 The approved aggregate loss to the Generating Company or Licensee on account of controllable factors shall be dealt in the following manner:

- (a) One-third of the amount of such loss may be passed on as an additional charge in tariffs over such period as may be specified in the order of the Commission under Regulation 9.7 and
- (b) The balance amount of loss shall be absorbed by the Generating Company or licensee.

The gains / losses due to controllable factors and uncontrollable factors and the consolidated gains / losses approved to be passed through to their beneficiaries are given in the tables 4.43, 4.44 and 4.45 below:

Table 4.43: Sharing of Gains/losses due to fuel cost as controllable factors

Sr. No	Power Station	Gains/(losses) due to fuel cost as controllable factors	Gain/(losses) to be passed through	Gain to be retained in a sp. reserve	Gain/(losses) on account of Company
1	Ukai (1-5)	(3)	(1.00)		(2.00)
2	Gandhinagar (1-4)	16	5.33	5.33	5.33
3	Gandhinagar 5*		-		-
4	Wanakbori 1-6 TPS	(11)	(3.67)		(7.33)
5	Wanakbori 7*		-		-



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No	Power Station	Gains/(losses) due to fuel cost as controllable factors	Gain/(losses) to be passed through	Gain to be retained in a sp. reserve	Gain/(losses) on account of Company
6	Sikka TPS	4	1.33	1.33	1.33
7	KLTPS 1-3	(12)	(4.00)		(8.00)
8	KLTPS 4	(3)	(1.00)		(2.00)
9	Dhuvaran (Gas 1)*		-		-
10	Dhuvaran (Gas 2)	1	0.33	0.33	0.33
11	Utran Gas*		-		-
12	Utran Extension*		-		-
13	Ukai Hydro		-		-
14	Kadana Hydro		-		-
15	Dhuvaran (Oil)	(12)	(4.00)		(8.00)
	Total	(20)	(6.67)	7.00	(20.33)

Table 4.44: Sharing of Gains/losses due to controllable O&M Expenses

Sr. No	Power Station	Gains/(losses) due to controllable O & M expenses	Gain/(losses) to be passed through	Gain to be retained in a sp. reserve	Gain/(losses) on account of Company
1	Ukai (1-5)	(5.61)	(1.87)		(3.74)
2	Gandhinagar (1-4)	(26.94)	(8.98)		(17.96)
3	Gandhinagar 5*	-			
4	Wanakbori 1-6 TPS	20.97	6.99	6.99	6.99
5	Wanakbori 7*	-			
6	Sikka TPS	(16.42)	(5.47)		(10.95)
7	KLTPS 1-3	(60.71)	(20.24)		(40.47)
8	KLTPS 4	7.58	2.53	2.53	2.53
9	Dhuvaran (Gas 1)*	-			
10	Dhuvaran (Gas 2)	(7.25)	(2.42)	(2.42)	(2.42)
11	Utran Gas*	-			
12	Utran Extension*	-			
13	Ukai Hydro	1.70	0.57	0.57	0.57
14	Kadana Hydro	4.95	1.65	1.65	1.65
15	Dhuvaran (Oil)	(11.54)	(3.85)		(7.69)
	Total	(93.27)	(31.09)	9.32	(71.50)

Table 4.45: Gain/(loss) due to uncontrollable factors

Sr. No.	Power Station	Depreciation	Interest & finance charges	Return on Equity	O&M expenses	Interest on Working Capital	Tax	Total Gains / (losses) to be passed through
1	Ukai (1-5)	(2.18)	1.65	2.31	(12.00)	2.24	1.41	(6.57)
2	Gandhinagar (1-4)	6.94	15.13	4.80	(9.00)	0.13	1.94	19.94
3	Gandhinagar 5*	-		-	-	-	0	-



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power Station	Depreciation	Interest & finance charges	Return on Equity	O&M expenses	Interest on Working Capital	Tax	Total Gains / (losses) to be passed through
4	Wanakbori 1-6 TPS	(3.52)	(7.90)	0.93	(18.00)	(6.82)	1.88	(33.43)
5	Wanakbori 7*	-	-	-	-	-	0	-
6	Sikka TPS	1.35	(2.87)	0.33	(3.00)	(0.04)	0.3	(3.93)
7	KLTPS 1-3	1.59	(12.27)	(0.20)	(3.00)	(0.35)	1.85	(12.38)
8	KLTPS 4	(0.25)	20.60	4.22	(1.00)	2.93	0.38	26.88
9	Dhuvaran (Gas 1)*	-	-	-	-	-	0	-
10	Dhuvaran (Gas 2)	(0.54)	6.86	0.92	(2.00)	0.53	0.8	6.57
11	Utran Gas*	-	-	-	-	-	0	-
12	Utran Extension*	-	-	-	-	-	0	-
13	Ukai Hydro	0.51	0.27	(0.18)	(4.00)	0.52	-0.11	(2.99)
14	Kadana Hydro	0.48	(1.75)	0.05	(3.00)	0.17	1.18	(2.87)
15	Dhuvaran (Oil)	3.74	1.79	(0.09)	(3.00)	13.60	-0.22	15.82
	Total	8.12	21.51	13.09	(58.00)	12.91	9.41	7.04
	Gain due to Insurance considered as part of O & M expenses							8.39
	TOTAL Gain							15.43

Table 4.46: Consolidated gains/(loss) to be included in ARR for FY 2011-12

Sr. No	Power Station	Total controllable Gains/(losses) to be passed through	Total uncontrollable Gains/(losses) to be passed through	Total Gains/(losses) to be passed through
1	Ukai (1-5)	(2.87)	(6.57)	(9.44)
2	Gandhinagar (1-4)	(3.65)	19.94	16.29
3	Gandhinagar 5*	-	-	-
4	Wanakbori 1-6 TPS	3.32	(33.43)	(30.11)
5	Wanakbori 7*	-	-	-
6	Sikka TPS	(4.14)	(3.93)	(8.07)
7	KLTPS 1-3	(24.24)	(12.38)	(36.62)
8	KLTPS 4	1.53	26.88	28.41
9	Dhuvaran (Gas 1)*	-	-	-
10	Dhuvaran (Gas 2)	(2.08)	6.57	4.49
11	Utran Gas*	-	-	-
12	Utran Extension*	-	-	-
13	Ukai Hydro	0.57	(2.99)	(2.42)
14	Kadana Hydro	1.65	(2.87)	(1.22)
15	Dhuvaran (Oil)	(7.85)	15.82	7.97
	Insurance		8.39	8.39
	Total	(37.76)	15.43	(22.33)



4.8 Sharing of gain / losses and entitlement for FY 2008-09

Based on the annual performance review and truing up for FY 2008-09, the Commission had computed the gain and losses in para 3.3.11 of Commission's Order dated 14th December, 2009 and concluded that the petitioner is provisionally entitled to Rs.85.96 crore as losses for the FY 2008-09.

Subsequently, in the review proceedings before the Appellate Tribunal for Electricity in the matter of Torrent Power Limited (Review Petition No.9 of 2010-GERC v/s Torrent Power Limited), the Torrent Power Limited has pointed out that in case of GSECL, the Commission allowed transit loss on washed coal also. In the said proceeding, the Commission submitted that the transit loss are not allowed for washed coal in accordance with the MYT Order dated 17th January, 2009 and at the time of truing up order dated 14th December, 2009 in Petition No.974 of 2009, Commission decided as follows:

“The Commission considers the transit losses at the level of approved in its MYT Order of 17th January, 2009”.

However, in calculation of fuel cost at the time of truing up of FY 2008-09, inadvertently transit loss was also applied to washed coal. The Commission submitted before the “Appellate Tribunal for Electricity” that, the Commission will rectify this error at the time of next truing up. Hence, the fuel cost calculations for the FY 2008-09 are revised and accordingly the resultant loss for the FY 2008-09 is now revised to Rs.87.06 crore.

4.9 Treatment of gap/surplus of the FY 2008-09 and FY 2009-10

As discussed above, there is gap of Rs. 87.06 crore for FY 2008-09 and Rs. 22.33 crore for FY 2009-10. The Commission has not considered this gap while determining the tariff for FY 2011-12, as the truing up for last year of the first MYT control period is required to be taken up next year. After completing the truing up for FY 2010-11 and looking to the net entitlement for the first MYT control period, the Commission would take appropriate decision on this at that time.

Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.1

Truing up for FY 2009-10
Fuel costs (Coal, Lignite & Secondary Oil) - Ukai TPS 1 to 5

Sr. No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	4829
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B	MUs	435
4	Net Generation	$Y=A - B$	MUs	4394
5	Station Heat Rate	D	KCal/KWH.	2,775
6	Sp. Oil Consumption	E	ml/kWh	2.00
7	Gross Calorific Value of Coal	F	kcal/kg	3,948
8	Calorific value of Oil	G	kcal/l	10,469
9	Overall Heat	$H=A \times D$	G Cal	13400475
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	101110
11	Heat from Coal	$J=H-I$	G Cal	13299365
12	Transit loss of coal	K	%	1.2%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	32.84%
15	B) Washed Coal	X2	%	67.16%
16	C) Imported Coal	X3	%	0.0%
17	Actual Oil Consumption	$L=A \times E$	kl	9658
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	3368634
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	1119696
20	B) Washed Coal	$Q2=M^* \times X2$	MT	2262374
21	C) Imported Coal	$Q3=M^* \times X3$	MT	0.00
22	Specific Coal Consumption		kg/kWh	0.64
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2042
25	B) Washed Coal	P2	Rs/MT	2186.00
26	C) Imported Coal	P3	Rs/MT	
27	Price of Oil	P4	Rs/kl	25775
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	22864
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	49456
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	0
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	72320
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	2489
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	74809
35	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	1.55
36	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	1.70
37	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	558
38*	Actual net generation	S	MUs	4442
39*	Normative Fuel Cost for actual net generation	$T=S \times Q/10$	Rs Lakh	756

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.2

Truing up for 2009-10
Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 1-4

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	4171
2	Auxiliary Consumption	C	%	11.12%
3	Auxiliary Consumption	B	MUs	464
4	Net Generation	$Y = A - B$	MUs	3707
5	Station Heat Rate	D	KCal/KWH.	2,855
6	Sp. Oil Consumption	E	ml/kWh	3.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,288
8	Calorific value of Oil	G	kcal/l	10,509
9	Overall Heat	$H = A \times D$	G Cal	11908205
10	Heat from Oil	$I = (A \times E \times G) / 1000$	G Cal	153416
11	Heat from Coal	$J = H - I$	G Cal	11754789
12	Transit loss of coal	K	%	1.4%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	15.08%
15	B) Washed Coal	X2	%	66.66%
16	C) Imported Coal	X3	%	18.26%
17	Actual Oil Consumption	$L = A \times E$	kl	14599
18	Actual Coal Consumption	$M = (J \times 1000) / F$	MT	2741322
19	A) Indigenous Coal	$Q1 = M^* \times X1 / (1 - K)$	MT	419261
20	B) Washed Coal	$Q2 = M^* \times X2$	MT	1827365
21	C) Imported Coal	$Q3 = M^* \times X3$	MT	500565
22	Specific Coal Consumption		kg/kWh	0.56
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3033
25	B) Washed Coal	P2	Rs/MT	2500.00
26	C) Imported Coal	P3	Rs/MT	5696
27	Price of Oil	P4	Rs/kl	25063
28	Coal cost			
29	A) Indigenous Coal	$N1 = Q1 \times P1 / 10^5$	Rs Lakh	12716
30	B) Washed Coal	$N2 = Q2 \times P2 / 10^5$	Rs Lakh	45684
31	C) Imported Coal	$N3 = Q3 \times P3 / 10^5$	Rs Lakh	28512
32	Total Coal Cost	$N4 = N1 + N2 + N3$	Rs Lakh	86913
33	Oil Cost	$N5 = P4 \times L / 10^5$	Rs Lakh	3659
34	Total Fuel Cost	$O = N4 + N5$	Rs Lakh	90571
35	Fuel Cost/Unit Gross	$P = O / (A \times 10)$	Rs/kWh	2.17
36	Fuel Cost/Unit Net	$Q = O / (Y \times 10)$	Rs/kWh	2.44
37	Cost of fuel/KCal	$R = (O / H) \times 10^5$	Rs/Gcal	761
38*	Actual net generation	S	MUs	3734
39*	Normative Fuel Cost for actual net generation	$T = S \times Q / 10$	Rs Lakh	912

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.3

Truing up for 2009-10
Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 5

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	1746
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B	MUs	157
4	Net Generation	$Y=A - B$	MUs	1589
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	4,288
8	Calorific value of Oil	G	kcal/l	10,509
9	Overall Heat	$H=A \times D$	G Cal	4295160
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	64220
11	Heat from Coal	$J=H-I$	G Cal	4230940
12	Transit loss of coal	K	%	1.4%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	15.08%
15	B) Washed Coal	X2	%	66.66%
16	C) Imported Coal	X3	%	18.26%
17	Actual Oil Consumption	$L=A \times E$	kl	6111
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	986693
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	150906
20	B) Washed Coal	$Q2=M^* \times X2$	MT	657730
21	C) Imported Coal	$Q3=M^* \times X3$	MT	180170.14
22	Specific Coal Consumption		kg/kWh	0.51
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3039
25	B) Washed Coal	P2	Rs/MT	2498
26	C) Imported Coal	P3	Rs/MT	5791
27	Price of Oil	P4	Rs/kl	25063
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	4586
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	16430
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	10434
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	31450
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1532
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	32981
35	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	1.89
36	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	2.08
37	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	768



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.4

Truing up for 2009-10

Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 1-6

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	9160
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B	MUs	824
4	Net Generation	$Y=A - B$	MUs	8336
5	Station Heat Rate	D	KCal/KWH.	2,650
6	Sp. Oil Consumption	E	ml/kWh	1.00
7	Gross Calorific Value of Coal	F	kcal/kg	3,844
8	Calorific value of Oil	G	kcal/l	10,526
9	Overall Heat	$H=A \times D$	G Cal	24274000
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	96418
11	Heat from Coal	$J=H-I$	G Cal	24177582
12	Transit loss of coal	K	%	1.5%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	32.35%
15	B) Washed Coal	X2	%	60.55%
16	C) Imported Coal	X3	%	7.10%
17	Actual Oil Consumption	$L=A \times E$	kl	9160
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	6289694
19	A) Indigenous Coal	$Q1=M \times X1/(1-K)$	MT	2065701
20	B) Washed Coal	$Q2=M \times X2$	MT	3808409
21	C) Imported Coal	$Q3=M \times X3$	MT	446568
22	Specific Coal Consumption		kg/kWh	0.68
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2853
25	B) Washed Coal	P2	Rs/MT	2469
26	C) Imported Coal	P3	Rs/MT	5474
27	Price of Oil	P4	Rs/kl	26053
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	58934
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	94030
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	24445
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	177409
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	2386
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	179796
35	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	1.96
36	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	2.16
37	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	741
38*	Actual net generation	S	MUs	8357
39*	Normative Fuel Cost for actual net generation	$T=S \times Q/10$	Rs Lakh	1803

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.5

Truing up for 2009-10

Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 7

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	1768
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B	MUs	159
4	Net Generation	$Y=A - B$	MUs	1609
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	3,844
8	Calorific value of Oil	G	kcal/l	10,526
9	Overall Heat	$H=A \times D$	G Cal	4349280
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	65135
11	Heat from Coal	$J=H-I$	G Cal	4284145
12	Transit loss of coal	K	%	1.5%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	32.35%
15	B) Washed Coal	X2	%	60.55%
16	C) Imported Coal	X3	%	7.10%
17	Actual Oil Consumption	$L=A \times E$	kl	6188
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	1114502
19	A) Indigenous Coal	$Q1=M \times X1/(1-K)$	MT	366032
20	B) Washed Coal	$Q2=M \times X2$	MT	674831
21	C) Imported Coal	$Q3=M \times X3$	MT	79130
22	Specific Coal Consumption		kg/kWh	0.64
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2846
25	B) Washed Coal	P2	Rs/MT	2465
26	C) Imported Coal	P3	Rs/MT	5429
27	Price of Oil	P4	Rs/kl	26053
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	10417
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	16635
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	4296
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	31348
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1612
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	32960
35	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	1.86
36	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	2.05
37	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	758



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.6

Truing up for 2009-10
Fuel costs (Coal, Lignite & Secondary Oil) - Sikka TPS

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	1367
2	Auxiliary Consumption	C	%	10.70%
3	Auxiliary Consumption	B	MUs	146
4	Net Generation	$Y=A - B$	MUs	1221
5	Station Heat Rate	D	KCal/KWH.	3,100
6	Sp. Oil Consumption	E	ml/kWh	2.77
7	Gross Calorific Value of Coal	F	kcal/kg	3,804
8	Calorific value of Oil	G	kcal/l	10,269
9	Overall Heat	$H=A \times D$	G Cal	4237700
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	38884
11	Heat from Coal	$J=H-I$	G Cal	4198816
12	Transit loss of coal	K	%	2.0%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	46.32%
15	B) Washed Coal	X2	%	38.97%
16	C) Imported Coal	X3	%	14.71%
17	Actual Oil Consumption	$L=A \times E$	kl	3787
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	1103790
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	521710
20	B) Washed Coal	$Q2=M^* \times X2$	MT	430147
21	C) Imported Coal	$Q3=M^* \times X3$	MT	162367
22	Specific Coal Consumption		kg/kWh	0.56
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3267
25	B) Washed Coal	P2	Rs/MT	2734
26	C) Imported Coal	P3	Rs/MT	4577
27	Price of Oil	P4	Rs/kl	33352
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	17044
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	11760
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	7432
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	36236
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1263
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	37499
35	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	2.74
36	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	3.07
37	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	885
38*	Actual net generation	S	MUs	1217
39*	Normative Fuel Cost for actual net generation	$T=S \times Q/10$	Rs Lakh	374

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.7

Truing up for 2009-10
Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 1-3

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	1074
2	Auxiliary Consumption	C	%	12.25%
3	Auxiliary Consumption	B	MUs	132
4	Net Generation	$Y = A - B$	MUs	942
5	Station Heat Rate	D	KCal/KWH.	3,300
6	Sp. Oil Consumption	E	ml/kWh	3.00
7	Gross Calorific Value of Lignite	F	kcal/kg	2,542
8	Calorific value of Oil	G	kcal/l	10,603
9	Overall Heat	$H = A \times D$	G Cal	3544200
10	Heat from Oil	$I = (A \times E \times G) / 1000$	G Cal	34163
11	Heat from Lignite	$J = H - I$	G Cal	3510037
12	Transit loss of coal	K	%	0.00%
13	Actual Oil Consumption	$L = A \times E$	kl	3222
14	Actual Lignite Coal Consumption	$M = (J \times 1000) / F$	MT	1380817
15	Coal Consumption including Transits Loss	$N = M / (1 - K)$	MT	1380817
16	Specific Lignite Coal Consumption		kg/kWh	1.11
17	Price of Lignite	P1	Rs/MT	730
18	Price of Oil	P2	Rs/kl	33560
19	Cost of Lignite	$N1 = M \times P1 / 10^5$	Rs Lakh	10080
20	Oil Cost	$N2 = P2 \times L / 10^5$	Rs Lakh	1081
21	Total Fuel Cost	$O = N1 + N2$	Rs Lakh	11161
22	Fuel Cost/Unit Gross	$P = O / (A \times 10)$	Rs/kWh	1.04
23	Fuel Cost/Unit Net	$Q = O / (Y \times 10)$	Rs/kWh	1.18
24	Cost of fuel/KCal	$R = (O / H) \times 10^5$	Rs/Gcal	315
25*	Actual net generation	S	MUs	917
26*	Normative Fuel Cost for actual net generation	$T = S \times Q / 10$	Rs Lakh	109

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.8

Truing up for 2009-10
Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 4

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	96
2	Auxiliary Consumption	C	%	12.25%
3	Auxiliary Consumption	B	MUs	12
4	Net Generation	$Y=A - B$	MUs	84
5	Station Heat Rate	D	KCal/KWH.	3,000
6	Sp. Oil Consumption	E	ml/kWh	3.00
7	Gross Calorific Value of Lignite	F	kcal/kg	2,542
8	Calorific value of Oil	G	kcal/l	10,900
9	Overall Heat	$H=A \times D$	G Cal	288000
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	3139
11	Heat from Lignite	$J=H-I$	G Cal	284861
12	Transit losses	K	%	0.00%
13	Actual Oil Consumption	$L=A \times E$	kl	288
14	Actual Lignite Coal Consumption	$M=(J \times 1000)/F$	MT	112062
15	Coal Consumption including Transit Loss	$N=M/(1-K)$	MT	112062
16	Specific Lignite Coal Consumption		kg/kWh	1.01
17	Price of Lignite	P1	Rs/MT	730
18	Price of Oil	P2	Rs/kl	41155
19	Cost of Lignite	$N1=M \times P1/10^5$	Rs Lakh	818
20	Oil Cost	$N2=P2 \times L/10^5$	Rs Lakh	119
21	Total Fuel Cost	$O=N1 + N2$	Rs Lakh	937
22	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	0.98
23	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	1.11
24	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	325
25*	Actual net generation	S	MUs	76
26*	Normative Fuel Cost for actual net generation	$T=S \times Q/10$	Rs Lakh	8

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.9

Truing up for 2009-10

Fuel costs (Coal, Lignite & Secondary Oil) - Dhuvaran Oil

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	457
2	Auxiliary Consumption	C	%	11.50%
3	Auxiliary Consumption	B	MUs	53
4	Net Generation	$Y=A - B$	MUs	404
5	Station Heat Rate	D	KCal/KWH.	3,200
6	Calorific value of Oil	F	kcal/l	10,360
7	Overall Heat from OIL	$H=A \times D$	G Cal	1462400
8	Actual Oil Consumption	$M=(H \times 1000)/F$	kl	141158
9	Price of Oil	P1	Rs/kl	16428
10	Cost of Oil	$N5=P1 \times M/10^5$	Rs Lakh	23189
11	Total Fuel Cost	N5	Rs Lakh	23189
12	Fuel Cost/Unit Gross	$P=N5/(A \times 10)$	Rs/kWh	5.07
13	Fuel Cost/Unit Net	$Q=N5/(Y \times 10)$	Rs/kWh	5.73
14	Cost of fuel/KCal	$R=(N5/H) \times 10^5$	Rs/Gcal	1586
15*	Actual net generation	S	MUs	390
16*	Normative Fuel Cost for actual net generation	$T=S \times Q/10$	Rs Lakh	224

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.10

Truing up for 2009-10

Fuel costs (Gas) - Dhuvaran Gas 1

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	580
2	Auxiliary Consumption	C	%	3.00%
3	Auxiliary Consumption	B	MUs	17
4	Net Generation	$Y=A - B$	MUs	563
5	Station Heat Rate	D	KCal/KWH.	1,950
6	Calorific value of Gas	F	kcal/scm	9,606
7	Overall Heat from Gas	$H=A \times D$	G Cal	1131000
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	117739
9	Price of Gas	P1	Rs/scm	11.52
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	13564
11	Total Fuel Cost	N5	Rs Lakh	13564
12	Fuel Cost/Unit Gross	$P=N5/(A \times 10)$	Rs/kWh	2.34
13	Fuel Cost/Unit Net	$Q=N5/(Y \times 10)$	Rs/kWh	2.41
14	Cost of fuel/KCal	$R=(N5/H) \times 10^5$	Rs/Gcal	1199



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.11

Truing up for 2009-10

Fuel costs (Gas) - Dhuvaran Gas 2

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	778
2	Auxiliary Consumption	C	%	3.00%
3	Auxiliary Consumption	B	MUs	23
4	Net Generation	$Y = A - B$	MUs	755
5	Station Heat Rate	D	KCal/KWH.	1,950
6	Calorific value of Gas	F	kcal/scm	9,700
7	Overall Heat from Gas	$H = A \times D$	G Cal	1517100
8	Actual Gas Consumption	$M = (H \times 1000) / F$	M. scm	156402
9	Price of Gas	P1	Rs/scm	11.52
10	Cost of Gas	$N5 = P1 \times M / 10^2$	Rs Lakh	18018
11	Total Fuel Cost	N5	Rs Lakh	18018
12	Fuel Cost/Unit Gross	$P = N5 / (A \times 10)$	Rs/kWh	2.32
13	Fuel Cost/Unit Net	$Q = N5 / (Y \times 10)$	Rs/kWh	2.39
14	Cost of fuel/KCal	$R = (N5 / H) \times 10^5$	Rs/Gcal	1188
15*	Actual net generation	S	MUs	744
16*	Normative Fuel Cost for actual net generation	$T = S \times Q / 10$	Rs Lakh	178

* Required for computation of gain / loss



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.12

Truing up for 2009-10

Fuel costs (Gas) - Utran Gas

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	866
2	Auxiliary Consumption	C	%	4.00%
3	Auxiliary Consumption	B	MUs	35
4	Net Generation	$Y=A - B$	MUs	831
5	Station Heat Rate	D	KCal/KWH.	2,150
6	Calorific value of Gas	F	kcal/scm	9,460
7	Overall Heat from Gas	$H=A \times D$	G Cal	1861900
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	196818
9	Price of Gas	P1	Rs/scm	10.00
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	19682
11	Total Fuel Cost	N5	Rs Lakh	19682
12	Fuel Cost/Unit Gross	$P=N5/(A*10)$	Rs/kWh	2.27
13	Fuel Cost/Unit Net	$Q=N5/(Y*10)$	Rs/kWh	2.37
14	Cost of fuel/KCal	$R=(N5/H)*10^5$	Rs/Gcal	1057



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 4.13

Truing up for 2009-10

Fuel costs (Gas) - Utran Extension

Sr.No.	Item	Derivation	Unit	2009-10
1	Gross Generation	A	MUs	967
2	Auxiliary Consumption	C	%	4.00%
3	Auxiliary Consumption	B	MUs	39
4	Net Generation	$Y=A - B$	MUs	928
5	Capacity		MW	375
6	Availability Factor		%	85.16%
7	Plant Load Factor		%	74.74%
8	Station Heat Rate	D	KCal/KWH.	1,850
9	Calorific value of Gas	F	kcal/scm	9,208
10	Overall Heat from Gas	$H=A \times D$	G Cal	1788950
11	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	194282
12	Price of Gas	P1	Rs/scm	10
13	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	19428
14	Total Fuel Cost	N5	Rs Lakh	19428
15	Fuel Cost/Unit Gross	$P=N5/(A \times 10)$	Rs/kWh	2.01
16	Fuel Cost/Unit Net	$Q=N5/(Y \times 10)$	Rs/kWh	2.09
17	Cost of fuel/KCal	$R=(N5/H) \times 10^5$	Rs/Gcal	1086



Chapter 5

Annual Performance Review for FY 2010-11

5.1 Generating Stations of GSECL

The details of generating stations of GSECL as on 1st April, 2010 along with their capacities and dates of commissioning are given in Table 5.1 below:

Table 5.1: Capacity, COD & Age of GSECL generating stations as on 1st April, 2010

Name of station	Unit No.	Capacity of the unit (MW)	Date of Commissioning	Age as on 01/04/2010 (Years)
Ukai	1	120	19/03/1976	34
	2	120	23/06/1976	34
	3	200	21/01/1979	31
	4	200	11/09/1979	31
	5	210	30/01/1985	25
Sub total		850		
Gandhinagar	1	120	13/03/1977	33
	2	120	10/04/1977	33
	3	210	20/03/1990	20
	4	210	20/07/1991	19
	5	210	17/03/1998	12
Sub total		870		
Wanakbori	1	210	25/03/1982	28
	2	210	15/01/1983	27
	3	210	15/03/1984	26
	4	210	09/03/1986	24
	5	210	23/09/1986	24
	6	210	18/11/1987	22
	7	210	31/12/1998	11
Sub total		1470		
Sikka	1	120	26/03/1988	22
	2	120	31/03/1993	17
Sub total		240		
KLTPS	1	70	29/03/1990	20
	2	70	25/03/1991	19
	3	75	31/03/1997	13
	4	75	20/12/2009	1
Sub total		290		
Dhuvaran	5 - Oil	110	27/05/1972	38
	6 - Oil	110	10/09/1972	38
	7 - Gas	106.617	28/01/2004	6
	8 - Gas	112.45	01/11/2007	2



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Name of station	Unit No.	Capacity of the unit (MW)	Date of Commissioning	Age as on 01/04/2010 (Years)
Sub total		439.067		
Utran	GT - 1	30	17/12/1992	17
	GT - 2	30	28/12/1992	17
	GT - 3	30	07/05/1993	17
	STG	45	17/07/1993	17
Sub total		135		
Utran Extension	GT - 1	375	08/11/2009	1
Sub Total GSECL (Coal + Lignite)		3720		
Sub Total GSECL (Oil)		220		
Sub Total GSECL (Gas)		729.067		
Total GSECL (Thermal)		4669		
Ukai Hydro	1	75	08/01/1974	36
	2	75	13/12/1974	35
	3	75	22/04/1975	35
	4	75	04/03/1976	34
Sub total		300		
Ukai LBC	1	2.5	08/12/1987	22
	2	2.5	19/02/1988	22
Sub total		5		
Kadana Hydro	1	60	31/03/1990	20
	2	60	02/09/1990	20
	3	60	03/01/1998	12
	4	60	27/05/1998	12
Sub total		240		
Panam	1	1	24/03/1994	16
	2	1	31/03/1994	16
Sub total		2		
Sub Total GSECL (Hydro)		547		
Wind Mills		10		1
Total capacity of GSECL		5226		

The performance and cost parameters are discussed hereunder for FY 2010-11, for the purpose of Annual Performance Review.

5.2 Operative Performance Parameters

GSECL submitted the actuals for the first half-year of FY 2010-11 and RE (Revised Estimates) for the whole year of FY 2010-11, in the case of PAF, PLF, Station Heat Rate, coal transit loss, auxiliary consumption and specific oil consumption etc. The Commission has undertaken the annual performance review of the individual operating parameters, which are discussed in detail.



5.2.1 Plant Availability Factor (PAF)

Petitioner's Submission

GSECL has submitted the actuals of plant availability for the first half year and revised estimates (RE) for the whole year of FY 2010-11 for all the stations.

The PAF (i) approved by the Commission in its order dated 31st March 2010 for annual tariff determination for FY 2010-11, (ii) actuals for first half year and (iii) RE for FY 2010-11 as submitted by GSECL are given in the Table 5.2 below:

Table 5.2: Plant Availability Factors for FY 2010-11

(%)

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (April-Sept.) (Actual)	GSECL (RE)
1.	Ukai (1-5)	74	67.75	74
2.	Gandhinagar (1-4)	80	79.57	78
3.	Gandhinagar- 5*	80	-	80
4.	Wanakbori 1-6 TPS	85	77.83	80
5.	Wanakbori 7 TPS*	80	-	80
6.	Sikka TPS	75	63.93	71
7.	KLTPS 1-3	75	64.71	65
8.	KLTPS 4	75	27.58	58.05
9.	Dhuvaran (Oil) +	80	88.44	80
10.	Dhuvaran (Gas 1)*	80	-	80
11.	Dhuvaran (Gas 2)	80	65.28	80
12.	Utran (Gas)*	80	-	80
13.	Utran Extension *	80	-	80
14.	Ukai Hydro	80	98.56	80
15.	Kadana Hydro	80	95.48	80

* PPA based stations.

+ Dhuvaran (oil) station is decommissioned w.e.f 1st Dec. 2010.

For PPA governed stations GSECL has proposed PAF of 80% which is as per the applicable PPAs and Regulations.

GSECL has submitted the reasons for the deviation of PAF for other stations as follows for FY 2010-11.

- Ukai units 1&2 have undergone R&M recently and the R&M is not yet found successful. Units run at partial load.
- Ukai unit 3: due to aging affect and old and obsolete technology in automation, instrumentation and control system causing more trippings.
- Gandhinagar 1-4 unit No.1 & 2 are not fully operational due to ageing effect.



- Wanakbori 1-6: As the machines design is old and not the type of modular design the maintenance of the machine requires more time.
- Sikka TPS: Backing down and vacuum problems during low tide period.
- KLTPS 1-3: Unit 3 has partial operation as load restricted to 50 MW as 2 stages of turbine shaved off to reduce the down time for repairing of high vibration of turbine and it also has vacuum problem due to brackish water causing low load operations;
- KLTPS 4: Unit has not stabilized yet due to teething problem.

Commission's analysis

For PPA governed stations, the PAF is considered for the purpose of APR for FY 2010-11 as per applicable PPA conditions and Regulations as proposed by GSECL.

In the case of Gandhinagar 1-4, GSECL proposed PAF of 78% against approved PAF of 80% in its order dated 31st March, 2010. GSECL's submission that the units are not fully operational due to ageing is not convincing. Hence, the PAF for Gandhinagar 1-4 is considered at 80%.

In the case of Sikka TPS and KLTPS 1-3 stations, the Commission considers the reasons submitted by GSECL as reasonable and hence considers the PAF for these stations as proposed by the GSECL for the purpose of APR for FY 2010-11. Since, the Commission is not considering any gain/loss in the review, the PAF for these stations is noted and it will be subjected to review at the time of truing up. However, the Commission expresses its concern regarding poor performance of the newly commissioned unit 4 of KLTPS, which has achieved PAF of only 27.58% during the first half of the year. PAF for this unit anticipated to be achieved during the full year is also low, viz. 58.05%. It has been submitted that the PAF is low due to teething problems encountered during stabilization, which is not very convincing. Since, the Commission is not considering any gain/loss in the review, the PAF for KLTPS-4, as projected by GSECL is noted and it will be subjected to review at the time of truing up. However, GSECL is directed to draw a time-bound program for improvement in performance of KLTPS-4 and submit the same to the Commission within a period of three months.

As the FY 2010-11 is almost over, GSECL is directed to strive for better performance in the coming years.



The PAF considered by the Commission for the purpose of APR for FY 2010-11 are as given in the Table 5.3 below:

Table 5.3: PAF considered for FY 2010-11 for the purpose of APR

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (RE)	Considered for APR FY 2010-11
1.	Ukai (1-5)	74	74	74
2.	Gandhinagar (1-4)	80	78	80
3.	Gandhinagar- 5*	80	80	80
4.	Wanakbori 1-6 TPS	85/80	80	80
5.	Wanakbori 7 TPS*	80	80	80
6.	Sikka TPS	75	71	71
7.	KLTPS 1-3	75	65	65
8.	KLTPS 4	75	58.05	58.05
9.	Dhuvaran (Oil)	80	80	80
10.	Dhuvaran (Gas 1)*	80	80	80
11.	Dhuvaran (Gas 2)	80	80	80
12.	Utran (Gas)*	80	80	80
13.	Utran Extension *	80	80	80
14.	Ukai Hydro	80	80	80
15.	Kadana Hydro	80	80	80

* PPA based stations.

5.2.2 Plant Load Factor (PLF)

Petitioner's Submission

GSECL submitted the actual PLF of different stations for the first half year and RE for the whole FY 2010-11.

