

# **Jharkhand State Electricity Regulatory Commission**



Order on  
approval of Business plan  
and  
determination of ARR for the control period  
FY 2016-17 to FY 2020-21  
(including True up for FY 2015-16 )  
for  
Tata Power Company Limited  
(TPCL)

Ranchi

19 February 2018

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

**TABLE OF CONTENTS**

<b>A1: INTRODUCTION .....</b>	<b>11</b>
JHARKHAND STATE ELECTRICITY REGULATORY COMMISSION.....	11
THE PETITIONER - TATA POWER COMPANY LIMITED.....	13
THE PETITIONER'S PRAYERS .....	13
SCOPE OF THE PRESENT ORDER .....	14
<b>A2: PROCEDURAL HISTORY.....</b>	<b>15</b>
BACKGROUND.....	15
TSL AND TPCL'S PRAYER FOR TREATMENT OF UNIT 2 AND UNIT 3 AS CAPTIVE UNITS AND RULING OF ATE.....	15
FILING OF ARR AND TARIFF PETITION BY TPCL AND TARIFF ORDER FOR FY 2009-10 .....	16
TARIFF ORDER FOR FY 2010-11 .....	17
TARIFF ORDER FOR FY 2011-12 .....	18
BUSINESS PLAN AND MYT ORDER FOR FY 2012-13 TO FY 2015-16 .....	18
TARIFF ORDER ON ANNUAL PERFORMANCE REVIEW FOR FY 2012-13 INCLUDING TRUING UP OF FY 2011-12 AND REVISED ESTIMATES FOR FY 2013-14 - FY 2015-16 .....	18
TARIFF ORDER ON ANNUAL PERFORMANCE REVIEW FOR FY 2013-14 INCLUDING REVISED TRUING UP FOR FY 2011- 12 AND TRUE UP FOR FY 2012-13.....	18
ORDER ON ANNUAL PERFORMANCE REVIEW PETITION FOR FY 2015-16 INCLUDING TRUE UP FOR FY 2013-14 AND TRUE UP FOR FY 2014-15 .....	18
FILING OF THE PETITION BY THE PETITIONER.....	19
INFORMATION GAPS IN THE APR PETITION .....	19
INVITING PUBLIC COMMENTS/SUGGESTIONS .....	20
SUBMISSION OF COMMENTS/SUGGESTIONS AND CONDUCT OF PUBLIC HEARING .....	21
<b>A3: SUMMARY OF THE PETITIONS FOR APPROVAL OF BUSINESS PLAN AND DETERMINATION OF ARR FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21 INCLUDING TRUE-UP FOR FY 2015-16.....</b>	<b>22</b>
OVERVIEW OF THE THERMAL STATIONS .....	22
TRUING UP FOR THE FY 2015-16 .....	22
APPROVAL OF BUSINESS PLAN AND DETERMINATION OF ARR FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21 .....	23
<b>A4: PUBLIC CONSULTATION PROCESS .....</b>	<b>25</b>
NO DISCUSSION ON CURRENT SCENARIO .....	25
INCREASE IN GENERATION FROM TATA POWER PLANTS.....	25
INVESTMENTS IN TATA DOCOMO.....	26
QUARTERLY PROFIT.....	26
INVESTMENTS OF WORLD BANK IN TATA POWER, CGPL.....	27
COMMENTS REGARDING SUPPLY TO OTHER LICENSEE (JUSCO) AND NEARBY AREAS .....	27
COMMENTS REGARDING INDUSTRIAL ENERGY LIMITED (IEL) .....	28
TRANSPORTATION OF COAL AND FLY ASH .....	28
IMPORTED COAL .....	29
NOC FOR SUPPLY OF FLY ASH.....	30
NORMS OF JSPCB.....	30
INCREASE IN SALARIES OF THE EMPLOYEES .....	30
RAW WATER PROCUREMENT .....	31
ISSUE ON SUB-LEASE .....	31

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

<b>A5: TRUING UP FOR FY 2015-16.....</b>	<b>33</b>
OPERATIONAL PERFORMANCE .....	33
<i>Plant Availability</i> .....	33
<i>Auxiliary Consumption</i> .....	34
<i>Plant Load Factor and Generation</i> .....	34
<i>Heat Rate</i> .....	35
<i>Operational Parameters Summary</i> .....	37
FUEL COST PARAMETERS.....	37
<i>Coal Mix and Gross Calorific Value (GCV) of Primary Fuel</i> .....	37
<i>Transit Loss</i> .....	39
<i>Landed Cost of Coal</i> .....	42
<i>Energy Charge Rate (ECR)</i> .....	44
<i>Summary of Fuel Cost</i> .....	45
DETERMINATION OF FIXED COST .....	47
<i>Additional Capitalization</i> .....	47
<i>Depreciation</i> .....	54
<i>Operation &amp; Maintenance Expenses</i> .....	55
<i>Return on Equity (RoE)</i> .....	63
<i>Interest on Loan</i> .....	66
<i>Cost of Secondary Fuel</i> .....	68
<i>Interest on Working Capital</i> .....	70
<i>Summary of Fixed Cost Determinants and Generation Tariff</i> .....	72
<i>Incentive</i> .....	74
TAX ON SAVINGS ON OPERATIONAL PARAMETERS .....	76
<i>Tax Liability on gain on secondary fuel oil consumption</i> .....	76
<i>Tax Liability on gain in Auxiliary Consumption</i> .....	78
<i>Tax Liability on gain in Heat rate</i> .....	79
TOTAL COST.....	80
GAP/SURPLUS FOR FY 2015-16 .....	81
<b>A6: APPROVAL OF BUSINESS PLAN FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21</b>	<b>82</b>
<i>Capital Investment Plan for the Control Period FY 2016-17 to FY 2020-21</i> .....	83
<i>Capital Structure (Financing of Additional Capitalization)</i> .....	88
<i>Interest on Loan</i> .....	90
<i>Return on Equity (RoE)</i> .....	93
<i>Operation &amp; Maintenance Expenses</i> .....	97
<i>Depreciation</i> .....	114
<i>Performance targets – FY 2016-17 to FY 2020-21</i> .....	117
<i>Availability</i> .....	117
<i>Auxiliary consumption</i> .....	118
<i>Plant Load factor and Generation</i> .....	118
<i>Station Heat Rate (SHR)</i> .....	119
<i>Specific Oil Consumption</i> .....	121
<i>Summary of the Operational Performance Parameters</i> .....	123
<b>A7: TARIFF DETERMINATION FOR THE MYT CONTROL PERIOD (FY 2016-17 TO FY 2020-21)</b>	<b>125</b>
OPERATIONAL PERFORMANCE – FY 2016-17 TO FY 2020-21.....	125

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

<i>Availability</i> .....	125
<i>Auxiliary Consumption</i> .....	126
<i>Plant Load factor and Generation</i> .....	126
<i>Station Heat Rate (SHR)</i> .....	127
<i>Specific Oil Consumption</i> .....	128
<i>Summary of the Operational Performance Parameters</i> .....	128
PROJECTED FUEL PARAMETERS – FY 2016-17 TO FY 2020-21 .....	130
<i>Determination of Energy Charges</i> .....	130
<i>Fuel Procurement Plan</i> .....	130
<i>Gross Calorific Value (GCV) of Primary Fuel</i> .....	133
<i>Transit Loss</i> .....	135
<i>Landed Cost of Primary Fuel</i> .....	135
<i>Energy Charge Rate (ECR)</i> .....	138
DETERMINATION OF FIXED COST .....	142
<i>Capital Investment Plan for the Control Period FY 2016-17 to FY 2020-21</i> .....	142
<i>Capital Structure (Financing of Additional Capitalization)</i> .....	145
<i>Operation &amp; Maintenance Expenses</i> .....	145
<i>Depreciation</i> .....	153
<i>Interest on Loan</i> .....	155
<i>Return on Equity (RoE)</i> .....	156
<i>Interest on Working Capital</i> .....	158
<i>Incentive</i> .....	161
<i>Summary of Fixed Cost Determinants</i> .....	162
REVENUE REQUIREMENT FOR THE CONTROL PERIOD FY 2016-17 TO FY 2020-21 .....	164
<b>A8: COMPLIANCE TO DIRECTIVES</b> .....	<b>167</b>
<b>A9: DIRECTIVES</b> .....	<b>172</b>
FILLING OF TRUE UP PETITION FOR FY 2016-17 AND APR FOR 2017-18 .....	172
DATA ADEQUACY IN NEXT TARIFF PETITION .....	172
TRANSIT LOSS.....	172
FUEL MIX .....	172
SPECIFIC FUEL CONSUMPTION .....	172
ASH DISPOSAL.....	172
DETAILED PROJECT REPORT (DPR) .....	173
NEW ADDITION/ INCREASE IN SCOPE OF WORK DURING EXECUTION OF APPROVED SCHEMES .....	173
<b>A10: ANNEXURES</b> .....	<b>174</b>
ANNEXURE I: LIST OF PARTICIPATING MEMBERS OF PUBLIC IN THE PUBLIC HEARING .....	174
ANNEXURE-II: LIST OF CAPEX SCHEMES (IN RS LACS) APPROVED BY THE COMMISSION FOR THE FY 2015-16 .....	175
ANNEXURE-III: LIST OF CARRY FORWARD SCHEMES APPROVED BY THE COMMISSION FOR THE FY 2016-17 .....	178
ANNEXURE-IV: LIST OF CAPEX SCHEMES APPROVED BY THE COMMISSION FOR THE PERIOD FY 2017-18 TO FY 2020-21 .....	185
ANNEXURE-V: LIST OF CAPEX SCHEMES UN-APPROVED BY THE COMMISSION FOR THE PERIOD FY 2017-18 TO FY 2020-21 .....	195

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**List of Abbreviations**

Abbreviation	Description
A&G	Administrative and General
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal for Electricity
COD	Date of Commercial Operation
FY	Financial Year
GCV	Gross Calorific Value
GFA	Gross Fixed Assets
GoI	Government of India
HO &SS	Head Office and Shared Services
JSERC	Jharkhand State Electricity Regulatory Commission
Kcal	Kilocalorie
Kg	Kilogram
kWh	Kilowatt-hour
LPPF	Landed Price of primary fuel
MAT	Minimum Alternative Tax
MCL	Mahanadi Coalfields Ltd. (IB Valley Coalfields)
ml	Millilitre
MT	Million Tonnes
MUs	Million Units
MW	Megawatt
O&M	Operations and Maintenance
PLF	Plant Load Factor
PPA	Power Purchase Agreement
RJC	Reprocessed Jig Coal
R&M	Repair and Maintenance
RoE	Return on Equity
Rs	Rupees
SBI	State Bank of India
SERC	State Electricity Regulatory Commission
SLM	Straight Line Method
TPCL	Tata Power Company Limited
TSL	Tata Steel Limited
UoM	Units of Measurement
WB	West Bokaro

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

**List of Tables**

Table 1: List of newspapers and dates on which the public notice by TPCL appeared.....	20
Table 2: List of newspapers and dates on which the public notice by JSERC appeared .....	20
Table 3: Overview of Unit 2 and Unit 3 .....	22
Table 4: Operational performance, fixed cost, energy charges and ARR for FY 2015-16.....	22
Table 5 Operational performance, fixed cost, energy charges and ARR for unit-2 for the MYT control period .....	23
Table 6 Operational performance, fixed cost, energy charges and ARR for unit-3 for the MYT control period .....	24
Table 7 Plant availability for truing up of FY 2015-16.....	33
Table 8 Auxiliary Consumption for truing up of FY 2015-16 .....	34
Table 9 Plant Load Factor and Generation (MU) for truing up of FY 2015-16 .....	35
Table 10 Heat Rate for truing up of FY 2015-16.....	36
Table 11: Trued-up operational parameters for Unit 2 for FY 2015-16.....	37
Table 12: Trued-up operational parameters for Unit 3 for FY 2015-16.....	37
Table 13: Approved Coal Mix and GCV for Unit 2 for FY 2015-16.....	39
Table 14: Approved Coal Mix and GCV for Unit 3 for FY 2015-16.....	39
Table 15: Actual transit loss submitted by the Petitioner.....	40
Table 16 Approved Transit loss for the FY 2015-16 .....	42
Table 17: Approved Weighted Average Landed Price of Coal for Unit 2 (in Rs/Ton).....	43
Table 18: Approved Weighted Average Landed Price of Coal for Unit 3 (in Rs/Ton) .....	43
Table 19: Approved Energy Charge Rate and Fuel Cost for Unit 2.....	45
Table 20: Approved Energy Charge Rate and Fuel Cost for Unit 3.....	45
Table 21: Approved Parameters for fuel cost for Unit 2 for FY 2015-16 .....	45
Table 22: Approved Parameters for fuel cost for Unit 3 for FY 2015-16 .....	46
Table 23: Apportionment ratio for additional Capitalisation of Common Facilities submitted by Petitioner .....	48
Table 24: Total Capitalisation submitted by the Petitioner (Rs. Cr) .....	49
Table 25 Comparison of the Capex schemes (in Rs Lacs) as approved in the previous MYT vis-a-vis as submitted now by the Petitioner.....	51
Table 26: Approved Additional Capitalisation for Unit 2 (Rs Cr) .....	53
Table 27: Approved Additional Capitalisation for Unit 3 (Rs Cr) .....	53
Table 28: Submitted Depreciation on for Unit 2 for FY 2015-16 (Rs Cr) .....	54
Table 29: Submitted Depreciation for Unit 3 for FY 2015-16 (Rs Cr) .....	54
Table 30: Approved Depreciation for FY 2015-16 of Unit 2 (Rs Cr).....	55
Table 31: Approved Depreciation for FY 2015-16 of Unit 3 (Rs Cr).....	55
Table 32: Summary of O&M Expenses submitted by the Petitioner (in Rs Cr).....	58
Table 33: Approved O&M expenses for Unit 2 (in Rs Cr) .....	62
Table 34: Approved O&M expenses for Unit 3 (in Rs Cr) .....	63
Table 35: Return on Equity submitted by the Petitioner (Rs Cr) .....	63
Table 36: Approved Return on Equity for Unit 2 (in Rs Cr).....	65
Table 37: Approved Return on Equity for Unit 3 ( in Rs Cr).....	65
Table 38: Interest on Loan of Unit 2 and Unit 3 submitted by the Petitioner for FY 2015-16 (Rs Cr).....	66
Table 39 Approved Interest on Loan for Unit-2 (in Rs Cr).....	67
Table 40 Approved Interest on Loan for Unit-3 (in Rs Cr).....	68
Table 41: Secondary fuel oil consumption in previous years.....	69
Table 42 Approved cost of secondary fuel for unit-2 (in Rs Cr).....	70
Table 43 Approved cost of secondary fuel for unit-3 (in Rs Cr).....	70
Table 44: Interest on Working Capital Submitted by the Petitioner (in Rs Cr).....	71
Table 45: Interest on Working Capital approved by the Commission for FY 2015-16 (in Rs Cr).....	72
Table 46: Summary of Annual Fixed Cost Unit 2 (in Rs Cr).....	73
Table 47: Summary of Annual Fixed Cost Unit 3 (in Rs Cr).....	73
Table 48: Incentive submitted by the Petitioner for Unit 2 and Unit 3 (in Rs Cr).....	74
Table 49: Incentive approved for Unit-2 (in Rs Cr).....	75
Table 50: Incentive approved for Unit-3 (in Rs Cr).....	75
Table 51: Computation of Tax liability on gains on LDO consumption of Unit 2 (in Rs Cr) .....	77

**Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)**

Table 52: Computation of Sharing of gains on LDO consumption of Unit 3 (in Rs Cr).....	77
Table 53: Tax Liability on Gain in Auxiliary Power Consumption for unit-2 (in Rs Cr) .....	78
Table 54: Tax Liability on Gain in Auxiliary Power Consumption for unit-3 (in Rs Cr) .....	78
Table 55: Tax liability on account of Heat rate for Unit-2 (in Rs Cr).....	79
Table 56 Tax liability on account of Heat rate for Unit-3 (in Rs Cr) .....	79
Table 57: Cost recoverable by the Petitioner for Unit 2.....	80
Table 58: Cost recoverable by the Petitioner for Unit 3.....	80
Table 59: Gap/Surplus for FY 2015-16 for Unit-2 (in Rs Cr).....	81
Table 60: Gap/Surplus for FY 2015-16 of Unit-3 (in Rs Cr) .....	81
Table 61: Methodology of apportionment ratio as submitted by the Petitioner .....	85
Table 62: Additional Capitalization for Control Period for Unit 2 (in Rs Cr) as submitted by the Petitioner.....	85
Table 63: Additional Capitalization for Control Period for Unit 3 (in Rs Cr) as submitted by the Petitioner.....	85
Table 64: GFA of Unit-2 (in Rs. Cr) for the Control period as submitted by the Petitioner .....	85
Table 65: GFA of Unit-3 (in Rs Cr) for the control period as submitted by the Petitioner .....	86
Table 66: Additional Capitalization of Unit 2 (in Rs Cr) as approved by the Commission .....	87
Table 67: Additional Capitalization of Unit 3 (in Rs Cr) as approved by the Commission .....	87
Table 68: GFA of Unit-2 (in Rs. Cr) for the control period as approved by the Commission .....	88
Table 69: GFA of Unit-3 (in Rs Cr) for the control period as approved by the Commission .....	88
Table 70: Financing of Additional Capitalization (in Rs Cr) for Unit-2 as submitted by the Petitioner .....	88
Table 71: Financing of Additional Capitalization (in Rs Cr) for Unit-3 as submitted by the Petitioner .....	89
Table 72: Financing of Additional Capitalization (in Rs Cr) for Unit-2 as approved by the Commission.....	89
Table 73: Financing of Additional Capitalization (in Rs Cr) for Unit-3 as approved by the Commission.....	90
Table 74: Interest on Loan (in Rs Cr) for Unit-2 as proposed by the Petitioner.....	90
Table 75: Interest on Loan (in Rs Cr) for Unit-3 as proposed by the Petitioner.....	90
Table 76: Interest on Loan (in Rs Cr) for Unit-2 as approved by the Commission.....	92
Table 77: Interest on Loan (in Rs Cr) for Unit-3 as approved by the Commission.....	92
Table 78: Return on Equity (in Rs Cr) for unit-2 as submitted by the Petitioner .....	93
Table 79: ROE for the MYT period for unit-3 as submitted by the Petitioner.....	94
Table 80: Return on Equity (in Rs Cr) for unit-2 as approved by the Commission .....	96
Table 81: Return on Equity (in Rs Cr) for unit-3 as approved by the Commission .....	96
Table 82: Employee expenses (in Rs Cr) for Unit 2 & 3 as submitted by the Petitioner .....	98
Table 83: R&M Expenses (in Rs Cr) for Unit-2 & 3 as submitted by the Petitioner .....	98
Table 84: Ash disposal expenses for Unit 2 & 3 (in Rs Cr) as submitted by the Petitioner .....	99
Table 85: Raw Water expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner .....	100
Table 86: Raw Water expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner .....	100
Table 87: HO expenses allocated to Unit 2 & 3 (in Rs Cr) as submitted by the Petitioner .....	101
Table 88: Application fee and Publication expenses (in Rs Cr) for Unit-2 as submitted by the Petitioner .....	102
Table 89: Application fee and Publication expenses (in Rs Cr) for Unit-3 as submitted by the Petitioner .....	102
Table 90: Other A&G expenses (in Rs Cr) as proposed by the Petitioner .....	102
Table 91: Capital Spares (in Rs Cr) for Unit-2 as submitted by the Petitioner .....	103
Table 92: Capital Spares (in Rs Cr) for Unit-3 as submitted by the Petitioner .....	103
Table 93: Total O&M expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner .....	103
Table 94: Total O&M expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner .....	104
Table 95: Employee expenses (in Rs Cr) for Unit 2 & 3 as approved by the Commission.....	106
Table 96: R&M Expenses (in Rs Cr) for Unit-2 & 3 as approved by the Commission.....	107
Table 97: Ash disposal expenses for Unit 2 & 3 (in Rs Cr) as approved by the Commission .....	108
Table 98: Raw Water expenses for Unit-2 (in Rs Cr) as approved by the Commission.....	109
Table 99: Raw Water expenses for Unit-3 (in Rs Cr) as approved by the Commission.....	109
Table 100: HO expenses allocated to Unit 2 & 3 (in Rs Cr) as approved by the Commission .....	110
Table 101: Application fee and Publication expenses (in Rs Cr) for Unit-2 as approved by the Commission .....	111
Table 102: Application fee and Publication expenses (in Rs Cr) for Unit-3 as approved by the Commission .....	111
Table 103: Other A&G expenses (in Rs Cr) as approved by the Commission.....	111
Table 104: Capital Spares (in Rs Cr) for Unit-2 as approved by the Commission.....	112
Table 105: Capital Spares (in Rs Cr) for Unit-3 as approved by the Commission.....	112

**Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)**

Table 106: Total O&M expenses for Unit-2 (in Rs Cr) as approved by the Commission.....	113
Table 107: Total O&M expenses for Unit-3 (in Rs Cr) as approved by the Commission.....	113
Table 108: Depreciation (in Cr) for Unit-2 as submitted by the Petitioner .....	115
Table 109: Depreciation (in Cr) for Unit-3 as submitted by the Petitioner .....	115
Table 110: Depreciation (in Rs Cr) for Unit-2 as approved by the Commission .....	117
Table 111: Depreciation (in Rs Cr) for Unit-3 as approved by the Commission .....	117
Table 112: Availability for the Control Period as submitted by the Petitioner .....	117
Table 113: Projected Generation (MU) and PLF (%) for Unit 2 as submitted by the Petitioner.....	118
Table 114: Projected Generation (MU) and PLF (%) for Unit 3 as submitted by the Petitioner.....	119
Table 115: Generation (MU) and PLF (%) for Unit 2 as approved by the Commission.....	119
Table 116: Generation and PLF (%) for Unit 3 as approved by the Commission.....	119
Table 41: Secondary fuel oil consumption in previous years.....	121
Table 117: Summary of Operational performance parameters for unit-2 as submitted by the Petitioner.....	123
Table 118: Summary of Operational performance parameters for unit-3 as submitted by the Petitioner.....	123
Table 119: Summary of Operational performance parameters for unit-2 as approved by the Commission.....	124
Table 120: Summary of Operational performance parameters for unit-3 as approved by the Commission.....	124
Table 121: Availability for the Control Period as submitted by the Petitioner .....	125
Table 122: Projected Generation (MU) and PLF (%) for Unit 2 as submitted by the Petitioner.....	126
Table 123: Projected Generation (MU) and PLF (%) for Unit 3 as submitted by the Petitioner.....	126
Table 124: Summary of Operational performance parameters for unit-2 as submitted by the Petitioner.....	128
Table 125: Summary of Operational performance parameters for unit-3 as submitted by the Petitioner.....	128
Table 126: Summary of Operational performance parameters for unit-2 as approved by the Commission.....	129
Table 127: Summary of Operational performance parameters for unit-3 as approved by the Commission.....	129
Table 128 : Fuel Procurement plan for Unit-2 as submitted by the Petitioner .....	130
Table 129: Fuel Procurement plan for Unit-3 as submitted by the Petitioner .....	131
Table 130 : Fuel Procurement plan for Unit-2 as approved by the Commission.....	132
Table 131: Fuel Procurement plan for Unit-3 as approved by the Commission.....	132
Table 132: GCV for unit-2 ( in Kcal/Kg) as submitted by the Petitioner.....	133
Table 133: GCV for unit-3 ( in Kcal/Kg) as submitted by the Petitioner.....	133
Table 134: GCV for unit-2 & 3 (in Kcal/Kg) as approved by the Commission .....	134
Table 135: Landed Cost of Coal (in Rs/Ton) for Unit-2 as submitted by the Petitioner .....	136
Table 136: Landed Cost of Coal (in Rs /Ton) for Unit-3 as submitted by the Petitioner .....	136
Table 137: Landed Cost of Coal (in Rs/Ton) for Unit-2 as approved by the Commission .....	137
Table 138: Landed Cost of Coal (in Rs/Ton) for Unit-3 as approved by the Commission .....	137
Table 139: Submitted Energy Charge Rate for the Control Period for Unit 2 .....	138
Table 140: Submitted Energy Charge Rate for the Control Period for Unit 3 .....	138
Table 141: Approved Energy Charge Rate for the Control Period for Unit 2 .....	140
Table 142: Approved Energy Charge Rate for the Control Period for Unit 3 .....	141
Table 143: Methodology of apportionment ratio as submitted by the Petitioner .....	143
Table 144: Additional Capitalization for Control Period for Unit 2 (in Rs Cr) as submitted by the Petitioner.....	143
Table 145: Additional Capitalization for Control Period for Unit 3 (in Rs Cr) as submitted by the Petitioner.....	144
Table 146: GFA of Unit-2 (in Rs. Cr) for the Control period as submitted by the Petitioner .....	144
Table 147: GFA of Unit-3 (in Rs Cr) for the control period as submitted by the Petitioner.....	144
Table 148: Financing of Additional Capitalization (in Rs Cr) for Unit-2 as submitted by the Petitioner .....	145
Table 149: Financing of Additional Capitalization (in Rs Cr) for Unit-3 as submitted by the Petitioner .....	145
Table 150: Employee expenses (in Rs Cr) for Unit 2 & 3 as submitted by the Petitioner .....	146
Table 151: R&M Expenses (in Rs Cr) for Unit-2 & 3 as submitted by the Petitioner .....	147
Table 152: Ash disposal expenses for Unit 2 & 3 (in Rs Cr) as submitted by the Petitioner .....	148
Table 153: Raw Water expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner .....	148
Table 154: Raw Water expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner .....	149
Table 155: HO expenses allocated to Unit 2 & 3 (in Rs Cr) as submitted by the Petitioner .....	150
Table 156: Application fee and Publication expenses (in Rs Cr) for Unit-2 as submitted by the Petitioner .....	150
Table 157: Application fee and Publication expenses (in Rs Cr) for Unit-3 as submitted by the Petitioner .....	151
Table 158: Other A&G expenses (in Rs Cr) as proposed by the Petitioner .....	151



**Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)**

---

Table 159: Capital Spares (in Rs Cr) for Unit-2 as submitted by the Petitioner .....	151
Table 160: Capital Spares (in Rs Cr) for Unit-3 as submitted by the Petitioner .....	152
Table 161: Total O&M expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner .....	152
Table 162: Total O&M expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner .....	153
Table 163: Depreciation (in Cr) for Unit-2 as submitted by the Petitioner .....	154
Table 164: Depreciation (in Cr) for Unit-3 as submitted by the Petitioner .....	154
Table 165: Interest on Loan (in Rs Cr) for Unit-2 as proposed by the Petitioner.....	155
Table 166: Interest on Loan (in Rs Cr) for Unit-3 as proposed by the Petitioner.....	155
Table 167: Return on Equity (in Rs Cr) for unit-2 as submitted by the Petitioner .....	156
Table 168: ROE for the MYT period for unit-3 as submitted by the Petitioner.....	157
Table 169: Interest on Working Capital for Unit-2 (in Rs Cr) as submitted by the Petitioner .....	158
Table 170: Interest on working capital for unit-3 (in Rs Cr) as submitted by the Petitioner.....	158
Table 171: Interest on Working Capital for Unit-2 (in Rs Cr) as approved by the Commission.....	160
Table 172: Interest on working capital for unit-3 (in Rs Cr) as approved by the Commission .....	160
Table 173: Submitted Cost of Incentive for the Control Period for Unit 2 (in Rs Cr).....	161
Table 174: Submitted Cost of Incentive for the Control Period for Unit 3 (in Rs Cr).....	162
Table 175: Annual Fixed Charges for Unit 2 (in Rs Cr) as submitted by the Petitioner .....	162
Table 176: Annual Fixed Charges for Unit 3 (in Rs Cr) as submitted by the Petitioner .....	163
Table 177: Annual Fixed Charges for Unit 2 (in Rs Cr) as approved by the Commission .....	163
Table 178: Annual Fixed Charges for Unit 3 (in Rs Cr) as approved by the Commission .....	163
Table 179: Annual Revenue requirement (in Rs Cr) for unit-2 as submitted by the Petitioner.....	164
Table 180: Annual Revenue requirement (in Rs Cr) for unit-3 as submitted by the Petitioner.....	165
Table 181: Annual Revenue requirement for unit-2 (in Rs Cr) as approved by the Commission .....	165
Table 182: Annual Revenue requirement for unit-3 (in Rs Cr) as approved by the Commission .....	166

## **BEFORE**

### **Jharkhand State Electricity Regulatory Commission, Ranchi**

**Case No.: 16 of 2016 and 05 of 2017**

**In the matter of:**

**Approval of Business plan and Determination of ARR for the  
Control period FY 2016-17 to FY 2020-21;  
(including True up for FY 2015-16)**

**In the matter:**

Tata Power Corporation Limited (TPCL), Jojobera Power Plant,  
PO Rahargora, Jamshedpur - 831 016

### **PRESENT**

**Hon'ble Dr Arbind Prasad**

**Chairperson**

**Hon'ble Mr R. N. Singh**

**Member (T)**

**Order dated 19 February 2018**

In this Petition, Tata Power Corporation Limited (hereinafter referred to as TPCL) has prayed for Order of Approval of Business plan and Determination of ARR for the MYT control period FY 2016-17 to FY 2020-21 (including True up for FY 2015-16).