The PLF (i) approved by the Commission in its order dated 31st March 2010 for Annual Tariff determination for FY 2010-11, (ii) actuals for the first half year and (iii) RE for FY 2010-11 as submitted by GSECL are given in the Table 5.4 below:

Table 5.4: Plant Load Factors for FY 2010-11

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (April – Sep) (Actual)	GSECL (RE)
1.	Ukai (1-5)	74	67.78	74
2.	Gandhinagar (1-4)	75	80.21	78
3.	Gandhinagar- 5*	92	-	80
4.	Wanakbori 1-6 TPS	85	78.63	80
5.	Wanakbori 7 TPS*	92	-	80
6.	Sikka TPS	75	65.73	71
7.	KLTPS 1-3	72	66.98	65

(%)



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

8.	KLTPS 4	80	30.26	58
9.	Dhuvaran (Gas 1)*	90	-	44
10.	Dhuvaran (Gas 2)	90	66.32	80
11.	Utran (Gas)*	92		80
12.	Utran Extension *	80		80
13.	Ukai Hydro	24	19.17	21.83
14.	Kadana Hydro	9	3.63	6.42

* PPA based stations

Commission's analysis

The stations Sikka TPS, KLTPS 1-3, Dhuvaran Gas-1, Ukai hydro and Kadana hydro achieved lower PLF than what was approved in the Commission's order dated 31st March, 2010. The PLF of KLTPS 4 was much lower than what was approved in the Tariff Order dated 31st March, 2010. It is stated that the unit has not yet stabilized. The Commission takes note of the above factor mentioned by GSECL and considers the PLF (RE) as projected by GSECL for the purpose of APR for FY 2010-11 as given in Table 5.5 below. Though the PLF of stations to some extent depends on schedule given by Distribution companies under ABT, this cannot be the sole reason for poor performance of stations like KLTPS- 4 and Dhuvaran Gas- 1.

Table 5.5: PLF considered for APR for FY 2010-11

(%)				
Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (RE)	Considered for APR for FY 2010-11
1.	Ukai (1-5)	74	74	74
2.	Gandhinagar (1-4)	75	78	78
3.	Gandhinagar- 5*	92	80	80
4.	Wanakbori 1-6 TPS	85	80	80
5.	Wanakbori 7 TPS*	92	80	80
6.	Sikka TPS	75	71	71
7.	KLTPS 1-3	72	65	65
8.	KLTPS 4	80	58	58
9.	Dhuvaran (Gas 1)*	90	44	44
10.	Dhuvaran (Gas 2)	90	80	80
11.	Utran (Gas)*	92	80	80
12.	Utran Extension *	80	80	80
13.	Ukai Hydro	24	21.83	21.83
14.	Kadana Hydro	9	6.42	6.42

* PPA based stations

5.2.3 Auxiliary Consumption

Petitioner's Submission

GSECL submitted the actual Auxiliary Consumption of different stations for the first half year and RE for the whole of FY 2010-11.



The auxiliary consumption (i) approved by the Commission in its order dated 31st March 2010 for annual tariff determination for FY 2010-11, (ii) actuals for first half year and (iii) RE for FY 2010-11 as submitted by GSECL are given in the Table 5.6 below:

Table 5.6: Auxiliary Consumption for FY 2010-11

(%)

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (April – Sep) (Actual)	GSECL (RE)
1.	Ukai (1-5)	9.10	9.34	10.50
2.	Gandhinagar (1-4)	10.27	10.54	10.60
3.	Gandhinagar- 5*	9.00	-	9.20
4.	Wanakbori 1-6 TPS	9.00	9.07	9.00
5.	Wanakbori 7 TPS*	9.00	-	9.10
6.	Sikka TPS	10.50	12.28	11.60
7.	KLTPS 1-3	12.00	14.38	14.50
8.	KLTPS 4	12.00	23.91	19.50
9.	Dhuvaran (Gas 1)*	3.00	-	6.00
10.	Dhuvaran (Gas 2)	3.00	4.35	4.30
11.	Utran (Gas)*	3.00	-	4.75
12.	Utran Extension *	3.00	-	2.40
13.	Ukai Hydro	0.70	0.85	0.80
14.	Kadana Hydro	1.19	2.13	1.70

* PPA based stations

GSECL submitted that for PPA governed stations auxiliary consumption is to be based on the respective PPAs, irrespective of what the actuals are.

Regarding other stations GSECL stated that the following are the reasons for deviation from approved auxiliary consumption during FY 2010-11.

- Ukai TPS: Partial Operation - Load on unit no. 1 & 2 could not be increased beyond 100-105 MW due to initial teething problems after major R&M; Backing down problems; no HP/LP By pass system in unit no. 3 & 4;
- Gandhinagar 1-4: Unit no. 1 & 2 are not fully operational due to ageing effect
- Sikka TPS: Partial Operation - Backing down & Vacuum problems during low tide period
- KLTPS 1-3: Partial Operation - Unit 3 has partial operation as load restricted to 50 MW as 2 stages of turbine shaved off to reduce the down time for repairing of high vibrations of turbine;
- KLTPS 4: designed auxiliary consumption of unit is 18%;
- Dhuvaran Gas 1: Partial Operation - Forced outage for 157 days due to damage



- of compressor in FY 2010-11;
- Dhuvaran Gas 2: Partial Operation - Planned outage for HGPI extended to 41 days against schedule of 15 days due to the unforeseen problems developed after the opening of the GT in FY 2010-11;
 - As a matter of fact all the old machines are designed on high CV of Coal viz. 4400-4700 K.cal./Kg, whereas nowadays indigenous coal is received with CV around 3000 K.cal./Kg, which leads to high auxiliary consumption as well as deterioration in Heat Rate as well.

Commission's analysis

The Commission has taken note of the submission made by the petitioner with regard to the auxiliary consumption (RE) for FY 2010-11. With regard to PPA governed stations, the Commission considers the auxiliary consumption based on the respective PPAs.

In the case of Utran gas station, the Commission in its order 3rd February 2011 revised the norms for Auxiliary Consumption from 3% to 4%. Hence 4% Auxiliary Consumption is considered for this station for the purpose of APR.

The auxiliary consumption (RE), projected by GSECL in the case of Ukai 1-5, Gandhinagar 1-4, Sikka TPS, KLTPS 1-3, KLTPS 4, Dhuvaran gas-1, Ukai hydro and Kadana hydro stations are higher than those approved by the Commission in its order dated 31st March 2010. Though, GSECL indicated the reasons for higher auxiliary consumption in its petition, the Commission is of the opinion that the reasons are not acceptable.

The Commission hence considers the auxiliary consumption for different stations as discussed above for the purpose of APR for FY 2010-11 as given in the Table 5.7 below:

Table 5.7: Auxiliary consumption considered for the purpose of APR for FY 2010-11

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (RE)	(%)
				Considered for APR for FY 2010-11
1.	Ukai (1-5)	9.10	10.50	9.10
2.	Gandhinagar (1-4)	10.27	10.60	10.27
3.	Gandhinagar- 5*	9.00	9.20	9.00



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

4.	Wanakbori 1-6 TPS	9.00	9.00	9.00
5.	Wanakbori 7 TPS*	9.00	9.10	9.00
6.	Sikka TPS	10.50	11.60	10.50
7.	KLTPS 1-3	12.00	14.50	12.00
8.	KLTPS 4	12.00	19.50	12.00
9.	Dhuvaran (Gas 1)*	3.00	6.00	3.00
10.	Dhuvaran (Gas 2)	3.00	4.30	3.00
11.	Utran (Gas)*	3.00	4.75	4.00
12.	Utran Extension *	3.00	2.40	3.00
13.	Ukai Hydro	0.70	0.80	0.70
14.	Kadana Hydro	1.19	1.70	1.19

* PPA based stations

Though the year FY 2010-11 has almost come to an end, GSECL should take necessary steps to contain auxiliary consumption within the values approved by the Commission in the coming years.

5.2.4 Station Heat Rate (SHR)

Petitioner's Submission

GSECL submitted the actual SHR of different stations for the first half year and RE for the FY 2010-11.

The Station heat rates (i) approved by the Commission in its order dated 31st March, 2010 for annual tariff determination for FY 2010-11; (ii) actuals for first half year and (iii) RE for FY 2010-11 as submitted by GSECL are given in the Table 5.8 below:

Table 5.8: Station Heat Rates for FY 2010-11

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	(Kcal/kWh)	
			GSECL (April-September) (Actual)	GSECL (RE)
1.	Ukai (1-5)	2658	2872	2837
2.	Gandhinagar (1-4)	2673	3029	2838
3.	Gandhinagar- 5*	2460	-	2640
4.	Wanakbori 1-6 TPS	2600	2683	2656
5.	Wanakbori 7 TPS*	2460	-	2480
6.	Sikka TPS	2750	2958	3045
7.	KLTPS 1-3	3300	3533	3516
8.	KLTPS 4	3000	3199	3200
9.	Dhuvaran (Gas 1)*	1950	-	2035
10.	Dhuvaran (Gas 2)	1950	1901	1900
11.	Utran (Gas)*	2150	-	2190
12.	Utran Extension *	1850	-	1650

* PPA based stations



GSECL has projected SHR for PPA governed stations of Gandhinagar 5, Wanakbori 7 and Dhuvaran gas stations in FY 2010-11 (RE) on higher side and for Dhuvaran gas (2) and Utran extension on lower side, but pleaded considering as per PPAs.

For other stations, GSECL furnished the reasons for deviation as follows:

- Ukai TPS: Partial Operation - Load on unit No. 1 & 2 could not be increased beyond 100-105 MW due to initial teething problems after major R&M; Backing down problems; no HP/LP By pass system in unit No. 3 & 4;
- Gandhinagar 1-4: Partial operation because of backing down.
- Sikka TPS: Partial Operation - Backing down & Vacuum problems during low tide period
- KLPTS 1-3: Partial Operation - Unit 3 has partial operation as load restricted to 50 MW as 2 stages of turbine shaved off to reduce the down time for repairing of high vibrations of turbine;
- KLPTS 4: Unit is not stabilized yet as it has teething problems.
- As a matter of fact all the old machines are designed on high CV of Coal viz. 4400-4700 K.cal./Kg, whereas nowadays indigenous coal is received with CV around 3000 K.cal./Kg, which leads to high auxiliary consumption and deterioration in heat rate as well.

Commission's Analysis

The Commission observed that, for the PPA governed stations the SHR is considered based on the PPAs (as approved in the Commission order dated 31st March 2010).

Based on Review Petition filed by GSECL the Commission revised in its order dated 3rd February 2011, the norms of station heat rate of Ukai 1-5, Gandhinagar 1-4, Wanakbori 1-6 and Sikka from those approved in its order dated 31st March 2010 as follows:

Station	Approved in the order dated 31/03/2010	Revised vide order dated 3rd February 2011
Ukai (1-5)	2658	2775
Gandhinagar (1-4)	2673	2782
Wanakbori (1-6)	2600	2625
Sikka	2750	3045



The SHR as per the revised approval are considered for APR for FY 2010-11 for the above stations.

In the case of KLTPS 1-3, KLTPS 4 stations the reasons indicated by GSECL for higher SHR are not acceptable to the Commission and considers the SHR as approved in its order dated 31st March 2010 for the purpose of APR for FY 2010-11.

Accordingly the SHR considered by the Commission for the purpose of APR for FY 2010-11 are as given in the Table-5.9 below:

Table 5.9: Station Heat Rates considered for APR for FY 2010-11

(Kcal/kWh)

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (RE)	Considered for APR for FY 2010-11
1.	Ukai (1-5)	2658	2837	2775
2.	Gandhinagar (1-4)	2673	2838	2782
3.	Gandhinagar- 5*	2460	2640	2460
4.	Wanakbori 1-6 TPS	2600	2656	2625
5.	Wanakbori 7 TPS*	2460	2480	2460
6.	Sikka TPS	2750	3045	3045
7.	KLTPS 1-3	3300	3516	3300
8.	KLTPS 4	3000	3200	3000
9.	Dhuvaran (Gas 1)*	1950	2035	1950
10.	Dhuvaran (Gas 2)	1950	1900	1950
11.	Utran (Gas)*	2150	2190	2150
12.	Utran Extension *	1850	1650	1850

* PPA based stations

GSECL should strive hard to achieve the SHR as approved by the Commission.

5.2.5 Secondary Fuel Oil Consumption

GSECL has submitted the actual secondary fuel oil consumption of different stations for the first half of FY 2010-11 and RE for the FY 2010-11.

The Station-wise Secondary Fuel Oil Consumption (i) approved by the Commission in its order dated 31st March 2010 for annual tariff determination for FY 2010-11; (ii) actuals for first half year and (iii) RE for FY 2010-11 as submitted by GSECL are given in the Table 5.10 below:



Table 5.10: Secondary Fuel Oil Consumption for FY 2010-11

(ml/kWh)				
Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (April – Sep) (Actual)	GSECL (RE)
1.	Ukai (1-5)	1.50	4.87	4.00
2.	Gandhinagar (1-4)	1.50	1.71	1.50
3.	Gandhinagar- 5*	3.50	-	0.70
4.	Wanakbori 1-6 TPS	1.00	1.04	1.00
5.	Wanakbori 7 TPS*	3.50	-	1.00
6.	Sikka TPS	1.50	4.60	4.00
7.	KLTPS 1-3	2.50	3.73	4.00
8.	KLTPS 4	2.50	8.72	5.25

* PPA based stations

The reasons given by GSECL, for deviation in some cases are given as follows:

- Ukai TPS: Partial Operation - Load on unit No. 1 & 2 could not be increased beyond 100-105 MW due to initial teething problems after major R&M; Backing down problems; no HP/LP By pass system in unit no. 3 & 4;
- Sikka TPS: Partial Operation - Backing down & Vacuum problems during low tide period
- KLTPS 1-3: Partial Operation - Unit 3 has partial operation as load restricted to 50 MW as 2 stages of turbine shaved off to reduce the down time for repairing of high vibrations of turbine;
- KLTPS 4: Unit is not stabilized as it has teething problems.

The RE, in case of PPA governed stations of Gandhinagar-5 and Wanakbori-7 is much less than those based on PPAs.

For all other stations, the values as per RE are equal or more than those approved by the Commission in its order dated 31st March, 2010.

Commission's analysis

For PPA governed stations the Specific Oil Consumption is considered based on the PPAs (as approved in the Commission order dated 31st March, 2010).

In the case of other stations, secondary fuel oil consumption of Ukai 1-5, Sikka TPS, KLTPS 1-3 and KLTPS 4 are higher than those approved in the order of the Commission dated 31st March, 2010. The reasons furnished by GSECL for higher consumption for these stations are not acceptable to the Commission and considers



the values as approved in its order dated 31st March, 2010 as given in Table 5.11 below:

Table 5.11: Secondary Fuel Oil Consumption considered for APR for FY 2010-11
(ml/kWh)

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (RE)	Considered for APR for FY 2010-11
1.	Ukai (1-5)	1.50	4.00	1.50
2.	Gandhinagar (1-4)	1.50	1.50	1.50
3.	Gandhinagar- 5*	3.50	0.70	3.50
4.	Wanakbori 1-6 TPS	1.00	1.00	1.00
5.	Wanakbori 7 TPS*	3.50	1.00	3.50
6.	Sikka TPS	1.50	4.00	1.50
7.	KLTPS 1-3	2.50	4.00	2.50
8.	KLTPS 4	2.50	5.25	2.50

* PPA based stations

5.2.6 Transit Loss

Petitioner's Submission

GSECL in its petition has not furnished the actuals of Transit Loss for the period April - September of FY 2010-11.

The RE for different stations are furnished as given in Table 5.12 below:

Table 5.12: Transit Loss of Coal for FY 2010-11
(%)

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (RE)
1.	Ukai (1-5)	0.80	0.80
2.	Gandhinagar (1-4)	0.80	0.80
3.	Gandhinagar- 5*	0.80	0.80
4.	Wanakbori 1-6 TPS	0.80	0.80
5.	Wanakbori 7 TPS*	0.80	0.80
6.	Sikka TPS	0.80	0.80
7.	KLTPS 1-3	0.00	0.30
8.	KLTPS 4	0.00	0.30

* PPA based stations

The projected RE values of GSECL are in tune with those approved in the Commission's order dated 31st March 2010, except in case of KLTPS (1-3) and KLTPS (4) stations.



Commission's analysis

The Commission has considered the transit loss for all the stations as approved in the order dated 31st March 2010, for the purpose of APR for FY 2010-11 as given in Table 5.13 below:

Table 5.13: Transit Loss of Coal considered for APR for FY 2010-11

Sr. No.	Power stations	As approved by Commission in its order dated 31/03/2010	GSECL (RE)	Considered for APR for FY 2010-11
1.	Ukai (1-5)	0.80	0.80	0.80
2.	Gandhinagar (1-4)	0.80	0.80	0.80
3.	Gandhinagar- 5*	0.80	0.80	0.80
4.	Wanakbori 1-6 TPS	0.80	0.80	0.80
5.	Wanakbori 7 TPS*	0.80	0.80	0.80
6.	Sikka TPS	0.80	0.80	0.80
7.	KLTPS 1-3	0.00	0.30	0.00
8.	KLTPS 4	0.00	0.30	0.00

The Transit Loss is allowed only in the case of indigenous coal excluding washed coal.

5.2.7 Performance Parameters Considered for FY 2010-11

The performance parameters, considered for FY 2010-11, as discussed in the earlier paragraphs, for the purpose of APR for FY 2010-11 are listed in Table 5.14 below:

Table 5.14: Performance Parameters considered for the purpose of APR for FY 2010-11

Sr. No.	Power stations	PAF (%)	PLF (%)	Aux consumption (%)	Heat rate (Kcal/kWh)	Secondary fuel oil consumption (ml/kWh)	Transit loss of coal (%)
1.	Ukai (1-5)	74.00	74.00	9.10	2775	1.50	0.8
2.	Gandhinagar (1-4)	80.00	78.00	10.27	2782	1.50	0.8
3.	Gandhinagar- 5*	80.00	80.00	9.00	2460	3.50	0.8
4.	Wanakbori 1-6 TPS	80.00	80.00	9.00	2625	1.00	0.8
5.	Wanakbori 7 TPS*	80.00	80.00	9.00	2460	3.50	0.8
6.	Sikka TPS	71.00	71.00	10.50	3045	1.50	0.8
7.	KLTPS 1-3	65.00	65.00	12.00	3300	2.50	0.0
8.	KLTPS 4	58.05	58.00	12.00	3000	2.50	0.0
9.	Dhuvaran (Gas 1)*	80.00	44.00	3.00	1950		
10.	Dhuvaran (Gas 2)	80.00	80.00	3.00	1950		
11.	Utran (Gas)*	80.00	80.00	4.00	2150		



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power stations	PAF (%)	PLF (%)	Aux consumption (%)	Heat rate (Kcal/kWh)	Secondary fuel oil consumption (ml/kWh)	Transit loss of coal (%)
12.	Utran Extension *	80.00	80.00	3.00	1850		
13.	Ukai Hydro	80.00	21.83	0.70	-		
14.	Kadana Hydro	80.00	6.42	1.19	-		

* PPA governed stations. For PPA governed stations it is as per PPAs.

5.2.8 Gross and Net generation

The gross and net generation of different stations, as per RE furnished by GSECL and as approved for the purpose of APR for FY 2010-11, are given in Table 5.15 below:

Table 5.15: Gross and Net Generation for FY 2010-11 for the purpose of APR

Sr. No	Power stations	As per RE furnished by GSECL				As approved by the Commission			
		Gross generation (MU)	Aux Cons. (%)	Aux. cons. (MU)	Net generation (MU)	Gross generation (MU)	Aux Cons. (%)	Aux. cons. (MU)	Net generation (MU)
1.	Ukai (1-5)	5510	10.50	579	4931	5510	9.1	501	5009
2.	Gandhinagar (1-4)	4510	10.60	478	4032	4510	10.27	463	4047
3.	Gandhinagar- 5*	1472	9.20	135	1337	1472	9.00	132	1339
4.	Wanakbori 1-6 TPS	8830	9.00	795	8035	8830	9.00	795	8035
5.	Wanakbori 7 TPS*	1472	9.10	134	1338	1472	9.00	132	1339
6.	Sikka TPS	1493	11.60	173	1320	1493	10.50	157	1336
7.	KLTPS 1-3	1224	14.50	178	1046	1224	12.00	147	1077
8.	KLTPS 4	381	19.50	74	307	381	12.00	46	335
9.	Dhuvaran (Gas 1)*	411	6.00	25	386	411	3.00	12	399
10.	Dhuvaran (Gas 2)	788	4.30	34	754	788	3.00	24	764
11.	Utran (Gas)*	946	4.75	45	901	946	4.00	38	908
12.	Utran Extension *	2625	2.40	63	2562	2625	3.00	79	2546
13.	Ukai Hydro	583	0.80	5	578	583	0.70	4	579
14.	Kadana Hydro	136	1.70	2	134	136	1.19	2	134
	Total	30381	-	2720	27661	30381	-	2532	27849

5.2.9 Cost Parameters

The cost parameters include GCV of fuel, mix of fuel and price of coal. GSECL generating stations run on coal, lignite, oil and gas as base fuel.

For some coal stations, a mix of indigenous, washed and imported coal is used.



GSECL has submitted the details of RE of Wt Av. GCV, mix of coal and Wt Av price of fuel for the different stations for the FY 2010-11 as discussed below:

5.2.10 Wt. Av. Gross Calorific Value (GCV) of Fuels

The REs of Wt. Av. Gross calorific values of different fuels (as fed into the boiler in case of usage of mix of coal) for FY 2010-11, furnished by GSECL are given in Table 5.16 below:

Table 5.16: Wt. Av. Gross Calorific Value (GCV) (RE) of Fuels for different stations for FY 2010-11

Sr. No.	Power stations	Wt. Av. GCV of coal, lignite or mix of coal (Kcal/kg)	Wt. Av. GCV of Secondary fuel oil (Kcal/liter)	Wt. Av. GCV of gas Kcal/SCM
1.	Ukai (1-5)	3950	10500	-
2.	Gandhinagar (1-4)	4325	10500	-
3.	Gandhinagar- 5*	4325	10500	-
4.	Wanakbori 1-6 TPS	3950	10500	-
5.	Wanakbori 7 TPS*	3950	10500	-
6.	Sikka TPS	3850	10500	-
7.	KLTPS 1-3	2700	10555	-
8.	KLTPS 4	2700	10900	-
9.	Dhuvaran (Oil)			-
10.	Dhuvaran (Gas 1)*	-	-	9500
11.	Dhuvaran (Gas 2)	-	-	9500
12.	Utran (Gas)*	-	-	9500
13.	Utran Extension *	-	-	9500

It is stated by GSECL that the Wt Av GCVs of fuel are estimated for the RE of FY 2010-11, based on annual contracted quantities as per the fuel linkages for indigenous, washed and targeted quantities of imported coal as per MOP's mandate.

Commission's analysis

For the purpose of APR for FY 2010-11, the RE values of Wt Av GCV furnished by GSECL are considered.

5.2.11 Mix of Coal

GSECL has furnished the RE values of percentage of the mix of different types of coal to be used for the stations using coal during FY 2010-11 as given in Table 5.17 below:

Table 5.17: The Mix of Different types of Coal for FY 2010-11 (RE)



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power Stations	Indigenous Coal (%)	Washed Coal (%)	Imported Coal (%)
1.	Ukai 1-5	26.41	73.59	0.00
2.	Gandhinagar 1-4	12.43	64.86	22.70
3.	Gandhinagar 5	12.43	64.86	22.70
4.	Wanakbori 1-6	24.49	67.35	8.16
5.	Wanakbori 7	24.49	67.35	8.16
6.	Sikka	29.41	70.59	0.00

Commission's analysis

For the purpose of APR for FY 2010-11, the RE values of mix of coal as furnished by GSECL are considered.

5.2.12 Wt. Av. Prices of Fuel

GSECL has furnished the RE of Wt Av price per unit of different fuels for the different stations for FY 2010-11 as given in Table 5.18 below:

Table 5.18: Wt. Av. Price / unit of Fuels for 2010-11 (RE)

Sr. No.	Power stations	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/Kl)
1.	Ukai (1-5)	2275	2419				30900
2.	Gandhinagar (1-4)	3188	2642	7151			28325
3.	Gandhinagar- 5*	3188	2642	7151			28325
4.	Wanakbori 1-6 TPS	3091	2692	7007			28325
5.	Wanakbori 7 TPS*	3091	2692	7007			28325
6.	Sikka TPS	3502	2978	-			33990
7.	KLTPS 1-3				914		35020
8.	KLTPS 4				914		46350
9.	Dhuvaran (Gas 1)*					14.00	
10.	Dhuvaran (Gas 2)					12.84	
11.	Utran (Gas)*					13.91	
12.	Utran Extension *					12.84	

Commission's Analysis

The Commission has decided to consider the prices (RE) furnished by GSECL for the purpose of APR for the FY 2010-11. The actual prices will be taken into account at the time of truing up of the costs for FY 2010-11, after audited annual accounts are made available.



5.3 Fuel Costs

Based on the performance and cost parameters considered in the earlier paragraphs, the fuel costs for each station for FY 2010-11, for the purpose of APR are given in Table 5.19 below:

Table 5.19: Fuel Cost of different stations considered for FY 2010-11 for APR

Sr. No.	Power stations	As per RE furnished by GSECL					As considered by the Commission					
		Gross gen. (MU)	Net gen. (MU)	Fuel cost (Rs. cr.)	Fuel cost per unit Gross (Rs/kWh)	Fuel cost per unit net (Rs/kW)	Gross gen. (MU)	Net gen. (MU)	Fuel cost (Rs. cr.)	Fuel cost per unit Gross (Rs/kWh)	Fuel cost per unit net (Rs/kW)	Fuel cost as Rs./G. Cal
1.	Ukai (1-5)	5510	4931	1004	1.82	2.04	5510	5009	944	1.71	1.88	617
2.	Gandhinagar (1-4)	4510	4032	1123	2.49	2.78	4510	4047	1097	2.43	2.71	874
3.	Gandhinagar-5*	1472	1337	339	2.30	2.54	1472	1340	323	2.19	2.41	891
4.	Wanakbori 1-6 TPS	8830	8035	1896	2.15	2.36	8830	8035	1865	2.11	2.32	805
5.	Wanakbori 7 TPS*	1472	1338	295	2.00	2.21	1472	1340	299	2.03	2.23	825
6.	Sikka TPS	1493	1320	388	2.60	2.94	1493	1336	377	2.52	2.82	828
7.	KLTPS 1-3	1224	1046	162	1.32	1.54	1224	1077	146	1.20	1.36	362
8.	KLTPS 4	381	307	50	1.31	1.63	381	335	43	1.12	1.28	374
9.	Dhuvaran (Gas 1) *	411	386	122	2.97	3.17	411	399	118	2.87	2.96	1474
10.	Dhuvaran (Gas 2)	788	754	202	2.56	2.68	788	764	208	2.64	2.72	1352
11.	Utran (Gas)*	946	901	303	3.20	3.37	946	908	298	3.15	3.28	1464
12.	Utran Extension *	2625	2562	585	2.23	2.28	2625	2546	656	2.50	2.58	1352
	Total	29662	26949	6469			29662	27136	6374			

The detailed calculations for each station for arriving at the above costs are given in Annexures 5.1 to 5.12.

GSECL has considered transit loss for washed coal also in its calculations for arriving at the fuel cost (RE), which is not accepted. The transit loss is considered only in case of the indigenous coal by the Commission.



5.4 Fixed Charges

5.4.1 Depreciation for FY 2010-11

Petitioner's submission

GSECL has claimed Rs. 568 crore towards depreciation charges in the Annual Performance Review for FY 2010-11. The depreciation approved by the Commission for FY 2010-11 in its MYT Order dated 17th January, 2009 and in Tariff Order for FY 2010-11 and now projected by GSECL, plant-wise, are given in the Table 5.20 below:

Table 5.20: Depreciation Charges projected by GSECL for FY 2010-11

(Rs. crore)

Sr. No.	Power station	MYT Order FY 2008-11	T.O FY 2010-11	Projected by GSECL in RE FY 2010-11
1.	Ukai (1-5)	48.72	51.20	47.00
2.	Gandhinagar (1-4)	53.18	62.89	66.00
3.	Gandhinagar- 5*	33.02	32.62	33.00
4.	Wanakbori 1-6 TPS	52.81	72.72	70.00
5.	Wanakbori 7 TPS*	32.70	31.73	32.00
6.	Sikka TPS	19.59	30.23	30.00
7.	KLTPS 1-3	37.80	57.60	57.00
8.	KLTPS 4	15.48	28.25	35.00
9.	Dhuvaran (Gas 1)*	15.01	16.98	17.00
10.	Dhuvaran (Gas 2)	20.76	22.45	22.00
11.	Utran (Gas)*	13.96	19.04	19.00
12.	Utran Extension *	4.42	81.10	80.00
13.	Ukai Hydro	10.99	6.92	6.00
14.	Kadana Hydro	71.82	15.44	15.00
15.	Dhuvaran Oil	9.16	8.77	40.00
	Total	439.42	537.93	568.00

* PPA governed stations.

GSECL has submitted that based on gross fixed assets as per the annual audited accounts for FY 2009-10 and considering capital additions during FY 2010-11, the revised estimate for depreciation for FY 2010-11 is Rs. 568 crore against Rs.537.93 crore as approved by the Commission.

Commission's analysis

Commission has observed that there is variance in depreciation charges approved in the MYT order dated 17th January, 2009 against the depreciation charges approved in the Tariff Order for FY 2010-11 due to (i) difference in the capital addition and (ii) change in the depreciation rates applicable from 1st April 2009 approved by the CERC.



The Commission has computed the depreciation charges at Rs. 536.90 crore in the Annual Performance Review for FY 2010-11 taking into consideration the depreciation rates approved by CERC. The depreciation charges station-wise considered by the Commission are shown in the Table 5.21 below:

Table 5.21: Depreciation Charges considered by the Commission in the Review for FY 2010-11

(Rs. crore)				
Sr. No.	Power station	T.O FY 2010-11	Projected by GSECL (RE) FY 2010-11	Considered in APR FY 2010-11
1.	Ukai (1-5)	51.20	47.00	47.28
2.	Gandhinagar (1-4)	62.89	66.00	66.10
3.	Gandhinagar- 5*	32.62	33.00	32.70
4.	Wanakbori 1-6 TPS	72.72	70.00	70.38
5.	Wanakbori 7 TPS*	31.73	32.00	31.75
6.	Sikka TPS	30.23	30.00	29.57
7.	KLTPS 1-3	57.60	57.00	57.33
8.	KLTPS 4	28.25	35.00	35.17
9.	Dhuvaran (Gas 1)*	16.98	17.00	16.50
10.	Dhuvaran (Gas 2)	22.45	22.00	21.64
11.	Utran (Gas)*	19.04	19.00	19.08
12.	Utran Extension *	81.10	80.00	79.56
13.	Ukai Hydro	6.92	6.00	6.49
14.	Kadana Hydro	15.44	15.00	15.07
15.	Dhuvaran (Oil)	8.77	40.00	8.29
	TOTAL	537.93	568.00	536.90

* PPA governed stations.

The Commission accordingly considers the depreciation charges at Rs. 536.90 crore as given in the Table above in the performance review for FY 2010-11.

5.4.2 Interest and Finance Charges for FY 2010-11

Petitioner's submission

GSECL has projected Rs. 414 crore towards interest and finance charges in the APR for FY 2010-11. The interest and finance charges approved by the Commission in the MYT order dated 17th January, 2009 and Tariff Order for FY 2010-11 and now claimed by GSECL are given plant-wise in the Table 5.22 below:



Table 5.22: Interest and Finance Charges projected by GSECL for FY 2010-11

(Rs. crore)

Sr. No.	Power station	MYT Order FY 2008-11	T.O FY 2010-11	Projected by GSECL (RE) FY 2010-11
1.	Ukai (1-5)	72.81	51.53	50.00
2.	Gandhinagar (1-4)	63.80	61.61	43.00
3.	Gandhinagar- 5*	-	-	-
4.	Wanakbori 1-6 TPS	71.47	53.35	52.00
5.	Wanakbori 7 TPS*	-	0.46	-
6.	Sikka TPS	20.33	20.67	20.00
7.	KLTPS 1-3	42.52	40.78	43.00
8.	KLTPS 4	21.24	35.63	44.00
9.	Dhuvaran (Gas 1)*	7.30	8.05	7.00
10.	Dhuvaran (Gas 2)	14.11	13.50	13.00
11.	Utran (Gas)*	8.19	7.41	5.00
12.	Utran Extension *	74.75	81.83	116.00
13.	Ukai Hydro	4.06	5.36	5.00
14.	Kadana Hydro	10.08	11.82	11.00
15.	Dhuvaran Oil	9.33	8.16	4.00
	TOTAL	419.99	400.15	414.00

* PPA governed stations.

GSECL has invited reference to the Tariff Order dated 31st March 2010 wherein the interest and finance charges were classified as 'uncontrollable' expenses. GSECL has also mentioned that it has considered the gains / losses on account of interest and finance charges as 'uncontrollable' factors. Based on this, GSECL has claimed that it has incurred a net loss of Rs.14 crore for FY 2010-11 for interest and finance charges.

Commission's analysis

In the tariff order dated 31st March 2010, the Commission has approved Rs. 400.15 crore towards interest and finance charges based on submissions made by GSECL.

It is observed that the interest and finance charges now projected by the GSECL for FY 2010-11 in the review are higher by about Rs.14 crore than the amount approved in the Tariff Order for FY 2010-11.

Further, the loans outstanding as on 1st April 2010 and the loan additions on account of Capex during FY 2010-11 and the rate of interest on the loans borrowed for different plants are examined. The Commission has computed the interest and finance charges for the FY 2010-11 as shown in the Table 5.23 below:



Table 5.23 : Interest and Finance charges considered in APR for FY 2010-11

(Rs. crore)

Sr. No.	Power station	T.O FY 2010-11	Claimed by GSECL FY 2010-11	Considered in APR FY 2010-11
1.	Ukai (1-5)	51.53	50.00	49.61
2.	Gandhinagar (1-4)	61.61	43.00	42.86
3.	Gandhinagar- 5*	-	-	-
4.	Wanakbori 1-6 TPS	53.35	52.00	52.42
5.	Wanakbori 7 TPS*	0.46	-	-
6.	Sikka TPS	20.67	20.00	19.96
7.	KLTPS 1-3	40.78	43.00	43.49
8.	KLTPS 4	35.63	44.00	44.45
9.	Dhuvaran (Gas 1)*	8.05	7.00	6.77
10.	Dhuvaran (Gas 2)	13.50	13.00	13.40
11.	Utran (Gas)*	7.41	5.00	5.36
12.	Utran Extension *	81.83	116.00	115.56
13.	Ukai Hydro	5.36	5.00	4.60
14.	Kadana Hydro	11.82	11.00	11.53
15.	Dhuvaran Oil	8.16	4.00	3.08
	TOTAL	400.15	414.00	413.09

* PPA governed stations.

The Commission accordingly considers the interest and finance charges at Rs. 413.09 crore as given in the table above in the performance review for FY 2010-11.

5.4.3 Return on Equity for FY 2010-11

Petitioner's submission

GSECL has proposed Rs. 381.00 crore towards return on equity in the APR for the FY 2010-11. The return on equity approved by the Commission in the MYT order dated 17th January, 2009 and the Tariff Order for the FY 2010-11 and now claimed by GSECL are given plant-wise in the Table 5.24 below:

Table 5.24: Return on Equity projected by GSECL for FY 2010-11

(Rs. crore)

Sr.No.	Power station	MYT Order FY 2008-11	T.O FY 2010-11	GSECL proposed FY 2010-11
1.	Ukai (1-5)	32.74	20.98	19.00
2.	Gandhinagar (1-4)	47.70	36.86	31.00
3.	Gandhinagar- 5*	26.84	26.84	27.00
4.	Wanakbori 1-6 TPS	74.95	53.82	51.00
5.	Wanakbori 7 TPS*	26.23	26.03	26.00
6.	Sikka TPS	22.17	20.75	20.00
7.	KLTPS 1-3	47.64	43.14	43.00
8.	KLTPS 4	18.07	19.81	28.00



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

9.	Dhuvaran (Gas 1)*	12.52	12.94	13.00
10.	Dhuvaran (Gas 2)	15.46	15.99	15.00
11.	Utran (Gas)*	10.30	10.65	10.00
12.	Utran Extension *	39.09	55.67	57.00
13.	Ukai Hydro	7.72	7.95	8.00
14.	Kadana Hydro	32.55	28.10	28.00
15.	Dhuvaran (Oil)	7.15	7.26	5.00
	TOTAL	421.13	386.80	381.00

* PPA governed stations.

GSECL has submitted that the revised estimates for return on equity for the FY 2010-11 resulted in a gain of Rs. 4 crore consequent on variation in the Capex and its funding and the equity portion thereon.

Commission's analysis

The Commission has examined the return on equity submitted by the GSECL, which is lower than the amount approved in the MYT order dated 17th January, 2009 and the Tariff Order for FY 2010-11. The Commission has observed that the amount of return on equity now projected is lesser on account of lesser amount of capitalization now projected by GSECL. The Commission has treated the factors that cause variance in the return on equity as uncontrollable as discussed in the (APR for FY 2009-10) Tariff Order for FY 2010-11 dated 31st March 2010. The gain/loss shall be computed based on the annual audited accounts in the Truing up exercise.

The Commission has computed the return on equity based on opening equity and equity addition now proposed in the APR for the FY 2010-11 as detailed in the Table 5.25 below:

Table 5.25: Return on Equity considered in APR for FY 2010-11

(Rs. crore)			
Sr. No.	Power station	GSECL Projected in RE FY 2010-11	Considered in APR FY 2010-11
1.	Ukai (1-5)	19.00	19.04
2.	Gandhinagar (1-4)	31.00	30.59
3.	Gandhinagar- 5*	27.00	26.78
4.	Wanakbori 1-6 TPS	51.00	51.31
5.	Wanakbori 7 TPS*	26.00	26.00
6.	Sikka TPS	20.00	20.16
7.	KLTPS 1-3	43.00	42.84
8.	KLTPS 4	28.00	28.42
9.	Dhuvaran (Gas 1)*	13.00	12.87
10.	Dhuvaran (Gas 2)	15.00	15.40
11.	Utran (Gas)*	10.00	10.40
12.	Utran Extension *	57.00	56.70
13.	Ukai Hydro	8.00	7.84



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

14.	Kadana Hydro	28.00	28.00
15.	Dhuvaran (Oil)	5.00	4.57
	TOTAL	381.00	380.92

* PPA governed stations.

The Commission considers the return on equity at Rs. 380.92 crore as given in the table above in the APR for FY 2010-11.

5.4.4 O&M Charges for FY 2010-11

Petitioner's submission

GSECL has claimed Rs. 743.00 crore towards O&M expenses in the APR for the FY 2010-11. These revised estimates for O&M expenses are inclusive of water charges. GSECL has submitted that the O&M expenses also include e.Urja charges of Rs.12 crore and the Sixth Pay Commission's arrears amount of Rs.75 crore. The O&M charges approved by the Commission for the year in MYT order dated 17th January, 2009 and Tariff order for FY 2010-11 and now claimed by GSECL in the revised estimates are given plant-wise in the Table 5.26 below:

Table 5.26: O&M Expenses projected by GSECL for FY 2010-11

(Rs. crore)				
Sr. No.	Power station	MYT Order FY 2008-11	T.O FY 2010-11	Projected by GSECL (RE) FY 2010-11
1.	Ukai (1-5)	114.33	114.33	126.00
2.	Gandhinagar (1-4)	88.78	119.53	104.00
3.	Gandhinagar- 5*	21.15	32.34	34.00
4.	Wanakbori 1-6 TPS	169.48	174.76	198.00
5.	Wanakbori 7 TPS*	20.92	22.36	32.00
6.	Sikka TPS	32.28	38.37	36.00
7.	KLTPS 1-3	28.92	27.85	31.00
8.	KLTPS 4	10.09	10.09	12.00
9.	Dhuvaran (Gas 1)*	7.92	6.80	15.00
10.	Dhuvaran (Gas 2)	11.35	10.23	38.00
11.	Utran (Gas)*	10.35	11.89	15.00
12.	Utran Extension *	37.79	37.79	48.00
13.	Ukai Hydro	8.50	8.50	16.00
14.	Kadana Hydro	13.30	13.30	15.00
15.	Dhuvaran (Oil)	29.59	27.35	22.00
	TOTAL	604.75	655.46	743.00

* PPA governed stations.

The O&M expenses submitted by GSECL under RE (APR) indicates a net loss of Rs. 63 crore out of which Rs. 60 crore is due to the impact of Sixth Pay Commission.



Commission's analysis

The Commission has approved the O&M charges at Rs.655.46 crore in the Tariff Order dated 31st March 2010 for FY 2010-11 including Rs.114.80 crore towards water charges as claimed by GSECL. In other words the O&M charges other than water charges approved are Rs. 540.66 crore for the FY 2010-11. The projected O&M charges including water charges during the FY 2010-11 are Rs. 744.42 crore as claimed by GSECL.

GSECL has stated that increase in water charges is one of the reasons for increase in O & M charges. But, this claim has not been supported by any actual data. GSECL is directed to submit station-wise quantity of water consumption, rate of water, water charges and actual amount paid towards water charges for past 5 years within a period of three months.

Considering the submission of the petition the Commission provisionally considers the O&M expenses at Rs. 743.00 crore as claimed by GSECL in the APR for FY 2010-11, which is subject to Truing up after the audited annual accounts are submitted to the Commission.

The O&M expenses considered in the FY 2010-11 against the O&M expenses projected by GSECL are given in the Table 5.27 below:

Table 5.27: O&M expenses considered in APR for FY 2010-11

(Rs. crore)

Sr.No.	Power station	Projected by GSECL in RE FY 2010-11	Considered in APR FY 2010-11
1.	Ukai (1-5)	126.00	126.00
2.	Gandhinagar (1-4)	104.00	104.00
3.	Gandhinagar- 5*	34.00	34.00
4.	Wanakbori 1-6 TPS	198.00	198.00
5.	Wanakbori 7 TPS*	32.00	32.00
6.	Sikka TPS	36.00	36.00
7.	KLTPS 1-3	31.00	31.00
8.	KLTPS 4	12.00	12.00
9.	Dhuvaran (Gas 1)*	15.00	15.00
10.	Dhuvaran (Gas 2)	38.00	38.00
11.	Utran (Gas)*	15.00	15.00
12.	Utran Extension *	48.00	48.00
13.	Ukai Hydro	16.00	16.00
14.	Kadana Hydro	15.00	15.00
15.	Dhuvaran (Oil)	22.00	22.00
	TOTAL	743.00	743.00

* PPA governed stations.



5.4.5 Interest on Working Capital for FY 2010-11

Petitioner's submission

GSECL has claimed the interest on working capital at Rs. 275 crore in the review for the FY 2010-11 against Rs. 252.13 crore approved in the Tariff Order dated 31st March 2010 for the FY 2010-11. The interest on working capital approved by the Commission for the year in 1st MYT Order and Tariff Order for FY 2010-11 and now claimed by GSECL in the review are given in the Table 5.28 below:

Table 5.28: Interest on Working Capital projected by GSECL for FY 2010-11

(Rs. crore)

Sr.No.	Power station	MYT Order FY 2008-11	T.O FY 2010-11	Projected by GSECL (RE) FY 2010-11
1.	Ukai (1-5)	35.57	31.18	41.00
2.	Gandhinagar (1-4)	31.98	32.86	45.00
3.	Gandhinagar- 5*	8.88	14.13	14.00
4.	Wanakbori 1-6 TPS	69.10	60.95	75.00
5.	Wanakbori 7 TPS*	8.25	13.75	13.00
6.	Sikka TPS	14.11	12.06	16.00
7.	KLTPS 1-3	8.04	10.14	10.00
8.	KLTPS 4	2.80	4.04	5.00
9.	Dhuvaran (Gas 1)*	4.93	6.66	6.00
10.	Dhuvaran (Gas 2)	8.14	8.06	9.00
11.	Utran (Gas)*	6.29	8.37	9.00
12.	Utran Extension *	17.83	23.02	27.00
13.	Ukai Hydro	0.49	0.88	1.00
14.	Kadana Hydro	1.28	1.80	2.00
15.	Dhuvaran Oil	20.09	24.23	1.00
	TOTAL	237.78	252.13	275.00

* PPA governed stations.

GSECL has submitted that the interest on working capital is derived based on other factors and hence not directly controllable by GSECL. Further the variation in the rate of interest on working capital loans affects the same and requested to treat the interest on working capital as an uncontrollable cost. GSECL has stated that the interest on working capital computed for RE FY 2010-11 indicates a loss of Rs. 28.00 crore (Rs. 43 crore loss and Rs. 15 crore gain).

Commission's analysis

The Commission has examined the submission of the petitioner. The interest on working capital has been approved in the Tariff Order on normative basis as specified under Regulation 20 of GERC (Terms and Conditions of Tariff) Regulations, 2005.



The Commission is of the view that since the interest on working capital is determined on a normative basis and the present review is subject to Truing up based on the audited annual accounts, the interest on working capital considered at the same level as projected by GSECL.

The Commission accordingly considers the interest on working capital at Rs.275.00 crore in the APR for FY 2010-11 as detailed in the Table 5.29 below:

Table 5.29: Interest on Working Capital considered in APR for FY 2010-11
(Rs. crore)

Sr. No.	Power station	Projected by GSECL in RE FY 2010-11	Considered in APR FY 2010-11
1.	Ukai (1-5)	41.00	41.00
2.	Gandhinagar (1-4)	45.00	45.00
3.	Gandhinagar- 5*	14.00	14.00
4.	Wanakbori 1-6 TPS	75.00	75.00
5.	Wanakbori 7 TPS*	13.00	13.00
6.	Sikka TPS	16.00	16.00
7.	KLTPS 1-3	10.00	10.00
8.	KLTPS 4	5.00	5.00
9.	Dhuvaran (Gas 1)*	6.00	6.00
10.	Dhuvaran (Gas 2)	9.00	9.00
11.	Utran (Gas)*	9.00	9.00
12.	Utran Extension *	27.00	27.00
13.	Ukai Hydro	1.00	1.00
14.	Kadana Hydro	2.00	2.00
15.	Dhuvaran (Oil)	1.00	1.00
	TOTAL	275.00	275.00

* PPA governed stations.

5.4.6 Insurance Charges for FY 2010-11

Petitioner's submission

GSECL has estimated the insurance charges at Rs.5.14 crore in the Annual Performance Review for FY 2010-11 against Rs. 2.68 crore approved in the Tariff Order dated 31st March 2010. The insurance charges approved in the MYT order dated 17th January, 2009 and the Tariff Order for the FY 2010-11 and now estimated by GSECL are given in the Table 5.30 below:

Table 5.30 : Insurance Charges projected by GSECL for FY 2010-11
(Rs. crore)

Sr. No.	Power station	MYT Order FY 2008-11	T.O FY 2010-11	Projected by GSECL (RE) FY 2010-11
1.	Ukai (1-5)	-	-	-
2.	Gandhinagar (1-4)	-	-	-
3.	Gandhinagar- 5*	2.48	0.86	0.80
4.	Wanakbori 1-6 TPS	-	-	-
5.	Wanakbori 7 TPS*	2.39	0.86	0.77



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

6.	Sikka TPS	-	-	-
7.	KLTPS 1-3	-	-	-
8.	KLTPS 4	-	-	-
9.	Dhuvaran (Gas 1)*	-	-	-
10.	Dhuvaran (Gas 2)	1.76	0.48	0.44
11.	Utran (Gas)*	2.08	0.47	0.43
12.	Utran Extension *	-	-	2.70
13.	Ukai Hydro	-	-	-
14.	Kadana Hydro	-	-	-
15.	Dhuvaran (Oil)	-	-	-
	TOTAL	8.71	2.67	5.14

Commission's analysis

The Commission has observed that the insurance charges estimated in RE by GSECL are higher than that approved in the Tariff Order for FY 2010-11 and this is mainly on account of insurance charges pertaining to Utran Extension Station.

The Commission considers the insurance charges at Rs. 5.14 crore as estimated by GSECL in the review for FY 2010-11 as detailed in the Table 5.31 below:

Table 5.31: Insurance Charges considered in APR for FY 2010-11

(Rs. crore)

Sr. No.	Power station	Projected by GSECL (RE) FY 2010-11	Considered in APR FY 2010-11
1.	Ukai (1-5)	-	-
2.	Gandhinagar (1-4)	-	-
3.	Gandhinagar- 5*	0.80	0.80
4.	Wanakbori 1-6 TPS	-	-
5.	Wanakbori 7 TPS*	0.77	0.77
6.	Sikka TPS	-	-
7.	KLTPS 1-3	-	-
8.	KLTPS 4	-	-
9.	Dhuvaran (Gas 1)*	-	-
10.	Dhuvaran (Gas 2)	0.44	0.44
11.	Utran (Gas)*	0.43	0.43
12.	Utran Extension *	-	-
13.	Ukai Hydro	2.70	2.70
14.	Kadana Hydro	-	-
15.	Dhuvaran (Oil)	-	-
	TOTAL	5.14	5.14

5.4.7 SLDC charges for FY 2010-11

Petitioner's submission

GSECL has estimated Rs.3.59 crore towards SLDC charges in the review for FY 2010-11 against Rs. 3.68 crore approved in the Tariff Order dated 31st March 2010.

The SLDC charges approved by the Commission in the Tariff Order for FY 2010-11



and the charges projected by the GSECL in the RE for FY 2010-11 are given in the Table 5.32 below:

Table 5.32 : SLDC Charges Projected by GSECL for FY 2010-11 (APR)

(Rs. crore)

Sr. No.	Power station	T.O FY 2010-11	Projected by GSECL (RE) FY 2010-11
1.	Ukai (1-5)	0.59	0.59
2.	Gandhinagar (1-4)	0.46	0.46
3.	Gandhinagar- 5*	0.15	0.15
4.	Wanakbori 1-6 TPS	0.88	0.88
5.	Wanakbori 7 TPS*	0.15	0.15
6.	Sikka TPS	0.17	0.17
7.	KLTPS 1-3	0.20	0.15
8.	KLTPS 4	0.05	0.05
9.	Dhuvaran (Gas 1)*	0.07	0.07
10.	Dhuvaran (Gas 2)	0.08	0.08
11.	Utran (Gas)*	0.09	0.09
12.	Utran Extension *	0.26	0.26
13.	Ukai Hydro	0.21	0.21
14.	Kadana Hydro	0.17	0.17
15.	Dhuvaran (Oil)	0.15	0.11
	TOTAL	3.68	3.59

* PPA governed stations.

Commission's analysis

The SLDC charges estimated by GSECL are lesser by Rs. 0.09 crore when compared to SLDC charges approved in the Tariff Order dated 14th December 2009.

The Commission considers the SLDC charges at Rs. 3.59 crore as estimated by GSECL in the review for FY 2010-11 as detailed in the Table 5.33 below:

Table 5.33: SLDC Charges considered in APR for FY 2010-11

(Rs. crore)

S.N	Power station	T.O FY 2010-11	Considered in APR FY 2010-11
1.	Ukai (1-5)	0.59	0.59
2.	Gandhinagar (1-4)	0.46	0.46
3.	Gandhinagar- 5*	0.15	0.15
4.	Wanakbori 1-6 TPS	0.88	0.88
5.	Wanakbori 7 TPS*	0.15	0.15
6.	Sikka TPS	0.17	0.17
7.	KLTPS 1-3	0.15	0.15
8.	KLTPS 4	0.05	0.05
9.	Dhuvaran (Gas 1)*	0.07	0.07
10.	Dhuvaran (Gas 2)	0.08	0.08
11.	Utran (Gas)*	0.09	0.09
12.	Utran Extension *	0.26	0.26



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

13.	Ukai Hydro	0.21	0.21
14.	Kadana Hydro	0.17	0.17
15.	Dhuvaran (Oil)	0.10	0.11
	TOTAL	3.68	3.59

* PPA governed stations.

5.4.8 Income Tax for FY 2010-11

Petitioner's submission

GSECL has estimated the taxes on income at Rs. 76 crore in the revised estimates for FY 2010-11 against Rs. 58.02 crore approved at 15% MAT rate on the return on equity by the Commission in the Tariff Order dated 31st March 2010.

Commission's view

GSECL has not furnished the details of computation of tax in the petition. The return on equity considered in the APR for the FY 2010-11 in para 5.4.3 above is Rs.380.92 crore and the tax on it at 19.934%, the present MAT rate, works out to Rs.75.92 crore for the FY 2010-11 .

The Commission considers the tax on income at Rs. 75.92 crore in the APR for FY 2010-11.

5.5 Fixed Charges considered in APR for FY 2010-11

The annual performance review carried out in the foregoing paras reveals a deviation of Rs. 136.69 crore for FY 2010-11 in respect of fixed charges.

The fixed charges approved in the MYT order for FY 2008-11, Tariff Order for FY 2010-11 dated 31st March 2010, projected by GSECL in the RE FY 2010-11 and now considered by the Commission in the annual performance review are given in the Table 5.34 below:

Table 5.34: Fixed Charges considered in the Performance Review for FY 2010-11

(Rs. crore)						
Sr. No	Fixed Charges	MYT Approved	Tariff Order 2010-11 (31.03.2010)	GSECL Projected (RE)	Considered in APR	Deviation (6-4)
1	2	3	4	5	6	7
1	Depreciation	439.42	537.94	568.00	536.90	(1.04)
2	Int & Fin charges	427.12	400.16	414.00	413.09	12.93



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

3	Return on equity	421.13	386.79	381.00	380.92	(5.87)
4	Int on working capital	237.78	252.13	275.00	275.00	22.87
5	O&M expenses	604.75	655.48	743.00	743.00	87.52
6	Income Tax	47.71	58.02	76.00	75.92	17.90
7	SLDC charges		3.68	3.59	3.59	(0.09)
8	Insurance charges	8.71	2.67	5.00	5.14	2.47
9	Total fixed charges	2186.62	2296.87	2465.59	2433.56	136.69

The Commission has not considered any loss / gain in the performance review. The actual performance for FY 2010-11 will be reviewed with reference to the audited annual accounts for FY 2010-11 and any sharing of loss / gain as per GERC Regulations will be considered at the time of truing up for FY 2010-11.



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.1

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - Ukai TPS 1 to 5

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	5510
2	Auxiliary Consumption	C	%	9.10%
3	Auxiliary Consumption	B	MUs	501
4	Net Generation	$Y = A - B$	MUs	5009
5	Station Heat Rate	D	KCal/KWH.	2,775
6	Sp. Oil Consumption	E	ml/kWh	1.50
7	Gross Calorific Value of Coal	F	kcal/kg	3,950
8	Calorific value of Oil	G	kcal/l	10,500
9	Overall Heat	$H = A \times D$	G Cal	15290250
10	Heat from Oil	$I = (A \times E \times G) / 1000$	G Cal	86783
11	Heat from Coal	$J = H - I$	G Cal	15203468
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	26.41%
15	B) Washed Coal	X2	%	73.59%
16	C) Imported Coal	X3	%	0.0%
17	Actual Oil Consumption	$L = A \times E$	kl	8265
18	Actual Coal Consumption	$M = (J \times 1000) / F$	MT	3848979
19	A) Indigenous Coal	$Q1 = M \times X1 / (1 - K)$	MT	1024713
20	B) Washed Coal	$Q2 = M \times X2$	MT	2832464
21	C) Imported Coal	$Q3 = M \times X3$	MT	0.00
22	Specific Coal Consumption		kg/kWh	0.67
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	2275
25	B) Washed Coal	P2	Rs/MT	2419.00
26	C) Imported Coal	P3	Rs/MT	
27	Price of Oil	P4	Rs/kl	30900
28	Coal cost			
29	A) Indigenous Coal	$N1 = Q1 \times P1 / 10^5$	Rs Lakh	23312
30	B) Washed Coal	$N2 = Q2 \times P2 / 10^5$	Rs Lakh	68517
31	C) Imported Coal	$N3 = Q3 \times P3 / 10^5$	Rs Lakh	0
32	Total Coal Cost	$N4 = N1 + N2 + N3$	Rs Lakh	91830
33	Oil Cost	$N5 = P4 \times L / 10^5$	Rs Lakh	2554
34	Total Fuel Cost	$O = N4 + N5$	Rs Lakh	94383
35	Fuel Cost/Unit Gross	$P = O / (A \times 10)$	Rs/kWh	1.71
36	Fuel Cost/Unit Net	$Q = O / (Y \times 10)$	Rs/kWh	1.88
37	Cost of fuel/KCal	$R = (O / H) \times 10^5$	Rs/Gcal	617



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.2

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 1-4

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	4510
2	Auxiliary Consumption	C	%	10.27%
3	Auxiliary Consumption	B	MUs	463
4	Net Generation	$Y=A - B$	MUs	4047
5	Station Heat Rate	D	KCal/KWH.	2,782
6	Sp. Oil Consumption	E	ml/kWh	1.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,325
8	Calorific value of Oil	G	kcal/l	10,500
9	Overall Heat	$H=A \times D$	G Cal	12546820
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	71033
11	Heat from Coal	$J=H-I$	G Cal	12475788
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	12.43%
15	B) Washed Coal	X2	%	64.86%
16	C) Imported Coal	X3	%	22.70%
17	Actual Oil Consumption	$L=A \times E$	kl	6765
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	2884575
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	361444
20	B) Washed Coal	$Q2=M^* \times X2$	MT	1870935
21	C) Imported Coal	$Q3=M^* \times X3$	MT	654799
22	Specific Coal Consumption		kg/kWh	1.00
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3188
25	B) Washed Coal	P2	Rs/MT	2642.00
26	C) Imported Coal	P3	Rs/MT	7151
27	Price of Oil	P4	Rs/kl	28325
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	11523
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	49430
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	46825
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	107778
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1916
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	109694
35	Fuel Cost/Unit Gross	$P=O/(A^*10)$	Rs/kWh	2.43
36	Fuel Cost/Unit Net	$Q=O/(Y^*10)$	Rs/kWh	2.71
37	Cost of fuel/KCal	$R=(O/H)^*10^5$	Rs/Gcal	874



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.3

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 5

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	1472
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B	MUs	132
4	Net Generation	$Y=A - B$	MUs	1340
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	4,325
8	Calorific value of Oil	G	kcal/l	10,500
9	Overall Heat	$H=A \times D$	G Cal	3621120
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	54096
11	Heat from Coal	$J=H-I$	G Cal	3567024
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	12.43%
15	B) Washed Coal	X2	%	64.86%
16	C) Imported Coal	X3	%	22.70%
17	Actual Oil Consumption	$L=A \times E$	kl	5152
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	824745
19	A) Indigenous Coal	$Q1=M* \times X1/(1-K)$	MT	103343
20	B) Washed Coal	$Q2=M* \times X2$	MT	534930
21	C) Imported Coal	$Q3=M* \times X3$	MT	187217.21
22	Specific Coal Consumption		kg/kWh	1.00
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3188
25	B) Washed Coal	P2	Rs/MT	2642
26	C) Imported Coal	P3	Rs/MT	7151
27	Price of Oil	P4	Rs/kl	28325
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	3295
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	14133
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	13388
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	30815
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1459
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	32275
35	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs/kWh	2.19
36	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs/kWh	2.41
37	Cost of fuel/KCal	$R=(O/H)*10^5$	Rs/Gcal	891



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.4

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 1-6

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	8830
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B	MUs	795
4	Net Generation	$Y=A - B$	MUs	8035
5	Station Heat Rate	D	KCal/KWH.	2,625
6	Sp. Oil Consumption	E	ml/kWh	1.00
7	Gross Calorific Value of Coal	F	kcal/kg	3,950
8	Calorific value of Oil	G	kcal/l	10,500
9	Overall Heat	$H=A \times D$	G Cal	23178750
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	92715
11	Heat from Coal	$J=H-I$	G Cal	23086035
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	24.49%
15	B) Washed Coal	X2	%	67.35%
16	C) Imported Coal	X3	%	8.16%
17	Actual Oil Consumption	$L=A \times E$	kl	8830
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	5844566
19	A) Indigenous Coal	$Q1=M* \times X1/(1-K)$	MT	1442877
20	B) Washed Coal	$Q2=M* \times X2$	MT	3936315
21	C) Imported Coal	$Q3=M* \times X3$	MT	476917
22	Specific Coal Consumption		kg/kWh	0.68
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3091
25	B) Washed Coal	P2	Rs/MT	2692
26	C) Imported Coal	P3	Rs/MT	7007
27	Price of Oil	P4	Rs/kl	28325
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	44599
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	105966
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	33418
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	183982
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	2501
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	186484
35	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs/kWh	2.11
36	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs/kWh	2.32
37	Cost of fuel/KCal	$R=(O/H)*10^5$	Rs/Gcal	805



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.5

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 7

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	1472
2	Auxiliary Consumption	C	%	9.00%
3	Auxiliary Consumption	B	MUs	132
4	Net Generation	$Y=A - B$	MUs	1340
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	3,950
8	Calorific value of Oil	G	kcal/l	10,500
9	Overall Heat	$H=A \times D$	G Cal	3621120
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	54096
11	Heat from Coal	$J=H-I$	G Cal	3567024
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	24.49%
15	B) Washed Coal	X2	%	67.35%
16	C) Imported Coal	X3	%	8.16%
17	Actual Oil Consumption	$L=A \times E$	kl	5152
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	903044
19	A) Indigenous Coal	$Q1=M^* \times X1/(1-K)$	MT	222939
20	B) Washed Coal	$Q2=M^* \times X2$	MT	608200
21	C) Imported Coal	$Q3=M^* \times X3$	MT	73688
22	Specific Coal Consumption		kg/kWh	0.61
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3091
25	B) Washed Coal	P2	Rs/MT	2692
26	C) Imported Coal	P3	Rs/MT	7007
27	Price of Oil	P4	Rs/kl	28325
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	6891
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	16373
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	5163
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	28427
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1459
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	29886
35	Fuel Cost/Unit Gross	$P=O/(A^*10)$	Rs/kWh	2.03
36	Fuel Cost/Unit Net	$Q=O/(Y^*10)$	Rs/kWh	2.23
37	Cost of fuel/KCal	$R=(O/H)^*10^5$	Rs/Gcal	825



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.6

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - Sikka TPS

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	1493
2	Auxiliary Consumption	C	%	10.50%
3	Auxiliary Consumption	B	MUs	157
4	Net Generation	$Y=A - B$	MUs	1336
5	Station Heat Rate	D	KCal/KWH.	3,045
6	Sp. Oil Consumption	E	ml/kWh	1.50
7	Gross Calorific Value of Coal	F	kcal/kg	3,850
8	Calorific value of Oil	G	kcal/l	10,500
9	Overall Heat	$H=A \times D$	G Cal	4546185
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	23515
11	Heat from Coal	$J=H-I$	G Cal	4522670
12	Transit losses	K	%	0.8%
13	Coal Blend			
14	A) Indigenous Coal	X1	%	29.41%
15	B) Washed Coal	X2	%	70.59%
16	C) Imported Coal	X3	%	0.00%
17	Actual Oil Consumption	$L=A \times E$	kl	2240
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	1174720
19	A) Indigenous Coal	$Q1=M* \times X1/(1-K)$	MT	348271
20	B) Washed Coal	$Q2=M* \times X2$	MT	829235
21	C) Imported Coal	$Q3=M* \times X3$	MT	0
22	Specific Coal Consumption		kg/kWh	0.71
23	Price of Coal			
24	A) Indigenous Coal	P1	Rs/MT	3502
25	B) Washed Coal	P2	Rs/MT	2978
26	C) Imported Coal	P3	Rs/MT	
27	Price of Oil	P4	Rs/kl	33990
28	Coal cost			
29	A) Indigenous Coal	$N1=Q1 \times P1/10^5$	Rs Lakh	12196
30	B) Washed Coal	$N2=Q2 \times P2/10^5$	Rs Lakh	24695
31	C) Imported Coal	$N3=Q3 \times P3/10^5$	Rs Lakh	0
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	36891
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	761
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	37652
35	Fuel Cost/Unit Gross	$P=O/(A*10)$	Rs/kWh	2.52
36	Fuel Cost/Unit Net	$Q=O/(Y*10)$	Rs/kWh	2.82
37	Cost of fuel/KCal	$R=(O/H)*10^5$	Rs/Gcal	828



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.7

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 1-3

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	1224
2	Auxiliary Consumption	C	%	12.00%
3	Auxiliary Consumption	B	MUs	147
4	Net Generation	$Y=A - B$	MUs	1077
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	2,700
8	Calorific value of Oil	G	kcal/l	10,555
9	Overall Heat	$H=A \times D$	G Cal	4039200
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	32298
11	Heat from Lignite	$J=H-I$	G Cal	4006902
12	Transit losses	K	%	0.00%
13	Actual Oil Consumption	$L=A \times E$	kl	3060
14	Actual Lignite Coal Consumption	$M=(J \times 1000)/F$	MT	1484038
15	Coal Consumption including Transit Loss	$N=M/(1-K)$	MT	1484038
16	Specific Lignite Coal Consumption		kg/kWh	1.21
17	Price of Lignite	P1	Rs/MT	914
18	Price of Oil	P2	Rs/kl	35020
19	Cost of Lignite	$N1=M \times P1/10^5$	Rs Lakh	13564
20	Oil Cost	$N2=P2 \times L/10^5$	Rs Lakh	1072
21	Total Fuel Cost	$O=N1 + N2$	Rs Lakh	14636
22	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	1.20
23	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	1.36
24	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	362



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.8

Annual Performance Review for FY 2010-11
Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 4

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	381
2	Auxiliary Consumption	C	%	12.00%
3	Auxiliary Consumption	B	MUs	46
4	Net Generation	$Y=A - B$	MUs	335
5	Station Heat Rate	D	KCal/KWH.	3,000
6	Sp. Oil Consumption	E	ml/kWh	2.50
7	Gross Calorific Value of Lignite	F	kcal/kg	2,700
8	Calorific value of Oil	G	kcal/l	10,900
9	Overall Heat	$H=A \times D$	G Cal	1143000
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	10382
11	Heat from Lignite	$J=H-I$	G Cal	1132618
12	Transit losses	K	%	0.00%
13	Actual Oil Consumption	$L=A \times E$	kl	953
14	Actual Lignite Coal Consumption	$M=(J \times 1000)/F$	MT	419488
15	Coal Consumption including Transit Loss	$N=M/(1-K)$	MT	419488
16	Specific Lignite Coal Consumption		kg/kWh	1.10
17	Price of Lignite	P1	Rs/MT	914
18	Price of Oil	P2	Rs/kl	46350
19	Cost of Lignite	$N1=M \times P1$	Rs Lakh	3834
20	Oil Cost	$N2=P2 \times L/10^5$	Rs Lakh	441
21	Total Fuel Cost	$O=N1 + N2$	Rs Lakh	4276
22	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	1.12
23	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	1.28
24	Cost of fuel/KCal	$R=(O/H) \times 10^5$	Rs/Gcal	374



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.9

Annual Performance Review for FY 2010-11

Fuel costs (Gas) - Dhuvaran Gas 1

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	411
2	Auxiliary Consumption	C	%	3.00%
3	Auxiliary Consumption	B	MUs	12
4	Net Generation	$Y=A - B$	MUs	399
5	Station Heat Rate	D	KCal/KWH.	1,950
6	Calorific value of Gas	F	kcal/scm	9,500
7	Overall Heat from Gas	$H=A \times D$	G Cal	801450
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	84363
9	Price of Gas	P1	Rs/scm	14.00
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	11811
11	Total Fuel Cost	N5	Rs Lakh	11811
12	Fuel Cost/Unit Gross	$P=N5/(A*10)$	Rs/kWh	2.87
13	Fuel Cost/Unit Net	$Q=N5/(Y*10)$	Rs/kWh	2.96
14	Cost of fuel/K.Cal	$R=(N5/H)*10^5$	Rs/Gcal	1474



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.10

Annual Performance Review for FY 2010-11

Fuel costs (Gas) - Dhuvaran Gas 2

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	788
2	Auxiliary Consumption	C	%	3.00%
3	Auxiliary Consumption	B	MUs	24
4	Net Generation	$Y=A - B$	MUs	764
5	Station Heat Rate	D	KCal/KWH.	1,950
6	Calorific value of Gas	F	kcal/scm	9,500
7	Overall Heat from Gas	$H=A \times D$	G Cal	1536600
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	161747
9	Price of Gas	P1	Rs/scm	12.84
10	Cost of Gas	$N5=P1 \times M/10^2$	Rs Lakh	20768
11	Total Fuel Cost	N5	Rs Lakh	20768
12	Fuel Cost/Unit Gross	$P=N5/(A \times 10)$	Rs/kWh	2.64
13	Fuel Cost/Unit Net	$Q=N5/(Y \times 10)$	Rs/kWh	2.72
14	Cost of fuel/K.Cal	$R=(N5/H) \times 10^5$	Rs/Gcal	1352



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.11

Annual Performance Review for FY 2010-11

Fuel costs (Gas) - Utran Gas

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	946
2	Auxiliary Consumption	C	%	4.00%
3	Auxiliary Consumption	B	MUs	38
4	Net Generation	$Y=A - B$	MUs	908
5	Station Heat Rate	D	KCal/KWH.	2,150
6	Calorific value of Gas	F	kcal/scm	9,500
7	Overall Heat from Gas	$H=A \times D$	G Cal	2033900
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	214095
9	Price of Gas	P1	Rs/scm	13.91
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	29781
11	Total Fuel Cost	N5	Rs Lakh	29781
12	Fuel Cost/Unit Gross	$P=N5/(A*10)$	Rs/kWh	3.15
13	Fuel Cost/Unit Net	$Q=N5/(Y*10)$	Rs/kWh	3.28
14	Cost of fuel/KCal	$R=(N5/H)*10^5$	Rs/Gcal	1464



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 5.12

Annual Performance Review for FY 2010-11

Fuel costs (Gas) - Utran Extension

Sr.No.	Item	Derivation	Unit	2010-11
1	Gross Generation	A	MUs	2625
2	Auxiliary Consumption	C	%	3.00%
3	Auxiliary Consumption	B	MUs	79
4	Net Generation	$Y=A - B$	MUs	2546
5	Capacity		MW	375
6	Availability Factor		%	80.00%
7	Plant Load Factor		%	80.00%
8	Station Heat Rate	D	KCal/KWH.	1,850
9	Calorific value of Gas	F	kcal/scm	9,500
10	Overall Heat from Gas	$H=A \times D$	G Cal	4856250
11	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	511184
12	Price of Gas	P1	Rs/scm	12.84
13	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	65636
14	Total Fuel Cost	N5	Rs Lakh	65636
15	Fuel Cost/Unit Gross	$P=N5/(A*10)$	Rs/kWh	2.50
16	Fuel Cost/Unit Net	$Q=N5/(Y*10)$	Rs/kWh	2.58
17	Cost of fuel/KCal	$R=(N5/H)*10^5$	Rs/Gcal	1352



Chapter 6

GSECL Generating Stations and their Performance for MYT Period FY 2011-12 to FY 2015-16

6.1 Generating Stations of GSECL

The details of the existing stations of GSECL along with their capacities and dates of commissioning are given in Table 6.1 below:

**Table 6.1 : Capacity, COD & Age of GSECL generating stations as on
1st April 2011**

Name of station	Unit No.	Capacity of the unit (MW)	Date of Commissioning	Age as on 01/04/2010 (Years)
Ukai	1	120	19/03/1976	35
	2	120	23/06/1976	35
	3	200	21/01/1979	32
	4	200	11/09/1979	32
	5	210	30/01/1985	26
Sub total		850		
Gandhinagar	1	120	13/03/1977	34
	2	120	10/04/1977	34
	3	210	20/03/1990	21
	4	210	20/07/1991	20
	5	210	17/03/1998	13
Sub total		870		
Wanakbori	1	210	25/03/1982	29
	2	210	15/01/1983	28
	3	210	15/03/1984	27
	4	210	09/03/1986	25
	5	210	23/09/1986	25
	6	210	18/11/1987	23
	7	210	31/12/1998	12
Sub total		1470		
Sikka	1	120	26/03/1988	23
	2	120	31/03/1993	18
Sub total		240		
KLTPS	1	70	29/03/1990	21
	2	70	25/03/1991	20
	3	75	31/03/1997	14
	4	75	20/12/2009	2
Sub total		290		
Dhuvaran	7 – Gas	106.617	28/01/2004	7
	8 - Gas	112.45	01/11/2007	3



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Name of station	Unit No.	Capacity of the unit (MW)	Date of Commissioning	Age as on 01/04/2010 (Years)
Sub total		219.067		
Utran	GT - 1	30	17/12/1992	18
	GT - 2	30	28/12/1992	18
	GT - 3	30	07/05/1993	18
	STG	45	17/07/1993	18
Sub total		135		
Utran Extension	GT - 1	375	08/11/2009	2
Sub Total GSECL (Coal + Lignite)		3720		
Sub Total GSECL (Gas)		729.067		
Total GSECL (Thermal)		4449		
Ukai Hydro	1	75	08/01/1974	37
	2	75	13/12/1974	36
	3	75	22/04/1975	36
	4	75	04/03/1976	35
Sub total		300		
Ukai LBC	1	2.5	08/12/1987	23
	2	2.5	19/02/1988	23
Sub total		5		
Kadana Hydro	1	60	31/03/1990	21
	2	60	02/09/1990	21
	3	60	03/01/1998	13
	4	60	27/05/1998	13
Sub total		240		
Panam	1	1	24/03/1994	17
	2	1	31/03/1994	17
Sub total		2		
Sub Total GSECL (Hydro)		547		
Wind Mills		10		2
Total capacity of GSECL		5006		

In addition to the existing stations, GSECL has projected the future capacity additions in their business plan. The details of future capacity additions are given in Table 6.2 below:

Table 6.2 : Future Capacity additions of GSECL

S.N	Name of the project	Capacity (MW)	Commissioning Schedule
1.	Ukai-6 (1x500 MW)	500	2011-12
2.	Sikka Extension (2x250 MW)	500	2013-14
3.	Dhuvaran-III (1x350+)	385	2013-14
4.	Wanakbori-8 (1x800 MW)	800	2015-16
5.	Manuyari (Gas)	1200	2014-15
6.	Bhadodar (Gas)	1200	2014-15
7.	Simor (coal) (2x800 MW)	1600	2016-17
8.	Dholera (coal) (2x800 MW)	1600	2016-17



GSECL has not projected any expected generation during the control period from the new projects in the petition, even though; some of the projects are scheduled to be commissioned during the MYT period, as submitted in the Business Plan. The performance and the cost of generation of these stations are not considered for the MYT period, as they are not mentioned in the petition.