## **A1: INTRODUCTION**

### **Jharkhand State Electricity Regulatory Commission**

- 1.1 The Jharkhand State Electricity Regulatory Commission (hereinafter referred to as “JSERC” or “the Commission”) was established by the Government of Jharkhand under Section 17 of the Electricity Regulatory Commission Act, 1998 on August 22, 2002. The Commission became operational with effect from April 24, 2003.
- 1.2 The Government of Jharkhand vide its notification dated August 22, 2002 had defined the functions of JSERC as per Section 22 of the Electricity Regulatory Commission Act, 1998 to be the following, namely:-
  - a) to determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be, in the manner provided in section 29;
  - b) to determine the tariff payable for the use of the transmission facilities in the manner provided in section 29;
  - c) to regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the State;
  - d) to promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of this Act.
- 1.3 After the Electricity Act, 2003 came into force, the earlier Electricity Regulatory Commission Act of 1998 stands repealed and the JSERC is discharging its functions as prescribed in Section 86 of the Act.
- 1.4 In accordance with provisions of the said Act, the JSERC discharges the following functions: -
  - a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State:
  - (a) Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;
  - b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;

- c) facilitate intra-state transmission and wheeling of electricity;
  - d) issue licences to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;
  - e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;
  - f) adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;
  - g) levy fee for the purposes of this Act;
  - h) specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;
  - i) specify or enforce standards with respect to quality, continuity and reliability of service by licensees;
  - j) fix the trading margin in the intra-state trading of electricity, if considered, necessary;
  - k) discharge such other functions as may be assigned to it under this Act.
- 1.5 The Commission advises the State Government on all or any of the following matters, namely:-
- a) promotion of competition, efficiency and economy in activities of the electricity industry;
  - b) promotion of investment in electricity industry;
  - c) reorganisation and restructuring of electricity industry in the State;
  - d) matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.
- 1.6 The State Commission ensures transparency while exercising its powers and discharging its functions.
- 1.7 In discharge of its functions, the State Commission is guided by the National Tariff Policy framed and published by Government of India under the provisions of Section 3 of the Act. The objectives of the present National Tariff Policy are to:

- a) ensure availability of electricity to consumers at reasonable and competitive rates;
- b) ensure financial viability of the sector and attract investments;
- c) promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;
- d) promote competition, efficiency in operations and improvement in quality of supply.

### **The Petitioner - Tata Power Company Limited**

- 1.8 The Petitioner, Tata Power Company Limited (hereinafter referred to as 'TPCL' or the 'Petitioner'), is a company incorporated under the Indian Companies Act, VII of 1913 with its Registered Office at Bombay House, 24, Homi Mody Street, Fort, Mumbai – 400001 and is engaged in the generation, transmission and distribution of electricity in the country.
- 1.9 TPCL operates five out of which two units (Unit 2 and Unit 3) of Jojobera Power Plant are the subject matter of tariff determination in this Tariff Order. Both Units have a capacity of 120 MW each. Unit 2 commenced its operations on February 1, 2001 and Unit 3 on February 1, 2002.
- 1.10 Tata Steel Limited (TSL), which is engaged in the production of iron and steel and is also a distribution licensee in Jamshedpur (Jharkhand), obtained permission from the Government of Bihar to establish power plants in Jojobera in 1991 through its subsidiary company named Jamshedpur Power Company Ltd. (JAPCOL) which was subsequently transferred to Tata Power Company Limited. TPCL thereafter commissioned the two Units of 120 MW each at Jojobera for supply of power to TSL.

### **The Petitioner's prayers**

- 1.11 The Petitioner in the Petition for Approval of Business plan and Determination of ARR for the MYT control period FY 2016-17 to FY 2020-21 including True-up for FY 2015-16 has prayed before the Commission:
- a) To approve the projections of Operational parameters, Fuel Procurement, Capex and Capitalization of assets, O&M expenses (including Employee expenses, A&G expenses, R&M expenses) proposed through MYT Business Plan as submitted on October 28, 2016 read with Revised MYT Business Plan submitted on February 10, 2017.
  - b) To approve the ARR and Generation Tariff for Unit 2 and Unit 3 for FY 2017-21 proposed through the MYT Petition submitted on April 11, 2017 in line with the Business plan submitted for the MYT control period.

- c) To approve the Operational and Financial Parameters, Annual Revenue Requirement and Generation Tariff for Unit 2 and Unit 3 of Jojobera for the year FY 2015-16 proposed through True-up petition submitted on April 11, 2017.
- 1.12 The Petitioner filed for the truing up for FY 2015-16 based on the actual information and audited accounts (including the requisite auditor certifications).

### **Scope of the Present Order**

- 1.13 The Commission in this order has approved the Business plan, Multi Year Tariff for the Control period FY 2016-17 to FY 2020-21 (including truing up for the FY 2015-16) of Unit 2 & 3 of the Jojobera plant of TPCL.
- 1.14 While conducting the review the Commission has taken into consideration:
- a. Material placed on record by the Petitioner
  - b. Provisions of the Electricity Act, 2003;
  - c. Principles laid down in the National Electricity Policy;
  - d. Principles laid down in the National Tariff Policy;
  - e. Provisions of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 (hereinafter referred to as 'JSERC Generation Tariff Regulations, 2010');
  - f. Provisions of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2015 (hereinafter referred to as 'JSERC Generation Tariff Regulations, 2015');
- 1.15 Accordingly, the Commission has scrutinized the Petitions in detail and hereby issues the Order on the Business Plan and determination of ARR for the Control Period FY 2016-17 to FY 2020-21 (including truing up for the FY 2015-16) of Unit 2 & 3 of the Jojobera plant of TPCL.

## **A2: PROCEDURAL HISTORY**

### **Background**

- 2.1 TISCO, now TSL, was accorded sanction under section 28(1) of the Indian Electricity Act 1910 for distribution of electricity in the Jamshedpur township area in 1923. Subsequently by Government of Bihar notification dated February 5, 1993 permission was granted for the establishment of Jamshedpur Power Generating Co. Ltd (JAPCOL) as proposed by TISCO in order to set up Units 2 and Unit 3 at Jojobera, Jamshedpur.
- 2.2 The two parties, signed a PPA on September 12, 1997 under which both the parties agreed to set up, in a phased manner, a power plant with a total capacity of up to 500 MW at Jojobera. The PPA contained certain provisions which govern the determination of tariff for power generated at Jojobera power plant and purchased by TSL.
- 2.3 In April 2000, JAPCOL was amalgamated into TPCL (the Petitioner) as its subsidiary. Currently, the Petitioner operates five units at the Jojobera Power Plant, out of which two Units (Units 2 and Unit 3) have been subject to tariff determination by the Commission. Both Units have a capacity of 120 MW each.

### **TSL and TPCL's prayer for treatment of Unit 2 and Unit 3 as captive units and ruling of ATE**

- 2.4 TSL and the Petitioner jointly filed a petition with the Commission for treatment of Unit 2 and Unit 3 at Jojobera power plant as captive units of TSL. The extract of the Appeal is as stated below

*“The units 2 & 3 at Jojobera, Jamshedpur with a total installed capacity of 240 MW were conceived to meet the needs of steel works and are essentially captive power plants for steel works and related and associated activities of TSL i.e. steel works. The permission to establish the units 2 & 3 were granted to Jamshedpur Power Generating Co. Ltd. (JAPCOL for short) vide a notification issued by the Government of Bihar dated 05.02.93, subsequently amended on 22.03.96 under section 15-A, 43(A)(1)(C) and 44(1) of the Act of 1948. JAPCOL was later amalgamated into TPC in April 2000. The electricity generated from units 2 & 3 were from the very beginning primarily and essentially used for activities associated with manufacture of steel at TSL and for activities incidental and related thereto such as for supply to residential colonies of steel works. TSL became a sanction holder under section 28(1) of Act of 1910 and the area contiguous to the steel works forming part of the Jamshedpur city was taken over by TSL for electricity distribution. TSL is now distribution licensee in the area of Jamshedpur as an ancillary unit in principal business of production of steel. The electricity distribution and retail supply to consumers was done from the energy available after own consumption for TSL's principal business activity. TSL also purchases electricity from*

*TPCL's unit 1 at Jojobera for consumers of steel works. It also purchases electricity from the Damodar Valley Corporation (DVC for short) to supplement the electricity generated at TPCL's generating units. The supply of electricity to steel works from units 2 & 3 be not considered as supply of electricity by TSL as distribution licensee and therefore be not made part of annual revenue requirement and tariff proposal of TSL's activity as distribution licensee."*

- 2.5 The Commission, in its order dated November 2, 2007, dismissed the appellants' contention that Units 2 and Unit 3 of the Jojobera plant be treated as captive power plants, on the basis of Section 9 of the Electricity Act 2003 and Rule 3 of the Electricity Rules 2005.
- 2.6 Dissatisfied with the Commission's order on the Joint petition filed by TSL and the Petitioner, the two appellants went in appeal before the Hon'ble ATE.
- 2.7 The Hon'ble ATE, too, ruled that the generating Units in question could not be treated as CPPs and upheld the Order of the Commission. The two appellants subsequently submitted a petition in the Hon'ble Supreme Court to get a stay on the Hon'ble ATE's Judgment, which was refused by the Hon'ble Court. The matter is still pending in the Hon'ble Supreme Court.

#### **Filing of ARR and Tariff petition by TPCL and Tariff Order for FY 2009-10**

- 2.8 In view of the Hon'ble ATE's Judgement and in accordance with the JSERC Generation Tariff Regulations, 2004 and its powers under the Section 62 (1) (a) of the Act, 2003, the Commission directed the Petitioner to file the ARR and Tariff petition with the Commission for determination of tariff of the two units (Unit 2 and Unit 3) at Jojobera.
- 2.9 TPCL filed the petition for determination of ARR for FY 2007-08, FY 2008-09 and FY 2009-10. The norms and guiding principles for tariff determination adopted by TPCL were not as per the JSERC Generation Tariff Regulations, 2004 but in accordance with the Power Purchase Agreement of 30 years signed with TISCO/TSL as sanction holder for distribution and generation of electricity at Jamshedpur.
- 2.10 During the tariff determination exercise for FY 2009-10 the Petitioner submitted that "as the PPA is legally binding on both parties, the Commission is requested to determine generation tariff for sale of power from both the Units, as per the provisions of the existing PPA."
- 2.11 The Commission accepted TPCL's request and determined the tariff for the FY 2009-10 as per the provisions of the PPA between TPCL and TSL. The Commission, however, directed the two parties to re-negotiate the PPA as under:



*“10.1 The Petitioner had signed a Power Purchase Agreement (PPA) with TSL Limited (TSL) on 12th September, 1997 under which the Petitioner and TSL agreed to set up, in a phased manner, a power plant with a total capacity up to 500 MW at Jojobera. The PPA laid down certain provisions governing the determination of tariff for power generated by TPCL’s Jojobera Power Plant and purchased by TSL.*

*10.2 Since the tariff period for FY 2007-08 and FY 2008-09 is effectively over and the tariff period remaining for FY 2009-10 is also not adequate to enforce any changes in the PPA, the Commission has decided to accept the provisions of the PPA for the tariff determination exercise for FY 2007-08, FY 2008-09 & FY 2009-10 for power generated from Unit 2 and Unit 3 of Jojobera Plant.*

*10.3 Furthermore, since the petition for FY 2010-11 is already due for submission by TPCL, the Commission has decided to continue with the provisions of the PPA for the tariff period FY 2010-11 as well.*

*10.4 Meanwhile, for future tariff periods, the Commission directs the Petitioner to renegotiate the terms and conditions for the determination of tariff specified in the PPA with TSL within 6 months of the issue of this order and submit the ARR filing for FY 2011-12 as per the new agreement (to be ratified by the Commission). The terms and conditions of the tariff determination in the new agreement between TPCL and TSL should be guided by ‘Generation Tariff Regulations, 2004’ as amended from time to time.”*

### **Tariff Order for FY 2010-11**

- 2.12 During the tariff determination exercise for FY 2010-11 the Petitioner reiterated its request that the Commission determine the generation tariff for sale of power from both the Units (Unit 2 and Unit 3), as per the provisions of the existing PPA.
- 2.13 The Commission in its previous tariff order of FY 2009-10 had accepted the Petitioner’s request and had decided to follow the provisions of PPA for determination of tariff up to the FY 2010-11 for power generated by Unit 2 and Unit 3. Thus the Commission decided to determine the tariff for FY 2010-11 as per the provisions of the PPA.
- 2.14 However, the Commission reiterated that from FY 2011-12 onwards, the tariff for Unit 2 and Unit 3 must be determined in accordance with the Generation Tariff Regulations 2010 of the Commission. It was clarified in the Tariff Order for FY 2010-11, thus;

*“The Commission is in the process of revising the Generation Regulations and the same would be applicable to all the generation stations.”*

### **Tariff Order for FY 2011-12**

- 2.15 The Commission in its previous Tariff Order for FY 2011-12 determined the ARR and generation tariff for Unit 2 and Unit 3 of TPCL for FY 2011-12 in accordance with the provisions and principles laid down in the Generation Tariff Regulations, 2010.

### **Business Plan and MYT Order for FY 2012-13 to FY 2015-16**

- 2.16 The Petitioner filed the petition for Business Plan, Annual Revenue Requirement and Determination of Generation Tariff for the control period FY 2012-13 to 2015-16 on November 30, 2011.
- 2.17 The Commission in its order dated May 31, 2012 approved the petition filed by the Petitioner regarding Business Plan, Annual Revenue Requirement and Determination of Generation Tariff for the control period FY 2012-13 to 2015-16, including truing up for FY 2010-11 and provisional truing up for FY 2011-12.

### **Tariff Order on Annual Performance Review for FY 2012-13 including Truing up of FY 2011-12 and Revised Estimates for FY 2013-14 - FY 2015-16**

- 2.18 The Commission in its previous Tariff Order, in accordance with the provisions and principles laid down in the Generation Tariff Regulations, 2010, carried out truing up of ARR parameters for FY 2011-12 and directed the Petitioner to file fresh petition regarding Truing up for FY 2012-13, APR for FY 2013-14 and Revised Estimates for FY 2014-15 to FY 2015-16.

### **Tariff Order on Annual Performance Review for FY 2013-14 including revised Truing up for FY 2011-12 and True up for FY 2012-13**

- 2.19 The Commission in its Order dated May 31, 2015 in accordance with the provisions and principles laid down in the Generation Tariff Regulations, 2010, carried out revised truing up of ARR parameters for FY 2011-12, true up of FY 2012-13 and APR for FY 2013-14.

### **Order on Annual Performance Review Petition for FY 2015-16 Including True up for FY 2013-14 and True up for FY 2014-15**

- 2.20 The Commission in its Order dated December 30, 2016 in accordance with the provisions and principles laid down in the Generation Tariff Regulations, 2010, carried out True up of FY 2013-14 and for FY 2014-15.
- 2.21 Since FY 2015-16 had already passed by the time the Petitioner submitted the Petition, The Commission had directed the Petitioner to submit a Petition for Truing up of FY 2015-16.

### **Filing of the Petition by the Petitioner**

- 2.22 The Petitioner filed the petition for the Approval of Business plan for the MYT Control period FY 2016-17 to FY 2020-21 on October 28, 2016.
- 2.23 The Commission in its discrepancy note had directed the Petitioner to submit document certifying the approval of the MYT Business Plan by Board of Directors.
- 2.24 The Petitioner vide his reply to the discrepancy note, submitted a revised business plan duly signed by COO and Executive Director, Tata Power on February 10, 2017. The Petitioner further submitted that COO and Executive Director, Tata Power are also the Board Members and the MYT Business Plan duly approved by the Board of Directors shall be submitted once their approval is obtained in the next Board Meeting.
- 2.25 Further, the Petitioner filed the Multi Year Tariff Petition for the Control period FY 2016-17 to FY 2020-21 including Truing up for FY 2015-16. The Petitioner in the petitions has requested to approve:
- a) To approve the projections of Operational parameters, Fuel Procurement, Capex and Capitalization of assets, O&M expenses (including Employee expenses, A&G expenses, R&M expenses) proposed through MYT Business Plan as submitted on October 28, 2016 read with Revised MYT Business Plan submitted on February 10, 2017.
  - b) To approve the ARR and Generation Tariff for Unit 2 and Unit 3 for FY 2017-21 proposed through the MYT Petition submitted on April 11, 2017 in line with the Business plan submitted for the MYT control period.
  - c) To approve the Operational and Financial Parameters, Annual Revenue Requirement and Generation Tariff for Unit 2 and Unit 3 of Jojobera for the year FY 2015-16 proposed through True-up petition submitted on April 11, 2017.

### **Information Gaps in the APR Petition**

- 2.26 In accordance with Section 64(3) of the Act, the State Electricity Regulatory Commission, within one hundred and twenty days of the filing of application for determination of tariff, is required to either accept it and issue a tariff order or reject the application for reasons to be recorded in writing. The Commission accepted the application submitted by the Petitioner for determination of tariff. As part of tariff determination exercise for the Control Period, several deficiencies/information gaps were observed in the tariff petition submitted by the Petitioner.
- 2.27 Those information were pointed out and communicated to the Petitioner vide letter nos.
- (a) JSERC/Case (Tariff) No. 16 of 2016/596 dated 21.12.2016

- (b) JSERC/Case (Tariff) No. 05 of 2017/153 dated 26.05.2017
- (c) E-mail dated September 09, 2017
- 2.28 The Petitioner submitted its response to the aforesaid letters and furnished additional data/information vide letter nos.
- (a) Letter No. JPP/REG/JSERC/27/17 dated 10.02.2017
- (b) Letter No. JPP/REG/JSERC/93/17 dated 19.06.2017
- (c) Letter No. JPP/REG/JSERC/146/17 dated 31.10.2017
- (d) Email dated January 08, 2018
- 2.29 The Commission scrutinized the said additional data/information and also considered the same while passing this Order on the petition filed by the Petitioner.

### Inviting Public Comments/Suggestions

- 2.30 The Commission directed the Petitioner to make available copies of the petition to the members of general public on request, and also issue a public notice inviting comments/suggestions on the petition for Approval of Business plan and Determination of ARR for the MYT control period FY 2016-17 to FY 2020-21 including True-up for FY 2015-16.
- 2.31 The aforesaid public notice was issued by the Petitioner in various newspapers and a period of twenty one (21) days was given to the members of the general public for submitting their comments/suggestions.

**Table 1: List of newspapers and dates on which the public notice by TPCL appeared**

Sl. No.	Newspaper	Date of Publication
1.	The Telegraph	22.09.2017 & 23.09.2017
2.	Hindustan Times	22.09.2017 & 23.09.2017
3.	Prabhat Khabar	22.09.2017 & 23.09.2017
4.	Hindustan	22.09.2017 & 23.09.2017

- 2.32 Subsequently, the Commission also issued a notice on its website [www.jserc.org](http://www.jserc.org) and various newspapers for conducting the public hearing on the Petition. The details of the newspapers publishing the notice by the Commission are as under:

**Table 2: List of newspapers and dates on which the public notice by JSERC appeared**

Sl. No.	Newspaper	Date of Publication
1	Hindustan	24.10.2017

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

Sl. No.	Newspaper	Date of Publication
2	Prabhat Khabar	24.10.2017
3	Dainik Jagran	24.10.2017
4	The Hindustan Times	24.10.2017
5	Dainik Bhaskar	25.10.2017
6	Uditvani	25.10.2017
7	Morning India	25.10.2017

### **Submission of Comments/Suggestions and Conduct of Public Hearing**

- 2.33 A public hearing was held on November 7, 2017 at Jamshedpur and respondents voiced their views on the ARR and tariff petition filed by the Petitioner. The comments/suggestions voiced by the respondents and the Petitioner's response thereon along with the Commissions analysis on the response provided by the Petitioner are detailed in the **Section 4** of this Order.

### **A3: SUMMARY OF THE PETITIONS FOR APPROVAL OF BUSINESS PLAN AND DETERMINATION OF ARR FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21 INCLUDING TRUE-UP FOR FY 2015-16**

#### **Overview of the Thermal Stations**

- 3.1 The Petitioner currently operates five units at the Jojobera power plant. Of these, two units i.e. Unit 2 and Unit 3 are the subject of ARR and tariff determination in the petition filed by it. The following table summarizes the information pertaining to both the units.

**Table 3: Overview of Unit 2 and Unit 3**

S. No.	Unit	Installed Capacity( MW)	Status of Operation	Commercial Date of Operation
1	Unit 2	120	Operational	February 1, 2001
2	Unit 3	120	Operational	February 1, 2002

#### **Truing up for the FY 2015-16**

- 3.2 In its petition the Petitioner has requested for the Truing up for the FY 2015-16 based on the actual information for the period from April 2015 to March 2016. The energy charge and fixed charge submitted by the Petitioner for FY 2015-16 are shown in the table below:

**Table 4: Operational performance, fixed cost, energy charges and ARR for FY 2015-16**

Particulars	UoM	Actuals for FY 2015-16 (Unit -2)	Actuals for FY 2015-16 (Unit -3)
Gross Generation	MU	848.41	791.49
Plant Load Factor	%	80.49%	75.09%
Aux Power Consumption	%	9.13%	9.25%
Ex-Bus Generation	MU	770.91	718.31
Availability	%	99.93%	95.53%
Gross Heat Rate	kCal/kWh	2548	2557
Normative Sp. LDO Consumption	ml/kWh	1.00	1.00
Fixed Charges			
Depreciation	Rs Cr	5.79	7.41
Interest on Loan	Rs Cr	3.65	2.97
O&M Expenses	Rs Cr	51.87	46.52
Return on Equity (Pre-Tax)	Rs Cr	28.24	27.06
Interest on working Capital	Rs Cr	15.98	16.92
Cost of Secondary Fuel Oil	Rs Cr	4.66	4.62
Annual Fixed Charges	Rs Cr	<b>110.19</b>	<b>105.49</b>
Projected Incentive (Pre-tax)	Rs Cr	24.61	16.62

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	Actuals for FY 2015-16 (Unit -2)	Actuals for FY 2015-16 (Unit -3)
Annual Fixed Charges (including Incentive)	Rs Cr	<b>134.80</b>	<b>122.11</b>
Rate of Energy Charges	Rs/kWh	2.771	2.786
Energy charge	Rs Cr	<b>213.58</b>	<b>200.11</b>
Add: Tax on the Gain on LDO Consumption retained by TPCL	Rs Cr	1.15	1.05
Add: Tax on the Gain on Auxiliary Power Consumption	Rs Cr	0.55	0.45
Add: Tax on the Gain on station heat rate	Rs Cr	0.43	0.42
Annual Revenue Requirement (including Tax on Efficiency Gains)	<b>Rs Cr</b>	<b>350.52</b>	<b>324.14</b>

**Approval of Business plan and Determination of ARR for the MYT control period  
FY 2016-17 to FY 2020-21**

- 3.3 In its petition the Petitioner has requested for the Approval of Business plan and determination of ARR for the MYT control period FY 2016-17 to FY 2020-21. The energy charge and fixed charge submitted by the Petitioner for the MYT control period FY 2016-17 to FY 2020-21 are shown in the table below:

**Table 5 Operational performance, fixed cost, energy charges and ARR for unit-2 for the MYT control period**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	852.49	886.58	835.32	890.71	831.00
Auxiliary Consumption	%	10%	10%	10%	10%	10%
Ex-Bus Generation	MU	767.24	797.92	751.78	801.64	747.90
Station Heat Rate	kCal/kWh	2567	2567	2567	2567	2567
Normative Sp LDO Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Fixed Charges						
Depreciation	Rs Cr	6.27	7.03	8.40	9.35	9.57
Interest on Loan	Rs Cr	4.18	4.56	5.13	5.34	4.93
O&M expenses	Rs Cr	52.28	57.39	61.42	66.55	68.49
Return on Equity (Pretax)	Rs Cr	28.8	29.33	30.06	30.67	30.92
Interest on Working Capital	Rs Cr	13.22	13.56	13.86	14.22	14.31
Total Annual Fixed Charges – (1)	Rs Cr	<b>104.75</b>	<b>111.86</b>	<b>118.87</b>	<b>126.13</b>	<b>128.23</b>
Incentive (Pre-Tax) – (2)	Rs Cr	0.00	0.00	0.00	0.00	0.00
Total Annual Fixed Charges including Incentive (pre-tax) –(3) = (1+2)	Rs Cr	<b>104.75</b>	<b>111.86</b>	<b>118.87</b>	<b>126.13</b>	<b>128.23</b>
Rate of Energy Charges	Rs/kWh	2.650	2.650	2.650	2.650	2.650

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Total Energy Charges – (4)	Rs Cr	<b>203.31</b>	<b>211.44</b>	<b>199.21</b>	<b>212.43</b>	<b>198.18</b>
Annual Revenue Requirement – (3) + (4)	<b>Rs Cr</b>	<b>308.06</b>	<b>323.30</b>	<b>318.08</b>	<b>338.56</b>	<b>326.41</b>

**Table 6 Operational performance, fixed cost, energy charges and ARR for unit-3 for the MYT control period**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.98	815.52	916.78	832.40	915.08
Auxiliary Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Ex-Bus Generation	MU	774.88	733.97	825.10	749.16	823.57
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Normative Sp LDO Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Fixed Charges						
Depreciation	Rs Cr	7.76	8.70	9.93	10.74	10.96
Interest on Loan	Rs Cr	3.67	4.33	4.8	4.97	4.62
O&M expenses	Rs Cr	47.88	51.67	57.34	60.15	63.83
Return on Equity (Pretax)	Rs Cr	27.74	28.46	29.14	29.69	29.94
Interest on Working Capital	Rs Cr	13.02	13.29	13.68	13.9	14.09
Total Annual Fixed Charges – (1)	Rs Cr	100.07	106.45	114.89	119.45	123.45
Incentive (Pre-Tax) – (2)	Rs Cr	0	0	1.33	0	1.23
Total Annual Fixed Charges including Incentive (pre-tax) –(3) = (1+2)	Rs Cr	<b>100.07</b>	<b>106.45</b>	<b>116.22</b>	<b>119.45</b>	<b>124.68</b>
Rate of Energy Charges	Rs/kWh	2.666	2.666	2.666	2.666	2.666
Total Energy Charges – (4)	Rs Cr	<b>206.56</b>	<b>195.66</b>	<b>219.95</b>	<b>199.71</b>	<b>219.54</b>
Annual Revenue Requirement – (3) + (4)	<b>Rs Cr</b>	<b>306.63</b>	<b>302.11</b>	<b>336.17</b>	<b>319.16</b>	<b>344.22</b>



#### **A4: PUBLIC CONSULTATION PROCESS**

- 4.1 The public hearing on the tariff petition filed by the Petitioner was held on November 7, 2017 at Golmuri club in Jamshedpur. The list of participants is enclosed as **Annexure-I**.
- 4.2 The comments and suggestion of the members of the public along with the response thereon of the Petitioner and the views of the Commission are detailed hereunder:

##### **No discussion on current scenario**

###### *Public Comments/Suggestions*

- 4.3 The Objector submitted that the presentation delivered by Tata Power during Public Hearing on 07.11.2017 only covers planning for future year and doesn't include the details of the losses incurring in present.

###### *Petitioner's response*

- 4.4 The Petitioner submitted that the presentation covered the summary of the details about Business Plan & Petition for Second MYT Control Period including True-up for FY 2015- 16 for Jojobera Unit 2 and Unit 3 which gives the actual status of operations during FY 2015-16.

###### *Commission's views*

- 4.5 The Commission has taken note of the Objectors comments and the response of the Petitioner and has discussed in detail the treatment for losses presently incurred in subsequent chapters in this tariff order.

##### **Increase in generation from Tata Power plants**

###### *Public Comments/Suggestions*

- 4.6 The Objector submitted that Tata Power in its press conference dated May 25, 2017 has stated that in FY 2016-17 it had recorded a comparative increase of 16% in generation for its generation plants situated in India. However, it had neither informed the same to Hon'ble Commission nor mentioned the same in generation for Jamshedpur units in the ARR.

###### *Petitioner's response*

- 4.7 The Petitioner submitted that the MYT Business Plan, MYT Petition and True-up Petition have been filed for determination of Tariff for Jojobera Unit 2 and Unit 3 as per generation Tariff Regulations 2010/2015 and not for other business (es) of Tata Power. Hence, reference to overall performance of Tata Power is not relevant to present petition. The objection raised here is beyond the scope of the above petition.

- 4.8 The Petitioner further submitted that the actual operational performance for FY 2016-17 for Petitioned Units has already been submitted to the Hon'ble Commission.

*Commission's views*

- 4.9 The Commission agrees with the views of the Petitioner that the objection is beyond the scope of the present Order.

**Investments in Tata Docomo**

*Public Comments/Suggestions*

- 4.10 The objector enquired whether the Petitioner had taken prior approval from the Commission for the investment it had made in Tata Docomo.

*Petitioner's response*

- 4.11 The Petitioner submitted that objection raised is beyond the scope of the MYT Business Plan, MYT Petition for FY 2017-21 including Truing-up for FY 2015-16 for Jojobera Unit 2 and Unit 3.

*Commission's views*

- 4.12 The Commission agrees with the views of the Petitioner that the objection is beyond the scope of the present Order.

**Quarterly Profit**

*Public Comments/Suggestions*

- 4.13 The Objector submitted that in the quarterly performance result for the month ending June 30, 2017, Tata Power had announced a PAT of Rs 142.18 crore for its Renewable business which is 329% higher as compared to Q1 of FY 2016-17 and PAT of 173 crores in Q2 of FY 2017-18. However, the increase in generation from Jamshedpur units and the quarterly profit ending 30th June 2017 has not been informed to the Hon'ble Commission nor mentioned in the ARR

*Petitioner's response*

- 4.14 The Petitioner submitted that the objection refers to the quarterly performance reported by the Tata Power Renewable as per statutory requirements for Q1 of FY 2017-18 and the actual operational and financial performance of Jojobera Units 2 & 3 is submitted to the Hon'ble Commission at time of Annual performance review or True-up in accordance with the Generation Tariff Regulations.
- 4.15 The Petitioner further submitted that the above query is not related to the present petition.

*Commission's views*

- 4.16 The Commission agrees with the views of the Petitioner that the objection is beyond the scope of the present Order.

**Investments of World Bank in Tata Power, CGPL**

*Public Comments/Suggestions*

- 4.17 The Objector submitted that the World Bank has made an investment in the Tata Power, CGPL. The Objector submitted that such facts are not mentioned in the petition and only loans from SBI have been made available in the Petition.

*Petitioner's response*

- 4.18 The Petitioner submitted that the objection raised is beyond the scope of the present petition. With reference to the loans from SBI, the Petitioner submitted that additional capitalization for FY 2015-16 has been financed from internal accruals and no specific loan has been taken for any Capex Scheme. Also, the projected Additional Capitalization for Second Control Period is envisaged to be financed from internal accruals and hence no project specific loan has been mentioned in the petition as of now.

*Commission's views*

- 4.19 The Commission agrees with the views of the Petitioner that the objection is beyond the scope of the present Order.

**Comments regarding supply to other licensee (JUSCO) and nearby areas**

*Public Comments/Suggestions*

- 4.20 The Objector commented that Tata Power supplies 65 MW to JUSCO without approval of the Hon'ble Commission. However, Tata Power has not mentioned these facts in its ARR Petition.
- 4.21 The Objector raised objections on where the rest of the total 120 MW is being sold from each unit when the power supplied to Tata Steel is only 65 MW from each unit and also profit on account of such sale has not been mentioned in the ARR
- 4.22 The Objector further commented that the Petitioner directly supplies power in nearby areas which is in violation of the provisions of the regulations and requested the Commission to conduct a scrutiny for such supply.

*Petitioner's response*

- 4.23 The Petitioner submitted that power from Jojobera Unit 2 and Unit 3 is entirely supplied to Tata Steel Distribution Licensee and not to JUSCO or other distribution licensee.

- 4.24 The Petitioner further submitted that the actual generation from Unit 2 and Unit 3 which is wholly supplied to Tata Steel Distribution Licensee as certified by LDC has already been submitted to the Commission and requested the Commission to keep aside such objections as it lacks merit.

*Commission's views*

- 4.25 The Commission has noted the objection raised and the response of the Petitioner in this regard and has dealt with it appropriately in the subsequent chapters of this order.

**Comments regarding Industrial Energy Limited (IEL)**

*Public Comments/Suggestions*

- 4.26 The objector has commented that Tata Power and Tata Steel have formed a Joint Venture Company i.e. Industrial Energy Limited which supplies power to factory of Tata Steel. However, Tata Power has not mentioned these facts in ARR and has not taken Commission's approval.
- 4.27 The Objector submitted that Tata Steel has formed a separate company IEL along with Tata Power for generating power. The Objector submitted that Tata Steel Distribution Licensee, is still buying electricity from Tata Power when it is itself generating electricity. And such facts are not disclosed in the Petition

*Petitioner's response*

- 4.28 The Petitioner submitted that the MYT Business Plan, MYT Petition and True-up Petition have been filed for determination of Tariff for Jojobera Unit 2 and Unit 3 as per JSERC Generation Tariff Regulations 2010/2015 and not for other business (es) of Tata Power.

*Commission's views*

- 4.29 The Commission has noted the submissions of the Objector and the Petitioner and would like to mention that the approval of ARR has been accorded only after carrying out review and prudence check of the submissions of the Petitioner.

**Transportation of Coal and Fly Ash**

*Public Comments/Suggestions*

- 4.30 The Objector raised that the Petitioner has developed a Railway Platform for transportation of Coal and Fly Ash. However, they also transport coal/Fly Ash through roadways. Additional cost due to such medium of transportation should not be allowed.

*Petitioner's response*

- 4.31 The Petitioner submitted that the railway platform has been developed to facilitate transportation of fly Ash to north east cement companies, else, it would have entailed higher cost as per norms of JSPCB & MoEF.
- 4.32 The Petitioner submitted that road transportation is inevitable for source or destination not having rail connectivity and submitted that mostly coal is being transported through rail/rake and occasionally through roadways in case of shortage of coal. Similarly, transportation of Pond Ash to low lying areas or for construction of highways or to some industries where rail connectivity is not available, the only mode can be through road.
- 4.33 The Petitioner further mentioned that in FY 2015-16, tailing coal by road forms only 0.58% of the total coal consumption for Unit 2 and 0.62% for unit 3. The balance coal has been transported through railways. In view of above, the petitioner requested the Commission to accordingly approve the energy charges claimed for FY 2015-16 for Jojobera Unit 2 and Unit 3.

*Commission's views*

- 4.34 The Commission is of the view that the road transportation is inevitable for source or destination not having rail connectivity and as per the submissions made by the Petitioner, very low amount of coal has been transported by roadways for the FY 2015-16 due to the unavailability of coal. However, the Petitioner should ensure the availability of coal in future and make sure that the coal is mostly transported through railways using the infrastructure which have been developed.

**Imported Coal**

*Public Comments/Suggestions*

- 4.35 The objector submitted that Tata Power imported around 5 crore tons of imported coal. However, the Petitioner has not mentioned these facts in its petition.

*Petitioner's response*

- 4.36 The Petitioner submitted that details the various types of coal consumed by Jojobera Unit 2 and Unit 3 in FY 2015-16 has been submitted to the Commission. Similarly, projected coal requirement from WBCL and MCL for FY 2017-21 have also been provided in the MYT Petition.

*Commission's views*

- 4.37 The Commission while carrying out the true-up exercise for the FY 2015-16 has scrutinized the information provided by the Petitioner. Further, for the FY 2016-17 to FY 2020-21, the Commission has projected the coal requirements from WB collieries and MCL coal.

## **NOC for supply of Fly Ash**

### *Public Comments/Suggestions*

- 4.38 The Objector raised that the Petitioner supplies Fly Ash at no profit no loss basis. The Objector questioned whether the Petitioner obtained No Objection Certificate from the Revenue Department.

### *Petitioner's response*

- 4.39 The Petitioner submitted that in order to achieve 100% Ash utilization at Jojobera Power Plant as mandated by MoEF, Tata Power supplies Fly Ash free of cost to M/s Lafarge and other off takers.

### *Commission's views*

- 4.40 The Commission has noted the objection raised and the response of the Petitioner. And directs the Petitioner to maintain compliance with all the statutory norms.

## **Norms of JSPCB**

### *Public Comments/Suggestions*

- 4.41 The Objector submitted that the Petitioner may be complying with the norms of Jharkhand Pollution Control Board (JSPCB). However, JSPCB has not conducted any Public Hearing till date.

### *Petitioner's response*

- 4.42 The Petitioner submitted that the objection raised is beyond the scope of the MYT Business Plan, MYT Petition for FY 2017-21 including Truing-up for FY 2015-16 and requested the Commission to keep aside such query.

### *Commission's views*

- 4.43 The Commission is of the view that the objection is beyond the scope of the present Order.

## **Increase in Salaries of the employees**

### *Public Comments/Suggestions*

- 4.44 The Objector submitted that Tata Power has substantially increased the salary of employees which shows company is earning significant profit.

*Petitioner's response*

- 4.45 The Petitioner submitted that the clipping is an old one and relates to agreement effective from January 2013 and, hence, is not relevant to present tariff Petition for Unit 2 and 3 of Jojobera plant.
- 4.46 The Petitioner further submitted that salaries of employees of these units form part of O&M expenses, which are claimed as per JSERC Tariff Regulations 2010/2015.

*Commission's views*

- 4.47 The Commission had after due prudence check had allowed the employee expenses as per JSERC Generation tariff Regulations 2010/2015.

**Raw water procurement**

*Public Comments/Suggestions*

- 4.48 The objector commented Tata Power procures raw water from private company who is not authorized to sell water. Expenses should have been allowed to the extent it is being paid to Government of Jharkhand. The raw water consumption for Unit 2 and Unit 3 has not been shown in the ARR and should be considered for entire plant.

*Petitioner's response*

- 4.49 The Petitioner submitted that it is sourcing raw water from JUSCO for its industrial consumption since inception of the Jojobera Units 2 & 3 and the Commission has accordingly after due prudence check approved the raw water Expenses for these units.
- 4.50 The Petitioner further submitted that the objection regarding authority of Tata Steel is not related to current Petition.

*Commission's views*

- 4.51 The Commission has scrutinized the documents submitted by the Petitioner for raw water charges and after due prudence check has undertaken the necessary action as per the provisions prescribed in the JSERC Generation tariff regulations.

**Issue on Sub-Lease**

*Public Comments/Suggestions*

- 4.52 The Objector submitted that the issue of sublease between Tata Steel and Government of Jharkhand is sub-judice before the High Court of Jharkhand. However, Tata Power without taking consent of High court is supplying electricity in these areas and the same has not been mentioned in the ARR.

*Petitioner's response*

- 4.53 The Petitioner submitted that the issue of sub-lease is sub-judice before the Hon'ble High Court of Jharkhand. Tata Power, so far, has not received any directions from any of the statutory body in this regard and hence it is discharging its obligations in terms of the Generation Tariff Regulations and Power Purchase agreement entered between Tata Power and Tata Steel as distribution licensee.

*Commission's views*

- 4.54 The Commission will take into consideration any order/ direction received from the Hon'ble High Court of Jharkhand on this matter as and when directed.



## **A5: TRUING UP FOR FY 2015-16**

- 5.1 The Commission had approved the ARR and generation tariff for FY 2015-16 in its MYT Order dated May 31, 2012 based on the projections for various cost parameters. The Petitioner has now sought approval from the Commission for truing up of FY 2015-16.
- 5.2 The Commission has analysed the submission of the Petitioner with respect to the ARR for FY 2015-16, and has undertaken the true up exercise of ARR components. The component-wise description of the Petitioner's submission and the Commission's analysis thereof is provided hereunder.

### **Operational Performance**

#### **Plant Availability**

##### *Petitioner's submission*

- 5.3 The Petitioner submitted the month wise actual plant availability of Unit 2 and Unit 3. The Petitioner has calculated the average annual availability of Unit 2 at 99.93% and that of Unit 3 at 95.53% during FY 2015-16.

##### *Commission's analysis*

- 5.4 The Commission in the MYT Order dated May 31, 2012 for FY 2015-16 had projected the availability for Unit 2 and Unit 3 as equal to the Normative Annual Plant Availability Factor (NAPAF) of 85% as specified in the Regulation 8.4 of JSERC Generation Tariff Regulation, 2010.
- 5.5 The Commission after scrutinising the certifications of SLDC to verify the actual availability approved the availability of Unit 2 as 99.93% and Unit 3 as 95.53%.
- 5.6 The Plant availability as approved by the Commission in the previous MYT order, as submitted now by the Petitioner and as approved now by the Commission has been summarized in the table below

**Table 7 Plant availability for truing up of FY 2015-16**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Plant availability of Unit-2	85%	99.93%	99.93%
Plant availability of Unit-3	85%	95.53%	95.53%

## Auxiliary Consumption

### *Petitioner's submission*

- 5.7 The actual auxiliary power consumption of Unit 2 and Unit 3 for FY 2015-16 was 9.13% and 9.25%. However, the Petitioner has considered the normative auxiliary consumption of 10.00% for both the units as approved by the Commission in the MYT order dated May 31, 2012.

### *Commission's analysis*

- 5.8 The Commission approves the actual auxiliary consumption for both Unit 2 and Unit 3 at 9.13% and 9.25%, respectively for the FY 2015-16 and same has been considered for arriving at the net generation of Unit 2 and Unit 3 for the year FY 2015-16.
- 5.9 However, for the computation of ECR, the Commission has considered the normative auxiliary consumption of 10.00% for both the units for the year FY 2015-16.
- 5.10 The Auxiliary consumption as approved by the Commission in the previous MYT order, as submitted now by the Petitioner and as approved now by the Commission has been summarized in the table below

**Table 8 Auxiliary Consumption for truing up of FY 2015-16**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Auxiliary Consumption of Unit-2 (%)	10%	9.13%	9.13%
Auxiliary Consumption of Unit-3 (%)	10%	9.25%	9.25%

## Plant Load Factor and Generation

### *Petitioner's submission*

- 5.11 The Petitioner submitted that the actual PLF for FY 2015-16 as 80.49% and 75.09% for Unit 2 and Unit 3 respectively
- 5.12 The Petitioner submitted that the actual gross generation of Unit 2 and Unit 3 of the Jojobera generating station was 848.41 MU and 791.49 MU respectively for FY 2015-16.
- 5.13 Accordingly, the Petitioner submitted net generation for the FY 2015-16 for Unit 2 & Unit 3 stood at 770.91 MU and 718.31 MU respectively.
- 5.14 The Petitioner further submitted that actual gross generation/ PLF of Units 2 & 3 is lower than that approved in the MYT Order which is 895.97 MU's for both Unit 2 & 3 due to lower demand by the distribution licensee despite of maintaining high availability of the units.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

*Commission's analysis*

- 5.15 The Commission in the MYT Order dated May 31 2012 had approved gross generation at 895.97 MU for Unit 2 and Unit 3 each after considering PLF at normative level of 85%. The Petitioner has now submitted that the actual PLF for FY 2015-16 as 80.49% and 75.09% for Unit 2 and Unit 3 respectively.
- 5.16 Hence, for the purpose of truing up for FY 2015-16, the Commission has considered the actual PLF and accordingly, approved gross generation at 848.41 MU and 791.49 MU for Unit 2 and Unit 3 respectively.
- 5.17 Accordingly, the net generation approved by the Commission is 770.91 MU and 718.31 MU respectively for Unit-2 and Unit-3.
- 5.18 The plant load factor, gross and net generation as approved by the Commission in the previous MYT order, as submitted now by the Petitioner and as approved now by the Commission has been summarized in the table below

**Table 9 Plant Load Factor and Generation (MU) for truing up of FY 2015-16**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
<b>Unit-2</b>			
Gross generation (in MU)	895.97	848.41	848.41
Net generation (in MU)	806.37	770.91	770.91
Plant load factor (%)	85%	80.49%	80.49%
<b>Unit-3</b>			
Gross generation (in MU)	895.97	791.49	791.49
Net generation (in MU)	806.37	718.31	718.31
Plant load factor (%)	85%	75.09%	75.09%

## Heat Rate

*Petitioner's submission*

- 5.19 The Petitioner submitted that the actual Heat Rate for FY 2015-16 was 2548 kcal/kWh for Unit 2 and 2557 kcal/kWh for Unit 3 as against the Normative Heat Rate of 2567 kcal/kWh for Unit 2 and 2577 kcal/kWh for Unit 3 as specified by the Hon'ble Commission in the Generation Tariff Regulations, 2010 for Control Period FY 2012-13 to FY 2015-16.
- 5.20 The Petitioner has considered normative heat rate of 2567 kcal/kWh for Unit 2 & 2577 kcal/kWh for Unit 3 for Truing-up exercise for the FY 2015-16.

*Commission's analysis*

- 5.21 As per the generation tariff regulations, 2010, the station Heat Rate for the Petitioner is specified at 2567 kcal/kWh for Unit 2 and 2577 kcal/kWh for Unit 3.

- 5.22 It is to be noted that in the tariff petition for the truing up of FY 2011-12, the Petitioner had requested for relaxation of station heat rate approved by the Commission in the Generation Tariff Regulation, 2010. However, the Commission after considering the submissions made by the Petitioner in detail had declined to relax the norm for station heat Rate. The relevant portion of the order dated 28 April, 2014 is quoted below:

*“9.15 The Commission specified the norms of operation for the two Units of Jojobera Plant in the Clause 8.4 of the Generation Tariff Regulations, 2010. It is pertinent to mention that the norms of operation were fixed by the Commission after study of the past performance for each plant in the state and as per the data made available by the Generation companies including TPCL for the two units - Unit 2 and Unit 3 of Jojobera Plant. Before finalization of the norms, the Commission had also conducted a public hearing in which all the stakeholders, including TPCL, participated. The Commission after due deliberation finalized the Regulations.*

*9.16 The Regulations have been notified accordingly and the norms of operation are applicable and binding on each of the generation plants covered under the Regulations. As per the said Regulations, the Station Heat Rate for the two units has been fixed at 2567kCal/kWh and 2577 kCal/kWh respectively.*

*9.18 The Commission notes with concern that the CPRI Report clearly indicates that principal deviation (274.8 kCal/kWh) is a controllable loss and better SHR than the 2577 kCal/kWh currently allowed is achievable.*

*9.19 In view of the above observations, the Commission does not find any merit in allowing deviation in the norms fixed for SHR, for Unit 2 at 2567 kCal/kWh and Unit 3 at 2577 kCal/kWh, as per the Generation Tariff Regulations, 2010.”*

- 5.23 The Petitioner later filed an appeal (Appeal no 189 of 2011) before the Hon’ble APTEL for relaxation of the norm for station heat rate. The Hon’ble APTEL however upheld the decision of the Commission to not relax the norm for station heat rate.
- 5.24 Taking the above judgement into cognizance and as per the norms given in the JSERC Generation Tariff regulations, 2010, the Commission approves the station heat rate at 2567 kcal/kWh for Unit 2 and 2577 kcal/kWh for Unit 3.
- 5.25 The Heat rate, as approved by the Commission in the previous MYT order, as submitted by the Petitioner and as approved by the Commission has been summarized in the table below.

**Table 10 Heat Rate for truing up of FY 2015-16**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Heat Rate of Unit-2 (Kcal/kWh)	2567	2548	2567
Heat Rate of Unit-3 (Kcal/kWh)	2577	2557	2577

### Operational Parameters Summary

- 5.26 The following table indicates the operational parameters for Unit 2 and Unit 3 as approved in MYT Order dated May 31, 2012, as submitted by the Petitioner and as approved by the Commission in true up of FY 2015-16.

**Table 11: Trued-up operational parameters for Unit 2 for FY 2015-16**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Gross Generation(MU)	895.97	848.41	848.41
PLF	85%	80.49%	80.49%
Aux. Power Consumption	10%	9.13%	9.13%
Net Generation(MU)	806.37	770.91	770.91
Heat Rate(kcal/kWh)	2567	2548	2567

**Table 12: Trued-up operational parameters for Unit 3 for FY 2015-16**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Gross Generation (MU)	895.97	791.49	791.49
PLF	85%	75.09%	75.09%
Aux. Power Consumption	10%	9.25%	9.25%
Net Generation (MU)	806.37	718.31	718.31
Heat Rate(kcal/kWh)	2577	2557	2577

### Fuel Cost Parameters

- 5.27 The Petitioner submitted that during FY 2015-16, Tata Power has utilized various types of coal in Jojobera Power Plant and the annual weighted average GCV from various sources of coal has been computed as weighted average of monthly GCV of coal (which in turn has been arrived at by computing weighted average of daily GCV of coal from that source with the daily coal consumption as weights) from that source with the monthly consumption as weights.

### Coal Mix and Gross Calorific Value (GCV) of Primary Fuel

#### *Petitioner's submission*

- 5.28 The Petitioner submitted that the coal which is used as the primary fuel for Unit 2 and Unit 3 is primarily sourced from West Bokaro colliery of Tata Steel (Middling Coal) and Mahanadi Coal Fields, Odisha (MCL Coal).

- 5.29 The Petitioner further submitted that during FY 2015-16, short supply of middling coal has been observed due to additional time required by West Bokaro collieries in obtaining yearly renewal from coal controller (MoC) for sale of middling/rejects coal to Tata Power. Therefore, in order to compensate for short despatch the Petitioner had procured washery coal and imported coal from other sources.
- 5.30 The Petitioner submitted that such types of coal have been fired along with middling or MCL coal and even independently from the month of June 2015 onwards. The Petitioner further submitted that two different by-products of coal from West Bokaro collieries, viz., Two (2) Product and Tailing were also procured in FY 2015-16 to meet the coal requirements.