As per GERC (MYT) Regulations, 2011, GSECL has to file a separate petition for approval of ARR and Tariff for these units / stations.

The performance parameters for the existing stations are discussed in the following paras.

Among the existing stations, it is stated by GSECL that the Dhuvran (Oil) plant is decommissioned on 1st December 2010.

6.2 Performance of Generating Stations, GSECL's projections for the MYT period and Commission's Analysis and Decisions

The actual performance of the stations for the FY 2009-10 and RE for FY 2010-11 as provided by GSECL and the Commission's analysis and decisions are already discussed in chapters 4 and 5 in the truing up for FY 2009-10 and APR for FY 2010-11.

GSECL submitted that the operating parameters are dependant on the present conditions of the machines. The present operating conditions of the machines are the function of several factors like-

- Operation and Maintenance since commissioning.
- Degradation due to ageing.
- Water chemistry.
- Condition of the auxiliaries.
- Schedule of maintenance followed.
- Over loading / partial loading of machine.
- Number of start / stop.
- Operating frequency range – machines have been subjected to
- Temperature and pressure stresses – machines have been subjected to
- Automation of C&I.
- Condenser vacuum



GSECL pleaded with the Commission for approval of the operating parameters as projected in the petition for the MYT period FY 2011-12 to FY 2015-16 taking into consideration all the factors mentioned above.

The projections of GSECL for the control period and the analysis of the Commission are discussed hereunder, parameter wise.

The Commission has considered the vintage of GSECL thermal plant, constraints in the operation of the plant etc., and fixed certain operation parameters for each of the stations for the control period FY 2011-12 to FY 2015-16 in the MYT Regulations, 2011. These parameters are considered in determining the tariff during the control period.

6.2.1 Plant Availability

Petitioner's submission

GSECL has submitted the plant availability factors for all the stations for the control period as given in the Table 6.3 below:

Table 6.3 : Projected Plant Availability Factors for control period FY 2011-12 to FY 2015-16

						(%)
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	75	75	74	75	74
2.	Gandhinagar (1-4)	78	78	78	79	78
3.	Gandhinagar- 5*	80	80	80	80	80
4.	Wanakbori 1-6 TPS	80	80	80	80	80
5.	Wanakbori 7 TPS*	80	80	80	80	80
6.	Sikka TPS	68	68	71	71	71
7.	KLTPS 1-3	66	75	75	75	75
8.	KLTPS 4	75	75	75	75	75
9.	Dhuvaran (Gas 1)*	80	80	80	80	80
10.	Dhuvaran (Gas 2)	80	80	80	80	80
11.	Utran (Gas)*	80	80	80	80	80
12.	Utran Extension *	80	80	80	80	80
	Hydro stations					
13.	Ukai Hydro	80	80	80	80	80
14.	Kadana Hydro	80	80	80	80	80

* PPA governed stations

PAF for PPA based stations for recovery of full fixed cost will be 80% as per Terms and Conditions of PPA.



In case of hydro stations, the neutralization level for full fixed cost recovery will be the availability of machines, subject to a ceiling of 80%.

Commission's Analysis

The Commission has analyzed the submission made by the petitioner, the vintage of the machines, past performance etc., and approved PAF for different stations taking into account the GERC (MYT) Regulations, 2011 as given in Table 6.4 below:

Table 6.4 : Approved Plant Availability Factors for control period FY 2011-12 to FY 2015-16

(%)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	75	75	75	75	75
2.	Gandhinagar (1-4)	79	79	79	79	79
3.	Gandhinagar- 5*	80	80	80	80	80
4.	Wanakbori 1-6 TPS	85	85	85	85	85
5.	Wanakbori 7 TPS*	80	80	80	80	80
6.	Sikka TPS	75	75	75	75	75
7.	KLTPS 1-3	75	75	75	75	75
8.	KLTPS 4	80	80	80	80	80
9.	Dhuvaran (Gas 1)*	80	80	80	80	80
10.	Dhuvaran (Gas 2)	85	85	85	85	85
11.	Utran (Gas)*	80	80	80	80	80
12.	Utran Extension *	80	80	80	80	80
	Hydro stations					
13.	Ukai Hydro	80	80	80	80	80
14.	Kadana Hydro	80	80	80	80	80

* PPA governed stations

6.2.2 Plant Load Factor

GSECL has projected the Plant Load Factors for all the stations for the control period as given in Table 6.5 below:

Table 6.5: Projected Plant Load Factors for control period FY 2011-12 to FY 2015-16

(%)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	75	75	74	75	74
2.	Gandhinagar (1-4)	78	78	78	79	78
3.	Gandhinagar- 5*	80	80	80	80	80
4.	Wanakbori 1-6 TPS	80	80	80	80	80
5.	Wanakbori 7 TPS*	80	80	80	80	80
6.	Sikka TPS	68	68	71	71	71
7.	KLTPS 1-3	66	75	75	75	75
8.	KLTPS 4	75	75	75	75	75
9.	Dhuvaran (Gas 1)*	80	80	80	80	80
10.	Dhuvaran (Gas 2)	80	80	77	80	80



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
11.	Utran (Gas)*	80	80	80	80	80
12.	Utran Extension *	80	80	80	80	80
	Hydro stations					
13.	Ukai Hydro	13	13	13	13	13
14.	Kadana Hydro	6	6	6	6	6

* PPA governed stations

Commission's Analysis

The Commission acknowledges the fact that PLF of a generating station depends upon the schedules given by the Distribution Licensees. However, in order to project the gross generation, it is required to approve PLF. It is also fact that the the generation from GSECL stations is required to be maximized to limit purchase of high cost power from other sources. Keeping thia in mind and considering the PAFs approved, constraints in operation of some of the generating stations and their past performance, the Commission approves the PLF as given in Table 6.6 below:

Table 6.6: Approved Plant Load Factors for control period FY 2011-12 to FY 2015-16

(%)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	75	75	75	75	75
2.	Gandhinagar (1-4)	79	79	79	79	79
3.	Gandhinagar- 5*	85	85	85	85	85
4.	Wanakbori 1-6 TPS	85	85	85	85	85
5.	Wanakbori 7 TPS*	85	85	85	85	85
6.	Sikka TPS	68	68	71	71	71
7.	KLTPS 1-3	66	75	75	75	75
8.	KLTPS 4	75	75	75	75	75
9.	Dhuvaran (Gas 1)*	80	80	80	80	80
10.	Dhuvaran (Gas 2)	80	80	77	80	80
11.	Utran (Gas)*	80	80	80	80	80
12.	Utran Extension *	80	80	80	80	80
	Hydro stations					
13.	Ukai Hydro	13	13	13	13	13
14.	Kadana Hydro	6	6	6	6	6

* PPA governed stations

6.2.3 Auxiliary Consumption

Petitioner's Submission

GSECL has projected the auxiliary consumption for all the stations for the control period as given in Table 6.7 below:



Table 6.7 : Projected Auxiliary Consumption for the control period FY 2011-12 to FY 2015-16

						(%)
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	10.50	10.50	10.50	10.50	10.50
2	Gandhinagar (1-4)	10.60	10.60	10.60	10.60	10.60
3	Gandhinagar- 5*	9.00	9.00	9.00	9.00	9.00
4	Wanakbori 1-6 TPS	9.00	9.00	9.00	9.00	9.00
5	Wanakbori 7 TPS*	9.00	9.00	9.00	9.00	9.00
6	Sikka TPS	11.00	11.00	11.00	11.00	11.00
7	KLTPS 1-3	14.50	14.50	14.50	14.50	14.50
8	KLTPS 4	18.00	18.00	18.00	18.00	18.00
9	Dhuvaran (Gas 1)*	3.00	3.00	3.00	3.00	3.00
10	Dhuvaran (Gas 2)	3.00	3.00	3.00	3.00	3.00
11	Utran (Gas)*	4.00	4.00	4.00	4.00	4.00
12	Utran Extension *	3.00	3.00	3.00	3.00	3.00
	Hydro stations					
13	Ukai Hydro	0.90	0.90	0.90	0.90	0.90
14	Kadana Hydro	1.70	1.70	1.70	1.70	1.70

* PPA governed stations

GSECL has submitted that the consumption of gas booster compressor is to be considered at actuals as approved by the Commission earlier for Dhuvaran and Utran gas stations.

GSECL has also pleaded that the projected auxiliary consumption is on the higher side, as the old stations are operated on part load under many constraints.

Commission's Analysis

The Commission has analyzed the auxiliary consumption pattern for all the stations. The auxiliary consumption for PPA governed stations, any how, is approved based on respective PPAs.

In the case of other stations auxiliary consumption is approved as fixed in GERC (MYT) Regulations, 2011.

The consumption of gas booster compressor in the case of Dhuvaran and Utran gas stations is to be allowed as per actuals. GSECL should submit the actual consumption, duly providing a separate meter.

The auxiliary consumption for different stations is approved for the control period FY 2011-12 to FY 2015-16 as given in Table 6.8 below:



Table 6.8 : Approved Auxiliary Consumption for the control period FY 2011-12 to FY 2015-16

(%)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	9.00	9.00	9.00	9.00	9.00
2	Gandhinagar (1-4)	10.00	10.00	10.00	10.00	10.00
3	Gandhinagar- 5*	9.00	9.00	9.00	9.00	9.00
4	Wanakbori 1-6 TPS	9.00	9.00	9.00	9.00	9.00
5	Wanakbori 7 TPS*	9.00	9.00	9.00	9.00	9.00
6	Sikka TPS	11.00	11.00	11.00	11.00	11.00
7	KLTPS 1-3	12.00	12.00	12.00	12.00	12.00
8	KLTPS 4	12.00	12.00	12.00	12.00	12.00
9	Dhuvaran (Gas 1)*	3.00	3.00	3.00	3.00	3.00
10	Dhuvaran (Gas 2)	3.00	3.00	3.00	3.00	3.00
11	Utran (Gas)*	4.00	4.00	4.00	4.00	4.00
12	Utran Extension *	3.00	3.00	3.00	3.00	3.00
	Hydro stations					
13	Ukai Hydro	0.70	0.70	0.70	0.70	0.70
14	Kadana Hydro	1.19	1.19	1.19	1.19	1.19

* PPA governed stations

6.2.4 Station Heat Rate (SHR)

Petitioner's Submission

GSECL projected the SHR of different stations for the control period FY 2011-12 to FY 2015-16 as given in the Table 6.9 below:

Table 6.9 : Projected Station Heat Rates for the control period FY 2011-12 to FY 2015-16

(Kcal/kWh)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	2824	2815	2805	2796	2786
2	Gandhinagar (1-4)	2835	2831	2828	2825	2822
3	Gandhinagar- 5*	2460	2460	2460	2460	2462
4	Wanakbori 1-6 TPS	2656	2654	2651	2649	2649
5	Wanakbori 7 TPS*	2460	2460	2460	2460	2460
6	Sikka TPS	3040	3035	3030	3025	3020
7	KLTPS 1-3	3513	3510	3506	3503	3500
8	KLTPS 4	3200	3200	3150	3125	3100
9	Dhuvaran (Gas 1)*	1950	1950	1950	1950	1950
10	Dhuvaran (Gas 2)	1950	1950	1950	1950	1950
11	Utran (Gas)*	2150	2150	2150	2150	2150
12	Utran Extension *	1850	1850	1850	1850	1850

* PPA governed stations

The projections for PPA governed stations are based on the respective PPAs.

In the case of other stations GSECL submitted that it has considered the past performance of its plants for arriving at the projection of SHR for the control period FY 2011-12 to FY2015-16.



GSECL has also submitted various reasons for not achieving required SHR, as already mentioned in para 4.2.4 of chapter 4 and para 6.2 above.

Commission's Analysis

In the case of PPA governed stations, the SHR is approved based on the conditions in the respective PPAs.

In the case of other stations the heat rate is approved as per the GERC (MYT) Regulations, 2011 as stated earlier.

The SHR approved by the Commission for all the stations for the control period FY 2011-12 to FY 2015-16, are given in Table 6.10 below:

Table 6.10 : Approved Station Heat Rates for the control period FY 2011-12 to FY 2015-16

(Kcal/kWh)						
S.N	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	2770	2765	2760	2755	2750
2	Gandhinagar (1-4)	2782	2782	2782	2782	2782
3	Gandhinagar- 5*	2460	2460	2460	2460	2460
4	Wanakbori 1-6 TPS	2625	2625	2625	2625	2625
5	Wanakbori 7 TPS*	2460	2460	2460	2460	2460
6	Sikka TPS	3040	3035	3030	3025	3020
7	KLTPS 1-3	3300	3300	3300	3300	3300
8	KLTPS 4	3000	3000	3000	3000	3000
9	Dhuvaran (Gas 1)*	1950	1950	1950	1950	1950
10	Dhuvaran (Gas 2)	1950	1950	1950	1950	1950
11	Utran (Gas)*	2150	2150	2150	2150	2150
12	Utran Extension *	1850	1850	1850	1850	1850

* PPA governed stations

6.2.5 Secondary Fuel Oil Consumption

Petitioner's Submission

GSECL has projected the Secondary Fuel Oil Consumption for the control period FY 2011-12 to FY 2015-16 as given in Table 6.11 below:

Table 6.11 : Projected secondary fuel oil consumption for the control period FY 2011-12 to FY 2015-16

(ml/kWh)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	3.00	3.00	3.00	3.00	3.00
2	Gandhinagar (1-4)	1.50	1.50	1.50	1.50	1.50
3	Gandhinagar- 5*	3.50	3.50	3.50	3.50	3.50
4	Wanakbori 1-6 TPS	1.00	1.00	1.00	1.00	1.00



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

5	Wanakbori 7 TPS*	3.50	3.50	3.50	3.50	3.50
6	Sikka TPS	4.25	4.25	4.25	4.25	4.25
7	KLTPS 1-3	3.50	3.50	3.50	3.50	3.50
8	KLTPS 4	5.25	5.25	5.25	5.25	5.25

* PPA governed stations

For PPA governed stations, the secondary fuel oil consumption is projected based on the conditions in the respective PPAs.

Regarding other stations, GSECL pleaded that for lower size units the secondary fuel oil consumption remains higher as compared to large size power generating units, because certain amount of specific oil consumption remains fixed with respect to the size of the generating unit. As many units of GSECL power stations are smaller in size, the secondary fuel oil consumption for these stations is generally high. Another reason stated is that the GSECL stations are running at low load and additional oil support is required in such cases to sustain the flame.

Commission's Analysis

The secondary fuel oil consumption for PPA governed stations is approved according to PPA norms.

For the other old stations, the secondary fuel oil consumption is approved as per the GERC (MYT) Regulations 2011.

The secondary fuel oil consumption for the control period FY 2011-12 to FY 2015-16 as approved by the Commission is given in Table 6.12 below:

**Table 6.12 : Approved secondary fuel oil consumption for the control period
FY 2011-12 to FY 2015-16**

		(ml/kWh)				
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	2.00	2.00	2.00	2.00	2.00
2	Gandhinagar (1-4)	1.50	1.50	1.50	1.50	1.50
3	Gandhinagar- 5*	3.50	3.50	3.50	3.50	3.50
4	Wanakbori 1-6 TPS	1.00	1.00	1.00	1.00	1.00
5	Wanakbori 7 TPS*	3.50	3.50	3.50	3.50	3.50
6	Sikka TPS	4.00	4.00	4.00	4.00	4.00
7	KLTPS 1-3	3.00	3.00	3.00	3.00	3.00
8	KLTPS 4	3.00	3.00	3.00	3.00	3.00

* PPA governed stations



6.2.6 Transit Loss of coal

Petitioner's submission

GSECL has projected the Transit Loss of coal for different stations for the control period FY 2011-12 to FY 2015-16 as given in Table 6.13 below:

Table 6.13 : Projected Transit loss of coal for the control period FY 2011-12 to FY 2015-16

(%)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	0.80	0.80	0.80	0.80	0.80
2	Gandhinagar (1-4)	0.80	0.80	0.80	0.80	0.80
3	Gandhinagar- 5	0.80	0.80	0.80	0.80	0.80
4	Wanakbori 1-6 TPS	0.80	0.80	0.80	0.80	0.80
5	Wanakbori 7 TPS	0.80	0.80	0.80	0.80	0.80
6	Sikka TPS	0.80	0.80	0.80	0.80	0.80
7	KLTPS 1-3	0.30	0.30	0.30	0.30	0.30
8	KLTPS 4	0.30	0.30	0.30	0.30	0.30

GSECL projected the Transit Loss of coal as per Regulations for other than pit head stations at 0.80%. For pit head stations KLTPS 1-3 and KLTPS 4, 0.3% is projected, whereas 0.2% is allowed as per GERC (MYT) Regulations, 2011.

Commission's Analysis

The Commission has approved the transit loss for all the stations as per GERC (MYT), Regulations, 2011 i.e 0.80% for non-pit head stations and 0.20% for pithead stations including lignite based stations as given in Table-6.14 below:

Table 6.14 : Transit loss of coal Approved for the control period FY 2011-12 to FY 2015-16

(%)						
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	0.80	0.80	0.80	0.80	0.80
2	Gandhinagar (1-4)	0.80	0.80	0.80	0.80	0.80
3	Gandhinagar- 5	0.80	0.80	0.80	0.80	0.80
4	Wanakbori 1-6 TPS	0.80	0.80	0.80	0.80	0.80
5	Wanakbori 7 TPS	0.80	0.80	0.80	0.80	0.80
6	Sikka TPS	0.80	0.80	0.80	0.80	0.80
7	KLTPS 1-3	0.20	0.20	0.20	0.20	0.20
8	KLTPS 4	0.20	0.20	0.20	0.20	0.20

The transit loss is allowable only in the case of indigenous coal including washed coal and lignite but not in imported coal.



6.2.7 Performance parameters approved for the control period FY 2011-12 to FY 2015-16 for different stations are given in the Table 6.15 below:

Table 6.15: Approved parameters of PAF, PLF, Auxiliary Consumption, Heat Rate, Specific Oil Consumption and Coal Transit Loss for FY 2011-12 to FY 2015-16

Stations	PAF					PLF					Auxiliary consumption				
	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
Ukai 1-5	75	75	75	75	75	75	75	75	75	75	9.00	9.00	9.00	9.00	9.00
Gandhinagar 1-4	79	79	79	79	79	79	79	79	79	79	10.00	10.00	10.00	10.00	10.00
Gandhinagar 5*	80	80	80	80	80	85	85	85	85	85	9.00	9.00	9.00	9.00	9.00
Wanakbori 1-6 TPS	85	85	85	85	85	85	85	85	85	85	9.00	9.00	9.00	9.00	9.00
Wanakbori 7 TPS*	80	80	80	80	80	85	85	85	85	85	9.00	9.00	9.00	9.00	9.00
Sikka TPS	75	75	75	75	75	68	68	71	71	71	11.00	11.00	11.00	11.00	11.00
KLTPS 1-3	75	75	75	75	75	66	75	75	75	75	12.00	12.00	12.00	12.00	12.00
KLTPS 4	80	80	80	80	80	75	75	75	75	75	12.00	12.00	12.00	12.00	12.00
Dhuvaran (Gas 1)	80	80	80	80	80	80	80	80	80	80	3.00	3.00	3.00	3.00	3.00
Dhuvaran (Gas 2)	85	85	85	85	85	80	80	77	80	80	3.00	3.00	3.00	3.00	3.00
Utran (Gas)*	80	80	80	80	80	80	80	80	80	80	4.00	4.00	4.00	4.00	4.00
Utran Extension*	80	80	80	80	80	80	80	80	80	80	3.00	3.00	3.00	3.00	3.00
Hydro Stations															
Ukai	80	80	80	80	80	13	13	13	13	13	0.70	0.70	0.70	0.70	0.70
Kadana	80	80	80	80	80	6	6	6	6	6	1.19	1.19	1.19	1.19	1.19

* PPA governed stations.

Table 6.15 (Contd.)

Stations	Heat Rate (Kcal/kWh)					Specific Oil Consumption (ml/kWh)					Transit loss of coal (%)				
	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
Ukai (1-5)	2770	2765	2760	2755	2750	2.00	2.00	2.00	2.00	2.00	0.80	0.80	0.80	0.80	0.80
Gandhinagar (1-4)	2782	2782	2782	2782	2782	1.50	1.50	1.50	1.50	1.50	0.80	0.80	0.80	0.80	0.80
Gandhinagar- 5*	2460	2460	2460	2460	2460	3.50	3.50	3.50	3.50	3.50	0.80	0.80	0.80	0.80	0.80
Wanakbori 1-6 TPS	2625	2625	2625	2625	2625	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	0.80	0.80
Wanakbori 7 TPS*	2460	2460	2460	2460	2460	3.5	3.5	3.5	3.5	3.5	0.80	0.80	0.80	0.80	0.80
Sikka TPS	3040	3035	3030	3025	3020	4.00	4.00	4.00	4.00	4.00	0.80	0.80	0.80	0.80	0.80
KLTPS 1-3	3300	3300	3300	3300	3300	3.00	3.00	3.00	3.00	3.00	0.20	0.20	0.20	0.20	0.20
KLTPS 4	3000	3000	3000	3000	3000	3.00	3.00	3.00	3.00	3.00	0.20	0.20	0.20	0.20	0.20
Dhuvaran (Gas 1)	1950	1950	1950	1950	1950	-	-	-	-	-	-	-	-	-	-
Dhuvaran (Gas 2)	1950	1950	1950	1950	1950	-	-	-	-	-	-	-	-	-	-
Utran (Gas)*	2150	2150	2150	2150	2150	-	-	-	-	-	-	-	-	-	-
Utran Extension *	1850	1850	1850	1850	1850	-	-	-	-	-	-	-	-	-	-
Hydro stations															
Ukai	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kadana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* PPA governed stations.



6.3 Gross and Net Generation

GSECL has projected the gross and net generation for different stations, with the projected PLF and auxiliary consumption for the control period FY 2011-12 to FY 2015-16, as given in the Table 6.16 below:

Table 6.16 : Projected Gross and Net generation for the control period FY 2011-12 to FY 2015-16

(MU)

Sr. No.	Power station	2011-12		2012-13		2013-14		2014-15		2015-16	
		Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
1	Ukai (1-5)	5585	4998	5585	4998	5510	4931	5585	5510	5510	4931
2	Gandhinagar 1-4	4510	4032	4510	4032	4510	4032	4567	4083	4510	4032
3	Gandhinagar- 5	1472	1339	1472	1339	1472	1339	1472	1339	1472	1339
4	Wanakbori 1-6 TPS	8830	8035	8830	8035	8830	8035	8830	8035	8830	8035
5	Wanakbori 7 TPS	1472	1339	1472	1339	1472	1339	1472	1339	1472	1339
6	Sikka TPS	1430	1272	1430	1272	1493	1329	1493	1329	1493	1329
7	KLTPS 1-3	1243	1063	1413	1208	1413	1208	1413	1208	1413	1208
8	KLTPS 4	493	404	493	404	493	404	493	404	493	404
9	Dhuvaran (Gas 1)	747	725	747	725	747	725	747	725	747	725
10	Dhuvaran (Gas 2)	788	764	788	764	758	736	788	764	788	764
11	Utran (Gas)	946	908	946	908	946	908	946	908	946	908
12	Utran Extension	2625	2546	2625	2546	2625	2546	2625	2546	2625	2546
Hydro stations											
12	Ukai Hydro	347	344	347	344	347	344	347	344	347	344
14	Kadana Hydro	127	125	127	125	127	125	127	125	127	125

* PPA governed stations

6.3.1 The Gross and Net generation for different stations as approved by the Commission based on the approved PLF and auxiliary consumption as discussed in the earlier paras are given in the Table 6.17 below:

Table 6.17 : Approved Gross and Net Generation for the control period FY 2011-12 to FY 2015-16

(MU)

Sr. No.	Power station	2011-12+		2012-13		2013-14		2014-15		2015-16+	
		Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
1	Ukai (1-5)	5600	5096	5585	5082	5585	5082	5585	5082	5600	5096
2	Gandhinagar 1-4	4580	4122	4567	4110	4567	4110	4567	4110	4580	4122
3	Gandhinagar- 5*	1568	1427	1564	1423	1564	1423	1564	1423	1568	1427
4	Wanakbori 1-6 TPS	9408	8561	9382	8538	9382	8538	9382	8538	9408	8561
5	Wanakbori 7* TPS	1568	1427	1564	1423	1564	1423	1564	1423	1568	1427
6	Sikka TPS	1434	1276	1430	1273	1493	1329	1493	1329	1497	1332
7	KLTPS 1-3	1246	1096	1413	1243	1413	1243	1413	1243	1417	1247
8	KLTPS 4	494	435	493	434	493	434	493	434	494	435
9	Dhuvaran (Gas 1)*	749	727	747	725	747	725	747	725	749	727
10	Dhuvaran (Gas 2)	790	766	788	764	758	735	788	764	790	766
11	Utran (Gas)*	949	911	946	908	946	908	946	908	949	911
12	Utran Extension*	2635	2556	2628	2549	2628	2549	2628	2549	2635	2556
Hydro stations											
13	Ukai Hydro	347	344	347	344	347	344	347	344	347	344
14	Kadana Hydro	127	125	127	125	127	125	127	125	127	125

* PPA Governed stations.

+ Leap years with 8784 hours



Chapter 7

Generation Costs for the control period FY 2011-12 to FY 2015-16

7. Generation Costs - Variable (Energy) and Capacity (Fixed) Charges

7.1 Variable Costs (Energy Charge)

The performance parameters for different stations are discussed and approved for the control period from FY 2011-12 to FY 2015-16 in Chapter 6. The variable costs (mostly fuel cost) depend on the cost parameters such as GCV of different fuels used, mix of fuel and price of fuel. GSECL generating stations run on coal, lignite and gas as base fuel. For some of the coal stations, a mix of indigenous, washed and imported coal is used.

In the case of hydro stations no fuel costs are involved. However, the energy charge and fixed charge for hydro stations shall be recovered in accordance with the Regulation 60 of the MYT Regulations 2011.

It is basically decided to adopt the cost parameters (except mix of coal) as actually obtained during FY 2009-10 for the control period FY 2011-12 to FY 2015-16 with the provision to pass on any difference in fuel cost to the consumers due to variation in cost parameters during the MYT period as per the FPPPA formula.

GSECL projections and Commission's analysis on the mix of coal, Wt. Av. GCV of fuels to be consumed and Wt. Av. price of fuel for different stations are discussed below:

7.1.1 Mix of Coal

GSECL projected the percentage mix of coal for different stations for the control period as given in Table 7.1 below:

Table 7.1 : Projected Percentage of Mix of Coal for the control period FY 2011-12 to FY 2015-16

(%)				
Sr. No.	Power station	Indigenous coal	Washed coal	Imported coal
1.	Ukai (1-5)	26.41	73.59	0.00
2.	Gandhinagar 1-4 & 5	12.43	64.86	22.70
3.	Wanakbori 1-6 & 7	24.49	67.35	8.16
4.	Sikka TPS	29.41	70.59	0.00

GSECL submitted that as stated earlier the mix and Wt. Av. GCV of coal is projected based on the annual contracted quantities as per the fuel linkages for indigenous and washed coal and targeted quantities of imported coal.

Commission's analysis

GSECL has submitted that the mix of coal is projected based on the annual contracted quantities as per the fuel linkages for indigenous and washed coal and targeted quantities of imported coal. In the light of this the Commission considers to adopt the mix of coal as projected by GSECL for the control period.

Accordingly, the Commission approves the mix of coal as given in Table 7.2 below:

Table 7.2: Approved percentage of mix of coal for the control period FY 2011-12 to FY 2015-16

(%)							
Sr. No.	Power station	Indigenous coal		Washed coal		Imported coal	
		As projected by GSECL	As approved	As projected by GSECL	As approved	As projected by GSECL	As approved
1	Ukai (1-5)	26.41	26.41	73.59	73.59	0.00	0.00
2	Gandhinagar 1-4 & 5	12.43	12.43	64.86	64.86	22.70	22.70
3	Wanakbori 1-6 & 7	24.49	24.49	67.35	67.35	8.16	8.16
4	Sikka TPS	29.41	29.41	70.59	70.59	0.00	0.00

7.1.2 Wt. Av. Gross Calorific Value (GCV) of fuel

GSECL projected the Wt. Av. GCV of different fuels (as fed into the boiler in the case of coal stations), for the control period FY 2011-12 to FY 2015-16, as given in the Table 7.3 below:



**Table 7.3 : Projected Wt. Av. GCV of different fuels for the control period
FY 2011-12 to FY 2015-16**

Sr. No.	Power station	For all the years from FY 2011-12 to FY 2015-16		
		Wt. Av. GCV of coal / lignite (k.cal/kg.)	Wt. Av. GCV of Secondary fuel (k.cal/lit.)	Wt. Av. GCV of gas (k.cal/scm)
1.	Ukai (1-5)	3950	10500	-
2.	Gandhinagar 1-4 & 5	4325	10500	-
3.	Wanakbori 1-6 & 7	3950	10500	-
4.	Sikka TPS	3850	10500	-
5.	KLTPS 1-3 (Lignite)	2700	10555	-
6.	KLTPS 4 (Lignite)	2700	10900	-
7.	Dhuvaran Gas 1	-	-	9500
8.	Dhuvaran Gas 2	-	-	9500
9.	Utran Gas	-	-	9500
10.	Utran extension	-	-	9500

It is submitted by GSECL that the Wt. Av. GCV of coal is projected based on the annual contracted quantities as per the fuel linkage for indigenous coal and washed coal and targeted quantities of imported coal, assuming average GCV treating the mix as one grade.

It is stated that the Wt. Av. GCV of secondary fuel oil and gas received during 2009-10 is considered for projection.

Commission's Analysis

The Commission decides to arrive at the fuel costs based on the actual GCVs of lignite, secondary fuel oil and gas, obtained during FY 2009-10.

In the case of coal stations GSECL projected a different mix of indigenous and washed and imported coal for different stations (than actually obtained during FY 2009-10). As discussed in para 7.1.1 above the submission of GSECL that the projected mix of coal is based on the annual contracted quantities as per the fuel linkage for indigenous coal, washed coal and targeted quantities of imported coal is accepted.