*Commission's analysis*

- 5.31 The Commission observes that the Petitioner had used different types of coal other than what had been approved by the Commission in its previous order, owing to different reasons.
- 5.32 The Commission in its discrepancy note directed the Petitioner to submit audited GCV and Coal consumption of the coal used for Unit 2 & 3 for the FY 2015-16.
- 5.33 The Petitioner vide his reply submitted that the GCV of the coal from various sources for FY 2015-16 and for the preceding years were analyzed and recorded as per the Industry standards at the chemical laboratory of the Petitioner located at Jojobera. The Petitioner further submitted that GCV, being a non-financial parameter, it is difficult getting a certificate from statutory auditor on the same and mentioned that such requirement of audited GCV had never been there since FY 2007-08 and is also not a requirement as per Generation Tariff Regulations, 2010. However, the Petitioner had provided audited coal consumption of various types of coal consumed for the FY 2015-16.
- 5.34 The Petitioner has submitted month- wise audited consumption of coal along with the GCV of the coal recorded in its chemical laboratory used for the FY 2015-16 .The Commission approves the coal mix for different types of coal by considering the month wise actual quantity of coal used for the FY 2015-16 as submitted by the Petitioner. The Petitioner, while using alternate sources of coal other than what had been approved by the Commission, should ensure that the price (in Rs /MT) and GCV of the coal used should not vary much from the approved figures. Also, any usage of such coal should be brought to the notice of the Commission during the APR filings of the Petitioner.
- 5.35 The Commission further, computed the GCV for each type of coal by considering the actual weighted average GCV for FY 2015-16 after scrutinizing the actual monthly GCV submitted by the Petitioner.
- 5.36 The following tables summarize the weighted average GCV of coal as submitted by the Petitioner and approved by the Commission and the Coal Mix submitted and approved by the Commission for Unit 2 and Unit 3 of Jojobera Generation station.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 13: Approved Coal Mix and GCV for Unit 2 for FY 2015-16**

Particulars	Coal Mix (%)			GCV(kcal/kg)		
	Approved in MYT order	Submitted by TPCL	Approved in True up	Approved in MYT order	Submitted by TPCL	Approved in True up
Middling Coal	61.69%	43.40%	43.40%	4156	4066	4066
MCL Coal	38.31%	28.17%	28.17%	2935	2672	2672
2 Product + Tailing(Rake)	-	13.76%	13.76%	-	3950	3950
Tailing(Road)	-	0.58%	0.58%	-	4042	4042
Washery Coal	-	10.64%	10.64%	-	4050	4050
Imported Coal	-	3.46%	3.46%	-	3820	3820

**Table 14: Approved Coal Mix and GCV for Unit 3 for FY 2015-16**

Particulars	Coal Mix (%)			GCV(kcal/kg)		
	Approved in MYT order	Submitted by TPCL	Approved in True up	Approved in MYT order	Submitted by TPCL	Approved in True up
Middling Coal	63.12%	43.84%	43.84%	4163	4058	4058
MCL Coal	36.88%	26.28%	26.28%	2940	2643	2643
2 Product + Tailing(Rake)	-	14.98%	14.98%	-	3948	3948
Tailing(Road)	-	0.62%	0.62%	-	4047	4047
Washery Coal	-	10.58%	10.58%	-	4046	4046
Imported Coal	-	3.70%	3.70%	-	3823	3823

## Transit Loss

### *Petitioner's submission*

- 5.37 The Petitioner submitted that coal is procured primarily from two sources, viz. Middling Coal from the West Bokaro Collieries of Tata Steel in Jharkhand and MCL Coal procured from the Mahanadi Coalfields in Orissa. As mentioned earlier, the Petitioner submitted that during FY 2015-16, it had to procure Washery Coal and Imported Coal from other sources due to shortage in supply of Middling Coal. In addition to these, the Petitioner has also additionally procured two different by-products of coal from West Bokaro Collieries, viz., Two (2) Product and Tailing in order to cater the demand adequately. The coal procured from West Bokaro Collieries are by-products of the Coal Beneficiation process and therefore falls under the category of 'Washed Coal'

- 5.38 The Petitioner submitted that the actual Transit Loss in Middling Coal from April 2015 to March 2016 works out to 2.47% whereas actual Transit Loss for other category of Washed Coal, i.e., 2-Product Coal + Tailing (Rake) Coal is 3.35% and the same have been used for the computation of Trued-up Energy Charges for FY 2015-16. The details of actual transit loss submitted by the Petitioner are given in the table below:

**Table 15: Actual transit loss submitted by the Petitioner**

Particulars	Actual transit loss (%)
Middling Coal	2.47 %
MCL Coal	- 0.99 %
2 Product + Tailing(Rake)	3.35 %
Tailing(Road)	0.69 %
Washery Coal	0.00 %
Imported Coal	1.11 %

- 5.39 The Petitioner further submitted that the Transit Loss for coal other than Middling & 2-Product +Tailing (Rake) has been considered as Normative Transit Loss as per Generation Tariff Regulations 2010.
- 5.40 The Petitioner requested the Commission to approve the actual Transit Loss for the different categories of Washed Coal used in FY 2015-16 in view of the Judgment of the Hon'ble Tribunal dated 14.11.2013 in Appeal No. 147 of 2012.

*Commission's analysis*

- 5.41 The Commission in the MYT order dated May 31, 2012 approved Transit Loss at 0.8% for both Unit 2 and Unit 3 for FY 2015-16 in accordance with the norms specified in the Generation Tariff Regulations, 2010.
- 5.42 The Petitioner has submitted that due to shortfall in supply of Middling coal, additionally two different by-products of coal were procured from West Bokaro Collieries, viz., Two (2) Product and Tailing (Rake) in order to cater the demand of power adequately. The Petitioner has requested for a relaxation in Transit loss up to 3.35% for 2-Product coal and Tailing coal and 2.47% for Middling coal.



- 5.43 The Commission has considered the submissions made by the Petitioner with respect to the transit loss incurred on 2-product and tailing (rake) coal and Middling Coal. As per the submissions of the Petitioner in Annexure 3e of its Petition, the Petitioner has recorded a transit loss of 2.47 % in Middling Coal and 3.35% in 2 product and Tailing Coal. On scrutiny of the monthly transit loss data submitted by the Petitioner, the Commission observed that there was no significant variation in transit loss of 2-product and tailing coal during FY 2015-16 with respect to previous year, while the transit loss for Middling coal has increased significantly from 0.08% (submitted by the Petitioner for truing up of FY 2014-15) to 2.47%.The Commission notes with concern that such increase in transit loss reflects in the increase in coal requirement which increases the overall revenue requirement.
- 5.44 The Generation Tariff Regulations, 2010 provide a normative transit loss of 0.8% for non-pit head generating stations. Further in light of the Judgement of the Hon'ble Tribunal in Appeal No. 147 of 2012, the Commission in its tariff order dated May 31, 2015 had allowed transit loss subject to a maximum of 1% in washed coal (Middling coal) of Unit 2 and Unit 3 of the Jojobera Generating station for FY 2011-12.
- 5.45 In the Tariff Order dated May 31, 2015, the Commission had considered similar precedence wherein Punjab State Electricity Regulatory Commission (PSERC) in its Tariff Order for FY 2015-16 for Punjab State Power Corporation Ltd. (PSPCL) had capped transit loss for PSPCL thermal stations. PSPCL for FY 2015-16 also faced similar issue in case of transit loss for its GNDTP thermal station. PSPCL had claimed that the actual transit losses for the GNDTP stations is 1.50% and that loss in transportation of coal is beyond its control and had prayed to the Commission to adopt the same norm. However, the PSERC after considering the whole issue of transit loss, decided to cap the maximum transit loss of coal at 1.0% to be trued up at actual. The PSERC had also approved Transit loss of coal at 1% for all the three thermal generating stations of PSPCL in the tariff order for FY 2013-14 as against 1.5%, 1.5% and 2.0% projected by PSPCL for GNDTP, GGSSTP and GSTP respectively. Subsequently PSPCL challenged the issue of transit loss in APTEL filing appeal no. 106 of 2013. However, the Hon'ble Tribunal in its order dated 16.12.2015 decided the issue against PSPCL.
- 5.46 Taking into consideration the above facts, the Commission allows transit loss subject to a maximum of 1% in 2-Product Coal & Tailing (rake) Coal and Middling Coal for the year FY 2015-16.
- 5.47 For the other types of domestic coal used by the Petitioner, the Commission has scrutinized the data submitted by the Petitioner and observed that the actual transit loss is less than what has been set as normative. In view of that, the Commission feels it is prudent to approve the transit loss of other types of domestic coal on actual incurred basis. For the MCL coal, the Petitioner has submitted a transit loss of -0.99%, however the Commission has approved 0% for the same. For Tailing (road) and washery coal, the Commission has approved 0.69% and 0% as transit loss as per actual.

5.48 In case of imported coal, the Petitioner has submitted transit loss of 1.11%. Since transit loss of imported coal is not specified in the JSERC Generation Tariff Regulations, 2010, the Commission has referred to the CERC (Terms and Conditions of Tariff) Regulations, 2014, wherein a norm of 0.2% for transit loss on imported coal has been set. The Commission approves the same for the imported coal used by the plant.

5.49 The details of transit loss approved by the Commission is provided in the table below

**Table 16 Approved Transit loss for the FY 2015-16**

Particulars	Transit Loss (%)		
	Approved in MYT order	Submitted by TPCL	Approved in True up
Middling Coal	0.80%	2.47%	1.00 %
MCL Coal	0.80%	0.80%	0.00 %
2 Product + Tailing (Rake)	-	3.35%	1.00 %
Tailing (Road)	-	0.80%	0.69 %
Washery Coal	-	0.80%	0.00 %
Imported Coal	-	0.80%	0.2 %

### Landed Cost of Coal

#### *Petitioner's submission*

5.50 The Petitioner submitted that the actual landed price of Middling coal for FY 2015-16 is higher than what had been proposed by the Petitioner in the MYT Petition for FY 2012-16 and as approved by the Hon'ble Commission in the MYT Order. The reason for increase in price of Coal is mainly on account of year on year increase in base price of Middling coal from FY 2012-13 onwards.

5.51 The Petitioner further submitted that, the price of the fuel is uncontrollable in nature for a generating company and requested the Hon'ble Commission to approve the same as proposed by the Petitioner.

#### *Commission's analysis*

5.52 The Commission in its discrepancy note has directed the Petitioner to submit details of actual monthly fuel purchase bills for the FY 2015-16. The actual monthly fuel purchase being voluminous in nature, the Petitioner submitted sample fuel purchase bills vide his reply.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

5.53 After scrutinizing the submissions made by the Petitioner, the Commission has arrived at the weighted average of the landed cost of coal from April 2015 to March 2016, by the following methodology:

- (a) The base price of coal, other charges and tax, transportation and handling charges as submitted by the Petitioner from April 2015 to March 2016.
- (b) Actual consumption of various types of coal during April 2015 to March 2016.
- (c) Transit loss as approved by the Commission in para 5.46.

5.54 The Landed price of coal as approved in the MYT order, as submitted by the Petitioner and as approved by the Commission has been tabulated below

**Table 17: Approved Weighted Average Landed Price of Coal for Unit 2 (in Rs/Ton)**

Particulars	Weighted Average Landed Price of the coal (Rs/Ton)		
	Approved in MYT order	Submitted by TPCL	Approved in True up
Middling Coal	2921	4127	4135.15*
MCL Coal	1671	2035	2018.86
2 Product + Tailing(Rake)	-	3044	3050.51*
Tailing(Road)	-	4372	4368.62
Washery Coal	-	5272	5229.79
Imported Coal	-	4170	4144.57
Weighted average landed cost of Coal	<b>2442</b>	<b>3555</b>	<b>3507.92</b>

\* 1% Transit loss included in the landed price

**Table 18: Approved Weighted Average Landed Price of Coal for Unit 3 (in Rs/Ton)**

Particulars	Weighted Average Landed Price of the coal (Rs/ton)		
	Approved in MYT order	Submitted by TPCL	Approved in True up
Middling Coal	2921	4108	4116.91*
MCL Coal	1663	2031	2014.96
2 Product + Tailing(Rake)	-	3046	3052.04*
Tailing(Road)	-	4374	4369.73
Washery Coal	-	5273	5231.03
Imported Coal	-	4170	4144.67
Weighted average landed cost	<b>2457</b>	<b>3573</b>	<b>3525.42</b>

\* 1% Transit loss included in the landed price

## Energy Charge Rate (ECR)

### *Petitioner's submission*

- 5.55 The Petitioner has submitted the energy charge rate for FY 2015-16 at Rs 2.771 per Kwh and Rs 2.786 per kWh for Unit 2 and Unit 3 respectively.

### *Commission's analysis*

- 5.56 As per the Generation Tariff Regulation, 2010, the energy (variable) charge shall cover primary fuel costs and shall be payable by every beneficiary for the total energy scheduled to be supplied to such beneficiary during the calendar month on ex-power plant basis, at the specified energy charge rate of the month (with fuel price adjustment).
- 5.57 The formula for calculation of energy charge and energy charge rate (ECR) payable to a Generating Company is specified in Regulation 8.17 and 8.18 of the Generation Tariff Regulation, 2010 as quoted below:

*"8.17 Total Energy charge payable to the Generating Company for a month shall be: = (Energy charge rate in Rs. /kWh) x {Scheduled energy (ex-bus) for the month in kWh.}*

*8.18 Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formula:*

*(a) For coal based stations*

$$ECR = (GHR - SFC \times CVSF) \times LPPF \times 100 / \{CVPF \times (100 - AUX)\}$$

*Where,*

*AUX - Normative auxiliary energy consumption in percentage*

*CVPF - Gross calorific value of primary fuel as fired, in KCal per kg, per litre or per standard cubic metre, as applicable.*

*CVSF - Calorific value of secondary fuel, in KCal per ml*

*ECR - Energy charge rate, in Rupees per kWh sent out.*

*GHR - Gross station heat rate, in KCal per kWh.*

*LPPF - Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month.*

*SFC - Specific fuel oil consumption, in ml per kWh".*

- 5.58 Accordingly, the Commission has calculated the ECR to be charged by the Petitioner as per the formula specified in the Generation Tariff Regulations, 2010. The Table below details the ECR and Fuel Cost for Units 2 and 3 for truing up of FY 2015-16 as submitted by the Petitioner and as approved by the Commission.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 19: Approved Energy Charge Rate and Fuel Cost for Unit 2**

Parameters	UoM	Approved in MYT order	Submitted by TPCL	Approved in True up
Gross Generation	MU	895.97	848.41	848.41
Heat Rate	kcal/kWh	2567	2548	2567
Specific Oil Consumption	ml/kWh	1.00	0.09	0.09
Calorific Value of Oil	kcal/l	9100	9100	9100
Landed price	Rs/Ton	2442	3555	3507.92
Energy Charge Rate	Rs/kWh	<b>1.882</b>	<b>2.771</b>	<b>2.743</b>

**Table 20: Approved Energy Charge Rate and Fuel Cost for Unit 3**

Parameters	UoM	Approved in MYT order	Submitted by TPCL	Approved in True up
Gross Generation	MU	895.97	791.49	791.49
Heat Rate	kcal/kWh	2577	2557	2577
Specific Oil Consumption	ml/kWh	1.00	0.16	0.16
Calorific Value of Oil	kcal/l	9100	9100	9100
Landed price	Rs/Ton	2457	3573	3525.42
Energy Charge Rate	Rs/kWh	<b>1.888</b>	<b>2.786</b>	<b>2.757</b>

### Summary of Fuel Cost

- 5.59 The following table provides the summary of Fuel Cost submitted by the Petitioner and approved by the Commission for True up of FY 2015-16.

**Table 21: Approved Parameters for fuel cost for Unit 2 for FY 2015-16**

Particulars	UoM	Approved in MYT order	Submitted by TPCL	Approved in True up
Specific LDO Consumption	ml/kWh	1.00	0.09	0.09
GCV – LDO	kcal/l	9100	9100	9100
Weighted Average GCV – Middling Coal	kcal/kWh	4156	4066	4066
Weighted Average GCV –MCL Coal	kcal/kWh	2935	2672	2672
Weighted Average GCV –2- Product+Tailing Coal	kcal/kWh	-	3950	3950
Weighted Average GCV – Tailing Coal (Road)	kcal/kWh	-	4042	4042
Weighted Average GCV – Washery Coal	kcal/kWh	-	4050	4050
Weighted Average GCV – Imported Coal	kcal/kWh	-	3820	3820
Landed Price– Middling Coal	Rs/MT	2921	4127	4135.15

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	Approved in MYT order	Submitted by TPCL	Approved in True up
Transit loss considered	%	0.8%	2.47%	1.00 %
Landed Price–MCL Coal	Rs/MT	1671	2035	2018.86
Transit loss considered	%	0.8%	0.8%	0.00%
Landed Price – 2 Product + Tailing Coal (rake)	Rs/MT	-	3044	3050.51
Transit loss considered	%		3.35%	1.00%
Landed Price –Tailing Coal (Road)	Rs/MT	-	4372	4368.62
Transit loss considered	%		0.8%	0.69%
Landed Price – Washery Coal	Rs/MT	-	5272	5229.79
Transit loss considered	%		0.8%	0.00%
Landed Price – Imported Coal	Rs/MT	-	4170	4144.57
Transit loss considered	%		0.8%	0.2%
<b>Total Cost</b>	<b>Rs Cr</b>		<b>213.58</b>	<b>211.43</b>

**Table 22: Approved Parameters for fuel cost for Unit 3 for FY 2015-16**

Particulars	UoM	Approved in MYT order	Submitted by TPCL	Approved in True up
Specific LDO Consumption	ml/kWh	1.00	0.16	0.16
GCV – LDO	kcal/L	9100	9100	9100
Weighted Average GCV – Middling Coal	kcal/kWh	4163	4058	4058
Weighted Average GCV –MCL Coal	kcal/kWh	2940	2643	2643
Weighted Average GCV –2- Product+Tailing Coal	kcal/kWh	-	3948	3948
Weighted Average GCV – Tailing Coal (Road)	kcal/kWh	-	4047	4047
Weighted Average GCV – w\Washery Coal	kcal/kWh	-	4046	4046
Weighted Average GCV – Imported Coal	kcal/kWh	-	3823	3823
Landed Price– Middling Coal	Rs/MT	2921	4108	4116.91
Transit loss considered	%	0.8%	2.47%	1.00%

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	Approved in MYT order	Submitted by TPCL	Approved in True up
Landed Price–MCL Coal	Rs/MT	1663	2031	2014.96
Transit loss considered	%	0.8%	0.8%	0.00%
Landed Price – 2 Product + Tailing Coal	Rs/MT	-	3046	3052.04
Transit loss considered	%	-	3.35%	1.00%
Landed Price –Tailing Coal (Road)	Rs/MT	-	4374	4369.73
Transit loss considered	%	-	0.8%	0.69%
Landed Price – Washery Coal	Rs/MT	-	5273	5231.03
Transit loss considered	%	-	0.8%	0.00%
Landed Price – Imported Coal	Rs/MT	-	4170	4144.67
Transit loss considered	%	-	0.8%	0.2%
<b>Total Cost</b>	Rs Cr		<b>200.11</b>	<b>198.01</b>

## Determination of Fixed Cost

### Additional Capitalization

#### *Petitioner's submission*

- 5.60 The Petitioner has submitted that the additional capitalization has been categorized under two broad categories after due approval by the Hon'ble Commission from FY 2011-12:
- i. Capitalization – Standalone: This category includes the Capitalized Costs incurred for Assets/Schemes exclusively for Unit 2 & 3.
  - ii. Capitalization – Common Facilities: This category includes the Assets/Schemes which are common to all the Units at the Jojobera Power Plant i.e. Units 1, 2, 3 & 4 of Tata Power and Unit 5 of Industrial Energy Limited ("IEL"). These Assets/Schemes provide facilities to all the above Units and therefore the capitalized cost of such Assets/Schemes must be apportioned to the GFA of Unit 2 and Unit 3 appropriately

The same methodology has been adopted by the Petitioner for determining the additional capitalisation during the FY 2015-16.

- 5.61 The Petitioner further submitted that the apportionment ratio was worked out individually for Unit 2 and Unit 3 and combined based on the installed capacity of these Units with respect to the installed capacity of Units 1, 2, 3, 4 and IEL Unit 5 of Jojobera Power Plant. The methodology of such apportionment is shown in the following Table and as approved in the APR Order for FY 2015-16 by the Hon'ble Commission.

**Table 23: Apportionment ratio for additional Capitalisation of Common Facilities submitted by Petitioner**

Facilities to Unit 2 & 3		
Installed Capacity of Unit 1	MW	67.5
Installed Capacity of Unit 2	MW	120
Installed Capacity of Unit 3	MW	120
Installed Capacity of Unit 4	MW	120
Installed Capacity of Unit 5	MW	120
Installed Capacity of Jojobera Power Plant	MW	547.5
Contribution of Unit 2 in Total Installed Capacity	%	21.92%
Contribution of Unit 3 in Total Installed Capacity	%	21.92%
Combined Contribution of Unit 2 & 3 in Total Installed Capacity	%	<b>43.84%</b>

- 5.62 The Petitioner submitted that, there has been a revision in the phasing of the Capital Investment Plan as approved by the Hon'ble Commission in the MYT Order dated 31.05.2012 and the APR Order dated 31.05.2015. The Petitioner further submitted that it is difficult task for a Generating Company to completely stick to the original Capital expenditure plan as approved in the above MYT Order for the next 4 years due to various unforeseen and unavoidable circumstances as mentioned below:
- (a) Changes in the maintenance plan owing to variation in the operational plan or variations in technical requirements.
  - (b) Changes in the Annual shutdown plan or duration of the annual outage plan.
  - (c) Technical constraints like technological obsolescence, OEM Support etc.
  - (d) Deviations in Cost and Budgeting as planned.
  - (e) Non-availability of necessary permission from statutory bodies for certain schemes.
  - (f) Reassessment of necessity/usefulness of Schemes owing to ever-changing scenario.



- (g) Time-frame constraint: A considerable amount of time will be required for planning, obtaining internal approval, detail engineering, procurement of materials, delivery and execution of the Capex Projects. Also, the APR Order for FY 2013-14 was disposed off on 31.05.2015 where the Commission has approved few new Capex Schemes. Since, it was the last year of the 1st Control Period, it was an uphill task to complete the Capitalization of new Schemes approved vide above Order by end of FY 2015-16.

- 5.63 The Petitioner further submitted that on account of the reasons stated above, few of the Capital Investment schemes approved by the Hon'ble Commission are being carried forward to FY 2016-17 for capitalization and requested the Hon'ble Commission to allow the same.
- 5.64 The total capitalisation details submitted by the Petitioner in their original submission is shown in the following table.

**Table 24: Total Capitalisation submitted by the Petitioner (Rs. Cr)**

Asset Class Description	Standalone Capitalisation		Apportioned for Common Facilities		Total Additional Capitalisation	
	Unit 2	Unit 3	Unit 2	Unit 3	Unit 2	Unit 3
Building & Civil Engineering Works	0.08	0.08	0.69	0.69	0.77	0.77
Transformers, kiosk sub-station equipment & other fixed apparatus (including plant foundations): having a rating of 100 kilo volt amperes and over & (ii) Others	0.06	0.06	0	0	0.06	0.06
Batteries	0.04	0.53	0	0	0.04	0.53
Plant and Machinery in Generating Stations	6.84	8.1	0.65	0.65	7.49	8.75
Switchgear, including Cable Connections	0	0	0	0	0	0
Air Conditioning Plants(Static)	0	0	0	0	0	0
Other Assets-Unclassified	0.75	0.5	0.25	0.25	1	0.75
Office Furniture, Furnishings & Office Equipment	0	0	0	0	0	0
Communication Equipment-Telephone Lines and Telephones	0	0	0	0	0	0
Self-Propelled Vehicles	0	0	0.32	0.32	0.32	0.32
IT Equipment's	0	0	0	0	0	0
<b>Total</b>	<b>7.76</b>	<b>9.27</b>	<b>1.91</b>	<b>1.91</b>	<b>9.67</b>	<b>11.18</b>

#### *Commission's analysis*

- 5.65 The Commission has outlined the provisions for approval of any additional capitalization, for a generating station in Regulation 7.5 of the Generation Tariff Regulation, 2010. The clause is outlined below

#### *Additional Capitalisation*

*‘7.5 The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*

- (i) Undischarged liabilities;*
- (ii) Works deferred for execution;*
- (iii) Procurement of initial capital spares within the original scope of work, subject to the provisions under clause 7.3,7.4 of these Regulations;*
- (iv) Liabilities to meet award of arbitration or for compliance of the order or decree of a court; and*
- (v) Change in law.*

*Provided that the details of works included in the original scope of work along with estimates of expenditure, undischarged liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff.*

*‘7.6 The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:*

- (i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;*
- (ii) Change in law;*
- (iii) Deferred works relating to ash pond or ash handling system in the original scope of work;*
- (iv) Any additional works/services which have become necessary for efficient and successful operation of the generating station, but not included in the original project cost;”*

5.66 The Commission while scrutinizing the Petitioners submission found that the value of the capital expenditure vis-à-vis capitalization submitted for few schemes are more than what has been approved by the Commission in its earlier orders. The Commission vide its discrepancy note has sought clarifications from the Petitioner in this regard.

5.67 The Petitioner vide its reply submitted that the Capex Schemes as indicated above by the Commission have been Capitalized within the Capex approved by the Commission vide MYT Order dated 31.05.2012 except the Capex Scheme of Up-gradation of ESP at item 1 which has slightly increased by an amount of Rs 16.24 Lakhs due to factors which were beyond the control.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

- 5.68 The Petitioner further submitted that in items 2 and 3, there is no escalation beyond approved amount, when seen together with other similar Capex Schemes as there have been only inter-se adjustments within similar Schemes. The Petitioner further provided detailed explanation for each scheme raised by the Commission which has been tabulated below

**Table 25 Comparison of the Capex schemes (in Rs Lacs) as approved in the previous MYT vis-a-vis as submitted now by the Petitioner**

Capex scheme and Value Approved in the MYT Order					Capitalization Submitted for FY 2015-16 and approved in past				
S.No	Scheme Approved in the MYT Order dated 31.05.2012	Unit	Scheme Value Approved in MYT Order 31.05.2012 (Apportioned to Unit 2 & 3)	Total for Unit 2 & Unit3	Total Value Capitalized In FY2015-16 In Accounts as Common Asset	Apportioned Capitalization for Unit 2&3 in FY 2015-16 (Claimed)	Apportioned Value for Unit 2 & 3 Capitalized in previous years	Total Capitalization for Unit 2 & 3	Excess/ (Short' all)
Col. No			A	B	C	D	E	F=D+E	G=F-B
1	Extension lob of Conveyor 5	Common	184.13	184.13	297.37	130.35	0	130.35	-53.78
2	145KV CT	Unit 2	11.23	22.46	20.35	11.42	11.01	22.43	-0.03
3	145KV CT	Unit 3	11.23						
4	Revamping of Instrumentation Systems in DM Plant	Unit 2	5.61	11.22	19.32	10.85	0	10.85	-0.37
5	Revamping of Instrumentation Systems in DM Plant	Unit 3	5.61						
6	Modified Recovery Pump	Unit 2	14.04	28.08	50.33	28.26	0	28.26	0.18
7	Modified Recovery Pump	Unit 3	14.04						

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Capex scheme and Value Approved in the MYT Order					Capitalization Submitted for FY 2015-16 and approved in past				
S.No	Scheme Approved in the MYT Order dated 31.05.2012	Unit	Scheme Value Approved in MYT Order 31.05.2012 (Apportioned to Unit 2 & 3)	Total for Unit 2 & Unit3	Total Value Capitalized In FY2015-16 In Accounts as Common Asset	Apportioned Capitalization for Unit 2&3 in FY 2015-16 (Claimed)	Apportioned Value for Unit 2 & 3 Capitalized in previous years	Total Capitalization for Unit 2 & 3	Excess/ (Short' all)
Col. No			A	B	C	D	E	F=D+E	G=F-B
		Rs lakhs	245.89	245.89	387.37	180.88	11.01	191.89	-54.00

- 5.69 From the above table, it is evident that the Petitioner had maintained his capital expenditure well within the value as set by the Commission in the previous MYT Order dated May 31, 2012. As the capital expenditure incurred on the other line items is less than what had been approved by the Commission in its earlier Tariff Order (as evident from the Column G of the above table), the Commission finds it prudent to allow excess cost incurred on '*Upgradation of ESP*' as the excess cost incurred (16.24 lacs) is less than the amount saved by the Petitioner in capitalizing other items (54 Lacs).
- 5.70 The Commission has also found that the Petitioner has claimed the capitalization under the head '*Relining of Ash ponds*' for the FY 2015-16 for which the Commission in the MYT order dated May 31, 2012 had not allowed the capitalization till FY 2015-16.
- 5.71 The Petitioner vide its reply stated that, in pursuit to meet the scheduled capitalization of the project, in FY 2015-16, it had taken up the activity of strengthening of Bund Wall of the Ash Pond. Part of the work has been completed in FY 2015-16 and therefore part capitalization has been proposed in FY 2015-16.
- 5.72 The Petitioner further submitted that the strengthening of pond wall has further minimized the chances of outflow of pond water and thereby ensured safety of community residing around the pond.
- 5.73 The Commission approves the part capitalization as proposed by the Petitioner for the scheme '*Relining of Ash ponds*' for the FY 2015-16. However, any such changes in the future should be brought to the notice of the Commission immediately. Detailed list of the schemes as approved by the Commission for the FY 2015-16 for Unit-2 & 3 has been attached as **Annexure-II** to this tariff order.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