GSECL also submitted that the projected Wt.Av. GCVs of individual coal (indigenous, washed and imported coal) are also based on the annual contracted quantities as per the fuel linkages for indigenous coal and washed coal and targeted quantities of imported coal.



The Commission decides to adopt the Wt. Av. GCVs of the mix of coal as fed into the boiler, based on the GCVs of indigenous, washed and imported coal as actually obtained during FY 2009-10 while adopting the mix of coal as projected by GSECL and approved by the Commission in para 7.1.1.

Accordingly the Wt. Av. GCV of coal for different coal stations for the control period FY 2011-12 to FY 2015-16 is computed as given in the Table 7.4 below:

Table 7.4 : Computation of Wt. Av. GCV of coal for the control period FY 2011 - 12 to FY 2015-16

Thermal station	Coal mix (%) as projected by GSECL and accepted by the Commission and to be adopted for the control period			GCV of coal (Kcal/Kg) as actually obtained during FY 2009-10 and to be adopted for the control period			Wt Av GCV of the mix to be adopted for the control period FY 2011-12 to 2015-16
	Indigenous	Washed	Imported	Indigenous	Washed	Imported	
Ukai I-5	26.41	73.59	0.00	3855	3994	0	3957
Gandhinagar 1-4 & 5	12.43	64.86	22.70	3935	4026	5539	4358
Wanakbori 1-6 & 7	24.49	67.35	8.16	3335	3939	5348	3906
Sikka	29.41	70.59	0.00	3581	3819	4464	3749

Summing up the Wt. Av. GCV of different fuels for different stations approved for the control period FY 2011-12 to FY 2015-16 are as given in the Table 7.5 below:

Table 7.5 : Wt. Av. GCV of different fuel approved for the control period FY 2011-12 to FY 2015-16

Sr. No.	Power station	For all the years from FY 2011-12 to FY 2015-16		
		Wt. Av. GCV of coal / lignite (k.cal/kg.)	Wt. Av. GCV of Secondary fuel (k.cal/lit.)	Wt. Av. GCV of gas (k.cal/scm)
1.	Ukai (1-5)	3957	10469	-
2.	Gandhinagar 1-4 & 5	4358	10509	-
3.	Wanakbori 1-6 & 7	3906	10526	-
4.	Sikka TPS	3749	10269	-
5.	KLTPS 1-3 (Lignite)	2542	10603	-
6.	KLTPS 4 (Lignite)	2542	10900	-
7.	Dhuvaran Gas 1	-	-	9606
8.	Dhuvaran Gas 2	-	-	9700
9.	Utran Gas	-	-	9460
10.	Utran extension	-	-	9208



Any difference in the fuel costs due to the variation in the above values is to be passed on to the consumers based on the approved FPPPA formula.

7.1.3 Wt. Av. Prices of Fuel

GSECL projected the Wt. Av. prices of coal for different stations for the control period as given in Table 7.6 below:

Table 7.6 : Projected Wt. Av. prices of coal for the control period FY 2011-12 to 2015-16

Stations	2011-12			2012-13		
	Indigenous coal	Washed coal	Imported coal	Indigenous coal	Washed coal	Imported coal
Ukai (1-5)	2389	2540	-	2508	2667	-
Gandhinagar (1-4) & 5	3347	2774	7509	3515	2912	7884
Wanakbori 1-6	3245	2827	7358	3408	2968	7726
Sikka	3677	3127	-	3861	3284	-
KLTPS (1-3) & 4	960 (Lignite)	-	-	1008 (Lignite)	-	-

(Rs./MT)

2013-14			2014-15			2015-16		
Indigenous coal	Washed coal	Imported coal	Indigenous coal	Washed coal	Imported coal	Indigenous coal	Washed coal	Imported coal
2634	2801	-	2765	2941	-	2904	3088	-
3690	3058	8279	3875	3211	8693	4069	3371	9127
3578	3117	8132	3757	3273	8518	3945	3436	8943
4054	3448	-	4257	3620	-	4470	3801	-
1058	-	-	1111	-	-	1166	-	-

GSECL stated that the prices of coal are projected based on the annual contracted quantities of indigenous, washed coal and targeted quantities of imported coal and also with an escalation factor of 5% each year.

GSECL projected the Wt. Av. cost of secondary fuel oil for different stations for the control period as given in Table 7.7 below:

Table 7.7 : Projected Wt. Av. price of secondary fuel oil for the control period FY 2011-12 to 2015-16

Sr. No.	Power station	(Rs./KI)				
		2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai	31827	32782	33765	34778	35822
2.	Gandhinagar (1-4) & 5	29175	30050	30951	31880	32836
3.	Wanakbori (1-6) & 7	29175	30050	30951	31880	32836
4.	Sikka	35010	36060	37142	38256	39404
5.	KLTPS 1-3	36071	37153	38267	39415	40498
6.	KLTPS 4	47741	49173	50648	52167	53732



GSECL projected Wt. Av. prices of gas for different gas stations for the control period, as given in Table 7.8 below:

Table 7.8 : Projected Wt . Av. price of gas for the control period FY 2011-12 to 2015-16

Sr. No.	Power station	(Rs/SCM)				
		2011-12	2012-13	2013-14	2014-15	2015-16
1.	Dhuvaran Gas 1	15.00	16.00	17.00	18.00	20.00
2.	Dhuvaran Gas 2	13.74	14.70	15.73	16.83	18.01
3.	Utran Gas	14.88	15.93	17.04	18.23	19.51
4.	Utran Extension	13.74	14.70	15.73	16.83	18.01

It is submitted by GSECL that the prices of secondary fuel and gas projected above are based on the price trends observed in the recent past.

Commission's Analysis

It is decided to take into consideration the actuals of prices of different fuels, as obtained during the FY 2009-10, for the control period which are reproduced in the Table 7.9 below:

Table 7.9: Approved Wt. Av. Price per unit of different fuels for control period FY 2011-12 to FY 2015-16

Sr. No.	Power stations	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/Kl)
14.	Ukai (1-5)	2042	2186				25775
15.	Gandhinagar (1-4)	3033	2500	5696			25063
16.	Gandhinagar- 5	3039	2498	5791			25063
17.	Wanakbori 1-6 TPS	2853	2469	5474			26053
18.	Wanakbori 7 TPS	2846	2465	5429			26053
19.	Sikka TPS	3267	2734	4577			33352
20.	KLTPS 1-3				730		33560
21.	KLTPS 4				730		41155
22.	Dhuvaran (Gas 1)					11.52	
23.	Dhuvaran (Gas 2)					11.52	
24.	Utran (Gas)					10.00	
25.	Utran Extension					10.00	

The Commission decides to arrive at the fuel cost for the control period based on the cost parameters approved, as given in the Tables 7.2, 7.5 and 7.9. Any difference in



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

the fuel cost due to variation in cost parameters is to be passed on to the consumers as per the approved FPPPA formula.

7.1.4 Performance Parameters

The performance parameters as approved in chapter 6 for the control period are to be adopted for arriving at the fuel cost. The performance parameters approved in chapter 6 are reproduced in Table 7.10 below:

Table 7.10 : Approved performance parameters for control period FY 2011-12 to FY 2015-16

Stations	PAF					PLF					Auxiliary consumption (%)				
	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
Ukai (1-5)	75	75	75	75	75	75	75	75	75	75	9.00	9.00	9.00	9.00	9.00
Gandhinagar (1-4)	79	79	79	79	79	79	79	79	79	79	10.00	10.00	10.00	10.00	10.00
Gandhinagar 5*	80	80	80	80	80	85	85	85	85	85	9.00	9.00	9.00	9.00	9.00
Wanakbori 1 6 TPS	85	85	85	85	85	85	85	85	85	85	9.00	9.00	9.00	9.00	9.00
Wanakbori 7 TPS*	80	80	80	80	80	85	85	85	85	85	9.00	9.00	9.00	9.00	9.00
Sikka TPS	75	75	75	75	75	68	68	71	71	71	11.00	11.00	11.00	11.00	11.00
KLTPS 1-3	75	75	75	75	75	66	75	75	75	75	12.00	12.00	12.00	12.00	12.00
KLTPS 4	80	80	80	80	80	75	75	75	75	75	12.00	12.00	12.00	12.00	12.00
Dhuvaran (Gas 1)	80	80	80	80	80	80	80	80	80	80	3.00	3.00	3.00	3.00	3.00
Dhuvaran (Gas 2)	85	85	85	85	85	80	80	77	80	80	3.00	3.00	3.00	3.00	3.00
Utran (Gas)*	80	80	80	80	80	80	80	80	80	80	4.00	4.00	4.00	4.00	4.00
Utran Extension *	80	80	80	80	80	80	80	80	80	80	3.00	3.00	3.00	3.00	3.00
Hydro Stations															
Ukai	80	80	80	80	80	13	13	13	13	13	0.70	0.70	0.70	0.70	0.70
Kadana	80	80	80	80	80	6	6	6	6	6	1.19	1.19	1.19	1.19	1.19

* PPA governed stations.

Table 7.10 (Contd.)

Stations	Heat Rate (Kcal/kWh)					Specific Oil Consumption (ml/kWh)					Transit loss of coal (%)				
	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
Ukai (1-5)	2770	2765	2760	2755	2750	2.00	2.00	2.00	2.00	2.00	0.80	0.80	0.80	0.80	0.80
Gandhinagar (1-4)	2782	2782	2782	2782	2782	1.50	1.50	1.50	1.50	1.50	0.80	0.80	0.80	0.80	0.80
Gandhinagar- 5*	2460	2460	2460	2460	2460	3.50	3.50	3.50	3.50	3.50	0.80	0.80	0.80	0.80	0.80
Wanakbori 1-6 TPS	2625	2625	2625	2625	2625	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	0.80	0.80
Wanakbori 7 TPS*	2460	2460	2460	2460	2460	3.5	3.5	3.5	3.5	3.5	0.80	0.80	0.80	0.80	0.80



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Stations	Heat Rate (Kcal/kWh)					Specific Oil Consumption (ml/kWh)					Transit loss of coal (%)				
	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
Sikka TPS	3040	3035	3030	3025	3020	4.00	4.00	4.00	4.00	4.00	0.80	0.80	0.80	0.80	0.80
KLTPS 1-3	3300	3300	3300	3300	3300	3.00	3.00	3.00	3.00	3.00	0.20	0.20	0.20	0.20	0.20
KLTPS 4	3000	3000	3000	3000	3000	3.00	3.00	3.00	3.00	3.00	0.20	0.20	0.20	0.20	0.20
Dhuvaran (Gas 1)	1950	1950	1950	1950	1950	-	-	-	-	-	-	-	-	-	-
Dhuvaran (Gas 2)	1950	1950	1950	1950	1950	-	-	-	-	-	-	-	-	-	-
Utran (Gas)*	2150	2150	2150	2150	2150	-	-	-	-	-	-	-	-	-	-
Utran Extension *	1850	1850	1850	1850	1850	-	-	-	-	-	-	-	-	-	-
Hydro stations															
Ukai	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kadana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The fuel cost for the control period FY 2011-12 to FY 2015-16 is arrived at based on the performance and cost parameters approved as indicated above.

7.1.5 Fuel Costs

The station-wise approved fuel costs for the control period, based on the decisions of the Commission in the earlier paras are given in Table 7.11 below:

Table 7.11 : Approved Fuel Costs for the control period FY 2011-12 to 2015-16 along with projected costs

(Rs. crore)

Sr. No.	Power station	2011-12		2012-13		2013-14		2014-15		2015-16	
		Proj.	App.	Proj.	App.	Proj.	App.	Proj.	App.	Proj.	App.
1	Ukai (1-5)	1048	871	1096	867	1131	866	1199	864	1236	865
2	Gandhinagar (1-4)	1177	979	1234	976	1294	976	1374	976	1423	979
3	Gandhinagar- 5*	340	304	356	303	374	303	392	303	412	304
4	Wanakbori 1-6 TPS	1990	1805	2087	1800	2189	1800	2296	1800	2410	1805
5	Wanakbori 7 TPS*	315	289	330	288	347	288	364	288	381	289
6	Sikka TPS	390	353	408	352	447	367	468	366	490	367
7	KLTPS 1-3 (Lignite)	170	129	202	147	211	147	222	147	232	147
8	KLTPS 4 (Lignite)	68	48	70	48	73	48	75	48	79	48
9	Dhuvaran Gas 1	228	175	244	175	261	175	280	175	299	175
10	Dhuvaran Gas 2	222	183	238	182	245	176	272	182	291	183
11	Utran Gas	319	216	341	215	365	215	390	215	418	216
12	Utran extension	702	529	751	528	804	528	860	528	921	529
	Total	6969	5882	7357	5881	7741	5888	8192	5893	8592	5907



7.1.6 Fuel costs per unit (kWh)

The fuel costs of different stations per unit gross and net generation as approved by the Commission are given in Table 7.12 below:

Table 7.12 : Approved Fuel costs per unit for the control period FY 2011-12 to 2015-16

(Rs./kWh)

Sr. No.	Name of the Station	2011-12		2012-13		2013-14		2014-15		2015-16	
		Fuel Cost per unit Gross	Fuel cost per unit Net	Fuel Cost per unit Gross	Fuel cost per unit Net	Fuel Cost per unit Gross	Fuel cost per unit Net	Fuel Cost per unit Gross	Fuel cost per unit Net	Fuel Cost per unit Gross	Fuel cost per unit Net
1	Ukai TPS 1-5	1.556	1.710	1.553	1.707	1.550	1.704	1.548	1.701	1.545	1.698
2	Gandhinagar 1-4	2.137	2.375	2.137	2.375	2.137	2.375	2.137	2.375	2.137	2.375
3	Gandhinagar 5	1.939	2.130	1.939	2.130	1.939	2.130	1.939	2.130	1.939	2.130
4	Wanakbori 1-6	1.918	2.108	1.918	2.108	1.918	2.108	1.918	2.108	1.918	2.108
5	Wanakbori 7	1.840	2.022	1.840	2.022	1.840	2.022	1.840	2.022	1.840	2.022
6	Sikka TPS	2.464	2.769	2.461	2.765	2.457	2.760	2.453	2.756	2.449	2.752
7	KLTPS 1-3	1.039	1.181	1.039	1.181	1.039	1.181	1.039	1.181	1.039	1.181
8	KLTPS 4	0.976	1.109	0.976	1.109	0.976	1.109	0.976	1.109	0.976	1.109
9	Dhuvaran Gas 1	2.339	2.411	2.339	2.411	2.339	2.411	2.339	2.411	2.339	2.411
10	Dhuvaran Gas 2	2.316	2.388	2.316	2.388	2.316	2.388	2.316	2.388	2.316	2.388
11	Utran Gas	2.273	2.367	2.273	2.367	2.273	2.367	2.273	2.367	2.273	2.367
12	Utran Extension	2.009	2.071	2.009	2.071	2.009	2.071	2.009	2.071	2.009	2.071

7.1.7 Fuel Cost per G. Calories

The fuel cost approved per giga calories (G.cal) for each station for the control period based on 2009-10 fuel prices for 2011-12 to 2015-16 is given in Table 7.13 below:

Table 7.13 : Approved fuel cost per G.Cal for control period for FY 2011-12 to 2015-16

Rs. /G.Cal

Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	562	562	562	562	562
2.	Gandhinagar (1-4)	768	768	768	768	768
3.	Gandhinagar- 5*	788	788	788	788	788
4.	Wanakbori 1-6 TPS	731	731	731	731	731
5.	Wanakbori – 7 TPS*	748	748	748	748	748
6.	Sikka TPS	811	811	811	811	811
7.	KLTPS-1-3 (Lignite)	315	315	315	315	315
8.	KLTPS 4 (Lignite)	325	325	325	325	325
9.	Dhuvaran Gas 1	1199	1199	1199	1199	1199
10.	Dhuvaran Gas 2	1188	1188	1188	1188	1188
11.	Utran Gas	1057	1057	1057	1057	1057
12.	Utran extension	1086	1086	1086	1086	1086



The detailed calculations for each station for arriving at the above costs are given in Annexures 7.1 to 7.12.

7.2 Capital Expenditure

Petitioner's submission

GSECL has projected the capital expenditure to the extent of Rs. 1373 crore for the control period FY 2011-12 to 2015-16. The projected Capex of Rs. 1025 crore is towards major R&M and Rs. 247 crore is towards minor R&M and the balance of Rs. 101 crore is towards other capital works and need based R&M.

The actual Capex projections for the control period from FY 2011-12 to FY 2015-16 submitted by GSECL in the petition are given plant-wise and year-wise in the Table 7.14 below:

Table 7.14: Capital Expenditure Projected by GSECL for the control period FY 2011- 12 to 2015-16

(Rs. crore)						
Sr.No.	Station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	-	-	-	-	-
	Major R&M	50.00	300.00	150.00	-	-
	Minor R&M	11.00	5.00	-	7.00	6.00
	Other capital	9.00	-	-	-	-
2.	Gandhinagar (1-4)	-	-	-	-	-
3.	Gandhinagar- 5*	-	-	-	-	-
4.	Wanakbori 1-6 TPS	-	-	-	-	-
	Major R&M	53.00	300.00	172.00	-	-
	Minor R&M	59.00	58.00	59.00	10.00	10.00
	Other capital	8.00	-	-	-	-
5.	Wanakbori 7 TPS*	-	-	-	-	-
6.	Sikka TPS	-	-	-	-	-
	Major R&M	-	-	-	-	-
	Minor R&M	1.00	-	-	1.00	2.00
	Other capital	13.00	-	-	-	-
7.	KLTPS 1-3	-	-	-	-	-
	Major R&M	-	-	-	-	-
	Minor R&M	5.00	-	-	1.00	1.00
	Other capital	26.00	14.00	-	-	-
8.	KLTPS 4	-	-	-	-	-
9.	Dhuvaran (Oil)	-	-	-	-	-
10.	Dhuvaran (Gas 1)*	-	-	-	-	-
11.	Dhuvaran (Gas 2)	-	-	-	-	-
12.	Utran (Gas)*	-	-	-	-	-
	Major R&M	-	-	-	-	-
	Minor R&M	-	-	-	-	-
	Other capital	22.00	1.00	8.00	-	-
13.	Utran Extension *	-	-	-	-	-
14.	Ukai Hydro	-	-	-	-	-



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr.No.	Station	2011-12	2012-13	2013-14	2014-15	2015-16
	Major R&M	-	-	-	-	-
	Minor R&M	9.00	-	-	1.00	1.00
	Other capital	-	-	-	-	-
15.	Kadana Hydro	-	-	-	-	-
	Total	266.00	678.00	389.00	20.00	20.00
	Funding					
	Debt	229.00	558.00	318.00	18.00	18.00
	Equity	37.00	128.00	71.00	2.00	2.00

- (a) The plant-wise proposed Capex includes major and minor R&M and other capital expenditure. GSECL submitted that in most cases, the funding for Major R&M has been in the Debt : Equity ratio of 80:20 and for minor R&M the funding is in the Debt : Equity ratio of 90:10.
- (b) It is mentioned that CEA identified Wanakbori Unit 1-2 and 3 and Ukai unit 3,4 and 5 for major R&M under “Power to All Mission 2012. It is further stated that due to non-satisfactory performance of BHEL in carrying out major R&M in case of Ukai 1&2, GSECL has decided to undertake need based R&M.
- (c) It is further submitted by GSECL that Government of India has signed an MOU with Japan Coal Energy Centre (J-Coal) for identifying areas of concern through conducting different studies for making various units energy efficient and also up-rating the capacity when feasible. Wanakbori Unit-1 has been taken up for detailed study by J-Coal. GSECL has stated that though the cost of such works can be estimated only after the study of detailed report, but it believes that the cost should be in the range of Rs. 1.5 crore per MW. (This is considered under MYT petition for Ukai 3&4 and Wanakbori 1&2 units aggregating to 820 MW).

7.2.1 Capital Expenditure for New Projects

GSECL has submitted that in addition to the major and minor R&M capital expenditure mentioned above, Capex is also envisaged for new generation projects, which are currently in their primary stage.

The proposed Capex and present status for the new projects is given in the Table-7.15 below:



Table 7.15: Capital Expenditure for New Projects

Sr. No.	Name of the project	Capacity in MW	Estimated cost (Rs. crore)	Scheduled COD	Present status
Under execution					
1.	Ukai TPS -6	500	2087.14**	2011-12	EPC order placed with BHEL. All clearances received. EPC progress till June' 10 is 37.33%.
2.	Sikka TPS-3&4	500	2054.00	2012-13	EPC order placed with BHEL. All clearances received. EPC progress till June' 10 is 30.23%.
			4141.14		
Under various stages of planning / implementation					
3.	Sinor Power Plant	1600	8000	2016-17	DPR received. First season EIA study report received. Land acquisition application submitted to Collector, Vadodara. Presentation made to MoEF expert committee for ToR.
4.	Dahej Power plant	1600	8000	2016-17	Land allotment application submitted to GIDC, Dahej.
5.	Wanakbori - 8	800	4000	2015-16	EC issue is under final stage. All other clearances received. · Offers received for selection of EPC contractor on ICB basis. Technical bid will be opened shortly.
6.	Dhuvaran CCPP 3	395	1575	2013-14	Process for obtaining EC is under progress. Selection for EPC contractor on ICB route is under progress.
7.	Maniyari, Patan	1200	4320	2014-15	Draft feasibility report is received. Preparation of final DPR & EIA report is under process. Payment made for land acquisition. An application submitted to MoEF for ToR.
8.	Bhadodar, Banaskanta	1200	4320	2014-15	Mamlatdar, Tharad has recommended for allotment of Bhadodar land to GSEC L. Order for DPR & EIA study will be issued on firm allotment of land.
	Total		30215		

Note: ** As per EPC order as of now

Rs. 5.00 Cr / MW considered for Thermal Power Station (Sr. No.3 to 5)

Rs. 3.9 Cr / MW considered for Gas based unit at Sr. no. 6

Rs. 3.6 Cr / MW considered for Gas based units (Sr. no. 7 & 8)



7.3 Projected fixed costs for the control period (FY 2011-12 to 2015- 16)

Petitioner's submission

The petitioner has submitted the projections of fixed charges comprising the following components for FY 2011-12 to 2015-16.

- Depreciation
- Interest and finance charges
- Return on equity
- O&M expenses
- Water charges
- Insurance charges
- Interest on working capital
- Tax on income
- SLDC charges

The components of fixed charges mentioned above are discussed in detail in the following paras:

7.3.1 Depreciation

GSECL has projected the depreciation charges plant-wise for the control period FY 2011-12 to FY 2015-16 as detailed in the Table 7.16 below:

Table 7.16: Depreciation projected for FY 2011-12 to FY 2015-16

(Rs. crore)

Sr. No.	Power station	2011-12 (P)	2012-13 (P)	2013-14 (P)	2014-15 (P)	2015-16 (P)
1.	Ukai (1-5)	49	59	70	75	75
2.	Gandhinagar (1-4)	66	66	66	66	66
3.	Gandhinagar- 5*	33	33	33	33	33
4.	Wanakbori 1-6 TPS	74	86	100	107	107
5.	Wanakbori 7 TPS*	32	32	32	32	32
6.	Sikka TPS	30	30	30	30	31
7.	KLTPS 1-3	59	60	60	60	60
8.	KLTPS 4	35	35	35	35	35
9.	Dhuvaran (Gas 1)*	17	17	17	17	17
10.	Dhuvaran (Gas 2)	22	22	22	22	22
11.	Utran (Gas)*	20	20	20	21	21
12.	Utran Extension *	80	80	80	80	80
13.	Ukai Hydro	7	7	7	7	7
14.	Kadana Hydro	15	15	15	15	15
	TOTAL	537	561	588	598	599



GSECL has submitted that depreciation rates have been considered as per the new depreciation rates issued by CERC. The plant-wise depreciation rates adopted by GSECL are detailed in the Table-7.17 below:

Table 7.17: Depreciation Rates projected by GSECL

						(%)
Sr. No.	Station	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16
1.	Ukai (1-5)	5.15	5.15	5.15	5.15	5.15
2.	Gandhinagar (1-4)	5.15	5.15	5.15	5.15	5.15
3.	Gandhinagar 5*	5.00	5.00	5.00	5.00	5.00
4.	Wanakbori 1-6 TPS	5.04	5.04	5.04	5.04	5.04
5.	Wanakbori 7*	5.00	5.00	5.00	5.00	5.00
6.	Sikka TPS	5.17	5.17	5.17	5.17	5.17
7.	KLTPS 1-3	5.13	5.13	5.13	5.13	5.13
8.	KLTPS 4	5.21	5.21	5.21	5.21	5.21
9.	Dhuvaran (Gas 1)*	5.00	5.00	5.00	5.00	5.00
10.	Dhuvaran (Gas 2)	5.14	5.14	5.14	5.14	5.14
11.	Utran Gas*	5.00	5.00	5.00	5.00	5.00
12.	Utran Extension*	6.00	6.00	6.00	6.00	6.00
13.	Ukai Hydro	5.21	5.21	5.21	5.21	5.21
14.	Kadana Hydro	4.80	4.80	4.80	4.80	4.80

Commission's analysis

The depreciation is not estimated / projected in accordance with the clause 17 of CERC (Terms and Conditions of Tariff) Regulations, 2009 and Regulation 35 of GERC Tariff Regulations, 2010. The Regulation 17 of CERC (Terms and Conditions of Tariff) Regulations, 2009 specified 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 depreciation value as on 31st March of the year closing after a period of 12 years from the date of commercial operation shall be spread over the balance useful life of the assets after deducting the cumulative depreciation from the gross value of the assets.

With reference to a query from the Commission, GSECL has clarified in their letter dated 24th January, 2011 that depreciation has been considered as per the CERC (Terms and Conditions of Tariff) Regulations, 2009 and the plant-wise depreciation is projected as per the depreciation rates issued by CERC as given in Table 63 of the petition.

GERC has notified the MYT Regulations, 2011 and the depreciation is to be calculated in accordance with Regulation 40 and the rates specified in Annexure I



(Depreciation Schedule) of these Regulations. The depreciation rates notified now are the same as notified by CERC Regulations, 2009.

The depreciation computed by GSECL station-wise for the control period is verified and found to be in order. The plant-wise year-wise depreciation is given in the table below:

Table 7.18: Depreciation approved for FY 2011-12 to 2015-16

Sr.No	Power Station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	49.16	58.79	70.50	74.55	74.88
2	Gandhinagar (1-4)	66.38	66.38	66.38	66.38	66.38
3	Gandhinagar 5*	32.70	32.70	32.70	32.70	32.70
4	Wanakbori 1-6 TPS	73.53	85.60	100.47	106.55	107.05
5	Wanakbori 7*	31.75	31.75	31.75	31.75	31.75
6	Sikka TPS	30.04	30.40	30.40	30.43	30.50
7	KLTPS 1-3	58.51	59.66	60.02	60.05	60.10
8	KLTPS 4	35.17	35.17	35.17	35.17	35.17
9	Dhuvaran (Gas 1)*	16.50	16.50	16.50	16.50	16.50
10	Dhuvaran (Gas 2)	21.64	21.64	21.64	21.64	21.64
11	Utran Gas*	19.65	20.25	20.50	20.70	20.70
12	Utran Extension*	79.56	79.56	79.56	79.56	79.56
13	Ukai Hydro	7.11	7.35	7.35	7.37	7.42
14	Kadana Hydro	15.07	15.07	15.07	15.07	15.07
15	Dhuvaran (Oil)					
	Total	536.77	560.82	588.02	598.41	599.43

* PPA governed stations

The Commission approves the depreciation charges plant-wise for the control period for FY 2011-12 to FY 2015-16 as detailed in the Table above.

7.3.2 Interest and Finance charges for FY 2011-12 to 2015-16

GSECL has projected the interest and finance charges for the control period FY 2011-12 to FY 2015-16 station-wise as detailed in the Table 7.19 below:

Table 7.19: Proposed Interest and Finance Charges for 2011-12 to 2015-16

(Rs. crore)						
Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	48	59	74	74	67
2.	Gandhinagar (1-4)	39	35	32	28	26
3.	Gandhinagar- 5*	-	-	-	-	-
4.	Wanakbori 1-6 TPS	52	71	92	94	86
5.	Wanakbori 7 TPS*	-	-	-	-	-
6.	Sikka TPS	19	18	16	14	13



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
7.	KLTPS 1-3	41	39	36	32	29
8.	KLTPS 4	41	37	33	30	27
9.	Dhuvaran (Gas 1)*	6	5	5	4	4
10.	Dhuvaran (Gas 2)	12	11	10	9	8
11.	Utran (Gas)*	6	6	6	6	5
12.	Utran Extension *	107	96	87	78	70
13.	Ukai Hydro	5	5	5	4	4
14.	Kadana Hydro	10	9	8	7	6
	TOTAL	387	392	403	380	346

GSECL has submitted that it has considered the weighted average interest rate during the year for the respective plants for determination of interest on loan and 10.5% rate of interest on additional loans proposed to be borrowed during the period from FY 2011-12 to FY 2015-16. Average tenure of additional loan is considered as 10 years. It is stated that additional loans are assumed considering the proposed major and minor R&M expenditure. It is further stated that GSECL has added guarantee charges expected during the year to the projected interest during the control period.

GSECL has requested to approve the interest and finance charges including guarantee charges for each of the station for the control period FY 2011-12 to 2015-16 as projected.

Commission's analysis

The Commission has examined the submission made by GSECL. It is observed that the additional loans proposed for borrowing during the control period FY 2011-12 to FY 2015-16 are in line with the proposed capital expenditure towards R&M of the respective plants.

The Commission has also obtained the weighted average rate of interest on the existing loans plant-wise from GSECL on 24/01/2011 which are given in the Table 7.20 below:

Table 7.20: Plant-wise weighted average interest rate for FY 2009-10 furnished by GSECL

Sr. No.	Power station	FY 2009-10 Actual interest rate (%)
1.	Ukai (1-5)	11.06
2.	Gandhinagar (1-4)	8.96
3.	Gandhinagar- 5*	0.00



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power station	FY 2009-10 Actual interest rate (%)
4.	Wanakbori 1-6 TPS	11.59
5.	Wanakbori 7 TPS*	1.29
6.	Sikka TPS	11.67
7.	KLTPS 1-3	11.05
8.	KLTPS 4	10.23
9.	Dhuvaran (Gas 1)*	9.27
10.	Dhuvaran (Gas 2)	9.40
11.	Utran (Gas)*	9.66
12.	Utran Extension *	12.34
13.	Ukai Hydro	11.64
14.	Kadana Hydro	11.64
15.	Dhuvaran (oil)	11.54

It is observed from the petition that GSECL has proposed the average rate of interest as per the Table above plant-wise on the existing loans and applied 10.5% on the additional loans projected for the proposed Capex. GSECL has assumed the average tenure of additional loan as 10 years and projected the interest and finance charges accordingly.

GERC has notified MYT Regulations, 2011. The Regulation 39.3 specified that repayment for the year during the tariff period from FY 2011-12 to FY 2015-16 shall be deemed to be equal to the depreciation allowed for that year. The year-wise and plant-wise depreciation approved in para 7.3.1 above is taken as repayment of loan in respect of other than PPA governed stations. The Commission has considered rate of interest as given in the table 7.20.

In respect of PPA governed stations, the interest and finance charges projected by GSECL, as per the terms and conditions of PPA, are considered.

The Commission, accordingly approves the interest and finance charges as indicated in the Table 7.21 below:

Table 7.21: Interest and finance charges approved by the Commission for FY 2011-12 to FY 2015-16

(Rs. crore)						
S.N	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	46.72	57.51	70.54	69.49	61.56
2.	Gandhinagar (1-4)	36.18	30.23	24.29	18.34	12.39
3.	Gandhinagar- 5*	-	-	-	-	-
4.	Wanakbori 1-6 TPS	49.81	63.47	80.68	80.27	68.94



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

S.N	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
5.	Wanakbori-7 TPS*	-	-	-	-	-
6.	Sikka TPS	17.15	14.33	10.78	7.29	3.91
7.	KLTPS 1-3	38.43	34.11	28.16	21.58	15.05
8.	KLTPS 4	41.58	37.98	34.38	30.78	27.19
9.	Dhuvaran (Gas 1)*	6.07	5.47	4.91	4.40	3.94
10.	Dhuvaran (Gas 2)	11.67	9.64	7.60	5.57	3.54
11.	Utran (Gas)*	5.84	6.28	6.04	5.80	5.22
12.	Utran Extension*	107.05	96.38	86.75	78.05	70.21
13.	Ukai Hydro	5.17	4.80	3.94	3.14	2.40
14.	Kadana Hydro	9.13	7.38	5.62	3.87	2.12
	TOTAL	374.81	367.57	363.70	328.58	276.45

7.3.3 Return on Equity

Petitioner's submission

GSECL has projected the return on equity for the control period i.e. FY 2011-12 to FY 2015-16 as detailed in the Table 7.22 given below:

Table 7.22 : Return on equity projected for FY 2011-12 to FY 2015-16

(Rs. crore)

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	20	25	31	33	34
2.	Gandhinagar (1-4)	31	31	31	31	31
3.	Gandhinagar- 5*	27	27	27	27	27
4.	Wanakbori 1-6 TPS	53	58	66	69	69
5.	Wanakbori-7 TPS*	26	26	26	26	26
6.	Sikka TPS	20	20	20	20	20
7.	KLTPS 1-3	43	44	44	44	44
8.	KLTPS 4	28	28	28	28	28
9.	Dhuvaran (Gas 1)*	13	13	13	13	13
10.	Dhuvaran (Gas 2)	15	15	15	15	15
11.	Utran (Gas)*	10	10	10	10	10
12.	Utran Extension *	57	57	57	57	57
13.	Ukai Hydro	8	8	8	8	8
14.	Kadana Hydro	28	28	28	28	28
	TOTAL	379	391	404	409	410

GSECL has submitted that return on equity for the control period of FY 2011-12 to FY 2015-16 has been computed on normative basis at 14% for all transferred stations (non PPA based stations) and for new projects in line with GERC Terms and Conditions of Tariff, while ROE has been considered at 13% for the PPA governed stations. GSECL has projected the return on equity taking into consideration the opening equity as on 01/04/2011 based on the APR for 2010-11 and addition to the



equity expected during the control period. The plant-wise opening equity for the control period furnished by GSECL are given in the Table 7.23 below:

Table 7.23: Details of opening equity projected by GSECL for FY 2011-12 to FY 2015-16

		(Rs. crore)					
Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
1.	Ukai (1-5)	136	148	209	239	240	241
2.	Gandhinagar (1-4)	219	219	219	219	219	219
3.	Gandhinagar 5*	206	206	206	206	206	206
4.	Wanakbori 1-6 TPS	367	384	450	490	491	492
5.	Wanakbori 7 TPS*	200	200	200	200	200	200
6.	Sikka TPS	144	146	146	146	146	146
7.	KLTPS 1-3	307	310	312	312	312	312
8.	KLTPS 4	203	203	203	203	203	203
9.	Dhuvaran (Gas 1)*	99	99	99	99	99	99
10.	Dhuvaran (Gas 2)	110	110	110	110	110	110
11.	Utran (Gas)*	80	80	80	80	80	80
12.	Utran Extension *	405	405	405	405	405	405
13.	Ukai Hydro	57	58	58	58	58	58
14.	Kadana Hydro	200	200	200	200	200	200
	Total	2733	2768	2897	2967	2969	2971

Commission's analysis

The Commission has observed that the equity additions proposed for the control period by GSECL are in line with the proposed capital expenditure during the control period towards major and minor R&M works proposed in the Business plan as well as in the petition. They are also in line with the proposed funding and equity.

The ROE for the control period computed plant-wise / year-wise as per the approved rates of equity are given in the Table 7.24 below:

Table 7.24: Return on equity approved by the Commission for FY 2011-12 to FY 2015-16

		(Rs. crore)				
Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	19.88	24.99	31.36	33.53	33.67
2.	Gandhinagar (1-4)	30.66	30.66	30.66	30.66	30.66
3.	Gandhinagar- 5*	26.78	26.78	26.78	26.78	26.78
4.	Wanakbori 1-6 TPS	52.57	58.38	65.80	68.67	68.81
5.	Wanakbori 7 TPS*	26.00	26.00	26.00	26.00	26.00
6.	Sikka TPS	20.30	20.44	20.44	20.44	20.44
7.	KLTPS 1-3	43.19	43.54	43.68	43.68	43.68
8.	KLTPS 4	28.42	28.42	28.42	28.42	28.42
9.	Dhuvaran (Gas 1)*	12.87	12.87	12.87	12.87	12.87
10.	Dhuvaran (Gas 2)	15.40	15.40	15.40	15.40	15.40



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
11.	Utran (Gas)*	10.40	10.40	10.40	10.40	10.40
12.	Utran Extension *	56.70	56.70	56.70	56.70	56.70
13.	Ukai Hydro	8.05	8.12	8.12	8.12	8.12
14.	Kadana Hydro	28.00	28.00	28.00	28.00	28.00
	Total	379.22	390.70	404.63	409.67	409.95

The Commission approves the ROE as detailed in the Table-7.24 above for the control period for FY 2011-12 to FY 2015-16.

7.3.4 Operation and Maintenance (O&M) Expenses

Petitioner's submission

GSECL has projected the O&M expenses for the control period for FY 2011-12 to FY 2015-16 as detailed in the Table 7.25 below:

Table 7.25: Proposed O&M Expenses for FY 2011-12 to 2015-16

(Rs. crore)						
Sr. No.	Power Station	2011-12 (Projected**)	2012-13 (Projected**)	2013-14 (Projected**)	2014-15 (projected**)	2015-16 (Projected**)
1	Ukai (1-5)	131	135	140	145	150
2	Gandhinagar (1-4)	76	79	83	87	91
3	Gandhinagar 5*	25	26	27	28	29
4	Wanakbori 1-6 TPS	160	167	175	182	190
5	Wanakbori 7*	25	26	27	28	29
6	Sikka YPS	33	35	36	37	39
7	KLTPS 1-3	32	33	35	36	37
8	KLTPS 4	12	12	12	13	13
9	Dhuvaran (Gas 1)*	20	16	15	21	18
10	Dhuvaran (Gas 2)	35	40	38	40	46
11	Utran Gas*	13	13	14	14	15
12	Utran Extension*	45	46	48	49	51
13	Ukai Hydro	16	16	17	17	18
14	Kadana Hydro	15	15	16	16	17
	Total	637	661	682	714	742

** O&M Charges are exclusive of Water Charges

GSECL has submitted that O&M expenses for the control period of FY 2011-12 to FY 2015-16 have been computed on normative basis. The O&M expenses consist of Employee cost, A&G expenses, R&M expenses and Water charges. It is submitted by GSECL that in Gujarat the actual water charges for FY 2009-10 are highest i.e.



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Rs. 97 crore which is almost 18% of normative O&M approved for GSECL stations. GSECL has therefore proposed to claim water charges separately based on the following methodology.

Methodology proposed by GSECL for computing O&M expenses:

$$\text{O\&M Charges} = \text{Normative O\&M Charges} - \text{Actual Water Charges} \\ \text{(two years average)}$$

For the purpose of computation of O&M expenses, GSECL has determined average water charges for the last two years i.e. 2007-08 and 2008-09 and this has been deducted from the normative O&M expenses. In addition, GSECL has considered e-Urja charges of Rs. 12 crore over the normative O&M expenses and Rs. 75 crore under provision of Sixth Pay Commission impact.

The year-wise/plant-wise O&M expenses as computed by GSECL are given in the Tables 7.26 below:

Table 7.26: O&M Expenses Projected for FY 2011-12

(Rs. crore)

Sr. No.	Station	Unit (MW)	Water charges Rs. lakhs / MW (Two years average)	Rs. in lakhs/MW (Normative)	Rs. in lakhs/MW (Considered)	O&M expenses	e-Urja charges	Provision for sixth Pay Commission	O&M charges for FY 2011-12 incl. e-Urja & Impact of 6th Pay Comm.
1	Ukai (1-5)	850	-	13.69	13.69	116	2	12	131
2	Gandhinagar (1-4)	660	3.86	13.69	9.83	65	2	9	76
4	Gandhinagar 5*	210	2.2	22	0	3	25		
4	Wanakbori 1-6 TPS	1,260	2.62	13.69	11.07	139	3	18	160
5	Wanakbori 7*	210	2.57	21	0	3	25		
6	Sikka TPS	240	1.51	13.69	12.18	29	1	3	33
7	KLTPS 1-3	215	0.43	13.69	13.26	29	0	3	32
8	KLTPS 4	75	-	13.69	13.69	10	0	1	12
9	Dhuvaran (Gas 1)*#	107	1.48	18	0	2	20		
10	Dhuvaran (Gas 2)#	112	1.4	10.26	8.86	34	0	2	35
11	Utran Gas*	135	0.83	11	0	2	13		
12	Utran Extension*	375	-	10.26	10.26	38	1	5	45
13	Ukai Hydro	305	-	3.56	11	1	4	16	
14	Kadana Hydro	242	-	4.54	11	1	3	15	
15	Dhuvaran (Oil)	220							
	Total	5,216				554	11	72	637

Including Long Term Service Agreement charges of Rs. 9.98 Crores for Dhuvaran (Gas 1) & Rs. 23.55 Crores for Dhuvaran (Gas 2).



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.27: O&M Expenses Projected for FY 2012-13

(Rs. crore)

Sr. No.	Station	Unit (MW)	Water charges Rs. lakhs / MW (Two years average)	Rs. in lakhs/ MW (Normative)	Rs. in lakhs/ MW (Considered)	O&M expenses	e-Urja charges	Provision for 6th Pay Comm.	O&M charges for FY 2011-12 incl. e-urja & Impact of 6th Pay Comm.
1	Ukai (1-5)	850	-	14.24	14.24	121	2	12	135
2	Gandhinagar (1-4)	660	3.86	14.24	10.38	68	2	9	79
4	Gandhinagar 5*	210	2.2	23	0	3	26		
4	Wanakbori 1-6 TPS	1,260	2.62	14.24	11.61	146	3	18	167
5	Wanakbori 7*	210	2.57	22	0	3	26		
6	Sikka TPS	240	1.51	14.24	12.73	31	1	3	35
7	KLTPS 1-3	215	0.43	14.24	13.81	30	0	3	33
8	KLTPS 4	75	-	14.24	14.24	11	0	1	12
9	Dhuvaran (Gas 1)*#	107	1.48	14	0	2	16		
10	Dhuvaran (Gas 2)#	112	1.4	10.67	9.27	38	0	2	40
11	Utran Gas*	135	0.83			11	0	2	13
12	Utran Extension*	375	-	10.67	10.67	40	1	5	46
13	Ukai Hydro	305	-		3.7	11	1	4	16
14	Kadana Hydro	242	-		4.72	11	1	3	15
15	Dhuvaran (Oil)	220							
	Total	5216				578	11	72	661

Including Long Term Service Agreement charges of Rs. 5.89 Crores for Dhuvaran (Gas 1) & Rs. 27.97 Crores for Dhuvaran (Gas 2).

Table 7.28: O&M Expenses Projected for FY 2013-14

(Rs. crore)

Sr. No.	Station	Unit (MW)	Water charges Rs. lakhs / MW (Two years average)	Rs. in lakhs/MW (Normative)	Rs. in lakhs/MW (Considered)	O&M expenses	eurja charges	Provision for 6th Pay Comm.	O&M charges for FY 2011-12 incl. e-urja & Impact of 6th Pay Comm.
1	Ukai (1-5)	850	-	14.81	14.81	126	2	12	140
2	Gandhinagar (1-4)	660	3.86	14.81	10.95	72	2	9	83
4	Gandhinagar 5*	210	2.2			23	0	3	27
4	Wanakbori 1-6 TPS	1,260	2.62	14.81	12.18	154	3	18	175
5	Wanakbori 7*	210	2.57			23	0	3	27
6	Sikka TPS	240	1.51	14.81	13.3	32	1	3	36
7	KLTPS 1-3	215	0.43	14.81	14.38	31	0	3	35
8	KLTPS 4	75	-	14.81	14.81	11	0	1	12
9	Dhuvaran (Gas 1)*#	107	1.48			14	0	2	15
10	Dhuvaran (Gas 2)#	112	1.4	11.1	9.7	36	0	2	38
11	Utran Gas*	135	0.83			11	0	2	14
12	Utran Extension*	375	-	11.1	11.1	42	1	5	48
13	Ukai Hydro	305	-	3.85		12	1	4	17
14	Kadana Hydro	242	-	4.91		12	1	3	16
15	Dhuvaran (Oil)	220							
	Total	5216				598	11	72	682

Including Long Term Service Agreement charges of Rs. 4.78 Crores for Dhuvaran (Gas 1) & Rs. 25.06 Crores for Dhuvaran (Gas 2).



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.29: O&M Expenses Projected for FY 2014-15

									(Rs. crore)
Sr. No.	Station	Unit (MW)	Water charges Rs. lakhs / MW (Two years average)	Rs. in lakhs/MW (Normative)	Rs. in lakhs/MW (Considered)	O&M expenses	e-Urja charges	Provision for 6th Pay Comm.	O&M charges for FY 2011-12 incl. e-Urja & Impact of 6th Pay Comm.
1	Ukai (1-5)	850	-	15.4	15.4	131	2	12	145
2	Gandhinagar (1-4)	660	3.86	15.4	11.54	76	2	9	87
4	Gandhinagar 5*	210			2.2	24	0	3	28
4	Wanakbori 1-6 TPS	1,260	2.62	15.4	12.78	161	3	18	182
5	Wanakbori 7*	210			2.57	24	0	3	28
6	Sikka TPS	240	1.51	15.4	13.89	33	1	3	37
7	KLTPS 1-3	215	0.43	15.4	14.97	32	0	3	36
8	KLTPS 4	75	-	15.4	15.4	12	0	1	13
9	Dhuvaran (Gas 1)*#	107	1.48			19	0	2	21
10	Dhuvaran (Gas 2)#	112	1.4	11.54	10.14	38	0	2	40
11	Utran Gas*	135	0.83			12	0	2	14
12	Utran Extension*	375	-	11.54	11.54	43	1	5	49
13	Ukai Hydro	305	-		4	12	1	4	17
14	Kadana Hydro	242	-		5.11	12	1	3	16
15	Dhuvaran (Oil)	220							
	Total	5216				630	11	72	714

Including Long Term Service Agreement charges of Rs. 9.74 Crores for Dhuvaran (Gas 1) & Rs. 26.50 Crores for Dhuvaran (Gas 2).

Table 7.30: O&M Expenses Projected for FY 2015-16

									(Rs. crore)
Sr.No.	Station	Unit (MW)	Water charges Rs. lakhs / MW (Two years average)	Rs. in lakhs/MW (Normative)	Rs. in lakhs/MW (Considered)	O&M expenses	e-Urja charges	Provision for sixth Pay Comm.	O&M charges for FY 2011-12 incl. e-Urja & Impact of 6th Pay Comm.
1	Ukai (1-5)	850	-	16.01	16.01	136	2	12	150
2	Gandhinagar (1-4)	660	3.86	16.01	12.15	80	2	9	91
4	Gandhinagar 5*	210	2.2			25	0	3	29
4	Wanakbori 1-6 TPS	1,260	2.62	16.01	13.39	169	3	18	190
5	Wanakbori 7*	210	2.57			25	0	3	29
6	Sikka TPS	240	1.51	16.01	14.51	35	1	3	39
7	KLTPS 1-3	215	0.43	16.01	15.59	34	0	3	37
8	KLTPS 4	75	-	16.01	16.01	12	0	1	13
9	Dhuvaran (Gas 1)*#	107	1.48			16	0	2	18
10	Dhuvaran (Gas 2)#	112	1.4	12	10.6	44	0	2	46
11	Utran Gas*	135	0.83			12	0	2	15
12	Utran Extension*	375	-	12	12	45	1	5	51
13	Ukai Hydro	305	-		4.17	13	1	4	18
14	Kadana Hydro	242	-		5.31	13	1	3	17
15	Dhuvaran (Oil)	220							
	Total	5216				659	12		742

Including Long Term Service Agreement charges of Rs. 6.62 Crores for Dhuvaran (Gas 1) & Rs. 31.80 Crores for Dhuvaran (Gas 2).



Commission's Analysis

The Commission has examined the O&M expenses for control period submitted by GSECL. GSECL has projected the O&M charges based on existing GERC (Terms and Conditions for Determination of Tariff) Regulations, 2005. These Regulations specified the O&M expenses (Rs. lakhs / MW) covered from FY 2004-05 to FY 2008-09 with an annual escalation of 4%. From these normative working expenses the utility has deducted the average water charges (actual) for the years 2007-08 and 2008-09 and arrived at the working expenses Rs. lakh / MW. GSECL has computed the O&M charges on normative basis excluding the water charges for each station and then e-Urja added the charges and the provision for the Sixth Pay Commission impact, as the normative O&M expenses specified in the GERC Tariff Regulations, 2005 did not include the Sixth Pay Commission impact of Employee cost.

GSECL has projected the O&M charges in respect of PPA governed stations as per PPA conditions and for the other stations as per the norms specified in the GERC Tariff Regulations, 2005.

The Commission has obtained the actual O&M expenses incurred by GSECL for the years 2007-08, 2008-09 and 2009-10. O&M expenses (actual) average for the above three years have been worked out excluding the water charges. The impact of increase in employee cost on account of the Sixth Pay Commission recommendations have already been factored into the actuals. The average O&M charges for the three year period 2007-08 to 2009-10 have been considered as O&M charges for the year 2008-09. These O&M expenses are escalated at the escalation factor of 4% per annum to get the O&M expenses for FY 2011-12. Taking these O&M expenses determined for FY 2011-12, the permissible O&M expenses for the years FY 2012-13 to FY 2015-16 are arrived at by escalating the O&M expenses of FY 2011-12 with 5.72% per annum for each year of the control period in respect of existing generating stations other than PPA governed stations as specified in Regulation 55 of GERC ((MYT) Regulations 2011. In respect of KLTPS-4 which was commissioned on 20.12.2009, the permissible O&M expenses are arrived at for the control period in accordance with Regulations 56 of GERC (MYT) Regulations 2011. The O&M charges computed station-wise for the control period from FY 2011-12 to FY 2015-16 are given in the Table 7.31 below:



Table 7.31: Approved O&M charges for FY 2011-12 to FY 2015-16

(Rs. crore)

Sr. No.	Name of Power Station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai TPS	128.87	136.24	144.04	152.28	160.99
2	Gandhinagar unit 1-4	91.27	96.49	102.01	107.85	114.02
3	Gandhinagar unit 5 *	25.00	26.00	27.00	28.00	29.00
4	Wankbori unit 1-6	131.88	139.42	147.39	155.83	164.74
5	Wankbori unit *	25.00	26.00	27.00	28.00	29.00
6	Sikka	46.23	48.88	51.67	54.63	57.75
7	KLTPS 1-3	72.47	76.62	81.00	85.63	90.53
8	KLTPS 4	16.22	17.15	18.14	19.17	20.27
9	Dhuvaran unit 7 (Gas)	20.00	16.00	15.00	21.00	18.00
10	Dhuvaran unit 8 (Gas)	17.85	18.87	19.95	21.09	22.29
11	Utran Gas *	13.00	13.00	14.00	14.00	15.00
12	Utran 375 MW *	45.00	46.00	48.00	49.00	51.00
13	Ukai Hydro	11.48	12.14	12.83	13.56	14.34
14	Kadana Hydro	13.20	13.96	14.76	15.60	16.49
	Total	657.48	686.76	722.79	765.63	803.42

The Commission accordingly approves the O&M expenses for the control period FY 2011-12 to FY 2015-16 as detailed in the table above.

7.3.5 Water charges for FY 2011-12 to FY 2015-16

Petitioner's submission

GSECL has projected the water charges for the control period for the FY 2011-12 to FY 2015-16 as detailed in the Table 7.32 below:

Table 7.32: Proposed water charges for FY 2011-12 to 2015-16

(Rs. crore)

Sr. No.	Power station	2011- 12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	-	-	-	-	-
2.	Gandhinagar (1-4)	35	38	42	47	51
3.	Gandhinagar- 5*	11	12	13	15	16
4.	Wanakbori 1-6 TPS	49	54	59	65	72
5.	Wanakbori 7 TPS*	9	9	10	11	13
6.	Sikka TPS	5	5	6	6	7
7.	KLTPS 1-3	1	1	1	1	1
8.	KLTPS 4	1	1	1	1	1
9.	Dhuvaran (Gas 1)*	1	1	1	1	1
10.	Dhuvaran (Gas 2)	1	1	1	1	1
11.	Utran (Gas)*	3	4	4	4	5
12.	Utran Extension *	5	5	6	6	7
13.	Ukai Hydro	-	-	-	-	-
14.	Kadana Hydro	-	-	-	-	-
	Total	119	131	145	159	175

*PPA governed stations.



GSECL has submitted that the water charges form a major portion in O&M charges as water charges are very high in Gujarat and therefore, GSECL has proposed to claim water charges separately. GSECL has further submitted that actual water charges for the FY 2009-10 have been considered as a base and 10% increase P.A. is taken for projection of water charges for the control period of FY 2011-12 to 2015-16.

Commission's Analysis

The Commission has observed that the water charges are quite substantial as noted from the accounts for the past four years from FY 2006-07 to FY 2009-10. The water charges are payable to the Government of Gujarat. Water charges have already been recognized and allowed in the Tariff Order for FY 2010-11 dated 31st March 2010. However, the Commission is not in favour of considering annual escalation of these water charges. The water charges, which are in the nature of levy, may not be increased every year. The water used for consumption may not increase as there is no substantial increase in the proposed generation. The Commission is of the opinion that the water charges shall be considered at the level of actuals i.e FY 2009-10 for the control period. Any increase in the cost of water shall be considered at the time of truing up based on the audited annual accounts for the respective years. The actual water charges as per audited annual accounts for the FY 2009-10 are Rs. 97.24 crore. This includes Rs. 2.68 crore in respect of Dhuvaran (oil) Plant. Since, Dhuvaran oil plant is reported to have been decommissioned on 1st December 2010, the Commission considers the actual water charges for other plants at Rs. 94.56 crore (Rs. 97.24 – 2.68 crore) for the FY 2009-10. This has been adopted for the control period.

The Commission accordingly approves the water charges for the control period from FY 2011-12 to FY 2015-16 as detailed in the Table 7.33 below:

Table-7.33: Water charges approved by the Commission for FY 2011-12 to FY 2015-16

(Rs. crore)						
Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	-	-	-	-	-
2.	Gandhinagar (1-4)	30.47	30.47	30.47	30.47	30.47
3.	Gandhinagar- 5*	7.62	7.62	7.62	7.62	7.62
4.	Wanakbori 1-6 TPS	40.57	40.57	40.57	40.57	40.57



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
5.	Wanakbori 7 TPS*	7.12	7.12	7.12	7.12	7.12
6.	Sikka TPS	3.89	3.89	3.89	3.89	3.89
7.	KLTPS 1-3	0.60	0.60	0.60	0.60	0.60
8.	KLTPS 4	-	-	-	-	-
9.	Dhuvaran (Gas 1)*	-	-	-	-	-
10.	Dhuvaran (Gas 2)	-	-	-	-	-
11.	Utran (Gas)*	2.70	2.70	2.70	2.70	2.70
12.	Utran Extension *	1.59	1.59	1.59	1.59	1.59
13.	Ukai Hydro	-	-	-	-	-
14.	Kadana Hydro	-	-	-	-	-
	Total	94.56	94.56	94.56	94.56	94.56

7.3.6 Insurance charges for FY 2011-12 to FY 2015-16

GSECL has projected the insurance charges separately for the control period for the FY 2011-12 to FY 2015-16 as detailed in the Table 7.34 below:

Table 7.34: Proposed insurance charges for FY 2011-12 to 2015-16

(Rs. crore)

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	-	-	-	-	-
2.	Gandhinagar (1-4)	-	-	-	-	-
3.	Gandhinagar- 5*	1	1	1	1	1
4.	Wanakbori 1-6 TPS	-	-	-	-	-
5.	Wanakbori 7 TPS*	1	1	1	1	1
6.	Sikka TPS	-	-	-	-	-
7.	KLTPS 1-3	-	-	-	-	-
8.	KLTPS 4	-	-	-	-	-
9.	Dhuvaran (Gas 1)*	0	1	1	1	1
10.	Dhuvaran (Gas 2)	-	-	-	-	-
11.	Utran (Gas)*	0	1	1	1	1
12.	Utran Extension *	3	3	4	4	4
13.	Ukai Hydro	-	-	-	-	-
14.	Kadana Hydro	-	-	-	-	-
	Total	5	7	8	8	8

Commission's analysis

The O&M expenses are considered as per the norms specified in Regulations 55 and 56 of GERC (MYT) Regulations, 2011. The O&M charges approved are inclusive of insurance charges. The Commission, therefore, has not considered insurance charges separately though claimed by GSECL.



7.3.7 Interest on working capital for FY 2011-12 to FY 2015-16

GSECL has projected the interest on working capital for the control period for the FY 2011-12 to FY 2015-16 as detailed in the Table 7.35 below:

Table 7.35: Proposed Interest on working capital for FY 2011-12 to 2015-16

(Rs. crore)						
Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	43	46	48	51	52
2.	Gandhinagar (1-4)	47	50	52	55	57
3.	Gandhinagar- 5*	15	15	16	17	17
4.	Wanakbori 1-6 TPS	79	84	89	93	98
5.	Wanakbori 7 TPS*	14	14	15	16	16
6.	Sikka TPS	16	17	19	19	20
7.	KLTPS 1-3	10	11	12	12	12
8.	KLTPS 4	5	5	5	5	5
9.	Dhuvaran (Gas 1)*	9	9	10	11	11
10.	Dhuvaran (Gas 2)	10	10	11	12	12
11.	Utran (Gas)*	10	10	11	12	13
12.	Utran Extension *	31	32	34	36	38
13.	Ukai Hydro	1	1	1	1	1
14.	Kadana Hydro	2	2	2	2	2
	Total	292	308	323	340	355

GSECL has submitted that interest on working capital for the FY 2011-12 to FY 2015-16 has been computed on normative basis under Regulation 20 (V) of GERC (Terms and Conditions for Determination of Tariff) Regulations, 2005.

GSECL has further submitted that the rate of interest on working capital is considered at 10.25%, the Short Term Prime Lending Rate as on 01/04/2004, for all the plants except Dhuvaran Gas-2, Dhuvaran Gas -1, KLTPS-4 and Utran Extension. Dhuvaran Gas -2 was commissioned in the FY 2007-08 and the rate of interest i.e. 12.25% as on 1st April 2007 has been considered. For KLTPS-4 and Utran Extension, the SBI PLR of 12.25% as on 1st April 2009 has been considered as these stations were commissioned in FY 2009-10.

Commission's analysis

The Commission has examined the submission of GSECL and found that the working capital and the interest on the working capital have been computed by GSECL on normative basis in accordance with GERC (Terms and Conditions for Determination of Tariff) Regulations, 2005. The rate of interest adopted for old stations which were commissioned on or before 1st April 2004 is 10.25% (the SBI PLR as on that date). The rate of interest adopted for other stations viz., Dhuvaran



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Gas-2, Dhuvaran Gas-1, KLTPS -4 and Utran Extension is 12.25%, the applicable SBI PLR as on 1st April of the year in which these stations were commissioned.

The Commission has arrived at the interest on working capital in accordance with GERC (MYT) Regulations, 2011. The applicable rate of interest is 11.75% being the State Bank Advance Rate (SBAR) as on 1.4.2010 as detailed in the table 7.36 below:

Table 7.36: Approved Interest on Working Capital for FY 2011-12 to FY 2015-16
(Rs. crore)

Sr.No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	25.82	26.69	27.29	27.48	27.40
2	Gandhinagar (1-4)	28.66	28.62	28.62	28.62	28.65
3	Gandhinagar- 5*	9.27	9.28	9.30	9.32	9.35
4	Wanakbori 1-6 TPS	50.18	51.02	51.84	52.10	52.24
5	Wanakbori 7 TPS*	8.84	8.85	8.86	8.87	8.88
6	Sikka TPS	9.07	9.04	9.32	9.30	9.31
7	KLTPS 1-3	11.58	11.98	12.01	12.04	12.08
8	KLTPS 4	9.15	9.13	9.11	9.10	9.08
9	Dhuvaran (Gas 1)*	2.85	2.80	2.78	2.84	2.81
10	Dhuvaran (Gas 2)	3.12	3.12	3.05	3.12	3.13
11	Utran (Gas)*	3.22	3.23	3.26	3.26	3.28
12	Utran Extension *	10.03	9.93	9.87	9.80	9.78
13	Ukai Hydro	0.52	0.53	0.53	0.54	0.55
14	Kadana Hydro	1.10	1.10	1.10	1.10	1.10
	Total	173.40	175.30	176.94	177.48	177.63

The Commission, accordingly, approves the interest on working capital as detailed in the Table 7.36 above.

7.3.8 Tax on income for FY 2010-11 to FY 2015-16

GSECL has projected the tax on income for the control period for the FY 2011-12 to 2015-16 on the basis of MAT rate @ 19.934% on the return on equity portion generated as detailed in the Table 7.37 below:

Table 7.37: Tax on Income Projected for FY 2011-12 to 2015-16
(Rs. crore)

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	4	5	6	7	7
2.	Gandhinagar (1-4)	6	6	6	6	6
3.	Gandhinagar- 5*	5	5	5	5	5
4.	Wanakbori 1-6 TPS	10	12	13	14	14
5.	Wanakbori 7 TPS*	5	5	5	5	5
6.	Sikka TPS	4	4	4	4	4
7.	KLTPS 1-3	9	9	9	9	9
8.	KLTPS 4	6	6	6	6	6
9.	Dhuvaran (Gas 1)*	3	3	3	3	3
10.	Dhuvaran (Gas 2)	3	3	3	3	3



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
11.	Utran (Gas)*	2	2	2	2	2
12.	Utran Extension *	11	11	11	11	11
13.	Ukai Hydro	2	2	2	2	2
14.	Kadana Hydro	6	6	6	6	6
	Total	76	78	81	82	82

Petitioner's submission

GSECL has submitted that norms of GERC and all other SERCs allow the tax on income earned from generation business to be reimbursed by the buyer. GSECL has requested to approve the reimbursement of tax on income earned through generation business as per the Regulations.

GSECL has further submitted that the amount of taxes / duties / fees / cess and any Government levies payable by the GSECL to the Government (Central / State) and / or any other local bodies / authorities on generation of electricity including auxiliary consumption or any other types of consumption including water, transmission, environment protection, sale or on supply of electricity and / or in respect of any of its installation associated with the generating stations and / or transmission system shall be billed to GUVNL in the shape of supplementary bill raised by the GSECL and the GUVNL will make payment accordingly.

The tax on income projected by the GSECL for the FY 2011-12 to FY 2015-16 is computed on the ROE at MAT Rate of 19.934%.

Commission's analysis

The Commission is of the opinion that the tax on the income shall be allowed as per GERC (MYT) Regulations 2011. The Commission provisionally approves the income tax payable for each year of the control period based on the actual income tax paid as per the latest audited accounts available for the applicant in accordance with the Regulation 42 of GERC (MYT) Regulations 2011. The actual income tax as per audited accounts for 2009-10 was Rs.25 crores for the generating stations other than Dhuvaran (Oil) which was de-commissioned in December 2010.

The Commission accordingly approves the income tax for the control period FY 2011-12 to FY 2015-16 at actuals as per audited accounts for the FY 2009-10. Any variation in income tax actually paid and approved shall be reimbursed based on documentary evidence at the time of truing up for each year of the



control period in accordance with Regulation 42.2 of GERC (MYT) Regulations 2011.

The Commission approves the tax on income as detailed in the Table 7.38 below for FY 2011-12 to 2015-16.

Table 7.38: Tax on Income Approved for FY 2011-12 to FY 2015-16

(Rs. crore)						
Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	1	1	1	1	1
2.	Gandhinagar (1-4)	2	2	2	2	2
3.	Gandhinagar- 5*	2	2	2	2	2
4.	Wanakbori 1-6 TPS	4	4	4	4	4
5.	Wanakbori 7 TPS*	2	2	2	2	2
6.	Sikka TPS	2	2	2	2	2
7.	KLTPS 1-3	3	3	3	3	3
8.	KLTPS 4	1	1	1	1	1
9.	Dhuvaran (Gas 1)*	1	1	1	1	1
10.	Dhuvaran (Gas 2)	1	1	1	1	1
11.	Utran (Gas)*	1	1	1	1	1
12.	Utran Extension *	2	2	2	2	2
13.	Ukai Hydro	1	1	1	1	1
14.	Kadana Hydro	2	2	2	2	2
	Total	25	25	25	25	25

7.3.9 SLDC charges for FY 2011-12 to 2015-16

GSECL has projected the charges payable to SLDC for the control period for the FY 2011-12 to FY 2015-16 based on the charges approved in the Tariff Order dated 31/03/2010, i.e. Rs. 518.59/MW/Month and SLDC fees of Rs. 375.13/MW/half year for FY 2010-11. Based on the proposed capacity for the FY 2011-12, GSECL has to pay Rs. 3.48 crore towards SLDC charges for 2011-12 and GSECL has projected the same charges for the rest of the control period. The SLDC charges projected by GSECL are given in the Table 7.39 below:

Table 7.39: Projected SLDC charges for FY 2011-12 to 2015-16

(Rs. crore)						
Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	0.59	0.59	0.59	0.59	0.59
2.	Gandhinagar (1-4)	0.46	0.46	0.46	0.46	0.46
3.	Gandhinagar- 5*	0.15	0.15	0.15	0.15	0.15
4.	Wanakbori 1-6 TPS	0.88	0.88	0.88	0.88	0.88
5.	Wanakbori 7 TPS*	0.15	0.15	0.15	0.15	0.15
6.	Sikka TPS	0.17	0.17	0.17	0.17	0.17



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power station	2011-12	2012-13	2013-14	2014-15	2015-16
7.	KLTPS 1-3	0.15	0.15	0.15	0.15	0.15
8.	KLTPS 4	0.05	0.05	0.05	0.05	0.05
9.	Dhuvaran (Gas 1)*	0.07	0.07	0.07	0.07	0.07
10.	Dhuvaran (Gas 2)	0.08	0.08	0.08	0.08	0.08
11.	Utran (Gas)*	0.09	0.09	0.09	0.09	0.09
12.	Utran Extension *	0.26	0.26	0.26	0.26	0.26
13.	Ukai Hydro	0.21	0.21	0.21	0.21	0.21
14.	Kadana Hydro	0.17	0.17	0.17	0.17	0.17
	Total	3.48	3.48	3.48	3.48	3.48

Commission Analysis

The Commission has analyzed the submission of GSECL. The Commission has noted that SLDC has filed the petition for determination of SLDC fees and charges for the control period from FY 2011-12 to FY 2015-16 and the Commission has approved the following amounts for the FY 2011-12.

SLDC Charges.....Rs.400/MW/Month

SLDC Fees.....Rs. 320/MW/Half Year

The Commission accordingly approves the SLDC charges for the FY 2011-12 and considers the same charges for the remaining years FY 2012-13 to FY 2015-16. The SLDC charges for the control period FY 2011-12 to FY 2015-16 are detailed in the Table 7.40 below:

Table 7.40 : Approved SLDC Charges for FY 2011-12 to FY 2015-16

(Rs. in crores)

Sr. No.	Power station	Capacity in MW	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai (1-5)	850	0.46	0.46	0.46	0.46	0.46
2.	Gandhinagar (1-4)	660	0.36	0.36	0.36	0.36	0.36
3.	Gandhinagar- 5*	210	0.11	0.11	0.11	0.11	0.11
4.	Wanakbori 1-6 TPS	1260	0.68	0.68	0.68	0.68	0.68
5.	Wanakbori 7 TPS*	210	0.11	0.11	0.11	0.11	0.11
6.	Sikka TPS	240	0.13	0.13	0.13	0.13	0.13
7.	KLTPS 1-3	215	0.12	0.12	0.12	0.12	0.12
8.	KLTPS 4	75	0.04	0.04	0.04	0.04	0.04
9.	Dhuvaran (Gas 1)*	107	0.06	0.06	0.06	0.06	0.06
10.	Dhuvaran (Gas 2)	113	0.06	0.06	0.06	0.06	0.06
11.	Utran (Gas)*	135	0.07	0.07	0.07	0.07	0.07
12.	Utran Extension *	375	0.2	0.2	0.2	0.2	0.2
13.	Ukai Hydro	305	0.16	0.16	0.16	0.16	0.16
14.	Kadana Hydro	242	0.13	0.13	0.13	0.13	0.13
	Total	4996	2.69	2.69	2.69	2.69	2.69



7.3.10 Non-tariff income

GSECL has not projected any non-tariff income for the control period for the FY 2011-12 to 2015-16.

Petitioner's submission

With reference to a query from the Commission, GSECL has submitted that for generation plants, ARR is not given in the form of net of non-tariff income / other income and this is also not mentioned in the Regulations.

Commission's Analysis

GSECL has not taken into consideration the other income / non-tariff income while arriving at the ARR. The non-tariff income includes insurance claim / refunds, penalties recovered from suppliers / contractors, income from sale of scrap, miscellaneous receipts etc.

The actual non-tariff income is substantial in the case of GSECL. The non-tariff income earned by GSECL for the last four years from FY 2006-07 to 2009-10 is Tabulated in Table 7.41 below:

Table 7.41: Non-tariff Income actuals for FY 2006-07 to 2009-10

(Rs. crore)				
Particulars	2006-07	2007-08	2008-09	2009-10
Non-tariff income	54.67	129.14	272.29	137.89

The non-tariff income is arising from ancillary or incidental to the power generation.