5.74 The capitalization as approved by the Commission in its earlier order, as submitted by the Petitioner, approved during true-up are as shown in the following table:

**Table 26: Approved Additional Capitalisation for Unit 2 (Rs Cr)**

Particulars	Additional Capitalisation during FY 2015-16		
	Approved in MYT order	Submitted by TPCL	Approved in True up
Building & Civil Engineering Works	-	0.77	0.77
Transformers, kiosk sub-station equipment & other fixed apparatus (including plant foundations): having a rating of 100 kilo volt amperes and over & (ii) Others		0.06	0.06
Batteries		0.04	0.04
Plant and Machinery in Generating Stations		7.49	7.49
Switchgear, including Cable Connections		0	0
Air Conditioning Plants (Static)		0	0
Other Assets - Unclassified		1.00	1.00
Office Furniture, Furnishings & Office Equipment		0	0
Communication Equipment - Telephone Lines and Telephones		0	0
Self-Propelled Vehicles		0.32	0.32
IT equipment		0	0
<b>Total Additional Capitalisation</b>	<b>14.62</b>	<b>9.67</b>	<b>9.67</b>

**Table 27: Approved Additional Capitalisation for Unit 3 (Rs Cr)**

Particulars	Additional Capitalisation during FY 2015-16		
	Approved in MYT order	Submitted by TPCL	Approved in True up
Building & Civil Engineering Works	-	0.77	0.77
Transformers, kiosk sub-station equipment & other fixed apparatus (including plant foundations): having a rating of 100 kilo volt amperes and over & (ii) Others		0.06	0.06
Batteries		0.53	0.53
Plant and Machinery in Generating Stations		8.75	8.75
Switchgear, including Cable Connections		0	0
Air Conditioning Plants (Static)		0	0
Other Assets - Unclassified		0.75	0.75
Office Furniture, Furnishings & Office Equipment		0	0
Communication Equipment - Telephone Lines and Telephones		0	0
Self-Propelled Vehicles		0.32	0.32
IT equipment		0	0
<b>Total Additional Capitalisation</b>	<b>14.31</b>	<b>11.18</b>	<b>11.18</b>

## Depreciation

### *Petitioner's submission*

- 5.75 The Petitioner submitted that the depreciation on additional capitalization calculation was determined as per the depreciation rates of various classes of assets as prescribed in Appendix-I of Generation Tariff Regulations, 2010. The submission made by the Petitioner for total depreciation for Units 2 and Unit 3 has been provided in the following Table

**Table 28: Submitted Depreciation on for Unit 2 for FY 2015-16 (Rs Cr)**

Particulars	Depreciation in FY 16
Depreciation on Original Capital Cost	3.36
Depreciation on Additional Capitalization in FY 12	0.43
Depreciation on Additional Capitalization in FY 13	0.58
Depreciation on Additional Capitalization in FY 14	0.43
Depreciation on Additional Capitalization in FY 15	0.73
Depreciation on Additional Capitalization in FY 16	0.25
<b>Total Depreciation</b>	<b>5.79</b>

**Table 29: Submitted Depreciation for Unit 3 for FY 2015-16 (Rs Cr)**

Particulars	Depreciation in FY 16
Depreciation on Original Capital Cost	5.34
Depreciation on Additional Capitalization in FY 12	0.38
Depreciation on Additional Capitalization in FY 13	0.32
Depreciation on Additional Capitalization in FY 14	0.81
Depreciation on Additional Capitalization in FY 15	0.26
Depreciation on Additional Capitalization in FY 16	0.29
<b>Total Depreciation</b>	<b>7.41</b>

### *Commission's analysis*

- 5.76 The Generation Tariff Regulation, 2010 have specified the following methodology for the calculation of depreciation expense for existing generating stations:
- (a) *Depreciation shall be allowed up to a maximum of 90% of the capital cost of the asset and the salvage value of the asset shall be considered as 10%.*
  - (b) *Depreciation shall be calculated annually as per the straight line method and at the rates specified in the Appendix-I of the said Regulations.*

- (c) *In case of existing generating stations, during the transition period, the balance depreciable value as on April 1, 2011 shall be worked out by deducting the cumulative depreciation including AAD as admitted by the Commission up to March 31, 2011 from the gross depreciable value of the assets.*
- (d) *The rate of depreciation shall be continued to be charged at the rate specified in Annexure-I till the cumulative depreciation reaches 70%. Thereafter, the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.*

5.77 The Commission in the MYT order dated May 31, 2012 approved the depreciation on original cost of power plant at Rs 3.36 Cr for Unit 2 and Rs 5.34 Cr for Unit 3 for the FY 2015-16. The Commission after conducting due prudence check approves depreciation as shown in the following table:

**Table 30: Approved Depreciation for FY 2015-16 of Unit 2 (Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Depreciation on Original Cost of Capital	3.36	3.36	3.36
Depreciation on Additional Capitalisation from FY 12 to FY 16	2.98	2.43	2.43
<b>Total Depreciation</b>	<b>6.34</b>	<b>5.79</b>	<b>5.79</b>

**Table 31: Approved Depreciation for FY 2015-16 of Unit 3 (Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Depreciation on Original Cost of Capital	5.34	5.34	5.34
Depreciation on Additional Capitalisation from FY 12 to FY 16	2.30	2.07	2.07
<b>Total Depreciation</b>	<b>7.64</b>	<b>7.41</b>	<b>7.41</b>

## Operation & Maintenance Expenses

### *Petitioner's submission*

5.78 The Petitioner has submitted O&M Expenses for FY 2015-16 at Rs 51.87 Cr for Unit 2 and at Rs 46.52 Cr for Unit 3.

5.79 The basis of allocation as submitted by the Petitioner is shown below:

- 5.80 **Ash Disposal Expenses:** The Petitioner submitted that the Ash Disposal Expenses forms a major part of the O&M Expenses of Unit 2 and Unit 3. The Petitioner submitted that the Ash Disposal Expenses have considerably increased vis-à-vis as projected in the MYT Order dated 31.05.2012 as a result of multiple reasons which have been listed below:

*I. Compliance with Statutory Directives:*

- i. The Petitioner submitted that the Hon'ble JSPCB had in its "Consent to Operate" ("CTO") dated 07.05.2015 directed Tata Power not to dispose of Ash in the nearby sites such as Chota Govindpur, Vivek Nagar etc. and also achieve 100% Fly Ash utilization. The above condition mentioned in the CTO follows from the growth in human inhabitation in these nearby localities which had forced the Petitioner to dispose higher volumes of Ash through bulkers to distant low lying areas in FY 2015-16. With the increase in the transportation distance, the cost of evacuation increases proportionately.
- ii. The petitioner further submitted that, the entire process of disposal of pond ash involves excavation, transportation and covering with top soil. Tata Power incurs the entire expenditure towards such excavation and transportation of ash from the ash pond and further covering it by top soil. The use of such top soil is mandatory under the directive of the Hon'ble Ministry of Environment and Forests ("MoEF") through the Gazette Notification dated 03.11.2009. The above notification is further amendment of MoEF Notification No. 976 (E) dated 27.08.2003 and the principal notification was published vide notification No. 763 (E) dated 14.09.1999. The Petitioner submitted that such top soil has been procured by Tata Power at the rate of Rs 200/Ton which has increased the effective cost of Ash Disposal besides the increase in the transportation cost

*II. Increase in Rate Contracts:*

- i. The Petitioner submitted that the Rate Contracts for the transportation of Fly Ash to low lying areas had to undergo a revision on account of increase in the transportation distance in compliance to the directions as outlined in the CTO by Hon'ble JSPCB. In FY 2015-16, the Rate Contract has increased from Rs 180/Ton to Rs 198/Ton w.e.f. December 2015 on account of increasing Transportation distance and hike in the price of diesel.



*III. Fly Ash Disposal to North East Cement Companies:*

- i. The Petitioner submitted that in order achieve 100% Ash utilization as directed by Hon'ble JSPCB and in compliance to further direction of Hon'ble Commission in APR Order for FY 2013-14, Fly Ash is transported to North East Cement Companies free of cost. However, in order to make this arrangement viable, Tata Power has to bear differential Railway Freight Charges of Rs 120/Ton. The entire cost pertaining to such cost-sharing arrangement cannot be avoided as it would otherwise impact the off-take of Fly Ash Disposal from the Jojobera Power Plant which may lead to increase in the Ash Disposal expenses by disposing such Ash to far-away low lying areas. Such Cost too has led to the increase the Ash Disposal Expenses for FY 2015-16.

5.81 **Head office expenses** – The Petitioner submitted that it has its Corporate Offices at Mumbai and Noida which provides specialized support services like Engineering, Legal, Regulatory, Commercial, Environment etc. to all Divisions of Tata Power and accordingly, the costs pertaining to these functions are allocated to all the Divisions. The basis of allocation of HO expenses to any Unit of Tata Power is as per the given methodology.

- i. *Allocation of Head Office and management expenses = Head office and management expenses allocable to cost of generation\*Generation expenses of Unit/Total generation expenses (excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel (including related exchange loss/gain) etc.).*
- ii. *Head office and Management expenses allocable to cost of generation = Head office and management expenses\* Total generation expenses (excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel (including related exchange loss/gain), etc.)/{Total generation expenses(excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel(including related exchange loss/gain),etc.) + Total distribution, transmission expenses and expenses related to other business (excluding wheeling/transmission charges, depreciation, exchange loss/gain and borrowing costs, components consumed, non-recurring one-time expenses, etc.)}*

The Petitioner further submitted that few HO expenses were inadvertently not included in the above formula for previous years, which was corrected in FY 2015-16 and, hence, the correct allocation for the FY 2015-16 seems to be higher than previous years.

5.82 **Raw water expenses** – The Petitioner submitted that the Raw Water Expenses for FY 2015-16 for Unit 2 and Unit 3 includes the Raw Water Expenses towards actual consumption during the year FY 2015-16 and the arrears from FY 2011-12 upto August

31, 2015. The considerable increase in Raw Water Expenses have been incurred on account of following uncontrollable reason:

- i. Increase in the Raw Water Tax by Government of Jharkhand (“GoJ”) from Rs 0.99/KL to Rs 5.81/KL w.e.f 01.04.2011 with an escalation of 7.5% increase year on year.
- ii. Revision in the Base Charges of Raw Water from Rs 4.53/KL to Rs 8.54/KL w.e.f from 01.09.2015 which shall increase with an annual escalation of 7.5% to account for the increase in production cost of Raw water.

The Petitioner submitted that increase in Raw Water Tax in order to comply with the directive of GoJ and increase in Raw Water Charges from 01.09.2015 are beyond the control of the Petitioner and hence, additional water expenses on account of such factor is inevitable. Further, the revision in water tax has been imposed by GoJ and hence, it squarely fits under definitions of “Change in Law” as per sub clause 13 (i) of Regulations. Hence, the Petitioner requested the Commission to approve the charges as proposed.

- 5.83 **Application fees and Publication expenses** – The Petitioner had considered the actual Application Fees towards the APR Petition for FY 2015-16 and apportioned the amount equally among Unit 2 and Unit 3.
- 5.84 The Petitioner submitted that the increase in the O&M Expenses for FY 2015-16 is largely on account of increase in Raw Water Expenses, HO Expenses and the Ash Disposal Expenses. The increase in Raw Water Expenses is mainly on account of the arrears for FY 2011-12 to FY 2014-15 and from 01.04.2015 to 31.08.2015 due to the revision of Water Tax by the GoJ. The increase in the Ash Disposal Expenses due to statutory compliances as explained above and the HO Expenses is a pertinent and unavoidable expense which is being incurred in order to avail specialized services being rendered by Corporate Office for smooth operation of Unit 2 and Unit 3.
- 5.85 Using the above methodology the Petitioner has submitted the details as shown on the table below.

**Table 32: Summary of O&M Expenses submitted by the Petitioner (in Rs Cr)**

Particulars	Unit 2	Unit 3
<i>O&amp;M Expenses</i>		
<b>Employee Cost</b>	<b>6.78</b>	<b>6.78</b>
Employee Expenses without Terminal Liabilities	5.94	5.94
Terminal Liabilities	0.84	0.84
<b>R&amp;M Expenses</b>	<b>13.12</b>	<b>8.17</b>
<b>A&amp; G Expenses</b>	<b>31.97</b>	<b>31.57</b>
Ash Disposal Expenses	5.02	4.67
Raw Water Expenses	9.54	9.3
Other A&G Expenses (including HO Expenses)	17.36	17.54

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

Particulars	Unit 2	Unit 3
Application Fees & Publication Expenses	0.06	0.06
<b>Total O&amp;M Expenses</b>	<b>51.87</b>	<b>46.52</b>

*Commission's Analysis*

- 5.86 Regulation 7.41 of the Generation Tariff Regulation, 2010 lays out the provision for determination of O&M expenses, the same is quoted below

*“7.41 Existing Thermal Generating Stations:*

*(a) The O&M expenses for the Transition Period shall be approved by the Commission as per the JSERC (Terms and condition of Determination of Generation Tariff) Regulations, 2004.*

*(b) The Applicant shall submit details on O&M expenses as required by the Commission. The O&M expenses excluding terminal liabilities for the Base Year shall be determined based on latest accounting statements, estimates of the Generating Company for relevant years and other factors considered relevant.*

*(c) The O&M expenses excluding terminal liabilities permissible towards determination of tariff for each year of the Control Period shall be determined after a prudence check by the Commission based on submissions of the Generating Company, previous years' actual expenses and any other factor considered relevant.*

*(d) Terminal Liabilities will be approved as per actual submitted by the Generating Company or be established through actuarial studies.*

*(e) Increase in O&M charges on account of war, insurgency or changes in laws, or like eventualities where the Commission is of the opinion that an increase in O&M charges is justified, may be considered by the Commission for a specified period.”*

- 5.87 As per Regulation 6.14 of the Generation Tariff Regulation, 2010, for the existing Thermal Generating Stations, any surplus or deficit on account of O&M expenses shall be to the account of the generating company. The regulations are quoted below:

*“6.14 The true up across various controllable parameters shall be conducted as per principles stated below: -*

*(a) Any surplus and deficit on account of O&M expenses shall be to the account of the generating company and shall not be trued up in ARR;*

...

*6.15 Notwithstanding anything contained in these Regulations, the gains or losses in the*

*Controllable items of ARR on account of force majeure factors shall be passed on as an additional charge or rebate in ARR over such period as may be laid down in the order of the Commission.”*

5.88 **Ash Disposal Expenses:** The Commission based on the above norms approved the O&M expenses in the order for the revised true up for FY 2011-12 and true up for the FY 2012-13 on May 31, 2015. Aggrieved by the above order, the Petitioner had approached the Hon’ble Tribunal challenging the earlier order of the Commission passed on May 31, 2015. Pertaining to O&M, the Petitioner had challenged the disallowance of actual ash disposal expenses in the earlier order of the Commission.

5.89 The Hon’ble Tribunal in their judgement on appeal no. 195 of 2015 passed on August 10, 2016 had mentioned the following on the issue of ash disposal expenses:

*“(iii) The State Commission while approving true up of FY 2012-13 allowed Rs. 2.49 Cr as Ash disposal expenses against the claim of Rs. 4.09 Cr submitted by the Appellant for the Unit No. 2 and Rs. 2.58 Cr against the claim of Rs. 4.44 submitted by the appellant for Unit 3 resulting into disallowing of the Ash Disposal Expenses to the tune of Rs. 3.46 Cr stated to have been incurred by the Appellant during the year FY 2012-13.*

*(iv) In our considered opinion, the Ash disposal activity undertaken by the generator is in compliance with the statutory requirements prescribed by the State Pollution Control Board as well as by the Ministry of Environment and Forest, Government of India. In this present case, we have noted that the Jharkhand State Pollution Control Board (“JSPCB”) issued Consent to Operate dated 13.08.2012 for the project prohibiting the generators in the State from disposing Ash in the nearby areas of the project and as a result the Appellant was required to transport Ash to farther places.*

*(v) In compliance to this condition imposed by the State Control Pollution board, the Appellant has claimed transportation charges etc. to dispose off the fly ash in the areas located around 20-25 kms from the project.*

*(vi) Ministry of Environment and Forest, Government of India by its Notification dated 03.11.2009 mandated that low lying areas used to fill ash must be covered with top soil after disposing Ash in the Area. The Appellant in compliance to this directive of Ministry of Environment and Forest, Government of India had to procure top soil for covering Ash filled in the low lying areas and for the same, the Appellant made claim in the Ash disposal expenses.*

*(vii) As per clause 2.1 (13) of the State Commission’s Generation Tariff Regulations, 2010, change in law means occurrence of any of the following events;*

*.....change by any competent authority, in any consent, approval or license or obtained for the project.....*

*As per Clause 7.41 of State Commission’s Generation Tariff Regulation, 2010 states as under:-*

*e) Increase in O&M on account of war, insurgency or changes in laws, or like eventualities where the Commission is of the opinion that an increase in O&M charges is justified, may be considered by the Commission for a specified period.”*

*(viii) In light of the Regulations 7.41(e) read with 2.1 (13) of the State Commission's Generation Tariff Regulation's, 2010, we do not have any doubt in our minds that the Appellant was required to comply with the both the Notifications i.e. Notification issued by the State Pollution Control Board as well Notification issued by Ministry of Environment and Forest, Government of India since they are statutory in nature and mandated by the statutory authorities and compliance of the same is must for the Appellant which resulted in additional expenditure towards disposal of Ash generated by its plant and the same should have been allowed by the State Commission while approving true up of the Appellant for the FY 2012-13 subject to its prudent check for the expenses incurred as claimed by the Appellant.*

*In light of the above, we decide this issue in favour of the Appellant and remand the matter to the State Commission for the Consideration of the same.”*

- 5.90 In light of the judgement and directive by Hon'ble Tribunal, the Commission has considered the actual ash disposal expenses for FY 2015-16. The Petitioner had submitted auditor's certificate against the actual ash disposal expenses. The Commission after due prudence check approves the actual ash disposal expenses for unit 2 & 3 for the FY 2015-16.
- 5.91 **Head office (HO) expenses:** The Petitioner submitted that few HO expenses were inadvertently not included in the formula for previous years, which was corrected in FY 2015-16 and, hence, the correct allocation fee the FY 2015-16 seems to be higher than previous years.
- 5.92 The Commission vide its discrepancy note directed the Petitioner to submit a detailed breakup of expenses under the head HO expenses and the heads which were not included till FY 2014-15 but were corrected in FY 2015-16.
- 5.93 The Petitioner vide its reply submitted that the information sought by the Commission is a voluminous work and requested the Commission for grant of additional time.
- 5.94 Since the Petitioner had not responded, the Commission had again directed the Petitioner to submit the aforementioned details. The Petitioner in its reply submitted breakup of expenses under different heads pertaining to H.O expenses and again submitted that few HO expenses were inadvertently not included in the formula for previous years, which was corrected in FY 2015-16 and, hence, the correct allocation for the FY 2015-16 seems to be higher than previous years.
- 5.95 The Commission observes that there has been a sudden increase from what has been approved by the Commission in its earlier Tariff Order dated May 31, 2012 to what has been submitted by the Petitioner now pertaining to H.O & SS expenses for Unit-2& 3.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

- 5.96 Moreover, the Commission is not satisfied with the justifications provided by the Petitioner for such sudden increase in expenses pertaining to HO & SS expenses. During the public hearing, the Petitioner had mentioned that expenses such as CSR etc. are considered under HO & SS expenses.
- 5.97 In light of the above, the Commission after due scrutiny decided to allow H.O & SS expenses as per MYT Order dated May 31, 2012 in line with JSERC Generation Regulations, 2010.
- 5.98 **Raw Water Expenses:** The Commission has noted the submission of the Petitioner with regards to raw water expenses. However, the Commission would like to highlight that the allowance of water charges is not in line with the provisions of the JSERC Generation Tariff Regulations, 2010.
- 5.99 With regards to water charges for the control period FY 2012-13 to FY 2015-16, the Petitioner had filed a review Petition in case no. 12 of 2012 wherein the Commission has mentioned the following:
- “Further the Commission has provisionally arrived at and allows the Raw Water Consumption and Raw Water Charges for Unit No. 2 & 3 as under subject to true up at the end of each Financial Year.”*
- 5.100 From the above order it is clear that the Commission had provisionally arrived and allowed the water charges and was subject to true up at the end of each financial year. Since allowance of water charges is not in line with the provisions of JSERC Generation Tariff Regulations, 2010, the Commission has not approved the water charges for the year FY 2015-16.
- 5.101 **Application fees and Publication expenses:** The Petitioner submitted receipts of the actual expenses incurred for the FY 2015-16. The Commission after due prudence check approves the actual Application fees and publication expenses for the FY 2015-16.
- 5.102 The O&M expenses approved for True up of FY 2015-16 and that submitted by the Petitioner are shown in the table below:

**Table 33: Approved O&M expenses for Unit 2 (in Rs Cr)**

Particulars	O&M expenses for Unit 2		
	As per MYT Order	Submitted by TPCL	Approved in True-up
<b>Employee Cost</b>	<b>6.78</b>	<b>6.78</b>	<b>6.78</b>
Employee Expenses without Terminal Liabilities	5.94	5.94	5.94
Terminal Liabilities	0.84	0.84	0.84
<b>R&amp;M Expenses</b>	<b>13.12</b>	<b>13.12</b>	<b>13.12</b>
<b>A&amp;G Expenses</b>	<b>11.57</b>	<b>31.97</b>	<b>11.62</b>
Ash Disposal Expenses	3.18	5.02	5.02

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	O&M expenses for Unit 2		
	As per MYT Order	Submitted by TPCL	Approved in True-up
Raw Water Expenses	1.6	9.54	0.00
Other A&G Expenses ( including HO Expenses)	6.6	17.36	6.60
<b>Application Fees &amp; Publication Expenses</b>	<b>0.19</b>	<b>0.06</b>	<b>0.06</b>
<b>Total O&amp;M Expenses</b>	<b>31.48</b>	<b>51.87</b>	<b>31.58</b>

**Table 34: Approved O&M expenses for Unit 3 (in Rs Cr)**

Particulars	O&M expenses for Unit 3		
	As per MYT Order	Submitted by TPCL	Approved in True-up
<b>Employee Cost</b>	<b>6.78</b>	<b>6.78</b>	<b>6.78</b>
Employee Expenses without Terminal Liabilities	5.94	5.94	5.94
Terminal Liabilities	0.84	0.84	0.84
<b>R&amp;M Expenses</b>	<b>8.17</b>	<b>8.17</b>	<b>8.17</b>
<b>A&amp; G Expenses</b>	<b>10.96</b>	<b>31.57</b>	<b>10.53</b>
Ash Disposal Expenses	3.29	4.67	4.67
Raw Water Expenses	1.62	9.3	0.00
Other A&G Expenses ( including HO Expenses)	5.86	17.54	5.86
<b>Application Fees &amp; Publication Expenses</b>	<b>0.19</b>	<b>0.06</b>	<b>0.06</b>
<b>Total O&amp;M Expenses</b>	<b>25.92</b>	<b>46.52</b>	<b>25.54</b>

## Return on Equity (RoE)

### *Petitioner's submission*

5.103 The details of equity considered by the Petitioner are shown in the table below.

**Table 35: Return on Equity submitted by the Petitioner (Rs Cr)**

Particulars	Unit-2	Unit-3
Opening GFA (Original project Cost)	431.34	418.14
Regulatory Equity on above (=30% of above)	129.4	125.44
Rate of Return on Equity on Original Project Cost	15.50%	15.50%
MAT Rate	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%
Return on Equity (Original Project Cost) – (1)	<b>25.5</b>	<b>24.72</b>
Opening GFA on Additional Capitalization during the year ( Additional Capitalization held during FY 2012-16)	41.49	34.01
Regulatory Equity at the beginning of the year (=30% of above)	12.45	10.2
Additional Capitalization during the year	9.67	11.18

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	Unit-2	Unit-3
Equity Component of above (=30% of above)	2.9	3.35
Regulatory Equity at the end of the year	15.35	13.56
Rate of Return on Equity (on Additional Capitalization)	15.50%	15.50%
MAT Rate	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%
Return on Equity (on Additional Capitalization ) –(2)	<b>2.74</b>	<b>2.34</b>
Total Return on Equity (Pre-Tax) – (1) + (2)	<b>28.24</b>	<b>27.06</b>

*Commission's analysis*

- 5.104 The Commission has worked out the gross normative equity for FY 2015-16 as per Regulation 7.13 and 7.14 of the JSERC Generation Tariff Regulation, 2010.

*7.13 “In case of the generating station declared under commercial operation prior to 1.4.2011, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31.3.2011 shall be considered for determination of tariff for the Transition period.”*

*7.14 “During the control period, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31.3.2012 shall be considered for determination of tariff.”*

*For the project declared under commercial operation on or after 1.04.2011, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*

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

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

- 5.105 As per the above regulations, the Commission considered the equity to be at 30% of the proposed additional capitalization. Also Clause 7.16, 7.17 and 7.18 of the Generation Tariff regulations, 2010 states that

*7.16 “Return on equity shall be computed on pre-tax basis at the base rate of 15.50%, to be grossed up as per clause 7.17 of these Regulations.”*

*7.17 “The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate applicable to the Generating Company as per details shown as under:*

*(ii) MYT period: Base rate to be grossed by the applicable tax rate for the Year 2011-12*



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

*Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period.”*

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

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

Where ‘t’ is the applicable tax rate in accordance with clause 7.17 of these Regulations”

In line with the regulations the Commission considered the rate of return on equity at 15.50% which after grossing up with the MAT rate applicable for the year which is 21.34 % comes out to 19.706 % for FY 2015-16.

- 5.106 Accordingly, the Commission approves the return of equity for FY 2015-16 as per detailed calculation shown in the following table.