GERC has notified the (MYT) Regulations 2011. Regulation 53.1 specified that the Annual Fixed Charges to be considered are net of non-tariff income. The non-tariff income and the components of non-tariff income are listed in Regulation 53. The Commission is of the view that the non-tariff income shall be taken into consideration while arriving at the net ARR. It is observed from the accounts that the non-tariff income for the last 3 years from 2007-08 to 2009-10 is quite substantial when compared with actual for 2006-07. The average non-tariff income for the last four years worked out to Rs. 148.50 crore. The Commission considers the average non-tariff income without any escalation for the control period. The station-wise other / non-tariff income is not available. The Commission has arrived at the station-wise other/non-tariff income based on the installed capacity of the respective stations.

The station-wise non-tariff income arrived at by the Commission is given in the Table-7.42 below:



Table 7.42: Approved non-tariff income for FY 2011-12 to FY 2015-16

(Rs. crore)

Sr. No.	Station	MW	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Ukai	850	25.27	25.27	25.27	25.27	25.27
2.	Gandhinagar (1-4)	660	19.62	19.62	19.62	19.62	19.62
3.	Gandhinagar- 5*	210	6.24	6.24	6.24	6.24	6.24
4.	Wanakbori 1-6 TPS	1260	37.45	37.45	37.45	37.45	37.45
5.	Wanakbori 7 TPS*	210	6.24	6.24	6.24	6.24	6.24
6.	Sikka TPS	240	7.13	7.13	7.13	7.13	7.13
7.	KLTPS 1-3	215	6.39	6.39	6.39	6.39	6.39
8.	KLTPS 4	75	2.23	2.23	2.23	2.23	2.23
9.	Dhuvaran (Gas 1)*	107	3.18	3.18	3.18	3.18	3.18
10.	Dhuvaran (Gas 2)	112	3.33	3.33	3.33	3.33	3.33
11.	Utran (Gas 2)	135	4.01	4.01	4.01	4.01	4.01
12.	Utran Extension *	375	11.15	11.15	11.15	11.15	11.15
13.	Ukai Hydro	305	9.07	9.07	9.07	9.07	9.07
14.	Kadana Hydro	242	7.19	7.19	7.19	7.19	7.19
	TOTAL	4996	148.50	148.50	148.50	148.50	148.50

The Commission accordingly approves the station-wise non-tariff income as detailed in the above Table for the control period for FY 2011-12 to FY 2015-16.

7.3.11 Projected Fixed Cost

The year-wise / station-wise fixed charges **projected** by GSECL for the control period from the FY 2011-12 to FY 2015-16 are given in the five tables below:

Table 7.43: Total Fixed Cost projected for FY 2011-12

(Rs. in crore)

Sr. No.	Power Station	Depreciation Projected	Interest & finance charges	Return on equity	Interest on working capital	O&M expenses	Water charges	Insurance charges	MAT	SLDC Fees & charges	Fixed cost	Net entitlement from true up of FY 2009-10	Total fixed cost
1	Ukai (1-5)	49	48	20	43	131	-	-	4	0.59	295	126	421
2	Gandhinagar (1-4)	66	39	31	47	76	35	-	6	0.46	301	-28	273
3	Gandhinagar 5*	33	-	27	15	25	11	1	5	0.15	117	-	117
4	Wanakbori 1-6 TPS	74	52	53	79	160	49	-	10	0.88	479	72	550
5	Wanakbori 7*	32	-	26	14	25	9	1	5	0.15	111	-	111
6	Sikka TPS	30	19	20	16	33	5	-	4	0.17	128	41	168
7	KLTPS 1-3	59	41	43	10	32	1	-	9	0.15	194	69	264
8	KLTPS 4	35	41	28	5	12	1	-	6	0.05	128	16	144
9	Dhuvaran (Gas 1)*	17	6	13	9	20	1	0	3	0.07	68	-	68
10	Dhuvaran (Gas 2)	22	12	15	10	35	1	-	3	0.08	98	10	109
11	Utran Gas*	20	6	10	10	13	3	0	2	0.09	65	-	65
12	Utran Extn.*	80	107	57	31	45	5	3	11	0.26	338	-	338
13	Ukai Hydro	7	5	8	1	16	-	-	2	0.21	39	9	48
14	Kadana Hydro	15	10	28	2	15	-	-	6	0.17	75	-2	74
15	Dhuvaran (Oil)	-	-	-	-	-	-	-	-	-	-	13	13



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Sr. No.	Power Station	Depreciation Projected	Interest & finance charges	Return on equity	Interest on working capital	O&M expenses	Water charges	Insurance charges	MAT	SLDC Fees & charges	Fixed cost	Net entitlement from true up of FY 2009-10	Total fixed cost
	Total	537	387	379	292	637	119	6	76	3.48	2,436	327	2,763

Table 7.44: Total Fixed Cost projected for FY 2012-13

(Rs. crore)

Sr. No.	Power Station	Depreciation Projected	Interest & finance charges	Return on equity	Interest on working capital	O&M expense	Water charges	Insurance charges	MAT	SLDC Fees & charges	Total fixed cost
1	Ukai (1-5)	59	59	25	46	135	-	-	5	0.59	329
2	Gandhinagar (1-4)	66	35	31	50	79	38	-	6	0.46	306
3	Gandhinagar 5*	33	-	27	15	26	12	1	5	0.15	120
4	Wanakbori 1-6 TPS	86	71	58	84	167	54	-	12	0.88	533
5	Wanakbori 7*	32	-	26	14	26	9	1	5	0.15	113
6	Sikka TPS	30	18	20	17	35	5	-	4	0.17	130
7	KLTPS 1-3	60	39	44	11	33	1	-	9	0.15	196
8	KLTPS 4	35	37	28	5	12	1	-	6	0.05	124
9	Dhuvaran (Gas 1)*	17	5	13	9	16	1	1	3	0.07	64
10	Dhuvaran (Gas 2)	22	11	15	10	40	1	-	3	0.08	103
11	Utran Gas*	20	6	10	10	13	4	1	2	0.09	67
12	Utran Extension*	80	96	57	32	46	5	3	11	0.26	331
13	Ukai Hydro	7	5	8	1	16	-	-	2	0.21	40
14	Kadana Hydro	15	9	28	2	15	-	-	6	0.17	75
	Total	561	392	391	308	661	131	6	78	3.48	2,531

Table 7.45 : Total Fixed Cost projected for FY 2013-14

(Rs. crore)

Sr. No.	Power Station	Depreciation Projected	Interest & finance charges	Return on equity	Interest on working capital	O&M expenses	Water charges	Insurance charges	MAT	SLDC Fees & charges	Total fixed cost
1	Ukai (1-5)	70	74	31	48	140	-	-	6	0.59	371
2	Gandhinagar (1-4)	66	32	31	52	83	42	-	6	0.46	313
3	Gandhinagar 5*	33	-	27	16	27	13	1	5	0.15	122
4	Wanakbori 1-6 TPS	100	92	66	89	175	59	-	13	0.88	595
5	Wanakbori 7*	32	-	26	15	27	10	1	5	0.15	116
6	Sikka TPS	30	16	20	19	36	6	-	4	0.17	131
7	KLTPS 1-3	60	36	44	12	35	1	-	9	0.15	195
8	KLTPS 4	35	33	28	5	12	1	-	6	0.05	121
9	Dhuvaran (Gas 1)*	17	5	13	10	15	1	1	3	0.07	64
10	Dhuvaran (Gas 2)	22	10	15	11	38	1	-	3	0.08	99
11	Utran Gas*	20	6	10	11	14	4	1	2	0.09	69
12	Utran Extension*	80	87	57	34	48	6	4	11	0.26	326
13	Ukai Hydro	7	5	8	1	17	-	-	2	0.21	40
14	Kadana Hydro	15	8	28	2	16	-	-	6	0.17	75
	Total	588	403	404	323	682	145	7	81	3.48	2,636



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.46 : Total Fixed Cost Projected for FY 2014-15

(Rs. crore)

Sr. No.	Power Station	Depreciation Projected	Interest & finance charges	Return on equity	Interest on working capital	O&M expenses	Water charges	Insurance charges	MAT	SLDC Fees & charges	Total fixed cost
1	Ukai (1-5)	75	74	33	51	145	-	-	7	0.59	385
2	Gandhinagar (1-4)	66	28	31	55	87	47	-	6	0.46	321
3	Gandhinagar 5*	33	-	27	17	28	15	1	5	0.15	126
4	Wanakbori 1-6 TPS	107	94	69	93	182	65	-	14	0.88	625
5	Wanakbori 7*	32	-	26	16	28	11	1	5	0.15	119
6	Sikka TPS	30	14	20	19	37	6	-	4	0.17	132
7	KLTPS 1-3	60	32	44	12	36	1	-	9	0.15	193
8	KLTPS 4	35	30	28	5	13	1	-	6	0.05	118
9	Dhuvaran (Gas 1)*	17	4	13	11	21	1	1	3	0.07	69
10	Dhuvaran (Gas 2)	22	9	15	12	40	1	-	3	0.08	101
11	Utran Gas*	21	6	10	12	14	4	1	2	0.09	70
12	Utran Extension*	80	78	57	36	49	6	4	11	0.26	321
13	Ukai Hydro	7	4	8	1	17	-	-	2	0.21	40
14	Kadana Hydro	15	7	28	2	16	-	-	6	0.17	74
	Total	598	382	409	340	714	159	8	82	3.48	2,695

Table 7.47: Total Fixed Cost Projected for FY 2015-16

(Rs. crore)

Sr. No.	Power Station	Depreciation Projected	Interest & finance charges	Return on equity	Interest on working capital	O&M expenses	Water charges	Insurance charges	MAT	SLDC Fees & charges	Total fixed cost
1	Ukai (1-5)	75	67	34	52	150	-	-	7	0.59	385
2	Gandhinagar (1-4)	66	26	31	57	91	51	-	6	0.46	328
3	Gandhinagar 5*	33	-	27	17	29	16	1	5	0.15	129
4	Wanakbori 1-6 TPS	107	86	69	98	190	72	-	14	0.88	636
5	Wanakbori 7*	32	-	26	16	29	13	1	5	0.15	122
6	Sikka TPS	31	13	20	20	39	7	-	4	0.17	134
7	KLTPS 1-3	60	29	44	12	37	1	-	9	0.15	192
8	KLTPS 4	35	27	28	5	13	1	-	6	0.05	116
9	Dhuvaran (Gas 1)*	17	4	13	11	18	1	1	3	0.07	67
10	Dhuvaran (Gas 2)	22	8	15	12	46	1	-	3	0.08	107
11	Utran Gas*	21	5	10	13	15	5	1	2	0.09	71
12	Utran Extension*	80	70	57	38	51	7	4	11	0.26	318
13	Ukai Hydro	7	4	8	1	18	-	-	2	0.21	40
14	Kadana Hydro	15	6	28	2	17	-	-	6	0.17	74
	Total	599	346	410	355	742	175	8	82	3.48	2,720



7.3.12 Approved fixed cost

Based on the Commission's analysis and decisions the approved fixed charges year-wise / station-wise for the control period from FY 2011-12 to FY 2015-16 are summarized in the following five tables.



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.48 GSECL - Approved Fixed Charges for 2011-12

(Rs. Crores)

Sr. No.	Power Station	Depreciation	Interest & Finance Charges	Return on Equity	Interest on Working Capital	O&M Expenses	Water Charges	Income Tax	SLDC Charges	Total Fixed Cost	Less Non Tariff Income	Net Fixed Charges
1	Ukai (1-5)	49.16	46.72	19.88	25.82	128.87	0.00	1.00	0.46	271.91	25.27	246.64
2	Gandhinagar (1-4)	66.38	36.18	30.66	28.66	91.27	30.47	2.00	0.36	285.99	19.62	266.37
3	Gandhinagar 5	32.70	0.00	26.78	9.27	25.00	7.62	2.00	0.11	103.48	6.24	97.24
4	Wanakbori 1-6 TPS	73.53	49.81	52.57	50.18	131.88	40.57	4.00	0.68	403.22	37.45	365.77
5	Wanakbori 7	31.75	0.00	26.00	8.84	25.00	7.12	2.00	0.11	100.82	6.24	94.58
6	Sikka TPS	30.04	17.15	20.30	9.07	46.23	3.89	2.00	0.13	128.81	7.13	121.68
7	KLTPS 1-3	58.51	38.43	43.19	11.58	72.47	0.60	3.00	0.12	227.89	6.39	221.50
8	KLTPS 4	35.17	41.58	28.42	9.15	16.22	0.00	1.00	0.04	131.57	2.23	129.34
9	Dhuvaran (Gas 1)	16.50	6.07	12.87	2.85	20.00	0.00	1.00	0.06	59.35	3.18	56.17
10	Dhuvaran (Gas 2)	21.64	11.67	15.40	3.12	17.85	0.00	1.00	0.06	70.74	3.33	67.41
11	Utran Gas	19.65	5.84	10.40	3.22	13.00	2.70	1.00	0.07	55.89	4.01	51.88
12	Utran Extension	79.56	107.05	56.70	10.03	45.00	1.59	2.00	0.20	302.13	11.15	290.98
13	Ukai Hydro	7.11	5.17	8.05	0.52	11.48	0.00	1.00	0.16	33.49	9.07	24.42
14	Kadana Hydro	15.07	9.13	28.00	1.10	13.20	0.00	2.00	0.13	68.64	7.19	61.45
	Total	536.77	374.81	379.22	173.40	657.48	94.56	25.00	2.69	2243.92	148.50	2095.42



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.49 Approved Fixed Charges for 2012-13

											(Rs.Crores)	
Sr. No	Power Station	Depreciation	Interest & Finance Charges	Return on Equity	Interest on Working Capital	O&M Expenses	Water Charges	Income Tax	SLDC Charges	Total Fixed Cost	Less Non Tariff Income	Net Fixed Charges
1	Ukai (1-5)	58.79	57.51	24.99	26.69	136.24	0.00	1.00	0.46	305.68	25.27	280.41
2	Gandhinagar (1-4)	66.38	30.23	30.66	28.62	96.49	30.47	2.00	0.36	285.22	19.62	265.60
3	Gandhinagar 5	32.70	0.00	26.78	9.28	26.00	7.62	2.00	0.11	104.49	6.24	98.25
4	Wanakbori 1-6 TPS	85.60	63.47	58.38	51.02	139.42	40.57	4.00	0.68	443.15	37.45	405.70
5	Wanakbori 7	31.75	0.00	26.00	8.85	26.00	7.12	2.00	0.11	101.83	6.24	95.59
6	Sikka TPS	30.40	14.33	20.44	9.04	48.88	3.89	2.00	0.13	129.10	7.13	121.97
7	KLTPS 1-3	59.66	34.11	43.54	11.98	76.62	0.60	3.00	0.12	229.62	6.39	223.23
8	KLTPS 4	35.17	37.98	28.42	9.13	17.15	0.00	1.00	0.04	128.88	2.23	126.65
9	Dhuvaran (Gas 1)	16.50	5.47	12.87	2.80	16.00	0.00	1.00	0.06	54.70	3.18	51.52
10	Dhuvaran (Gas 2)	21.64	9.64	15.40	3.12	18.87	0.00	1.00	0.06	69.72	3.33	66.39
11	Utran Gas	20.25	6.28	10.40	3.23	13.00	2.70	1.00	0.07	56.93	4.01	52.92
12	Utran Extension	79.56	96.38	56.70	9.93	46.00	1.59	2.00	0.20	292.35	11.15	281.20
13	Ukai Hydro	7.35	4.80	8.12	0.53	12.14	0.00	1.00	0.16	34.09	9.07	25.02
14	Kadana Hydro	15.07	7.38	28.00	1.10	13.96	0.00	2.00	0.13	67.64	7.19	60.45
	Total	560.82	367.57	390.70	175.30	686.76	94.56	25.00	2.69	2303.40	148.50	2154.90



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.50 Approved Fixed Charges for 2013-14

(Rs. Crores)												
Sr. No.	Power Station	Depreciation	Interest & Finance Charges	Return on Equity	Interest on Working Capital	O&M Expenses	Water Charges	Income Tax	SLDC Charges	Total Fixed Cost	Less Non Tariff Income	Net Fixed Charges
1	Ukai (1-5)	70.50	70.54	31.36	27.29	144.04	0.00	1.00	0.46	345.19	25.27	319.92
2	Gandhinagar (1-4)	66.38	24.29	30.66	28.62	102.01	30.47	2.00	0.36	284.79	19.62	265.17
3	Gandhinagar 5	32.70	0.00	26.78	9.30	27.00	7.62	2.00	0.11	105.51	6.24	99.27
4	Wanakbori 1-6 TPS	100.47	80.68	65.80	51.84	147.39	40.57	4.00	0.68	491.44	37.45	453.99
5	Wanakbori 7	31.75	0.00	26.00	8.86	27.00	7.12	2.00	0.11	102.84	6.24	96.60
6	Sikka TPS	30.40	10.78	20.44	9.32	51.67	3.89	2.00	0.13	128.63	7.13	121.50
7	KLTPS 1-3	60.02	28.16	43.68	12.01	81.00	0.60	3.00	0.12	228.59	6.39	222.20
8	KLTPS 4	35.17	34.38	28.42	9.11	18.14	0.00	1.00	0.04	126.26	2.23	124.03
9	Dhuvaran (Gas 1)	16.50	4.91	12.87	2.78	15.00	0.00	1.00	0.06	53.13	3.18	49.95
10	Dhuvaran (Gas 2)	21.64	7.60	15.40	3.05	19.95	0.00	1.00	0.06	68.70	3.33	65.37
11	Utran Gas	20.50	6.04	10.40	3.26	14.00	2.70	1.00	0.07	57.97	4.01	53.96
12	Utran Extension	79.56	86.75	56.70	9.87	48.00	1.59	2.00	0.20	284.67	11.15	273.52
13	Ukai Hydro	7.35	3.94	8.12	0.53	12.83	0.00	1.00	0.16	33.93	9.07	24.86
14	Kadana Hydro	15.07	5.62	28.00	1.10	14.76	0.00	2.00	0.13	66.68	7.19	59.49
	Total	588.02	363.70	404.63	176.94	722.79	94.56	25.00	2.69	2378.32	148.50	2229.82



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.51 Approved Fixed Charges for 2014-15

(Rs. Crores)

Sr. No.	Power Station	Depreciation	Interest & Finance Charges	Return on Equity	Interest on Working Capital	O&M Expenses	Water Charges	Income Tax	SLDC Charges	Total Fixed Cost	Less Non Tariff Income	Net Fixed Charges
1	Ukai (1-5)	74.55	69.49	33.53	27.48	152.28	0.00	1.00	0.46	358.78	25.27	333.51
2	Gandhinagar (1-4)	66.38	18.34	30.66	28.62	107.85	30.47	2.00	0.36	284.68	19.62	265.06
3	Gandhinagar 5	32.70	0.00	26.78	9.32	28.00	7.62	2.00	0.11	106.53	6.24	100.29
4	Wanakbori 1-6 TPS	106.55	80.27	68.67	52.10	155.83	40.57	4.00	0.68	508.67	37.45	471.22
5	Wanakbori 7	31.75	0.00	26.00	8.87	28.00	7.12	2.00	0.11	103.85	6.24	97.61
6	Sikka TPS	30.43	7.29	20.44	9.30	54.63	3.89	2.00	0.13	128.11	7.13	120.98
7	KLTPS 1-3	60.05	21.58	43.68	12.04	85.63	0.60	3.00	0.12	226.70	6.39	220.31
8	KLTPS 4	35.17	30.78	28.42	9.10	19.17	0.00	1.00	0.04	123.68	2.23	121.45
9	Dhuvaran (Gas 1)	16.50	4.40	12.87	2.84	21.00	0.00	1.00	0.06	58.67	3.18	55.49
10	Dhuvaran (Gas 2)	21.64	5.57	15.40	3.12	21.09	0.00	1.00	0.06	67.88	3.33	64.55
11	Utran Gas	20.70	5.80	10.40	3.26	14.00	2.70	1.00	0.07	57.92	4.01	53.91
12	Utran Extension	79.56	78.05	56.70	9.80	49.00	1.59	2.00	0.20	276.90	11.15	265.75
13	Ukai Hydro	7.37	3.14	8.12	0.54	13.56	0.00	1.00	0.16	33.90	9.07	24.83
14	Kadana Hydro	15.07	3.87	28.00	1.10	15.60	0.00	2.00	0.13	65.77	7.19	58.58
	Total	598.41	328.58	409.67	177.48	765.63	94.56	25.00	2.69	2402.03	148.50	2253.53



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Table 7.52 Approved Fixed Charges for 2015-16

(Rs. in Crores)

Sr. No.	Power Station	Depreciation	Interest & Finance Charges	Return on Equity	Interest on Working Capital	O&M Expenses	Water Charges	Income Tax	SLDC Charges	Total Fixed Cost	Less Non Tariff Income	Net Fixed Charges
1	Ukai (1-5)	74.88	61.56	33.67	27.40	160.99	0	1	0.46	359.95	25.27	334.68
2	Gandhinagar(1-4)	66.38	12.39	30.66	28.65	114.02	30.47	2	0.36	284.93	19.62	265.31
3	Gandhinagar 5	32.70	0.00	26.78	9.35	29.00	7.62	2	0.11	107.56	6.24	101.32
4	Wanakbori 1-6 TPS	107.05	68.94	68.81	52.24	164.74	40.57	4	0.68	507.02	37.45	469.57
5	Wanakbori 7	31.75	0.00	26	8.88	29.00	7.12	2	0.11	104.86	6.24	98.62
6	Sikka TPS	30.50	3.91	20.44	9.31	57.75	3.89	2	0.13	127.94	7.13	120.81
7	KLTPS 1-3	60.10	15.05	43.68	12.08	90.53	0.6	3	0.12	225.16	6.39	218.77
8	KLTPS 4	35.17	27.19	28.42	9.08	20.27	0	1	0.04	121.17	2.23	118.94
9	Dhuvaran (Gas 1)	16.50	3.94	12.87	2.81	18.00	0	1	0.06	55.18	3.18	52.00
10	Dhuvaran (Gas 2)	21.64	3.54	15.4	3.13	22.29	0	1	0.06	67.06	3.33	63.73
11	Utran Gas	20.70	5.22	10.4	3.28	15.00	2.7	1	0.07	58.36	4.01	54.35
12	Utran Extension	79.56	70.21	56.7	9.78	51.00	1.59	2	0.2	271.04	11.15	259.89
13	Ukai Hydro	7.42	2.40	8.12	0.55	14.34	0	1	0.16	34.00	9.07	24.93
14	Kadana Hydro	15.07	2.12	28	1.10	16.49	0	2	0.13	64.91	7.19	57.72
	Total	599.43	276.45	409.95	177.63	803.42	94.56	25	2.69	2389.14	148.5	2240.64



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

7.4 The fixed charges projected by GSECL and approved by the Commission for the control period for FY 2011-12 to 2015-16 are summarized in the Table-7.53 below:

Table 7.53 : Component wise Fixed Cost Projected and Approved for the MYT Period FY 2011-12 to 2015-16

(Rs. crores)

S.No	Fixed Charges	Projected					Approved				
		2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
1	2	3	4	5	6	7	8	9	10	11	12
1	Depreciation	537	561	588	598	599	536.77	560.82	588.02	598.41	599.43
2	Int & Fin charges	387	392	403	380	346	374.81	367.57	363.70	328.58	276.45
3	Return on equity	379	391	404	409	410	379.22	390.70	404.63	409.67	409.95
4	Int on working capital	292	308	323	340	355	173.40	175.30	176.94	177.48	177.63
5	O&M expenses	637	661	682	714	742	657.48	686.76	722.79	765.63	803.42
6	Water charges	119	131	145	159	175	94.56	94.56	94.56	94.56	94.56
7	Insurance charges	5	7	8	8	8	0.00	0.00	0.00	0.00	0.00
8	MAT	76	78	81	82	82	25.00	25.00	25.00	25.00	25.00
9	SLDC charges	3.48	3.48	3.48	3.48	3.48	2.69	2.69	2.69	2.69	2.69
10	Fixed Cost	2435.48	2532.48	2637.48	2693.48	2720.48	2243.92	2303.40	2378.32	2402.03	2389.14
11	Net entitlement from true up of FY 2009-10	327									
12	Total Fixed Cost	2762.48	2531.48	2636.48	2695.48	2720.48	2243.92	2303.40	2378.32	2402.03	2389.14
13	Less Other Income						148.50	148.50	148.50	148.50	148.50
14	Net fixed charges	2762.48	2531.48	2636.48	2695.48	2720.48	2095.42	2154.90	2229.82	2253.53	2240.64



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

7.5 The Energy charges Station-wise projected by GSECL and approved by the Commission for the Control Period FY 2011-12 to FY 2015-16 are summarized in the Table 7.54 below:

Table 7.54 : Energy Charges projected and approved for the MYT Period FY 2011-12 to 2015-16

(Rs/KWH)

S.No	Power Station	Projected					Approved				
		2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
1	Uka (1-5)	2.1	2.19	2.29	2.4	2.51	1.710	1.707	1.704	1.701	1.698
2	Gandhinagar (1-4)	2.92	3.06	3.21	3.37	3.53	2.375	2.375	2.375	2.375	2.375
3	Gandhinagar 5	2.54	2.66	2.79	2.93	3.07	2.130	2.130	2.130	2.130	2.130
4	Wanakabori 1-6	2.48	2.6	2.72	2.86	3	2.108	2.108	2.108	2.108	2.108
5	Wanakabori 7	2.35	2.47	2.59	2.71	2.85	2.022	2.022	2.022	2.022	2.022
6	Sikka TPS	3.07	3.21	3.36	3.52	3.69	2.769	2.765	2.760	2.756	2.752
7	KLTPS 1-3	1.6	1.67	1.75	1.83	1.92	1.181	1.181	1.181	1.181	1.181
8	KLTPS 4	1.67	1.73	1.79	1.87	1.95	1.109	1.109	1.109	1.109	1.109
9	Dhuvaran (Gas 1)	3.15	3.37	3.61	3.86	4.13	2.411	2.411	2.411	2.411	2.411
10	Dhuvaran (Gas 2)	2.91	3.11	3.33	3.56	3.81	2.388	2.388	2.388	2.388	2.388
11	Utran Gas	3.51	3.75	4.02	4.3	4.6	2.367	2.367	2.367	2.367	2.367
12	Utran Extension	2.76	2.95	3.16	3.38	3.62	2.071	2.071	2.071	2.071	2.071



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

7.6 The fixed charges station-wise projected by GSECL and approved by the Commission for the control period FY 2011-12 to 2015-16 are summarized in the Table 7.55 below:

Table-7.55 : Station-wise Fixed Cost Projected and Approved for the MYT Period FY 2011-12 to FY 2015-16

(Rs. Crore)

Sr. No.	Power Station	Projected					Approved				
		2011-12	2012-13	2013-14	2014-15	2015-16	2011-12	2012-13	2013-14	2014-15	2015-16
1	Ukai (1-5)	421	329	371	385	385	246.64	280.41	319.92	333.51	334.68
2	Gandhinagar (1-4)	273	306	313	321	328	266.37	265.60	265.17	265.06	265.31
3	Gandhinagar 5	117	120	122	126	129	97.24	98.25	99.27	100.29	101.32
4	Wanakabori 1-6	550	533	595	625	636	365.77	405.70	453.99	471.22	469.57
5	Wanakabori 7	111	113	116	119	122	94.58	95.59	96.60	97.61	98.62
6	Sikka TPS	168	130	131	132	134	121.68	121.97	121.50	120.98	120.81
7	KLTPS 1-3	264	196	195	193	192	221.50	223.23	222.20	220.31	218.77
8	KLTPS 4	144	124	121	118	116	129.34	126.65	124.03	121.45	118.94
9	Dhuvaran (Gas 1)	68	64	64	69	67	56.17	51.52	49.95	55.49	52.00
10	Dhuvaran (Gas 2)	109	103	99	101	107	67.41	66.39	65.37	64.55	63.73
11	Utran Gas	65	67	69	70	71	51.88	52.92	53.96	53.91	54.35
12	Utran Extension	338	331	326	321	318	290.98	281.20	273.52	265.75	259.89
13	Ukai Hydro	48	40	40	40	40	24.42	25.02	24.86	24.83	24.93
14	Kadana Hydro	74	75	75	74	74	61.45	60.45	59.49	58.58	57.72
	Total	2763	2531	2637	2694	2719	2095.42	2154.90	2229.82	2253.53	2240.64



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.1

Control period 2011-12 to 2015-16
Fuel costs (Coal, Lignite & Secondary Oil) - Ukai TPS 1 to 5

Sl.No.	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	5600	5585	5585	5585	5600
2	Auxiliary Consumption	C	%	9.00%	9.00%	9.00%	9.00%	9.00%
3	Auxiliary Consumption	B	MUs	504	503	503	503	504
4	Net Generation	Y=A - B	MUs	5096	5082	5082	5082	5096
5	Station Heat Rate	D	KCal/KWH.	2,770	2,765	2,760	2,755	2,750
6	Sp. Oil Consumption	E	ml/kWh	2.00	2.00	2.00	2.00	2.00
7	Gross Calorific Value of Coal	F	kcal/kg	3,957	3,957	3,957	3,957	3,957
8	Calorific value of Oil	G	kcal/l	10,469	10,469	10,469	10,469	10,469
9	Overall Heat	H=A x D	G Cal	15512000	15442525	15414600	15386675	15400000
10	Heat from Oil	I=(A x E x G)/1000	G Cal	117253	116939	116939	116939	117253
11	Heat from Coal	J=H-I	G Cal	15394747	15325586	15297661	15269736	15282747
12	Transisit losses	K	%	0.8%	0.8%	0.8%	0.8%	0.8%
13	Coal Blend							
14	A) Indigenous Coal	X1	%	26.41%	26.41%	26.41%	26.41%	26.41%
15	B) Washed Coal	X2	%	73.59%	73.59%	73.59%	73.59%	73.59%
16	C) Imported Coal	X3	%	0.0%	0.0%	0.0%	0.0%	0.0%
17	Actual Oil Consumption	L=A x E	kl	11200	11170	11170	11170	11200
18	Actual Coal Consumption	M=(J X 1000)/F	MT	3890510	3873032	3865975	3858917	3862206
19	A) Indigenous Coal	Q1=M* x X1/(1-K)	MT	1035770	1031117	1029238	1027359	1028234
20	B) Washed Coal	Q2=M* x X2/(1-K)	MT	2886115	2873149	2867914	2862679	2865118
21	C) Imported Coal	Q3=M* X X3	MT	0.00	0.00	0.00	0.00	0.00
22	Specific Coal Consumption		kg/kWh	0.64	0.64	0.64	0.64	0.64
23	Price of Coal							
24	A) Indigenous Coal	P1	Rs/MT	2042	2042	2042	2042	2042
25	B) Washed Coal	P2	Rs/MT	2186.00	2186.00	2186.00	2186.00	2186.00
26	C) Imported Coal	P3	Rs/MT					
27	Price of Oil	P4	Rs/kl	25775	25775	25775	25775	25775
28	Coal cost							
29	A) Indigenous Coal	N1=Q1 X P1	Rs Lakh	21150	21055	21017	20979	20997
30	B) Washed Coal	N2=Q2 X P2	Rs Lakh	63090	62807	62693	62578	62631
31	C) Imported Coal	N3=Q3 X P3	Rs Lakh	0	0	0	0	0
32	Total Coal Cost	N4=N1+N2+N3	Rs Lakh	84241	83862	83710	83557	83628
33	Oil Cost	N5=P4 x L/10^5	Rs Lakh	2887	2879	2879	2879	2887
34	Total Fuel Cost	O=N4 + N5	Rs Lakh	87128	86742	86589	86436	86515
35	Fuel Cost/Unit Gross	P=O/(A*10)	Rs/kWh	1.556	1.553	1.550	1.548	1.545
36	Fuel Cost/Unit Net	Q=O/(Y*10)	Rs/kWh	1.710	1.707	1.704	1.701	1.698
37	Cost of fuel/G.Cal	R=(O/H)*10^5	Rs/Gcal	562	562	562	562	562



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.2

Control period 2011-12 to 2015-16
Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 1-4

Sl.No	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	4580	4567	4567	4567	4580
2	Auxiliary Consumption	C	%	10.00%	10.00%	10.00%	10.00%	10.00%
3	Auxiliary Consumption	B	MUs	458	457	457	457	458
4	Net Generation	$Y=A - B$	MUs	4122	4110	4110	4110	4122
5	Station Heat Rate	D	KCal/KWH.	2,782	2,782	2,782	2,782	2,782
6	Sp. Oil Consumption	E	ml/kWh	1.50	1.50	1.50	1.50	1.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,358	4,358	4,358	4,358	4,358
8	Calorific value of Oil	G	kcal/l	10,509	10,509	10,509	10,509	10,509
9	Overall Heat	$H=A \times D$	G Cal	12741560	12705394	12705394	12705394	12741560
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	72197	71992	71992	71992	72197
11	Heat from Coal	$J=H-I$	G Cal	12669363	12633402	12633402	12633402	12669363
12	Transit losses	K	%	0.8%	0.8%	0.8%	0.8%	0.8%
13	Coal Blend							
14	A) Indigenous Coal	X1	%	12.43%	12.43%	12.43%	12.43%	12.43%
15	B) Washed Coal	X2	%	64.86%	64.86%	64.86%	64.86%	64.86%
16	C) Imported Coal	X3	%	22.70%	22.70%	22.70%	22.70%	22.70%
17	Actual Oil Consumption	$L=A \times E$	kl	6870	6851	6851	6851	6870
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	2907151	2898899	2898899	2898899	2907151
19	A) Indigenous Coal	$Q1=M \times X1/(1-K)$	MT	364273	363239	363239	363239	364273
20	B) Washed Coal	$Q2=M \times X2/(1-K)$	MT	1900784	1895389	1895389	1895389	1900784
21	C) Imported Coal	$Q3=M \times X3$	MT	659923	658050	658050	658050	659923
22	Specific Coal Consumption		kg/kWh	0.56	0.56	0.56	0.56	0.56
23	Price of Coal							
24	A) Indigenous Coal	P1	Rs/MT	3033	3033	3033	3033	3033
25	B) Washed Coal	P2	Rs/MT	2500.00	2500.00	2500.00	2500.00	2500.00
26	C) Imported Coal	P3	Rs/MT	5696	5696	5696	5696	5696
27	Price of Oil	P4	Rs/kl	25063	25063	25063	25063	25063
28	Coal cost							
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	11048	11017	11017	11017	11048
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	47520	47385	47385	47385	47520
31	C) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	37589	37483	37483	37483	37589
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	96157	95884	95884	95884	96157
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1722	1717	1717	1717	1722
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	97879	97601	97601	97601	97879
35	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	2.137	2.137	2.137	2.137	2.137
36	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	2.375	2.375	2.375	2.375	2.375
37	Cost of fuel/G.Cal	$R=(O/H) \times 10^5$	Rs/Gcal	768	768	768	768	768



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.3

Control period 2011-12 to 2015-16
Fuel costs (Coal, Lignite & Secondary Oil) - Gandhinagar 5

Sl.No	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	1568	1564	1564	1564	1568
2	Auxiliary Consumption	C	%	9.00%	9.00%	9.00%	9.00%	9.00%
3	Auxiliary Consumption	B	MUs	141	141	141	141	141
4	Net Generation	Y=A - B	MUs	1427	1423	1423	1423	1427
5	Station Heat Rate	D	KCal/KW H.	2,460	2,460	2,460	2,460	2,460
6	Sp. Oil Consumption	E	ml/kWh	3.50	3.50	3.50	3.50	3.50
7	Gross Calorific Value of Coal	F	kcal/kg	4,358	4,358	4,358	4,358	4,358
8	Calorific value of Oil	G	kcal/l	10,509	10,509	10,509	10,509	10,509
9	Overall Heat	H=A x D	G Cal	3857280	3847440	3847440	3847440	3857280
10	Heat from Oil	I=(A x E x G)/1000	G Cal	57673	57526	57526	57526	57673
11	Heat from Coal	J=H-I	G Cal	3799607	3789914	3789914	3789914	3799607
12	Transisit losses	K	%	0.8%	0.8%	0.8%	0.8%	0.8%
13	Coal Blend							
14	A) Indigenous Coal	X1	%	12.43%	12.43%	12.43%	12.43%	12.43%
15	B) Washed Coal	X2	%	64.86%	64.86%	64.86%	64.86%	64.86%
16	C) Imported Coal	X3	%	22.70%	22.70%	22.70%	22.70%	22.70%
17	Actual Oil Consumption	L=A x E	kl	5488	5474	5474	5474	5488
18	Actual Coal Consumption	M=(J X 1000)/F	MT	871869	869645	869645	869645	871869
19	A) Indigenous Coal	Q1=M* x X1/(1-K)	MT	109247	108969	108969	108969	109247
20	B) Washed Coal	Q2=M* x X2/(1-k)	MT	570055	568601	568601	568601	570055
21	C) Imported Coal	Q3=M* X X3	MT	197914	197409	197409	197409	197914
22	Specific Coal Consumption		kg/kWh	0.56	0.56	0.56	0.56	0.56
23	Price of Coal							
24	A) Indigenous Coal	P1	Rs/MT	3039	3039	3039	3039	3039
25	B) Washed Coal	P2	Rs/MT	2498	2498	2498	2498	2498
26	C) Imported Coal	P3	Rs/MT	5791	5791	5791	5791	5791
27	Price of Oil	P4	Rs/kl	25063	25063	25063	25063	25063
28	Coal cost							
29	A) Indigenous Coal	N1=Q1 X P1	Rs Lakh	3320	3312	3312	3312	3320
30	B) Washed Coal	N2=Q2 X P2	Rs Lakh	14240	14204	14204	14204	14240
31	C) Imported Coal	N3=Q3 X P3	Rs Lakh	11461	11432	11432	11432	11461
32	Total Coal Cost	N4=N1+N2+N3	Rs Lakh	29021	28947	28947	28947	29021
33	Oil Cost	N5=P4 x L/10^5	Rs Lakh	1375	1372	1372	1372	1375
34	Total Fuel Cost	O=N4 + N5	Rs Lakh	30397	30319	30319	30319	30397
35	Fuel Cost/Unit Gross	P=O/(A*10)	Rs/kWh	1.939	1.939	1.939	1.939	1.939
36	Fuel Cost/Unit Net	Q=O/(Y*10)	Rs/kWh	2.130	2.130	2.130	2.130	2.130
37	Cost of fuel/G.Cal	R=(O/H)*10^5	Rs/Gcal	788	788	788	788	788



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.4

Control period 2011-12 to 2015-16
Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 1-6

Sl.No	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	9408	9382	9382	9382	9408
2	Auxiliary Consumption	C	%	9.00%	9.00%	9.00%	9.00%	9.00%
3	Auxiliary Consumption	B	MUs	847	844	844	844	847
4	Net Generation	Y=A - B	MUs	8561	8538	8538	8538	8561
5	Station Heat Rate	D	KCal/KWH.	2,625	2,625	2,625	2,625	2,625
6	Sp. Oil Consumption	E	ml/kWh	1.00	1.00	1.00	1.00	1.00
7	Gross Calorific Value of Coal	F	kcal/kg	3,906	3,906	3,906	3,906	3,906
8	Calorific value of Oil	G	kcal/l	10,526	10,526	10,526	10,526	10,526
9	Overall Heat	H=A x D	G Cal	24696000	24627750	24627750	24627750	24696000
10	Heat from Oil	I=(A x E x G)/1000	G Cal	99029	98755	98755	98755	99029
11	Heat from Coal	J=H-I	G Cal	24596971	24528995	24528995	24528995	24596971
12	Transisit losses	K	%	0.8%	0.8%	0.8%	0.8%	0.8%
13	Coal Blend							
14	A) Indigenous Coal	X1	%	24.49%	24.49%	24.49%	24.49%	24.49%
15	B) Washed Coal	X2	%	67.35%	67.35%	67.35%	67.35%	67.35%
16	C) Imported Coal	X3	%	8.16%	8.16%	8.16%	8.16%	8.16%
17	Actual Oil Consumption	L=A x E	kl	9408	9382	9382	9382	9408
18	Actual Coal Consumption	M=(J X 1000)/F	MT	6297228	6279825	6279825	6279825	6297228
19	A) Indigenous Coal	Q1=M* x X1/(1-K)	MT	1554628	1550332	1550332	1550332	1554628
20	B) Washed Coal	Q2=M* x X2/(1-K)	MT	4275386	4263570	4263570	4263570	4275386
21	C) Imported Coal	Q3=M* X X3	MT	513854	512434	512434	512434	513854
22	Specific Coal Consumption		kg/kWh	0.68	0.68	0.68	0.68	0.68
23	Price of Coal							
24	A) Indigenous Coal	P1	Rs/MT	2853	2853	2853	2853	2853
25	B) Washed Coal	P2	Rs/MT	2469	2469	2469	2469	2469
26	C) Imported Coal	P3	Rs/MT	5474	5474	5474	5474	5474
27	Price of Oil	P4	Rs/kl	26053	26053	26053	26053	26053
28	Coal cost							
29	A) Indigenous Coal	N1=Q1 X P1	Rs Lakh	44354	44231	44231	44231	44354
30	B) Washed Coal	N2=Q2 X P2	Rs Lakh	105559	105268	105268	105268	105559
31	C) Imported Coal	N3=Q3 X P3	Rs Lakh	28128	28051	28051	28051	28128
32	Total Coal Cost	N4=N1+N2+N3	Rs Lakh	178041	177549	177549	177549	178041
33	Oil Cost	N5=P4 x L/10^5	Rs Lakh	2451	2444	2444	2444	2451
34	Total Fuel Cost	O=N4 + N5	Rs Lakh	180492	179993	179993	179993	180492
35	Fuel Cost/Unit Gross	P=O/(A*10)	Rs/kWh	1.918	1.918	1.918	1.918	1.918
36	Fuel Cost/Unit Net	Q=O/(Y*10)	Rs/kWh	2.108	2.108	2.108	2.108	2.108
37	Cost of fuel/G.Cal	R=(O/H)*10^5	Rs/Gcal	731	731	731	731	731



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.5

Control period 2011-12 to 2015-16

Fuel costs (Coal, Lignite & Secondary Oil) - Wanakbori 7

Sl.No	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	1568	1564	1564	1564	1568
2	Auxiliary Consumption	C	%	9.00%	9.00%	9.00%	9.00%	9.00%
3	Auxiliary Consumption	B	MUs	141	141	141	141	141
4	Net Generation	$Y=A - B$	MUs	1427	1423	1423	1423	1427
5	Station Heat Rate	D	KCal/KWH.	2,460	2,460	2,460	2,460	2,460
6	Sp. Oil Consumption	E	ml/kWh	3.50	3.50	3.50	3.50	3.50
7	Gross Calorific Value of Coal	F	kcal/kg	3,906	3,906	3,906	3,906	3,906
8	Calorific value of Oil	G	kcal/l	10,526	10,526	10,526	10,526	10,526
9	Overall Heat	$H=A \times D$	G Cal	3857280	3847440	3847440	3847440	3857280
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	57767	57619	57619	57619	57767
11	Heat from Coal	$J=H-I$	G Cal	3799513	3789821	3789821	3789821	3799513
12	Transisit losses	K	%	0.8%	0.8%	0.8%	0.8%	0.8%
13	Coal Blend							
14	A) Indigenous Coal	X1	%	24.49%	24.49%	24.49%	24.49%	24.49%
15	B) Washed Coal	X2	%	67.35%	67.35%	67.35%	67.35%	67.35%
16	C) Imported Coal	X3	%	8.16%	8.16%	8.16%	8.16%	8.16%
17	Actual Oil Consumption	$L=A \times E$	kl	5488	5474	5474	5474	5488
18	Actual Coal Consumption	$M=(J \times 1000)/F$	MT	972738	970256	970256	970256	972738
19	A) Indigenous Coal	$Q1=M \times X1/(1-K)$	MT	240145	239532	239532	239532	240145
20	B) Washed Coal	$Q2=M \times X2/(1-K)$	MT	660422	658737	658737	658737	660422
21	C) Imported Coal	$Q3=M \times X3$	MT	79375	79173	79173	79173	79375
22	Specific Coal Consumption		kg/kWh	0.68	0.68	0.68	0.68	0.68
23	Price of Coal							
24	A) Indigenous Coal	P1	Rs/MT	2846	2846	2846	2846	2846
25	B) Washed Coal	P2	Rs/MT	2465	2465	2465	2465	2465
26	C) Imported Coal	P3	Rs/MT	5429	5429	5429	5429	5429
27	Price of Oil	P4	Rs/kl	26053	26053	26053	26053	26053
28	Coal cost							
29	A) Indigenous Coal	$N1=Q1 \times P1$	Rs Lakh	6835	6817	6817	6817	6835
30	B) Washed Coal	$N2=Q2 \times P2$	Rs Lakh	16279	16238	16238	16238	16279
31	C) Imported Coal	$N3=Q3 \times P3$	Rs Lakh	4309	4298	4298	4298	4309
32	Total Coal Cost	$N4=N1+N2+N3$	Rs Lakh	27423	27353	27353	27353	27423
33	Oil Cost	$N5=P4 \times L/10^5$	Rs Lakh	1430	1426	1426	1426	1430
34	Total Fuel Cost	$O=N4 + N5$	Rs Lakh	28853	28779	28779	28779	28853
35	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	1.840	1.840	1.840	1.840	1.840
36	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	2.022	2.022	2.022	2.022	2.022
37	Cost of fuel/G.Cal	$R=(O/H) \times 10^5$	Rs/Gcal	748	748	748	748	748



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.6

Control period 2011-12 to 2015-16
Fuel costs (Coal, Lignite & Secondary Oil) - Sikka TPS

Sr. No.	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	1434	1430	1493	1493	1497
2	Auxiliary Consumption	C	%	11.00%	11.00%	11.00%	11.00%	11.00%
3	Auxiliary Consumption	B	MUs	158	157	164	164	165
4	Net Generation	Y=A - B	MUs	1276	1273	1329	1329	1332
5	Station Heat Rate	D	KCal/KWH.	3,040	3,035	3,030	3,025	3,020
6	Sp. Oil Consumption	E	ml/kWh	4.00	4.00	4.00	4.00	4.00
7	Gross Calorific Value of Coal	F	kcal/kg	3,749	3,749	3,749	3,749	3,749
8	Calorific value of Oil	G	kcal/l	10,269	10,269	10,269	10,269	10,269
9	Overall Heat	H=A x D	G Cal	4359360	4340050	4523790	4516325	4520940
10	Heat from Oil	I=(A x E x G)/1000	G Cal	58903	58739	61326	61326	61491
11	Heat from Coal	J=H-I	G Cal	4300457	4281311	4462464	4454999	4459449
12	Transit losses	K	%	0.8%	0.8%	0.8%	0.8%	0.8%
13	Coal Blend							
14	A) Indigenous Coal	X1	%	29.41%	29.41%	29.41%	29.41%	29.41%
15	B) Washed Coal	X2	%	70.59%	70.59%	70.59%	70.59%	70.59%
16	C) Imported Coal	X3	%	0.00%	0.00%	0.00%	0.00%	0.00%
17	Actual Oil Consumption	L=A x E	kl	5736	5720	5972	5972	5988
18	Actual Coal Consumption	M=(J X 1000)/F	MT	1147094	1141988	1190308	1188316	1189504
19	A) Indigenous Coal	Q1=M* x X1/(1-K)	MT	340081	338567	352893	352302	352654
20	B) Washed Coal	Q2=M* x X2/(1-K)	MT	816264	812630	847014	845597	846442
21	C) Imported Coal	Q3=M* X X3	MT	0	0	0	0	0
22	Specific Coal Consumption		kg/kWh	0.56	0.56	0.56	0.56	0.56
23	Price of Coal							
24	A) Indigenous Coal	P1	Rs/MT	3267	3267	3267	3267	3267
25	B) Washed Coal	P2	Rs/MT	2734	2734	2734	2734	2734
26	C) Imported Coal	P3	Rs/MT	4577	4577	4577	4577	4577
27	Price of Oil	P4	Rs/kl	33352	33352	33352	33352	33352
28	Coal cost							
29	A) Indigenous Coal	N1=Q1 X P1	Rs Lakh	11110	11061	11529	11510	11521
30	B) Washed Coal	N2=Q2 X P2	Rs Lakh	22317	22217	23157	23119	23142
31	C) Imported Coal	N3=Q3 X P3	Rs Lakh	0	0	0	0	0
32	Total Coal Cost	N4=N1+N2+N3	Rs Lakh	33427	33278	34686	34628	34663
33	Oil Cost	N5=P4 x L/10^5	Rs Lakh	1913	1908	1992	1992	1997
34	Total Fuel Cost	O=N4 + N5	Rs Lakh	35340	35186	36678	36620	36660
35	Fuel Cost/Unit Gross	P=O/(A*10)	Rs/kWh	2.464	2.461	2.457	2.453	2.449
36	Fuel Cost/Unit Net	Q=O/(Y*10)	Rs/kWh	2.769	2.765	2.760	2.756	2.752
37	Cost of fuel/G.Cal	R=(O/H)*10^5	Rs/Gcal	811	811	811	811	811



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.7

Control period 2011-12 to 2015-16
Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 1-3

Sr.No.	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	1246	1413	1413	1413	1417
2	Auxiliary Consumption	C	%	12.00%	12.00%	12.00%	12.00%	12.00%
3	Auxiliary Consumption	B	MUs	150	170	170	170	170
4	Net Generation	Y=A - B	MUs	1096	1243	1243	1243	1247
5	Station Heat Rate	D	KCal/KWH.	3,300	3,300	3,300	3,300	3,300
6	Sp. Oil Consumption	E	ml/kWh	3.00	3.00	3.00	3.00	3.00
7	Gross Calorific Value of Lignite	F	kcal/kg	2,542	2,542	2,542	2,542	2,542
8	Calorific value of Oil	G	kcal/l	10,603	10,603	10,603	10,603	10,603
9	Overall Heat	H=A x D	G Cal	4111800	4662900	4662900	4662900	4676100
10	Heat from Oil	I=(A x E x G)/1000	G Cal	39634	44946	44946	44946	45073
11	Heat from Lignite	J=H-I	G Cal	4072166	4617954	4617954	4617954	4631027
12	Transit losses	K	%	0.20%	0.20%	0.20%	0.20%	0.20%
13	Actual Oil Consumption	L=A x E	kl	3738	4239	4239	4239	4251
14	Actual Lignite Coal Consumption	M=(J X 1000)/F	MT	1601954	1816662	1816662	1816662	1821804
15	Coal Consumption including Transit Loss	N=M/(1-K)	MT	1605164	1820302	1820302	1820302	1825455
16	Specific Lignite Coal Consumption		kg/kWh	1.11	1.11	1.11	1.11	1.11
17	Price of Lignite	P1	Rs/MT	730	730	730	730	730
18	Price of Oil	P2	Rs/kl	33560	33560	33560	33560	33560
19	Cost of Lignite	N1=M x P1	Rs Lakh	11694	13262	13262	13262	13299
20	Oil Cost	N2=P2 x L/10^5	Rs Lakh	1254	1423	1423	1423	1427
21	Total Fuel Cost	O=N1 + N2	Rs Lakh	12949	14684	14684	14684	14726
22	Fuel Cost/Unit Gross	P=O/(A*10)	Rs/kWh	1.039	1.039	1.039	1.039	1.039
23	Fuel Cost/Unit Net	Q=O/(Y*10)	Rs/kWh	1.181	1.181	1.181	1.181	1.181
24	Cost of fuel/G.Cal	R=(O/H)*10^5	Rs/Gcal	315	315	315	315	315



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.8

Control period 2011-12 to 2015-16

Fuel costs (Coal, Lignite & Secondary Oil) - KLTPS 4

Sr.No.	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	494	493	493	493	494
2	Auxiliary Consumption	C	%	12.00%	12.00%	12.00%	12.00%	12.00%
3	Auxiliary Consumption	B	MUs	59	59	59	59	59
4	Net Generation	$Y=A - B$	MUs	435	434	434	434	435
5	Station Heat Rate	D	KCal/KWH.	3,000	3,000	3,000	3,000	3,000
6	Sp. Oil Consumption	E	ml/kWh	3.00	3.00	3.00	3.00	3.00
7	Gross Calorific Value of Lignite	F	kcal/kg	2,542	2,542	2,542	2,542	2,542
8	Calorific value of Oil	G	kcal/l	10,900	10,900	10,900	10,900	10,900
9	Overall Heat	$H=A \times D$	G Cal	1482000	1479000	1479000	1479000	1482000
10	Heat from Oil	$I=(A \times E \times G)/1000$	G Cal	16154	16121	16121	16121	16154
11	Heat from Lignite	$J=H-I$	G Cal	1465846	1462879	1462879	1462879	1465846
12	Transit losses	K	%	0.20%	0.20%	0.20%	0.20%	0.20%
13	Actual Oil Consumption	$L=A \times E$	kl	1482	1479	1479	1479	1482
14	Actual Lignite Coal Consumption	$M=(J \times 1000)/F$	MT	576651	575483	575483	575483	576651
15	Coal Consumption including Transit Loss	$N=M/(1-K)$	MT	577806	576637	576637	576637	577806
16	Specific Lignite Coal Consumption		kg/kWh	1.11	1.11	1.11	1.11	1.11
17	Price of Lignite	P1	Rs/MT	730	730	730	730	730
18	Price of Oil	P2	Rs/kl	41155	41155	41155	41155	41155
19	Cost of Lignite	$N1=M \times P1$	Rs Lakh	4210	4201	4201	4201	4210
20	Oil Cost	$N2=P2 \times L/10^5$	Rs Lakh	610	609	609	609	610
21	Total Fuel Cost	$O=N1 + N2$	Rs Lakh	4819	4810	4810	4810	4819
22	Fuel Cost/Unit Gross	$P=O/(A \times 10)$	Rs/kWh	0.98	0.98	0.98	0.98	0.98
23	Fuel Cost/Unit Net	$Q=O/(Y \times 10)$	Rs/kWh	1.11	1.11	1.11	1.11	1.11
24	Cost of fuel/G.Cal	$R=(O/H) \times 10^5$	Rs/Gcal	325	325	325	325	325



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.9

Control period 2011-12 to 2015-16

Fuel costs (Gas) - Dhuvaran Gas 1

Sr.No.	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	749	747	747	747	749
2	Auxiliary Consumption	C	%	3.00%	3.00%	3.00%	3.00%	3.00%
3	Auxiliary Consumption	B	MUs	22	22	22	22	22
4	Net Generation	$Y=A - B$	MUs	727	725	725	725	727
5	Station Heat Rate	D	KCal/KWH.	1,950	1,950	1,950	1,950	1,950
6	Calorific value of Gas	F	kcal/scm	9,606	9,606	9,606	9,606	9,606
7	Overall Heat from Gas	$H=A \times D$	G Cal	1460550	1456650	1456650	1456650	1460550
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	152046	151640	151640	151640	152046
9	Price of Gas	P1	Rs/scm	11.52	11.52	11.52	11.52	11.52
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	17516	17469	17469	17469	17516
11	Total Fuel Cost	N5	Rs Lakh	17516	17469	17469	17469	17516
12	Fuel Cost/Unit Gross	$P=N5/(A*10)$	Rs/kWh	2.34	2.34	2.34	2.34	2.34
13	Fuel Cost/Unit Net	$Q=N5/(Y*10)$	Rs/kWh	2.41	2.41	2.41	2.41	2.41
14	Cost of fuel/G.Cal	$R=(N5/H)*10^5$	Rs/Gcal	1199	1199	1199	1199	1199



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.10

Control period 2011-12 to 2015-16

Fuel costs (Gas) - Dhuvaran Gas 2

Sr.No.	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	790	788	758	788	790
2	Auxiliary Consumption	C	%	3.00%	3.00%	3.00%	3.00%	3.00%
3	Auxiliary Consumption	B	MUs	24	24	23	24	24
4	Net Generation	$Y=A - B$	MUs	766	764	735	764	766
5	Station Heat Rate	D	KCal/KWH.	1,950	1,950	1,950	1,950	1,950
6	Calorific value of Gas	F	kcal/scm	9,700	9,700	9,700	9,700	9,700
7	Overall Heat from Gas	$H=A \times D$	G Cal	1540500	1536600	1478100	1536600	1540500
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	158814	158412	152381	158412	158814
9	Price of Gas	P1	Rs/scm	11.52	11.52	11.52	11.52	11.52
10	Cost of Gas	$N5=P1 \times M/10^2$	Rs Lakh	18295	18249	17554	18249	18295
11	Total Fuel Cost	N5	Rs Lakh	18295	18249	17554	18249	18295
12	Fuel Cost/Unit Gross	$P=N5/(A \times 10)$	Rs/kWh	2.32	2.32	2.32	2.32	2.32
13	Fuel Cost/Unit Net	$Q=N5/(Y \times 10)$	Rs/kWh	2.39	2.39	2.39	2.39	2.39
14	Cost of fuel/KCal	$R=(N5/H) \times 10^5$	Rs/Gcal	1188	1188	1188	1188	1188



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.11

Control period 2011-12 to 2015-16

Fuel costs (Gas) - Utran Gas

Sr.No.	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	949	946	946	946	949
2	Auxiliary Consumption	C	%	4.00%	4.00%	4.00%	4.00%	4.00%
3	Auxiliary Consumption	B	MUs	38	38	38	38	38
4	Net Generation	$Y=A - B$	MUs	911	908	908	908	911
5	Station Heat Rate	D	KCal/KWH.	2,150	2,150	2,150	2,150	2,150
6	Calorific value of Gas	F	kcal/scm	9,460	9,460	9,460	9,460	9,460
7	Overall Heat from Gas	$H=A \times D$	G Cal	2040350	2033900	2033900	2033900	2040350
8	Actual Gas Consumption	$M=(H \times 1000)/F$	M. scm	215682	215000	215000	215000	215682
9	Price of Gas	P1	Rs/scm	10.00	10.00	10.00	10.00	10.00
10	Cost of Gas	$N5=P1 \times M/10^5$	Rs Lakh	21568	21500	21500	21500	21568
11	Total Fuel Cost	N5	Rs Lakh	21568	21500	21500	21500	21568
12	Fuel Cost/Unit Gross	$P=N5/(A*10)$	Rs/kWh	2.27	2.27	2.27	2.27	2.27
13	Fuel Cost/Unit Net	$Q=N5/(Y*10)$	Rs/kWh	2.37	2.37	2.37	2.37	2.37
14	Cost of fuel/G.Cal	$R=(N5/H)*10^5$	Rs/Gcal	1057	1057	1057	1057	1057



Gujarat State Electricity Corporation Limited
Truing Up for 2009-10, APR for 2010-11, ARR for 2011-16 and Determination of
Tariff for 2011-12

Annexure 7.12

Control period 2011-12 to 2015-16

Fuel costs (Gas) - Utran Extension

Sl.No	Item	Derivation	Unit	2011-12	2012-13	2013-14	2014-15	2015-16
1	Gross Generation	A	MUs	2635	2628	2625	2625	2635
2	Auxiliary Consumption	C	%	3.00%	3.00%	3.00%	3.00%	3.00%
3	Auxiliary Consumption	B	MUs	79	79	79	79	79
4	Net Generation	$Y = A - B$	MUs	2556	2549	2546	2546	2556
5	Capacity		MW	375	375	375	375	375
6	Station Heat Rate	D	KCal/KWH.	1,850	1,850	1,850	1,850	1,850
7	Calorific value of Gas	F	kcal/scm	9,208	9,208	9,208	9,208	9,208
8	Overall Heat from Gas	$H = A \times D$	G Cal	4875120	4861800	4856250	4856250	4875120
9	Actual Gas Consumption	$M = (H \times 1000) / F$	M. scm	529444	527997	527395	527395	529444
10	Price of Gas	P1	Rs/scm	10	10	10	10	10
11	Cost of Gas	$N5 = P1 \times M / 10^5$	Rs Lakh	52944	52800	52739	52739	52944
12	Total Fuel Cost	N5	Rs Lakh	52944	52800	52739	52739	52944
13	Fuel Cost/Unit Gross	$P = N5 / (A \times 10)$	Rs/kWh	2.01	2.01	2.01	2.01	2.01
14	Fuel Cost/Unit Net	$Q = N5 / (Y \times 10)$	Rs/kWh	2.07	2.07	2.07	2.07	2.07
15	Cost of fuel/G.Cal	$R = (N5 / H) \times 10^5$	Rs/Gcal	1086	1086	1086	1086	1086



Chapter 8

Compliance of Directives

8.1 Compliance of Directives issued by the Commission

The Commission in its tariff order dated 31st March 2010 had issued certain directives to GSECL. The GSECL has submitted the status of compliance of directives issued by the Commission.

The compliance of directives issued by the Commission and issue of new directives are discussed below:

8.2 Directives

8.2.1 Directive 1: Renovation and Modernization (R&M) of Thermal Plant

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

Compliance:

Latest status of R & M and LE works of 2 x 120 MW Ukai TPS unit No.1 & 2 by M/s. BHEL:

Unit 1:

- Shut down was taken on 06.09.2006. Machine Synchronised on 24.05.08.
- Yet full load of 120 MW is not achieved. M/s BHEL yet to give PG Test.

Unit 2:

- Unit 2 shut down taken on 12.08.08
- Unit -2 re-commissioned on 24.02.10
- Unit is running with 105 MW
- BHEL yet to give PG Test



Commission's comments:

The status of R&M of Ukai TPS unit 1 & 2 is noted. Quarterly progress report on the progress shall be submitted.

The current status and scheduled programme for R&M / LE works of Wanakbori TPS 1-6 shall also be reported to the Commission quarterly.

8.2.2 Directive 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:

In continuation of the previous Energy Audit carried out by GSECL for the various stations, the details of energy saving are submitted at Annexure-3.

Commission's comments:

The results submitted on Energy Audit are noted. The report covers Wanakbori-1, 4 & 5 Units and KLTPS-1&3 units.

The Energy Audit shall be continued on the balance generating plant also and reports submitted to the Commission.

8.2.3 Directive 3: Quality of Coal

GSECL shall make all possible efforts to obtain adequate and better quality mine coal and adequate quantity of washed coal. The Commission has taken note of the submission made by the petitioner. The Commission has directed GSECL 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 action taken during the year should be submitted by the petitioner along with its petition for annual tariff determination.

Compliance:

GSECL has taken action to improve upon its feedstock strategy so as to minimize its fuel cost and to improve the quality of fuel. A summary of action taken during the years is as under.

- GSECL has the strategy of 100% replacement of Mainline 'F' grade coal of SECL (South Eastern Coalfields Ltd.) by beneficiation (washing) and it has been achieved during the year 2009-10.
- Out of the total linkage of 164.40 lakh mt. from SECL, 80% coal was received after beneficiation and the balance coal from Korea-Rewa Coalfields.
- GSECL has the annual linkage of 9.30 lakh MT (only @ 5% of total domestic coal linkage) from the WCL coalfields that are closer to the GSECL power stations. Higher allocation of coal from WCL would lead to minimization of fuel cost. Efforts have been made even at Government level to get higher linkage of WCL coal. However, due to continuous efforts, GSECL has got 11.61 lakh Mt of coal from WCL in the year 2009-10.
- There was a mandate from MoP, Gol for GSECL to import 14.8 lakh mt. of coal in the year 2009-10. Due to higher prices of imported coal, it was used sparingly at Gandhinagar and Wanakbori TPSs, where it could be used efficiently for the target generation.
- Regarding quality of coal, the Company was continuously following up with the coal Companies on the quality complaints.
- As the Company is receiving major domestic coal after beneficiation (washing), where the quality is ensured by the washed coal contracts, the quality issues remain only for the small quantity and those are being taken up with Coal Companies by GSECL.

Commission's comments:

The action taken in getting the mainline coal replaced with washed coal is appreciated. Efforts are to be made to replace the balance mainline coal with washed coal.

8.2.4 Directive 4: Transit Loss of Coal

GSECL shall reduce the transit loss to normative level. 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 details of fuel cost segregated into pure fuel cost, freight and other cost (other cost should be segregated in to its respective components).

Compliance:

As per the directive of the Commission, GSECL will submit annually, along with its filing for annual tariff determination, the computation of the transit loss, the details of fuel cost segregated into pure coal cost, freight and other cost (into its respective components).

Commission's comments:

The information required as per the directive on the transit loss shall be furnished along with filing for annual tariff determination.

8.2.5 Directive 5: Power Purchase Agreement between GSECL & GUVNL

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

Compliance:

The PPA in respect to stations transferred from erstwhile GEB has been signed between GSECL and GUVNL and has been registered by the Commission as No. 1035 of 2010, which is pending.

Commission comments:

Action taken is noted.

8.2.6 Directive 6: 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. 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 the 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.

Compliance:

The Petitioner has submitted all the financial figures in terms of Rs. Crores in this Petition.

Commission's comments:

Action taken is noted.

8.2.7 Directive 7: Calculation of Depreciation

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.

Compliance:

Ministry of Power published a Tariff Policy in the Gazette of India dated 6th January 2006 vide resolution No. 23/2/2005-R&R (Volume III). In the Clause No. 5 (iii) (C) regarding depreciation, it is clearly mentioned as under:-

“Central Commission may notify rate of depreciation in respect of Generation and Transmission assets. The depreciation rates so notified would also be applicable for the distribution with appropriate modifications as may be evolved by the Forum of Regulators. The rate of depreciation so notified would be applicable for the purpose of tariff as well as accounting. There should be no need for any advance against the depreciation. The benefit of reduced tariff after the assets have been fully depreciated should remain available to the consumers.”

Accordingly, GSECL has adopted depreciation policy as per the Tariff Policy published by the Ministry of Power.

However, as per the Company's Act, the depreciation is required to be charged to the assets upto 95% during the useful life of assets. Over and above, it is also to be



mentioned that the dividend cannot be declared if the depreciation is charged less than the specified rate as per the Company's Act, Schedule-XIV.

As per the Electricity (Supply) Act, the depreciation is required to be charged upto 90% instead of 95% as compared to the Company's Act. Therefore, we are following CERC norms for the tariff as well as Accounting purpose. As per this policy, we have to charge depreciation upto 90% of original value during the useful life of the assets.

Commission's comments:

GSECL shall follow CERC (Terms and conditions of Tariff) Regulations 2009 for the calculation of depreciation for the determination of ARR and the tariff.

8.3 New Directives

8.3.1 Business Plan

GSECL has submitted a "Business Plan" for the control period of five (5) years i.e. from FY 2011-12 to FY 2015-16, in accordance with the directive of the Commission vide Letter No. GERC/MYT/Tariff-2010/1794 dated 12th November, 2010. It is observed that the assumptions used by GSECL in the Business Plan for projection of various components of ARR are as per the GERC Regulations, 2005 and MYT Regulations, 2007. As the MYT Regulations, 2011 are applicable for determination of tariff for the control period, FY 2011-12 to FY 2015-16 the projections for various components of ARR in the Business Plan should be as per the provisions of the MYT Regulations, 2011.

The GSECL is directed to revise the "Business Plan" for the control period FY 2011-12 to FY 2015-16 in line with the provisions in the MYT Regulations, 2011 and submit the same by August 2011 for approval of the Commission.

8.3.2 Sikka TPS

It is being stated that the units at Sikka TPS are operating at partial load due to vacuum problems during low tide period which adversely affects the Station Heat Rate, Auxiliary consumption and secondary fuel oil consumption. It is stated that the



sea water canal is being de-silted and after de-silting of the canal adequate water would be available and the problem of low vacuum during low tide period will be solved.

GSECL is directed to submit a report on the schedule for completion of de-silting of the canal and also submit quarterly reports to the Commission till the de-silting is completed and on the performance of the units at Sikka thereafter. The first report on de-silting shall be submitted by May 2011.

8.3.3 KLTPS Unit- 4

It is submitted that this newly commissioned unit of KLTPS is not performing well due to teething problems encountered during stabilization.

GSECL is directed to draw a time-bound program for improvement of performance of KLTPS- 4 unit and submit the same within a period of three months.

8.3.4 Water Charges

GSECL has stated that the O & M charges were increased during control period of 2008-09 to 2010-11 due to increase in water charges by the Government of Gujarat.

GSECL is directed to submit the station-wise details regarding quantity of water consumption, rate of water charges, total water charges, actual amount paid towards water charges for past five years within a period of three months.

8.3.5 Cost Audit of generating stations

Apart from the Energy Audit being conducted at various thermal generating stations, the GSECL is directed to get 'Cost Audit' conducted, for each of the thermal generating stations to identify the areas where efficiency could be improved and costs reduced. If such cost audit is already being conducted the report for FY 2009-10 shall be submitted to the Commission along with the details of the action taken to improve the efficiency of the areas identified and reduce the costs.

COMMISSION'S ORDER

The Commission approves the station-wise fixed charges and energy charges for the FY 2011-12 as outlined in the table below:

Sr. No.	Power Station	Annual Fixed Charges for FY 2011-12 (Rs. in crore)	Energy Charges FY 2011-12 (Rs/KWH)
1	Ukai (1-5)	246.64	1.710
2	Gandhinagar (1-4)	266.37	2.375
3	Gandhinagar 5	97.24	2.130
4	Wankabori (1-6)	365.77	2.108
5	Wankabori 7	94.58	2.022
6	Sikka	121.68	2.769
7	KLTPS (1-3)	221.50	1.181
8	KLTPS 4	129.34	1.109
9	Dhuvaran (Gas 1)	56.17	2.411
10	Dhuvaran (Gas 2)	67.41	2.388
11	Utran Gas	51.88	2.367
12	Utran Extension	290.98	2.071
13	Ukai Hydro	24.42	-
14	Kadana Hydro	61.45	-
	Total	2095.42	

This order shall come into force with effect from 1st April, 2011

Sd/-	Sd/-	Sd/-
_____ DR. P.K. MISHRA Chairman	_____ SHRI PRAVINBHAI PATEL Member	_____ DR. M.K. IYER Member

Date: 11th April 2011
Ahmedabad