**Table 36: Approved Return on Equity for Unit 2 (in Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True-up
Opening Equity for the year	143.92	141.85	141.85
Additional equity during FY 2015-16	4.38	2.90	2.90
Closing Equity	148.31	144.75	144.75
Rate of Return on Equity Component on Original Cost	15.50%	15.50%	15.50%
Rate of Return on Equity Component of Additional Capitalization	15.50%	15.50%	15.50%
Tax Rate	20.01%	21.342%	21.34%
Rate of Return on Equity Component of Original Cost	19.38%	19.71%	19.706%
Rate of Return on Equity Component of Additional Capitalization	19.38%	19.71%	19.706%
Return on Equity (Pre Tax)	<b>28.31</b>	<b>28.24</b>	<b>28.24</b>

**Table 37: Approved Return on Equity for Unit 3 ( in Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True-up
Opening Equity for the year	136.17	135.65	135.65
Additional equity during FY 2015-16	4.29	3.35	3.35
Closing Equity	140.46	139.00	139.00
Rate of Return on Equity Component on Original Cost	15.50%	15.50%	15.50%

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True-up
Rate of Return on Equity Component of Additional Capitalization	15.50%	15.50%	15.50%
Tax Rate	20.01%	21.34%	21.34%
Rate of Return on Equity Component of Original Cost	19.38%	19.71%	19.706%
Rate of Return on Equity Component of Additional Capitalization	19.38%	19.71%	19.706%
Return on Equity (Pre Tax)	<b>26.81</b>	<b>27.06</b>	<b>27.06</b>

### Interest on Loan

#### *Petitioner's submission*

- 5.107 The Petitioner submitted that the repayment of Long-term Loan on Original Project Cost of Unit 2 and Unit 3 has been completed in the years FY 2009-10 and 2010-11 respectively. The Petitioner has considered 70% of the approved Capitalization as Normative Loan for FY 2012- 13 to FY 2015-16 as approved by the Commission in the order dated May 31, 2012 .
- 5.108 The Petitioner has considered rate of interest of loan at 13.02% for Unit 2 and 12.33% for Unit 3 which is equal to the rate of interest approved by the Commission in the order dated May 31, 2012 for FY 2015-16 as shown in the table below

**Table 38: Interest on Loan of Unit 2 and Unit 3 submitted by the Petitioner for FY 2015-16 (Rs Cr)**

Particulars	Unit 2	Unit 3
Loan Balance Movement		
Opening Loan Balance	25.89	21.17
Additional Capitalization during FY 16	9.67	11.18
Loan Balance (on Additional Capitalization for FY16)	6.77	7.83
Deemed Repayment (=Depreciation)	2.43	2.06
Closing Loan Balance	30.23	26.94
Average Loan Balance during the year	28.06	24.06
Computation of Interest on Loan		
Rate Of Interest (%)	13.02%	12.33%
Interest on Loan for FY 2015-16	<b>3.65</b>	<b>2.97</b>

*Commission's analysis*

- 5.109 The Commission has worked out gross normative loan for FY 2015-16 as per Regulation 7.13 and 7.14 of the Generation Tariff Regulation, 2010 as quoted below

*“7.13 In case of the generating station declared under commercial operation prior to 1.4.2011, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31.3.2011 shall be considered for determination of tariff for the Transition period.*

*7.14 For the project declared under commercial operation on or after 1.04.2011, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*

*Explanation: - Any expenditure incurred or projected to be incurred on or after 1.04.2011 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension shall be serviced in the manner specified in clause 7.14 of this Regulation.”*

- 5.110 The rate of interest on the approved normative debt has been worked out for Unit 2 and Unit 3 as 13.02% and 12.33% respectively. Accordingly the Commission approved the interest on loan amount which has been tabulated below

**Table 39 Approved Interest on Loan for Unit-2 (in Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True-up
<b>Loan Balance Movement</b>			
Opening Loan Balance	28.59	25.89	25.89
Additional Capitalization during FY 16	14.62	9.67	9.67
Loan Balance (on Additional Capitalization for FY 16)	10.23	6.77	6.77
Deemed Repayment (=Depreciation)	2.98	2.43	2.43
Closing Loan Balance	35.84	30.23	30.23
Average Loan Balance during the year	32.21	28.06	28.06
<b>Computation of Interest on Loan</b>			
Rate Of Interest (%)	13.02%	13.02%	13.02%
Interest on Loan for FY 2015-16	<b>4.19</b>	<b>3.65</b>	<b>3.65</b>

**Table 40 Approved Interest on Loan for Unit-3 (in Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True-up
<b>Loan Balance Movement</b>			
Opening Loan Balance	21.05	21.17	21.17
Additional Capitalization during FY 16	14.31	11.18	11.18
Loan Balance (on Additional Capitalization for FY16)	10.02	7.83	7.83
Deemed Repayment (=Depreciation)	2.3	2.06	2.06
Closing Loan Balance	28.77	26.94	26.94
Average Loan Balance during the year	24.91	24.06	24.06
<b>Computation of Interest on Loan</b>			
Rate Of Interest (%)	12.33%	12.33%	12.33%
Interest on Loan for FY 2015-16	<b>3.07</b>	<b>2.97</b>	<b>2.97</b>

### Cost of Secondary Fuel

#### *Petitioner's submission*

- 5.111 The Petitioner submitted that the Hon'ble Commission in the MYT Order for Unit 2 and Unit 3 considered the Secondary Fuel Oil Consumption at 1 ml/kWh at NAPAF of 85% as per Regulation 8.4 of Generation Tariff Regulations 2010. In line with the above, the Petitioner has computed the Cost of Secondary Fuel Oil for its Units 2 & 3 at their corresponding NAPAF considering the actual Landed Price of LDO for FY 2015-16.
- 5.112 The Petitioner further submitted that the actual LDO Expenses for FY 2015-16 is lower than that approved by the Hon'ble Commission on account of lower actual consumption and lower Landed Price of LDO as compared to Landed Price approved by the Hon'ble Commission in the MYT Order.

#### *Commission's analysis*

- 5.113 The Commission vide its discrepancy note directed the Petitioner to submit unit wise and month wise data of the actual consumption, landed price of the secondary fuel used duly certified by auditors and sample bills related to the purchase of secondary fuel.
- 5.114 The Petitioner in his reply submitted the required data as per the directions of the Commission and stated that it is in the process of obtaining auditors certificate pertaining to monthly consumption and the landed price. The Petitioner in due course of time submitted the auditor's certificate pertaining to the above.

- 5.115 The Commission after scrutinizing the data submitted by the Petitioner found that the actual Specific LDO consumption for the FY 2015-16 for Unit-2 was 0.09 ml/kWh and Unit-3 was 0.16 ml/kWh which is less than the normative values as set by the Commission in Generation Tariff Regulations, 2010.
- 5.116 The Commission also referred to the consumption in the previous years and observed that secondary oil consumption over the year has been lower

**Table 41: Secondary fuel oil consumption in previous years**

Secondary fuel oil consumption (kL)	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
Unit 2	397	262	206	336	78
Unit 3	693	305	419	264	130

- 6.11 The Commission also referred to the report by CEA on “Recommendations on Operation Norms for Thermal Power Stations Tariff Period -2014-19” wherein it has also been observed that

*“Most stations have very low SFC- Overall SFC is 0.24 ml/kWh for about 75 % of the capacity considered and 0.75 ml/kWh for balance 25 % capacity. Extremely low yearly SFC of 0.08 to 0.10 ml/kWh are seen in many stations.*

*High SFC in select few stations appears to be due to station specific factors and can be lowered through proper identification and analysis of these factors and remedial measures. These stations have achieved low SFC in the past and in specific years).*

*Stations with low SFC have most of their oil consumption incurred in the start-ups and have very little oil consumption for flame support. About 60 % to 80 % of SFC (and even higher) in these cases is attributable to startups.”*

- 6.12 The JSERC Generation Tariff Regulations, 2010 specifies the following

*“17.4 The Commission may in public interest and for reasons to be recorded in writing, relax any of the provision of these Regulations.”*

- 5.117 After review of the data submitted by the Petitioner, and after referring to the study results of CEA and the provision in the regulations, the Commission is of the opinion that it is not in public interest to pass on the higher costs at normative levels when the actual consumption has been very less (approximately one-tenth of the normative consumption). The amount approved is given in the tables below:

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 42 Approved cost of secondary fuel for unit-2 (in Rs Cr)**

Particulars	UoM	Approved in MYT order	Submitted by TPCL	Approved in True-up
Unit Capacity	MW	120	120	120
Normative Plant Availability	%	85.00%	85.00%	85.00%
No. of Days of the Year	Days	366	366	366
Gross Generation at Normative Plant Availability	MU's	895.97	895.97	895.97
Normative Sp. LDO Consumption	ml/kWh	1	1	1
LDO Consumption at Normative Plant Availability	kL	895.97	895.97	895.97
Actual consumption	kL	-	77.50	77.50
LDO Landed Price	Rs/KL	59690	52014	52014
LDO Expenses at Normative Plant Availability	<b>Rs Crore</b>	<b>5.35</b>	<b>4.66</b>	<b>0.40</b>

**Table 43 Approved cost of secondary fuel for unit-3 (in Rs Cr)**

Particulars	UoM	Approved in MYT order	Submitted by TPCL	Approved in True-up
Unit Capacity	MW	120	120	120
Normative Plant Availability	%	85.00%	85.00%	85.00%
No. of Days of the Year	Days	366	366	366
Gross Generation at Normative Plant Availability	MU's	895.97	895.97	895.97
Normative Sp. LDO Consumption	ml/kWh	1	1	1
LDO Consumption at Normative Plant Availability	kL	895.97	895.97	895.97
Actual consumption	kL	-	130.00	130.00
LDO Landed Price	Rs/KL	63352	51517	51517
LDO Expenses at Normative Plant Availability	<b>Rs Crore</b>	<b>5.68</b>	<b>4.62</b>	<b>0.67</b>

## Interest on Working Capital

### *Petitioner's submission*

5.118 The Petitioner for computing the working capital and interest thereon as per the Generation Tariff Regulations, 2010 has considered the working capital as the sum of the following:

- (a) Cost of Coal for two months for generation corresponding to the Normative Annual Plant Availability Factor;
- (b) Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor;

- (c) Maintenance spares @ 20% of operation and maintenance expenses;
- (d) Operation and Maintenance expenses for 1 month; and
- (e) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.

5.119 For the purpose of computing Interest on Working Capital, the Petitioner considered the Cost of Coal as per the Energy Charge Rate computed based on weighted average Landed Price of Coal from April 2015 to March 2016, and the cost of LDO has been considered as per weighted average Landed Price of the LDO from April 2015 to March 2016 and considering LDO Consumption at Normative Plant Availability Factor for Unit 2 and Unit 3 respectively.

5.120 The rate of interest for calculating the interest on working capital is taken at the prevalent SBI PLR rate @ 14.75% The details are shown in the table below:

**Table 44: Interest on Working Capital Submitted by the Petitioner (in Rs Cr)**

Particulars	Unit 2	Unit 3
<b>Computation of Cost Elements at Normative Availability</b>		
Ex-Bus Generation at Normative Availability & Aux Power (i) (MU)	806.37	895.97
Approved Rate of Energy Charges for FY 2015-16 (ii) (Rs/kWh)	2.771	2.786
Coal Cost at Normative Availability [= (i)x(ii)]	223.41	249.61
LDO Cost at Normative Availability	4.66	4.62
Annual Fixed Charges (excluding Incentive) at Normative Availability	110.19	105.49
O&M Expenses	51.87	46.52
Maintenance Spares	10.37	9.3
<b>Elements of Working Capital</b>		
Working Capital as Coal Cost for 2 months	37.23	41.6
Working Capital as LDO Cost for 2 months	0.78	0.77
Working Capital as Receivables for 2 months	55.6	59.18
Working Capital as O&M Expenses for 1 month	4.32	3.88
Working Capital as Maintenance Spares (at 20% of O&M Expenses)	10.37	9.3
<b>Total Working Capital</b>	<b>108.31</b>	<b>114.73</b>
<b>Computation of Interest on Working Capital</b>		
SBI PLR as on 1st April 2015 (%)	14.75%	14.75%
<b>Interest on working Capital</b>	<b>15.98</b>	<b>16.92</b>

*Commission's analysis*

5.121 The Commission has computed the interest on working capital for FY 2015-16 for both Units 2 and 3 by considering values of related components. The working capital requirement for the Petitioner has been determined by considering the following components as per Regulation 7.34 of the Generation Tariff Regulation, 2010:

- (a) *Cost of Coal for two months for generation corresponding to the Normative Annual Plant Availability Factor;*
- (b) *Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor;*
- (c) *Maintenance spares @ 20% of operation and maintenance expenses;*
- (d) *Operation and Maintenance expenses for 1 month; and*
- (e) *Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.*

5.122 The rate of interest on working capital has been taken as 14.75% i.e. the short-term Prime Lending Rate of State Bank of India as on April 1, 2015.

5.123 Accordingly, the Commission has trued up the interest on working capital for Unit 2 and Unit 3 for FY 2015-16 as shown in the tables below.

**Table 45: Interest on Working Capital approved by the Commission for FY 2015-16 (in Rs Cr)**

Particulars	Approved in MYT order		Submitted by TPCL		Approved in True up	
	Unit 2	Unit 3	Unit 2	Unit 3	Unit 2	Unit 3
Coal Cost for 2 months	25.29	28.19	37.23	41.6	35.24	33.00
LDO Cost for 2 months	0.89	0.95	0.78	0.77	0.07	0.11
Receivables for 2 months	39.74	41.63	55.6	59.18	49.14	45.72
O&M Expenses for 1 month	2.62	2.16	4.32	3.88	2.63	2.13
Maintenance Spares (@ 20% of O&M Expenses)	6.3	5.18	10.37	9.3	6.32	5.11
<b>Total Working Capital</b>	<b>74.85</b>	<b>78.11</b>	<b>108.31</b>	<b>114.73</b>	<b>93.39</b>	<b>86.07</b>
<b>Rate of Interest</b>	<b>14.75%</b>	<b>14.75%</b>	<b>14.75%</b>	<b>14.75%</b>	<b>14.75%</b>	<b>14.75%</b>
<b>Interest on Working Capital (in Rs Cr)</b>	<b>11.04</b>	<b>11.52</b>	<b>15.98</b>	<b>16.92</b>	<b>13.78</b>	<b>12.70</b>

**Summary of Fixed Cost Determinants and Generation Tariff**

5.124 Regulation 8.2 of the Generation Tariff Regulations, 2010 states that

*8.2 “The annual fixed cost of a thermal generating station shall consist of the following*



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

- (a) *Return on Equity;*
- (b) *Interest and Financing Charges on Loan Capital;*
- (c) *Depreciation;*
- (d) *Operation and Maintenance Expenses;*
- (e) *Interest Charges on Working Capital;*
- (f) *Cost of Secondary Fuel Oil.*
- (g) *Special allowance in lieu of R&M or separate compensation allowance, wherever applicable”*

5.125 The following tables show the fixed cost components and energy cost for FY 2015-16, in terms of the Petitioner’s submission and the Commission’s trued up costs for Unit 2 and Unit 3.

**Table 46: Summary of Annual Fixed Cost Unit 2 (in Rs Cr)**

Parameters	Units	Unit 2		
		Approved in MYT order	Submitted by TPCL	Approved in True up
O&M charges	Rs Cr	31.48	51.87	31.58
Depreciation	Rs Cr	6.34	5.79	5.79
Interest on Loan	Rs Cr	4.19	3.65	3.65
Return on Equity (pre-tax)	Rs Cr	28.31	28.24	28.24
Cost of Secondary Fuel	Rs Cr	5.35	4.66	0.40
Interest on Working Capital	Rs Cr	11.04	15.98	13.78
<b>Annual Fixed Charges</b>	<b>Rs Cr</b>	<b>86.72</b>	<b>110.19</b>	<b>83.44</b>

**Table 47: Summary of Annual Fixed Cost Unit 3 (in Rs Cr)**

Parameters	Units	Unit 3		
		Approved in MYT order	Submitted by TPCL	Approved in True up
O&M charges	Rs Cr	25.92	46.52	25.54
Depreciation	Rs Cr	7.64	7.41	7.41
Interest on Loan	Rs Cr	3.07	2.97	2.97
Return on Equity (pre tax)	Rs Cr	26.81	27.06	27.06
Cost of Secondary Fuel	Rs Cr	5.68	4.62	0.67
Interest on Working Capital	Rs Cr	11.52	16.92	12.70

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Parameters	Units	Unit 3		
		Approved in MYT order	Submitted by TPCL	Approved in True up
Annual Fixed Charges	Rs Cr	80.64	105.49	76.34

## Incentive

### *Petitioner's submission*

- 5.126 The Petitioner based on the provisions of Generation Tariff Regulations, 2010 computed Incentive for Truing-up of FY 2015-16 which works out to Rs 24.61 Cr for Unit 2 and Rs 16.62 Cr for Unit 3. The detailed computation of pre-tax Incentive is shown in the following tables:

**Table 48: Incentive submitted by the Petitioner for Unit 2 and Unit 3 (in Rs Cr)**

Particulars	UoM	FY 2015-16	
		Unit 2	Unit 3
Actual Plant Availability	%	99.93%	95.53%
Normative Plant Availability	%	85.00%	85.00%
Annual Fixed Charges without Incentive	Rs Cr	110.19	105.49
Annual Fixed Charges with Incentive	Rs Cr	129.55	118.56
Computation of Incentive			
Incentive(Post-Tax)	Rs Cr	19.36	13.07
MAT Rate	%	21.34%	21.34%
Incentive(Pre-Tax) for FY 2015-16	Rs Cr	24.61	16.62

### *Commission's analysis*

- 5.127 As per Regulation 8.12 of Generation Tariff Regulations, 2010,

*“8.12 The capacity charge (inclusive of incentive) payable to a thermal generating station for a calendar month shall be calculated in accordance with the following formulae :*

*(a) Generating stations in commercial operation for less than ten (10) years on 1st April of the financial year:*

$$= (AFC \times (NDM / NDY) \times (0.5 + 0.5 \times PAFM / NAPAF) \text{ (in Rupees) ;}$$

*Provided that in case the plant availability factor achieved during a financial year (PAFY) is less than 70%, the total capacity charge for the year shall be restricted to: =AFC x (0.5 + 35 / NAPAF) x (PAFY / 70) (in Rupees)*

(b) For generating stations in commercial operation for ten (10) years or more on 1st April of the year:

$$= (AFC \times NDM / NDY) \times (PAFM / NAPAF) \text{ (in Rupees)}$$

Where, AFC - Annual fixed cost specified for the year, in Rupees;

NAPAF - Normative annual plant availability factor in percentage;

NDM - Number of days in the month;

NDY - Number of days in the year;

PAFM - Plant availability factor achieved during the month, in percent;

PAFY - Plant availability factor achieved during the year, in percent”

- 5.128 Accordingly the Commission has calculated the incentives after due verification of SLDC certified availability. The Commission hereby approves the pre-tax incentives as tabulated below

**Table 49: Incentive approved for Unit-2 (in Rs Cr)**

Particulars	UoM	Incentive for Unit-2		
		Approved in MYT order	Submitted by TPCL	Approved in True up
Actual Plant Availability	%	85.00%	99.93%	99.93%
Normative Plant Availability	%	85.00%	85.00%	85.00%
Annual Fixed Charges without Incentive	Rs Cr	86.72	110.19	83.44
Annual Fixed Charges with Incentive	Rs Cr	86.72	129.55	98.10
Computation of Incentive				
Incentive(Post-Tax)	Rs Cr	0	19.36	14.66
MAT Rate	%	20.01%	21.34%	21.34%
Incentive(Pre-Tax) for FY 2015-16	Rs Cr	0	24.61	18.64

**Table 50: Incentive approved for Unit-3 (in Rs Cr)**

Particulars	UoM	Incentive for Unit-3		
		Approved in MYT order	Submitted by TPCL	Approved in True up
Actual Plant Availability	%	85.00%	95.53%	95.53%
Normative Plant Availability	%	85.00%	85.00%	85.00%
Annual Fixed Charges without Incentive	Rs Cr	80.64	105.49	76.34

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	Incentive for Unit-3		
		Approved in MYT order	Submitted by TPCL	Approved in True up
Annual Fixed Charges with Incentive	Rs Cr	80.64	118.56	85.79
Computation of Incentive				
Incentive(Post-Tax)	Rs Cr	0	13.07	9.46
MAT Rate	%	20.01%	21.34%	21.34%
Incentive(Pre-Tax) for FY 2015-16	Rs Cr	0	16.62	12.03

### Tax on Savings on Operational Parameters

- 5.129 The Petitioner submitted that the Income Tax on gains on account of lower LDO Consumption, lower Auxiliary Power Consumption and lower Heat Rate is recoverable from Tata Steel Distribution Licensee as per Regulation 7.48 of the Generation Tariff Regulations 2010:

*“7.48 Tax on the income streams of the Generating Company shall not be recovered from the Beneficiaries.*

*Provided that the deferred tax liability, excluding Fringe Benefit Tax, for the period up to 31st March, 2011 whenever it materializes, shall be recoverable directly from the beneficiaries and the long-term customers;*

*Provided further that any tax liability on incentives and savings due to improved performance on any parameter, if any, shall be considered for passing onto the Beneficiaries in the ratio of the sharing of the gains as prescribed un-der these Regulations”*

- 5.130 The Petitioner in line with the Regulations 7.48 of the Generation Tariff Regulations, 2010 and following the methodology adopted by the Hon’ble Commission in the previous True-up Orders computed the Income Tax liability on gain on Secondary Fuel Oil Consumption, Auxiliary Power Consumption and Heat Rate for FY 2015-16 which have been summarized below.

### Tax Liability on gain on secondary fuel oil consumption

#### *Petitioner’s submission*

- 5.131 The Petitioner submitted that the tax liability to be borne by the Petitioner on such gains on account of lower LDO Consumption is recoverable from the beneficiaries as per Regulation 7.48 of the Generation Tariff Regulations, 2010.

*Commission's View*

- 5.132 The Commission calculated the tax on the gain on secondary fuel consumption of the Petitioner as per Regulation 7.48 of the Generation Tariff Regulations, 2010 and accordingly approves the same for Unit-2 and Unit-3 as tabulated below.

**Table 51: Computation of Tax liability on gains on LDO consumption of Unit 2 (in Rs Cr)**

Particulars	Tax liability on gains on LDO consumption for Unit 2	
	Submitted by TPCL	Approved in True up
Normative Gross generation	895.97	895.97
Actual gross generation	848.41	848.41
Normative sp. LDO Consumption	1	1
LDO Consumption at Normative Plant Availability	895.97	895.97
Actual LDO Consumption for the year	77.50	77.50
Equivalent actual LDO Consumption at normative generation	81.84	81.84
Difference in LDO Consumption	814.12	814.12
LDO Landed Price	52014	52014
Gain/Loss on LDO Consumption(post Tax)	4.23	4.23
MAT rate	21.34%	21.34%
Tax liability to be recovered from Consumers	<b>1.15</b>	<b>1.15</b>

**Table 52: Computation of Sharing of gains on LDO consumption of Unit 3 (in Rs Cr)**

Particulars	Tax liability on gains on LDO consumption for Unit 3	
	Submitted by TPCL	Approved in True up
Normative Gross generation	895.97	895.97
Actual gross generation	791.49	791.49
Normative sp. LDO Consumption	1	1
LDO Consumption at Normative Plant Availability	895.97	895.97
Actual LDO Consumption for the year	130	130
Equivalent actual LDO Consumption at normative generation	147.16	147.16
Difference in LDO Consumption	748.81	748.81
LDO Landed Price	51517	51517
Gain/Loss on LDO Consumption(post Tax)	3.86	3.86
MAT rate	21.34%	21.34%
Tax liability to be recovered from Consumers	<b>1.05</b>	<b>1.05</b>

## Tax Liability on gain in Auxiliary Consumption

### *Petitioner's submission*

- 5.133 The Petitioner submitted that the tax liability to be borne on the gain on account of lower auxiliary power consumption is recoverable from the beneficiaries as per Regulation 7.48 of the Generation Tariff Regulations, 2010.

### *Commission's analysis*

- 5.134 The Commission calculated the tax on the gain in auxiliary consumption of the Petitioner and accordingly approves the tax on auxiliary consumption for Unit-2 and Unit-3 as tabulated below.

**Table 53: Tax Liability on Gain in Auxiliary Power Consumption for unit-2 (in Rs Cr)**

Particulars	UoM	Tax Liability on Gain in Auxiliary Power Consumption for Unit 2	
		Submitted by TPCL	Approved in True up
Normative Auxiliary power consumption	%	10.00%	10.00%
Actual Auxiliary power consumption	%	9.13%	9.13%
Energy Charges	Rs Cr	213.58	211.33
Net Gain due to lower Auxiliary Power Consumption	Rs Cr	2.03	2.01
MAT Rate	%	21.34%	21.34%
Tax Liability due to Gain in Auxiliary Consumption	Rs Cr	<b>0.552</b>	<b>0.546</b>

**Table 54: Tax Liability on Gain in Auxiliary Power Consumption for unit-3 (in Rs Cr)**

Particulars	UoM	Tax Liability on Gain in Auxiliary Power Consumption for Unit 3	
		Submitted by TPCL	Approved in True up
Normative Auxiliary power consumption	%	10.00%	10.00%
Actual Auxiliary power consumption	%	9.25%	9.25%
Energy Charges	Rs Cr	200.11	197.96
Net Gain due to lower Auxiliary Power Consumption	Rs Cr	1.66	1.64
MAT Rate	%	21.34%	21.34%
Tax Liability due to Gain in Auxiliary Consumption	Rs Cr	<b>0.451</b>	<b>0.446</b>

## **Tax Liability on gain in Heat rate**

### *Petitioner's submission*

5.135 The Petitioner submitted that the tax liability to be borne on the gain Heat Rate is recoverable from the beneficiaries as per Regulation 7.48 of the Generation Tariff Regulations, 2010.

### *Commission's analysis*

5.136 The Commission calculated the tax on the gain in Heat rate of the Petitioner and accordingly approves the same for Unit-2 and Unit-3 as tabulated below.

**Table 55: Tax liability on account of Heat rate for Unit-2 (in Rs Cr)**

Particulars	UoM	Tax Liability on gain in Heat rate for Unit-2	
		Submitted by TPCL	Approved in True up
Normative Heat Rate	kcal/kWh	2567	2567
Actual Heat Rate	kcal/kWh	2548	2548
Gain in Heat Rate	kcal/kWh	19	19
Actual Gross Generation	MU	848.41	848.41
Total Heat Energy Saved	Mkcal	16426	16426
Equivalent GCV of Coal	kcal/kg	3647	3647
Equivalent Coal Saved	Ton	4504	4504
Actual Equivalent Landed Price of Coal	Rs/Ton	3555	3555
Gain on Account of Normative Heat Rate	Rs Cr	1.6	1.6
Applicable Tax Rate	%	21.34%	21.34%
Tax liability due to gain on Heat Rate	<b>Rs Cr</b>	<b>0.43</b>	<b>0.43</b>

**Table 56 Tax liability on account of Heat rate for Unit-3 (in Rs Cr)**

Particulars	UoM	Tax Liability on gain in Heat rate for Unit-3	
		Submitted by TPCL	Approved in True up
Normative Heat Rate	kcal/kWh	2577	2577
Actual Heat Rate	kcal/kWh	2557	2557
Gain in Heat Rate	kcal/kWh	20	20
Actual Gross Generation	MU	791.49	791.49
Total Heat Energy Saved	Mkcal	15922	15922
Equivalent GCV of Coal	kcal/kg	3660	3660
Equivalent Coal Saved	Ton	4351	4351
Actual Equivalent Landed Price of Coal	Rs/Ton	3573	3573
Gain on Account of Normative Heat Rate	Rs Cr	1.55	1.55
Applicable Tax Rate	%	21.34%	21.34%
Tax liability due to gain on Heat Rate	<b>Rs Cr</b>	<b>0.42</b>	<b>0.42</b>

## Total cost

5.137 The tables below show the total cost recoverable by the Petitioner for Unit 2 and Unit 3 inclusive of incentive and sharing of gains on operational parameters.

**Table 57: Cost recoverable by the Petitioner for Unit 2**

Parameters	UoM	Total Cost for Unit-2		
		Approved in MYT order	Submitted by TPCL	Approved in True up
Annual Fixed Charges	Rs Cr	86.59	110.19	83.44
Fuel Cost	Rs Cr	151.74	213.58	211.43
Total Cost	Rs Cr	238.33	323.77	294.87
Incentive on availability	Rs Cr	-	24.61	18.64
Add: Tax on the Gain on LDO Consumption retained by TPCL	Rs Cr	-	1.15	1.15
Add: tax on Gain on Aux. power consumption	Rs Cr	-	0.55	0.55
Add: tax on Gain on Heat Rate consumption	Rs Cr	-	0.43	0.43
Total Cost including incentive & sharing of gains on LDO consumption	<b>Rs Cr</b>	<b>238.33</b>	<b>350.52</b>	<b>315.63</b>

**Table 58: Cost recoverable by the Petitioner for Unit 3**

Parameters	UoM	Total Cost for Unit 3		
		Approved in MYT order	Submitted by TPCL	Approved in True up
Annual Fixed Charges	Rs Cr	79.64	105.48	76.34
Fuel Cost	Rs Cr	152.22	200.11	198.01
Total Cost	Rs Cr	231.86	305.59	274.35
Incentive on availability	Rs Cr		16.62	12.03
Add: Tax on the Gain on LDO Consumption retained by TPCL	Rs Cr		1.05	1.05
Add: Tax on Gain on aux. power consumption	Rs Cr		0.45	0.45
Add: Tax on Gain on Heat rate	Rs Cr		0.42	0.42
Total Cost including incentive & sharing of gains on LDO consumption	<b>Rs Cr</b>	<b>231.86</b>	<b>324.13</b>	<b>288.28</b>



## Gap/Surplus for FY 2015-16

5.138 As per Regulation 6.17 and 6.18 of the Generation Tariff Regulations, 2010.

*6.17 “Similarly, in case the Tariff already recovered is less than the Tariff determined after true up, the Generating Company shall recover from the Beneficiaries, the less recovered amount along with simple interest at the rate equal to short term prime lending rate of State Bank of India as on 1st April of the respective Year/Years subject to adhering to the timelines specified by the Commission for filling of True-up application. In case, it is found that the filling of True-up is delayed due to the reasons attributable to the Generating Company, the under recovery shall not bear any interest expenses.”*

*6.18 “The amount under-recovered or over-recovered, along with simple interest, shall be recovered or refunded by the Generating Company, in six equal monthly instalments starting within three months from the date of the tariff order issued by the Commission after the truing up exercise.”*

5.139 Accordingly, the Commission has calculated the gap for the period of FY 2015-16 and approved revenue gap/surplus for FY 2015-16 in table below.

**Table 59: Gap/Surplus for FY 2015-16 for Unit-2 (in Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Total Cost including incentive & sharing of gains on LDO consumption	-	350.52	315.63
Revenue Recovered during the year	-	316.04	316.04
Gap/(Surplus) for the year	-	34.48	(0.41)
Carrying Cost on gap/( Surplus)	-	9.12	(0.12)
Net Gap to be recovered/adjusted	-	<b>43.61</b>	<b>(0.53)</b>

**Table 60: Gap/Surplus for FY 2015-16 of Unit-3 (in Rs Cr)**

Particulars	Approved in MYT order	Submitted by TPCL	Approved in True up
Total Cost including incentive & sharing of gains on LDO	-	324.14	288.28
Revenue Recovered during the year	-	288.54	288.54
Gap/(Surplus) for the year	-	35.60	(0.26)
Carrying Cost on gap/( Surplus)	-	9.43	(0.07)
Net Gap to be recovered/adjusted	-	<b>45.03</b>	<b>(0.33)</b>

**A6: APPROVAL OF BUSINESS PLAN FOR THE MYT CONTROL PERIOD FY 2016-17 TO FY 2020-21**

- 6.1 The Petitioner filed the petition for the Approval of Business plan for the MYT Control period FY 2016-17 to FY 2020-21 on October 28, 2016.
- 6.2 The Commission in its discrepancy note had directed the Petitioner to submit document certifying the approval of the MYT Business Plan by Board of Directors. The Commission had also directed the Petitioner to re-calculate the apportionment ratio of common facilities after considering Unit 1-5 of the Jojobera plant and to update other sections of the Petition.
- 6.3 The Petitioner vide his reply to the discrepancy note, submitted a revised business plan duly signed by COO and Executive Director, Tata Power on February 10, 2017. The Petitioner further submitted that COO and Executive Director, Tata Power are also the Board Members and the MYT Business Plan duly approved by the Board of Directors shall be submitted once their approval is obtained in the next Board Meeting. The Petitioner also corrected the apportionment ratio of the common facilities in the revised Business plan.
- 6.4 As per clause 6.6 of the JSERC Generation Tariff Regulations, 2015

“6.6

....

*the Business Plan shall be for the entire Control Period and shall, interalia, contain:*

*(a) **Capital Investment Plan:** This shall include details of the investments planned by the Generating Company, along with the corresponding capitalisation schedule and financing plan. This plan shall be commensurate with capacity enhancement and proposed efficiency improvements for various plants of the Company and shall include cost benefit analysis;*

*(b) **Capital Structure:** The Generating Company shall submit plant-wise details of the capital structure and cost of financing (interest on debt) and return on equity, after considering the existing market conditions, terms of the existing loan agreements, risks associated in generation business and creditworthiness;*

*(c) **Operation and Maintenance (O&M) expenses:** This shall include the costs estimated for the Base Year, the actual expenses incurred in the previous two years and the projected values for each year of the Control Period based on the proposed norms for O&M cost, including indexation and other appropriate mechanisms;*

*(d) **Depreciation:** This shall include details of depreciation based on the fair life of the asset and capitalisation schedules for each year of the Control Period;*

*(e) **Performance Targets:** A set of targets proposed for other controllable items such as NPAF, Station Heat Rate, Secondary Fuel Oil Consumption, and Auxiliary Power Consumption. The targets shall be consistent with the Capital Investment Plan proposed by the Generating Company;*

*(f) **Other Information:** This shall include any other details considered appropriate by the Generating Company for consideration during determination of tariff.”*

- 6.5 The Petitioner has broadly submitted its MYT Business Plan for the Control Period under two heads, namely Business Plan and Financial Projections. The Business Plan covers aspects such as generation plan, annual outage plan and availability of the plant, operational performance plan, fuel procurement plan, ash management plan and raw water consumption plan while the capital expenditure plan and operation and maintenance expenses plan have been presented under the Financial Projections which have been discussed in detail below.
- 6.6 The Commission has approved the Business plan for the MYT control period from FY 2016-17 to FY 2020-21, in line with the relevant Regulations specified above.
- 6.7 The component-wise description of the Petitioner’s submission and the Commission’s analysis thereof is provided hereunder.

### **Capital Investment Plan for the Control Period FY 2016-17 to FY 2020-21**

#### *Petitioner’s submission*

- 6.8 The Petitioner has projected capital expenditure and additional capitalization for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 in its MYT Business Plan. The proposed Additional Capitalization for Jojobera Unit 2 and Unit 3 for the Control Period FY 2016-17 to FY 2020-21 includes the following:
- Additional Capitalization pertaining to Capital Expenditure Schemes carried forward from the first Control Period FY 2012-13 to FY 2015-16.
  - Additional Capitalization pertaining to Capital Expenditure Schemes proposed for FY 2016-17 to FY 2020-21 through MYT Business Plan and their capitalization phasing.
- 6.9 The Petitioner submitted that the Hon'ble Commission had approved various Additional Capital Expenditure Schemes for capitalization during the Control Period FY 2012-13 to FY 2015-16 through the MYT Order dated May 31, 2012 and the APR Order for FY 2013-14 dated May 31, 2015. However, few of the above approved Capital Expenditure Schemes could not be completed by the end of the first Control Period i.e. March 31, 2016 due to various uncontrollable reasons as listed below

- i. Changes in the maintenance plan in view of variation in the operational plan or variations in technical requirements.
  - ii. Changes in the Annual Shutdown Plan or duration of the Annual Outage of the Units due to unavoidable circumstances viz. high lead time in delivery of the equipment, non-availability of specialized OEM Engineers, etc.
  - iii. Re-negotiations with the vendors on account of deviations in Cost and Budgeting as planned.
  - iv. Reassessment of necessity/usefulness of Schemes owing to ever-changing scenario.
  - v. Time Constraint: A significant amount of time is required for planning, obtaining internal approval, engineering, placement of Purchase Orders, delivery of materials and execution of the Projects. It is pertinent to note that APR Order for FY 2013-14 has been disposed of by the Hon'ble Commission on 31.05.2015 wherein few of the critical Additional Capital Expenditure Schemes have been approved. The execution of such Additional Capital Expenditure Schemes shall require some more time for complete execution and capitalization.
- 6.10 The Petitioner requested the Hon'ble Commission to allow capitalization of already approved Capital Expenditure Schemes pertaining to the first control period amounting to Rs. 21.27 Crores in FY 2016-17 for Unit 2 and Unit 3.
- 6.13 The Petitioner further submitted that through its MYT Business Plan for FY 2016-17 to FY 2020-21 submitted the projected Capital Expenditure for the Control Period FY 2017-21 and proposed capitalized cost has been categorized under following 2 broad categories:
- **Capitalization – Standalone:** This category includes the Capitalized Costs incurred for Assets/Schemes exclusively for Unit 2 & 3.
  - **Capitalization – Common Facilities:** This category includes the Capitalized Costs which have been incurred or proposed to be incurred for all Generating Units within the Jojobera Power Plant i.e. Units 1, 2, 3 & 4 of Tata Power and Unit 5 of IEL. These Assets/Schemes provide facilities to all the above Units and therefore the capitalized cost of such Assets/Schemes must be apportioned to the GFA of Unit 2 and Unit 3 appropriately.
- 6.14 The Petitioner has worked out the apportionment ratio individually for unit 2 and unit 3 and combined based on the Installed Capacity of the above Units with respect to the Installed Capacity of Units 1, 2, 3, 4 and 5 operating within the Jojobera Power Plant. The methodology of such apportionment is shown in the following table.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 61: Methodology of apportionment ratio as submitted by the Petitioner**

Apportionment Ratio for Additional Capitalization of Common Facilities to Unit 2 & 3		
Installed Capacity of Unit-1	MW	67.5
Installed Capacity of Unit-2	MW	120
Installed Capacity of Unit-3	MW	120
Installed Capacity of Unit-4	MW	120
Installed Capacity of Unit-5 (IEL)	MW	120
<b>Installed Capacity of Jojobera Power Plant</b>	<b>MW</b>	<b>547.5</b>
Contribution of Unit 2 in Total Installed Capacity	%	21.92%
Contribution of Unit 3 in Total Installed Capacity	%	21.92%
<b>Combined Contribution of Unit 2 &amp; 3 in Total Installed Capacity</b>	<b>%</b>	<b>43.84%</b>

6.15 The additional capitalization as proposed by the Petitioner for the Control period FY 2016-17 to FY 2020-21 is shown in the following table.

**Table 62: Additional Capitalization for Control Period for Unit 2 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation - Standalone Assets	4.1	6.53	16.03	2.75	4.2
Additional Capitalisation - apportioned for Common Facilities	5.31	1.84	0.55	1.17	0.34
<b>Total</b>	<b>9.41</b>	<b>8.37</b>	<b>16.58</b>	<b>3.92</b>	<b>4.54</b>

**Table 63: Additional Capitalization for Control Period for Unit 3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation- Standalone Assets	6.55	10.53	10.03	6.95	0
Additional Capitalisation - apportioned for Common Facilities	5.31	1.84	0.55	1.17	0.34
<b>Total</b>	<b>11.86</b>	<b>12.37</b>	<b>10.58</b>	<b>8.12</b>	<b>0.34</b>

6.16 Accordingly, the Petitioner has worked out the Gross Fixed Assets of Unit 2 and Unit 3 for the Control Period FY 2017-21 has been shown in the following Tables. The closing Gross Fixed Asset ("GFA") for FY 2015-16 has been considered as the opening GFA for the Control Period FY 2016-17 to FY 2020-21.

**Table 64: GFA of Unit-2 (in Rs. Cr) for the Control period as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Opening GFA</b>	<b>482.5</b>	<b>491.91</b>	<b>500.27</b>	<b>516.85</b>	<b>520.77</b>

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Additional Capitalisation</b>	9.41	8.37	16.58	3.92	4.54
<b>Closing GFA</b>	<b>491.91</b>	<b>500.27</b>	<b>516.85</b>	<b>520.77</b>	<b>525.31</b>

**Table 65: GFA of Unit-3 (in Rs Cr) for the control period as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Opening GFA</b>	463.33	475.19	487.56	498.13	506.26
<b>Additional Capitalisation</b>	11.86	12.37	10.58	8.12	0.34
<b>Closing GFA</b>	<b>475.19</b>	<b>487.56</b>	<b>498.13</b>	<b>506.26</b>	<b>506.6</b>

*Commission's analysis*

6.17 As per Clause 7.6 of the JSERC Generation Tariff Regulations, 2015

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

*(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;*

*(ii) Change in law;*

*(iii) Deferred works relating to ash pond or ash handling system in the original scope of work;*

*(iv) Any additional works/services which have become necessary for efficient and successful operation of the generating station, but not included in the original project cost;*

*(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such undischarged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.*

*(vi) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialisation of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:*

*.....”*

6.18 The Commission has scrutinized the information provided in its revised MYT Business Plan where the Petitioner has provided justifications for the all the schemes proposed. The Commission has also scrutinized the Detailed Project Reports (DPR) provided by the Petitioner for the schemes with capital expenditure worth more than 1 crore.

6.19 The Commission while scrutinizing the carry forward schemes which were proposed to be capitalized in FY 2016-17 has verified the schemes approved in the MYT Order dated May 31, 2012 and APR Order dated May 31, 2015 .Accordingly, the Commission has allowed

the capital expenditure schemes and the related capitalization after due prudence check.

6.20 The approved capitalization for each year has been summarized in the tables below.

**Table 66: Additional Capitalization of Unit 2 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation- Standalone Assets	4.10	6.53	14.53	2.75	4.20
Additional Capitalisation - apportioned for Common Facilities	5.31	0.00	0.00	0.00	0.00
<b>Total</b>	<b>9.41</b>	<b>6.53</b>	<b>14.53</b>	<b>2.75</b>	<b>4.20</b>

**Table 67: Additional Capitalization of Unit 3 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation- Standalone Assets	6.55	10.53	8.53	6.95	0.00
Additional Capitalisation- apportioned for Common Facilities	5.31	0.00	0.00	0.00	0.00
<b>Total</b>	<b>11.86</b>	<b>10.53</b>	<b>8.53</b>	<b>6.95</b>	<b>0.00</b>

6.21 The details of the Capital expenditure schemes approved for the MYT period can be found at **Annexure-III & IV** of this Order.

6.22 The Commission shall review the capital expenditure and capitalization actually done by the Petitioner at the end of each year of the Control Period in accordance with Clause 6.8 to 6.10 of the Generation Tariff Regulations, 2015.

6.23 The Petitioner shall submit the actual capital expenditure incurred along with the Annual Performance Review Filing during each year of the Control Period. The Commission shall also conduct a midterm review at the end of second year of the Control Period. In case, the cumulative incurred capital expenditure and/or capitalization deviates from the approved capital expenditure / capitalization by more than 20% (cumulative), the Commission will make necessary changes to capital investment plan for the Control Period and will adjust depreciation and financing cost, which includes cost of debt (interest), working capital interest, cost of equity (return) based on the actual capital expenditure and/or capitalization vis-à-vis approved capital expenditure/capitalization.

6.24 Accordingly, the GFA approved by the Commission for the MYT control period is as follows

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 68: GFA of Unit-2 (in Rs. Cr) for the control period as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA	482.50	491.91	498.44	512.96	515.71
Additional Capitalisation	9.41	6.53	14.53	2.75	4.20
Closing GFA	<b>491.91</b>	<b>498.44</b>	<b>512.96</b>	<b>515.71</b>	<b>519.91</b>

**Table 69: GFA of Unit-3 (in Rs Cr) for the control period as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA	463.33	475.19	485.72	494.24	501.19
Additional Capitalisation	11.86	10.53	8.53	6.95	0.00
Closing GFA	<b>475.19</b>	<b>485.72</b>	<b>494.24</b>	<b>501.19</b>	<b>501.19</b>

### Capital Structure (Financing of Additional Capitalization)

#### *Petitioner's Submission*

- 6.25 The Petitioner submitted that it is planning to finance the projected Additional Capitalization for FY 2016-17 to FY 2020-21 from internal accruals and hence, no project specific debt for any of the proposed Capex Schemes is anticipated.
- 6.26 However, for the purpose of tariff computation, the Petitioner has considered the financing of Projected Additional Capitalization for FY 2016-17 to FY 2020-21 at Normative Debt: Equity ratio of 70:30 as per the provisions of Generation Tariff Regulations 2015.
- 6.27 The financing structure of proposed Additional Capitalization for Unit 2 and Unit 3 for the Control Period from FY 2016-17 to FY 2020-21 are summarized in the following tables

**Table 70: Financing of Additional Capitalization (in Rs Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation	9.41	8.37	16.58	3.92	4.54
Normative Debt Component (70% of Capitalized Cost)	6.59	5.86	11.6	2.75	3.18
Normative Equity Component (30% of Capitalized Cost)	2.82	2.51	4.97	1.18	1.36



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 71: Financing of Additional Capitalization (in Rs Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Additional Capitalisation</b>	11.86	12.37	10.58	8.12	0.34
<b>Normative Debt Component (70% of Capitalized Cost)</b>	8.3	8.66	7.4	5.69	0.24
<b>Normative Equity Component (30% of Capitalized Cost)</b>	3.56	3.71	3.17	2.44	0.10

*Commissions Analysis*

6.28 As per Clause 7.6 (a) of the Generation Tariff Regulations, 2015

*“7.6 Capital cost for a Project shall include:*

*(a) the expenditure incurred or projected to be incurred, including interest during construction, IEDC and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan –*

*(i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or*

*(ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, - up to the date of commercial operation of the project,*

*as admitted by the Commission after prudence check shall form the basis for determination of tariff;”*

6.29 The Commission accordingly approved equity to the tune of 30% and considered the remaining 70% as normative debt. The financing of the additional capitalization as approved by the Commission are tabulated below.

**Table 72: Financing of Additional Capitalization (in Rs Cr) for Unit-2 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Additional Capitalisation</b>	9.41	6.53	14.53	2.75	4.20
<b>Normative Debt Component (70% of Capitalized Cost)</b>	6.59	4.57	10.17	1.93	2.94
<b>Normative Equity Component (30% of Capitalized Cost)</b>	2.82	1.96	4.36	0.83	1.26

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 73: Financing of Additional Capitalization (in Rs Cr) for Unit-3 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Additional Capitalisation</b>	11.86	10.53	8.53	6.95	0.00
<b>Normative Debt Component (70% of Capitalized Cost)</b>	8.30	7.37	5.97	4.87	0.00
<b>Normative Equity Component (30% of Capitalized Cost)</b>	3.56	3.16	2.56	2.09	0.00

## Interest on Loan

### *Petitioner's submission*

- 6.30 The Petitioner submitted that the repayment of the long term debt of the original project cost for Unit 2 and Unit 3 has been completed in year FY 2009-10 and FY 2010-11 respectively.
- 6.31 The Petitioner further submitted that no loan has been availed for the financing of the additional capitalization and normative debt has been considered for working out the interest on loan on Additional Capitalization as discussed earlier.
- 6.32 The Petitioner considered the rate of interest as weighted average rate of interest of the actual loan portfolio at 13.02% for Unit 2 and 12.33% for Unit 3 in accordance with Regulations 7.23 of the JSERC Generation Tariff Regulations 2015.

**Table 74: Interest on Loan (in Rs Cr) for Unit-2 as proposed by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Opening Debt for the year</b>	30.23	33.91	36.1	42.66	39.42
<b>Additions during the year</b>	6.59	5.86	11.6	2.75	3.18
<b>Repayment</b>	2.91	3.67	5.04	5.99	6.21
<b>Closing Debt</b>	33.91	36.10	42.66	39.42	36.38
<b>Average Debt</b>	32.07	35.00	39.38	41.04	37.90
<b>Rate of Interest</b>	13.02%	13.02%	13.02%	13.02%	13.02%
<b>Interest on Debt</b>	<b>4.18</b>	<b>4.56</b>	<b>5.13</b>	<b>5.34</b>	<b>4.93</b>

**Table 75: Interest on Loan (in Rs Cr) for Unit-3 as proposed by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Opening Debt for the year</b>	26.94	32.59	37.66	40.24	40.3
<b>Additions during the year</b>	8.3	8.66	7.40	5.69	0.24
<b>Repayment</b>	2.65	3.59	4.82	5.63	5.85

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Closing Debt	32.59	37.66	40.24	40.3	34.69
Average Debt	29.77	35.13	38.95	40.27	37.5
Rate of Interest	12.33%	12.33%	12.33%	12.33%	12.33%
Interest on Debt	<b>3.67</b>	<b>4.33</b>	<b>4.80</b>	<b>4.97</b>	<b>4.62</b>

*Commission's analysis*

- 6.33 The Commission has worked out the gross normative loan for the MYT control period FY 2016-17 to FY 2020-21 as per Clause 7.13, 7.14, 7.19 to 7.24 of the Generation Tariff Regulations, 2015 as quoted below.

*“7.13 In case of the generating station declared under commercial operation prior to 1st April 2016, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31st March 2016 shall be considered for determination of tariff. During the control period, debt-equity ratio allowed by the Commission for determination of Tariff for the period ending 31st March 2017 shall be considered for determination of tariff.*

*7.14 For the project declared under commercial operation on or after 1st April 2016, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*

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

.....

*“7.19 The loans arrived at in the manner indicated in clause 7.13 and 7.14 of these Regulations shall be considered as gross normative loan for calculation of interest on loan.*

*7.20 The normative loan outstanding as on 1st April 2016 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31st March 2016 from the gross normative loan*

*7.21 The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year.*

*7.22 Notwithstanding any moratorium period availed by the Generating Company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.*

*7.23 The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the Project:*

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

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

*Provided further that if the generating station does not have actual loan, then the weighted average rate of interest of the Generating Company as a whole shall be considered.....*

*7.24 The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest."*

- 6.34 As per the above Regulations, the opening normative loan for the FY 2016-17 is considered equal to the closing debt for the FY 2015-16 as approved in the True-up of FY 2015-16.
- 6.35 The rate of interest on the approved normative debt has been worked out in accordance with Clause 7.23 of the Generation Tariff Regulation, 2015.
- 6.36 The last available weighted average rate of interest for Unit 2 and Unit 3 is 13.02% and 12.33% respectively (which was the rate of interest on the long term debt of Unit 2 and Unit 3 in FY 2009-10 and FY 2010-11 respectively). The same has been considered for calculation of interest on normative loan.
- 6.37 The repayment of loan for each year of the control period has been considered equal to the value of depreciation for the year as per clause 7.21 of the Generation Tariff Regulations, 2015.
- 6.38 The Interest on Loan approved by the Commission for Unit-2 & 3 has been tabulated below

**Table 76: Interest on Loan (in Rs Cr) for Unit-2 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Debt for the year	30.23	33.91	34.89	40.24	36.58
Additions during the year	6.59	4.57	10.17	1.93	2.94
Repayment	2.91	3.59	4.81	5.58	5.74
Closing Debt	33.91	34.89	40.24	36.58	33.78
Average Debt	32.07	34.40	37.56	38.41	35.18
Rate of Interest	13.02%	13.02%	13.02%	13.02%	13.02%
Interest on Debt	<b>4.18</b>	<b>4.48</b>	<b>4.89</b>	<b>5.00</b>	<b>4.58</b>

**Table 77: Interest on Loan (in Rs Cr) for Unit-3 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Debt for the year	26.94	32.59	36.45	37.82	37.40
Additions during the year	8.30	7.37	5.97	4.87	0.00
Repayment	2.65	3.51	4.60	5.29	5.45
Closing Debt	32.59	36.45	37.82	37.40	31.94
Average Debt	29.77	34.52	37.14	37.61	34.67
Rate of Interest	12.33%	12.33%	12.33%	12.33%	12.33%
Interest on Debt	<b>3.67</b>	<b>4.26</b>	<b>4.58</b>	<b>4.64</b>	<b>4.27</b>

## Return on Equity (RoE)

### *Petitioner's submission*

- 6.39 The Petitioner had considered the Post-Tax Return on Equity at 15.5% (to be grossed-up by the applicable Tax rate) on Equity component of the Original Project Cost, Additional Capitalization from FY 2011-12 to FY 2015-16 and projected Additional Capitalization for FY 2017-21 including the schemes being carried forward from the 1st Control Period as per Generation Tariff Regulations 2015.
- 6.40 The Petitioner considered the Debt-Equity Ratio for Unit 2 and Unit 3 as per the Regulations 7.3, 7.13 & 7.14 of Generation Tariff Regulations 2015, as stated earlier, at 70:30.

**Table 78: Return on Equity (in Rs Cr) for unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA (Original project Cost)	431.34	431.34	431.34	431.34	431.34
Regulatory Equity on above (=30% of above)	129.4	129.4	129.4	129.4	129.4
Rate of Return on Equity on Original Project Cost	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%
Return on Equity (Original Project Cost) – (1)	<b>25.50</b>	<b>25.5</b>	<b>25.5</b>	<b>25.5</b>	<b>25.5</b>
Opening GFA on Additional Capitalization during the year( Additional Capitalization held during FY 2012-16)	51.16	60.57	68.94	85.51	89.44
Regulatory Equity at the beginning of the year (=30% of above)	15.35	18.17	20.68	25.65	26.83
Additional Capitalization during the year	9.41	8.37	16.58	3.92	4.54
Equity Component of above (=30% of above)	2.82	2.51	4.97	1.18	1.36
Regulatory Equity at the end of the year	18.17	20.68	25.65	26.83	28.19
Rate of Return on Equity (on Additional Capitalization)	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Return on Equity (on Additional Capitalization during FY 17-21) – (2)	<b>3.30</b>	<b>3.83</b>	<b>4.57</b>	<b>5.17</b>	<b>5.42</b>
Total Return on Equity (Pre-Tax) – (1+2)	<b>28.80</b>	<b>29.33</b>	<b>30.06</b>	<b>30.67</b>	<b>30.92</b>

**Table 79: ROE for the MYT period for unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA (Original project Cost)	418.14	418.14	418.14	418.14	418.14
Regulatory Equity on above (=30% of above)	125.44	125.44	125.44	125.44	125.44
Rate of Return on Equity on Original Project Cost	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%
Return on Equity (Original Project Cost) – (1)	<b>24.72</b>	<b>24.72</b>	<b>24.72</b>	<b>24.72</b>	<b>24.72</b>
Opening GFA on Additional Capitalization during the year( Additional Capitalization held during FY 2012-16)	45.19	57.05	69.42	79.99	88.12
Regulatory Equity at the beginning of the year (=30% of above)	13.56	17.12	20.83	24.00	26.44
Additional Capitalization during the year	11.86	12.37	10.58	8.12	0.34
Equity Component of above (=30% of above)	3.56	3.71	3.17	2.44	0.1
Regulatory Equity at the end of the year	17.12	20.83	24	26.44	26.54
Rate of Return on Equity (on Additional Capitalization)	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%
Return on Equity (on Additional Capitalization during FY 17-21) – (2)	<b>3.02</b>	<b>3.74</b>	<b>4.42</b>	<b>4.97</b>	<b>5.22</b>
Total Return on Equity (Pre-Tax) – (1+2)	<b>27.74</b>	<b>28.46</b>	<b>29.14</b>	<b>29.69</b>	<b>29.94</b>

*Commission's analysis*

6.41 The Commission has worked out the normative equity for the MYT control period as per Clause 7.13 and 7.14 of the Generation Tariff Regulation, 2015 as discussed earlier.

6.42 Further, as per clause 7.15 to 7.18 of the Generation Tariff Regulations, 2015

*“7.15 Return on equity shall be computed in rupee terms, on the equity base determined in accordance with clause 7.13, 7.14 of these Regulations.*

*7.16 Return on equity shall be computed on pre-tax basis at the base rate of 15.50% for thermal generating stations ....., to be grossed up as per clause 7.17 of these Regulations.*

*Provided that return on equity with respect to the actual base rate applicable to the Generating Company, in line with the performance of the respective generating station for the respective year during the Control Period shall be trued up separately for each year of the Control Period along with the tariff petition filed for the next Control Period. 105*

*Provided that in case of Projects commissioned on or after 1st April, 2016, an additional return of 0.5% shall be allowed if such Projects are completed within the timeline specified in Appendix-II to these Regulations:*

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

*.....*

*7.17 The rate of return on equity shall be computed by grossing up the base rate with the normal applicable tax rate for the FY 2016-17 applicable to the Generating Company.*

*Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period.*

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

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

*Where ‘t’ is the applicable tax rate in accordance with clause 7.17 of these Regulations.”*

6.43 The Commission considered the base rate of return on equity at 15.50% as per Clause 7.16 of the Generation Tariff Regulation, 2015. Further, in accordance with Clause 7.17 and 7.18 of the said regulations, the same has been grossed by the applicable tax rate and rounded up to three decimals to arrive at the pre- tax return on equity for each year of the

Control Period i.e. from FY 2016-17 to FY 2020-21.

- 6.44 The Return on Equity arrived at by the Commission (in Rs. Cr) for Unit 2 & 3 for the Control period has been tabulated below

**Table 80: Return on Equity (in Rs Cr) for unit-2**

Particulars	FY 2016-17	FY 2017-18	FY 2018- 19	FY 2019-20	FY 2020-21
Opening GFA at the beginning of the year	482.50	491.91	498.44	512.96	515.71
Opening Equity for the year	144.75	147.57	149.53	153.89	154.71
Additions during the year	2.82	1.96	4.36	0.83	1.26
Closing Equity	147.57	149.53	153.89	154.71	155.97
Rate of Return on Equity (Post Tax)	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Return on Equity (Pre Tax)	19.705%	19.71%	19.71%	19.71%	19.71%
Average Equity	146.16	148.55	151.71	154.30	155.34
ROE	<b>28.80</b>	<b>29.27</b>	<b>29.89</b>	<b>30.41</b>	<b>30.61</b>

**Table 81: Return on Equity (in Rs Cr) for unit-3**

Particulars	FY 2016-17	FY 2017-18	FY 2018- 19	FY 2019-20	FY 2020-21
Opening GFA at the beginning of the year	463.33	475.19	485.72	494.24	501.19
Opening Equity for the year	139.00	142.56	145.72	148.27	150.36
Additions during the year	3.56	3.16	2.56	2.09	0.00
Closing Equity	142.56	145.72	148.27	150.36	150.36
Rate of Return on Equity (Post Tax)	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Return on Equity (Pre Tax)	19.71%	19.71%	19.71%	19.71%	19.71%
Average Equity	140.78	144.14	146.99	149.32	150.36
ROE	<b>27.74</b>	<b>28.40</b>	<b>28.97</b>	<b>29.42</b>	<b>29.63</b>

- 6.45 The Commission would like to highlight that the threshold norms for RoE approved in the regulation had been determined based on rate prevalent prior to the notification of the Regulation in the year 2015. Over time there has been change in the rates and even the benchmark has changed from a base rate to a MCLR regime. There has also been a decrease in the interest rates over the years. In view of that, the Commission is of the opinion that determining tariffs using threshold rates as given in the Regulations is not in the interest of the public. The benefit of the decrease in rates should be passed on in the tariffs to be determined in the coming years.

- 6.46 CERC vide its Terms and Conditions for Tariff determination from Renewable Energy



Sources Regulations, 2017 has also lowered the normative Return on Equity to 14%, to be grossed up by prevailing MAT as on 1st April of previous year.

- 6.47 In view of the above, the Commission may re-look the RoE during the course of True-up in the subsequent years after review of the prevailing rates which may impact the ARR as well as the approved fixed and energy charges.

### **Operation & Maintenance Expenses**

#### *Petitioner's submission*

- 6.48 The Petitioner has presented the O&M expenses for the Control Period under four broad categories
- Projected O&M Expenses for the Control Period FY 2017-21
    - Employee Expenses with terminal benefits
    - Repairs & Maintenance (R&M) Expenses
    - Administrative and General (A&G) Expenses
  - Raw Water Charges
  - Capital Spares
  - Application Fee & Publication Expenses
- 6.49 The Petitioner submitted that the Hon'ble Commission had approved the O&M Expenses for Jojobera Unit 2 & Unit 3 for the First Control Period FY 2012-13 to FY 2015-16 after due diligence and prudence check of the O&M Expenses of previous years. However, the actual O&M Expenses have been significantly higher during the First Control Period FY 2012-16 due to various uncontrollable reasons such as increase in R&M Expenses, Ash Disposal Expenses and other A&G Expenses (including HO & SS Expenses) as compared to the Normative O&M Expenses approved in the MYT Order for FY 2012-16.
- 6.50 The Petitioner had considered an Annual Escalation Factor of **7.22%** for escalating the normalized O&M Expenses of FY 2015-16 considering it as the Base Year as per JSERC Generation tariff Regulations 2015. The O&M expenses as submitted by the Petitioner has been summarized below
- 6.51 **Employee Expenses:** The Petitioner submitted that it had considered the actual Employee Expenses (including Terminal Benefits) for FY 2015-16, which is the Base Year as per Generation Tariff Regulations 2015 and applied the proposed Annual Escalation Factor of 7.22% on the same to arrive at the proposed Employee Expenses for each year of the Control Period FY 2016-17 to 2020-21.
- 6.52 The Petitioner further submitted that the actual Terminal Benefits shall be submitted during the Truing-Up of the subsequent years of the present Control Period. The Proposed Employee expenses for the MYT period are tabulated below.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 82: Employee expenses (in Rs Cr) for Unit 2 & 3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Employee Salaries– Unit-2	6.39	6.86	7.35	7.88	8.45
Terminal Benefits– Unit-2	0.27	0.29	0.31	0.33	0.36
<b>Total Employee Expenses – Unit-2</b>	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>
Employee Salaries– Unit-3	6.39	6.86	7.35	7.88	8.45
Terminal Benefits– Unit-3	0.27	0.29	0.31	0.33	0.36
<b>Total Employee Expenses – Unit-3</b>	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>

- 6.53 **Repairs & Maintenance (R&M) Expenses:** The Petitioner computed the base R&M Expenses of FY 2015-16 by normalizing the actual R&M Expenses for past five years, i.e., FY 2011-12 to FY 2015-16 with the Annual Escalation Factor of 8.40% as approved by the Hon'ble Commission the last MYT Order dated May 31, 2012 and averaging out the same. The R&M Expenses for FY 2016-17 to 2020-21 have been projected by applying the Annual Escalation Factor of 7.22% on the base R&M Expenses of FY 2015-16.
- 6.54 The Petitioner further submitted that R&M Expenses are projected to increase significantly for the present Control Period FY 2016-17 to 2020-21 as compared to First Control Period of FY 2012-16 due to vintage of both the Units, and also, due to the significant rise in spares and services cost towards contract manpower especially during annual shutdown of the Units over the years. The Petitioner further submitted that the units exhibit natural wear & tear which increases the cost of repairing the equipment. The Proposed R&M expenses for the MYT Control period has been tabulated below

**Table 83: R&M Expenses (in Rs Cr) for Unit-2 & 3 as submitted by the Petitioner**

Particulars	FY 2015-16 (Normalized R&M expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
R&M expenses (Plant & Machinery) – Unit-2	15.48	16.6	17.79	19.08	20.46	21.93
R&M expenses (Plant & Machinery) – Unit-3	11.05	11.85	12.71	13.62	14.61	15.66

### Administration & General Expenses

- 6.55 **Ash Disposal Expenses:** The Petitioner further submitted that there has been an increase in Ash Disposal Expenses during the present Control Period FY 2016-17 to 2020-21 due to higher Ash percentage in Coal, increase in Transportation and Handling Charges and increase in Ash Disposal distances in compliance with “Consent to Operate” issued by JSPCB and also the notification of Ministry of Environment and Forests ("MoEF"), which states that the utilization of both Fly Ash and Pond Ash should be maximized especially through the construction of roads and pavements within 45 Km radius of the Thermal Power Plant which had increased the transportation charges.
- 6.56 The Petitioner submitted that the opening stock of the Ash for the financial year FY 2016-17 is computed by considering 65% of the closing stock of the Ash Pond, i.e., excluding 35% moisture content, at the end of previous financial year FY 2015-16. The wet Ash added in the financial year FY 2016-17 consists of the sum of Bottom Ash for wet disposal and the unutilized balance Fly Ash. Further, it has been considered that 10% of the opening stock of Ash already accumulated in Ash Pond shall be evacuated every year. The Petitioner has considered proposed Annual Escalation Factor at 7.22% on year-on-year basis for the computation of Ash Disposal Expenses for the present Control Period FY 2016-17 to 2020-21.
- 6.57 Thereafter, the Petitioner submitted that the calculated Ash Disposal Expenses of Unit 1, Unit 2, Unit 3 and Unit 4 for FY 2016-17 to FY 2020-21 has been apportioned to Unit 2 and Unit 3 in the ratio of the Coal consumption.
- 6.58 The Ash Disposal expenses as submitted by the Petitioner for the MYT control period has been tabulated below

**Table 84: Ash disposal expenses for Unit 2 & 3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Ash Disposal Expenses of Unit 2	5.28	5.84	5.84	6.68	6.56
Ash Disposal Expenses of Unit 3	5.37	5.41	6.45	6.29	7.27

- 6.59 **Raw Water Consumption expenses:** The Petitioner projected the Raw Water Expenses for the second control period FY 2016-17 to FY 2020-21 based on the Gross Generation during the year and estimated Specific Raw Water Consumption per Unit.
- 6.60 The Specific Raw Water Consumption has been considered by taking the weighted average of the Specific Raw Water Consumption for the Transition Period and previous Control Period FY 2011-12 to FY 2015-16 which works out to **3.18 m<sup>3</sup>/MWh**.
- 6.61 The Petitioner further submitted that the Raw Water Expenses projected for the present Control Period FY 2016- 17 to 2020-21 has considerably increased on account of mainly two reasons as follows:
- Increase in Rate of Raw Water Charges in wake of revision of Water Tax by

Government of Jharkhand ("GoJ") from Rs 0.99/KL to Rs 5.81/KL w.e.f. 01.04.2011 with an escalation of 7.50% year-on-year.

- Revision in Base Charges from Rs 4.53/KL to Rs 8.54/KL w.e.f. 01.09.2015 by Tata Steel Corporate Services in light of considerable increase in production cost of clarified water with an escalation of 7.5% year-on-year.

6.62 The Projected Raw Water expenses for the Control period FY 2016-17 to FY 2020-21 are tabulated below

**Table 85: Raw Water expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation	MU	852.49	886.58	835.32	890.71	831.00
Specific Raw Water Consumption	m <sup>3</sup> /MWh	3.18	3.18	3.18	3.18	3.18
Raw Water Consumption	m <sup>3</sup>	2708557	2816867	2653990	2829998	2640264
Raw Water Charges	Rs/m <sup>3</sup>	17.52	18.84	20.25	21.77	23.4
Total Raw Water Expenses	Rs Cr	4.75	5.31	5.37	6.16	6.18

**Table 86: Raw Water expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation	MU's	860.98	815.52	916.78	832.40	915.08
Specific Raw Water Consumption	m <sup>3</sup> /MWh	3.18	3.18	3.18	3.18	3.18
Raw Water Consumption	m <sup>3</sup>	2741264	2596552	2918926	2650278	2913516
Raw Water Charges	Rs/m <sup>3</sup>	17.52	18.84	20.25	21.77	23.4
Total Raw Water Expenses	Rs Cr.	4.80	4.89	5.91	5.77	6.82

6.63 **Head Office & Shared Service (HO & SS) Expenses:** The Petitioner submitted that its Corporate Offices at Mumbai and Noida provide the specialized support services like Engineering, Legal, Regulatory, Commercial etc. to all Divisions of Tata Power and, accordingly, the costs pertaining to these functions are allocated to all the operating Divisions. Such expenses are called Head Office ("HO") and Shared Services ("SS") Expenses. The basis of allocation of HO expenses to any Unit of Tata Power is as per the given methodology.

- Allocation of Head Office and management expenses = Head office and management expenses allocable to cost of generation\*Generation expenses of Unit/Total generation expenses (excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel (including related exchange loss/gain) etc.).*

- ii. *Head office and Management expenses allocable to cost of generation = Head office and management expenses\* Total generation expenses (excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel (including related exchange loss/gain), etc.)/{Total generation expenses(excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel(including related exchange loss/gain),etc.) + Total distribution, transmission expenses and expenses related to other business (excluding wheeling/transmission charges, depreciation, exchange loss/gain and borrowing costs, components consumed, non-recurring one-time expenses, etc.)}*

- 6.64 The Petitioner further submitted that had such services not been utilized by Jojobera from HO and SS, they would have to be provided in-house, i.e., in Units 2 and 3 themselves which would have entailed higher expenditure for the Units. The Petitioner escalated the base year H.O expenses at the escalation factor of 7.22% as proposed earlier. The expenditure for HO & SS expenses as projected by the Petitioner for the MYT period are tabulated below.

**Table 87: HO expenses allocated to Unit 2 & 3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2015-16 (Base year HO expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
HO Expenses – Unit-2	13.52	14.5	15.55	16.67	17.87	19.16
HO Expenses – Unit-3	14.05	15.06	16.15	17.31	18.56	19.90

- 6.65 **Application Fees and Publication Expenses:** The Petitioner in its business plan submitted that Application Fees for Control Period FY 2016-17 to FY 2020-21 has been calculated prescribed in JSERC Conduct of Business Regulations 2011.
- 6.66 Later, the Commission had notified (Conduct of Business) Regulations, 2016 wherein the Fees Schedule has been revised.
- 6.67 The Petitioner accordingly revised the Application Fees for the Control Period based on the Fee Schedule specified under (Conduct of Business) Regulations, 2016 in the instant petition and request the Commission to consider the same.
- 6.68 The Petitioner submitted that it had not incurred Publications expenses in FY 2015-16. Hence, for arriving at the base year publication expenses it has considered the actual publication expenses for FY 2014-15 with a onetime escalation of 8.4% based on the annual escalation factor as approved by the Hon'ble Commission in MYT Order dated May 31, 2012. Thereafter, the base year publication expense is escalated with the

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

proposed annual escalation of 7.22% for projecting the publication expenses for FY 2016-17 to 2020-21.

**Table 88: Application fee and Publication expenses (in Rs Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Application fees – Unit-2	0.06	0.1	0.06	0.06	0.06	0.06
Publication Expenses – Unit-2	0.19	0.2	0.21	0.23	0.24	0.26
<b>Total – Unit-2</b>	<b>0.24</b>	<b>0.3</b>	<b>0.27</b>	<b>0.29</b>	<b>0.3</b>	<b>0.32</b>

**Table 89: Application fee and Publication expenses (in Rs Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Application fees – Unit-3	0.06	0	0.06	0.06	0.06	0.06
Publication Expenses – Unit-3	0.19	0.2	0.21	0.23	0.24	0.26
<b>Total – Unit-3</b>	<b>0.24</b>	<b>0.2</b>	<b>0.27</b>	<b>0.29</b>	<b>0.3</b>	<b>0.32</b>

- 6.69 **Other A&G expenses:** In addition to the above, the Petitioner had proposed other A&G expenses which has been tabulated below.
- 6.70 A similar methodology has been adopted where the Petitioner had escalated the base year expenses at the proposed annual escalation factor to arrive at the expenses for the control period.

**Table 90: Other A&G expenses (in Rs Cr) as proposed by the Petitioner**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Other A&G expenses – Unit-2	3.89	4.17	4.47	4.79	5.14	5.51
Other A&G expenses – Unit-3	3.55	3.81	4.09	4.38	4.7	5.04

- 6.71 **Capital Spares:** The Petitioner submitted that it had claimed Capital Spares for the Control Period FY 2016-17 to 2020-21 as per norms of Generation Tariff Regulations

2015.

- 6.72 The Capital Spares proposed by the Petitioner for Jojobera Unit 2 and Unit 3 for the Control Period FY 2016-17 to 2020-21 has been summarized in the following tables.

**Table 91: Capital Spares (in Rs Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Turbine and Generator Bearing sets	-	0.5	0.5	-	-
Coal Mill Gear Box	-	-	-	1.0	-
Turbine Stop & Control Valve Actuator	-	0.5	0.5	-	-
Procurement of Critical Spares for Turbine and DCS Cards	-	-	0.7	0.7	-
<b>Total Capital Spares</b>	<b>-</b>	<b>1.0</b>	<b>1.7</b>	<b>1.7</b>	<b>-</b>

**Table 92: Capital Spares (in Rs Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Turbine and Generator Bearing sets	-	0.5	0.5	-	-
Coal Mill Gear Box	-	-	-	1.0	-
Turbine Stop & Control Valve Actuator	-	0.5	0.5	-	-
Procurement of Critical Spares for Turbine and DCS Cards	-	-	0.7	0.7	-
<b>Total Capital Spares</b>	<b>-</b>	<b>1.0</b>	<b>1.7</b>	<b>1.7</b>	<b>-</b>

- 6.73 A summary of the O&M expenses as submitted by the Petitioner for Unit 2 & 3 has been summarized below

**Table 93: Total O&M expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Employee Expenses</b>					
Employee Salaries	6.39	6.86	7.35	7.88	8.45
Terminal Benefits	0.27	0.29	0.31	0.33	0.36
<b>Total Employee expenses—(1)</b>	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>
<b>R&amp;M expenses</b>					
<b>Total R&amp;M expenses – (2)</b>	<b>16.6</b>	<b>17.79</b>	<b>19.08</b>	<b>20.46</b>	<b>21.93</b>
<b>A&amp;G expenses</b>					
Ash Disposal expenses	5.28	5.84	5.84	6.68	6.56
Raw water Consumption charges	4.75	5.31	5.37	6.16	6.18

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Head Office expenses	14.5	15.55	16.67	17.87	19.16
Application and Publication expenses					
Application fee	0.1	0.06	0.06	0.06	0.06
Publication expenses	0.2	0.21	0.23	0.24	0.26
Total (Application fee + Publication expenses)	0.3	0.27	0.29	0.3	0.32
Other A&G expenses	4.17	4.47	4.79	5.14	5.51
Total A&G expenses - (3)	<b>23.95</b>	<b>25.86</b>	<b>27.3</b>	<b>29.7</b>	<b>31.23</b>
Capital spares (4)	-	1.0	1.7	1.7	-
Total O&M expenses (1+2+3+4)	<b>52.28</b>	<b>57.39</b>	<b>61.42</b>	<b>66.55</b>	<b>68.49</b>

**Table 94: Total O&M expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Employee Expenses</b>					
Employee Salaries	6.39	6.86	7.35	7.88	8.45
Terminal Benefits	0.27	0.29	0.31	0.33	0.36
Total Employee expenses—(1)	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>
<b>R&amp;M expenses</b>					
Total R&M expenses – (2)	<b>11.85</b>	<b>12.71</b>	<b>13.62</b>	<b>14.61</b>	<b>15.66</b>
<b>A&amp;G expenses</b>					
Ash Disposal expenses	5.37	5.41	6.45	6.29	7.27
Raw water Consumption charges	4.8	4.89	5.91	5.77	6.82
Head Office expenses	15.06	16.15	17.31	18.56	19.9
Application and Publication expenses					
Application fee	0	0.06	0.06	0.06	0.06
Publication expenses	0.2	0.21	0.23	0.24	0.26
Total (Application fee + Publication expenses)	0.2	0.27	0.29	0.3	0.32
Other A&G expenses	3.81	4.09	4.38	4.7	5.04
Total A&G expenses - (3)	<b>24.24</b>	<b>25.64</b>	<b>28.15</b>	<b>29.55</b>	<b>32.21</b>
Capital spares (4)	-	1.0	1.7	1.7	-



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Total O&M expenses (1+2+3+4)	47.88	51.67	57.34	60.15	63.83

*Commission's analysis*

6.74 As per the Clause 7.40 of the JSERC Generation Tariff Regulation, 2015

*7.40 "The O&M expenses shall comprise of:*

- a. Salaries, wages, pension contribution and other employee costs;*
- b. Administrative and General costs;*
- c. Repairs and maintenance expenses; and*
- d. Other miscellaneous expenses, statutory levies and taxes (except corporate income tax)."*

6.75 Further, as per Clause 7.41 of the Generation Tariff Regulation, 2015, for the Existing Thermal Generating Stations, the O&M expenses for the Control Period shall be approved considering the past O&M expenses of the generating station. The said Regulations are reproduced for reference below:

*"7.41 Existing Thermal Generating Stations:*

- a. The Applicant shall submit details on O&M expenses as required by the Commission. The O&M expenses excluding terminal liabilities for the Base Year shall be determined based on accounting statements for the base year, estimates of the Generating Company for relevant years and other factors considered relevant.*
- b. The O&M expenses excluding terminal liabilities permissible towards determination of tariff for each year of the Control Period shall be determined after a prudence check by the Commission based on submissions of the Generating Company, previous years' actual expenses and any other factor considered relevant.*
- c. Terminal Liabilities will be approved as per actual submitted by the Generating Company or be established through actuarial studies.*
- d. Increase in O&M charges on account of war, insurgency or changes in laws, or like eventualities where the Commission is of the opinion that an increase in O&M charges is justified, may be considered by the Commission for a specified period".*

6.76 The Commission calculated the escalation factor as per clause 7.42 (b) of the Generation Tariff regulations, 2015 which states that

*7.42 (b) “The normalised operation and maintenance expenses excluding terminal liabilities after prudence check, for the FY 2010-11 to FY 2014-15, shall be escalated to arrive at the normalised operation and maintenance expenses at the 2014-15 price level respectively and then averaged to arrive at normalized average operation and maintenance expenses for FY 2010-11 to FY 2014-15 at 2014-15 price level. The averaged normalized operation and maintenance expenses at 2014-15 price level shall be escalated to arrive at the operation and maintenance expenses for FY 2016-17. The escalation factor shall be computed based on the weighted average increase in WPI and CPI during last five years (FY 2010-11 to FY 2014-15). The weighted average shall be computed in ratio of 80:20 for WPI and CPI, respectively.”*

6.77 Accordingly, the Commission calculated the escalation factor giving ‘80% weightage to WPI & 20% weightage to CPI and the average increase in the weighted average index from FY 2010-11 to FY 2014-15. The escalation factor comes out to be **7.22%**

6.78 **Employee Expenses:** In accordance with the provisions of the JSERC Generation Tariff Regulations, 2015, for the purpose of approval of O&M expenses, employee expenses have been considered in two parts –

- (a) Employee Expenses excluding terminal liabilities: The base figures for employee expenses (excluding terminal liabilities) have been taken equal to the expenses submitted by the Petitioner for FY 2015-16. The escalation factor is considered according to the general inflation rate of 7.22% (on year-on-year basis to arrive at the approved employee expenses figure for FY 2016-17 to FY 2020- 21.
- (b) Terminal Liabilities: The base figures for projecting terminal liabilities have been taken equal to the expenses submitted by the Petitioner for FY 2015-16. The same has been considered for projection of terminal benefits during the Control Period. However, in accordance with Clause 7.41, the terminal liabilities for each year of the Control Period shall be trued up as per the actual terminal liabilities incurred by the Petitioner after due prudence check by the Commission. The Employee expenses as approved by the Commission(in Rs Cr) has been tabulated below

**Table 95: Employee expenses (in Rs Cr) for Unit 2 & 3 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Employee Salaries– Unit-2	6.39	6.86	7.35	7.88	8.45
Terminal Benefits– Unit-2	0.25	0.25	0.25	0.25	0.25
<b>Total Employee Expenses – Unit-2</b>	<b>6.65</b>	<b>7.11</b>	<b>7.60</b>	<b>8.14</b>	<b>8.70</b>

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Employee Salaries– Unit-3	6.39	6.86	7.35	7.88	8.45
Terminal Benefits– Unit-3	0.25	0.25	0.25	0.25	0.25
<b>Total Employee Expenses – Unit-3</b>	<b>6.65</b>	<b>7.11</b>	<b>7.60</b>	<b>8.13</b>	<b>8.70</b>

- 6.79 **R&M expenses:** The Commission observes that the R&M expenses for a generating station vary from year to year depending upon the maintenance activities carried out during the year. As such considering the R&M expenses for a single year as the base expenses would be inaccurate. The Commission followed a similar methodology which has been adopted in the previous Tariff Order dated 31 May, 2012.
- 6.80 The Actual R&M expenses have been taken by first normalizing the R&M expenses of the past five years (FY 2011-12 to FY 2015-16) at the escalation rate of 8.40%, which has been used for the projection of R&M expenses the first control period in the Tariff Order dated May 31, 2012 and then taking an average of the same.
- 6.81 The escalation factor is considered to be 7.22% (as stated above) on year-on-year basis. The same escalation factor has been applied on the normalized R&M expenses to arrive at the approved R&M expenses figure for the control period FY 2016-17 to FY 2020-21.
- 6.82 The R&M expenses as approved by the Commission (in Rs Cr) for the Control period has been tabulated below

**Table 96: R&M Expenses (in Rs Cr) for Unit-2 & 3 as approved by the Commission**

Particulars	FY 2015-16 (Normalized R&M expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>R&amp;M expenses (Plant &amp; Machinery) – Unit-2</b>	15.48	16.60	17.80	19.08	20.46	21.94
<b>R&amp;M expenses (Plant &amp; Machinery) – Unit-3</b>	11.05	11.85	12.71	13.62	14.61	15.66

- 6.83 **A&G expenses:** The A&G expenses for the Petitioner consist of Ash Disposal expenses, Water Charges, Head office and Shared service expense (HO & SS), ARR filing & publication expenses and other expenses.
- 6.84 **Ash Disposal Expenses:** The Petitioner in its Business plan submitted that there has been an increase in Ash Disposal Expenses during the present Control Period FY 2016-17 to FY 2020-21 due to higher Ash percentage in Coal, increase in Transportation and

Handling Charges and increase in Ash Disposal distances in compliance with “**Consent to Operate**” issued by JSPCB.

- 6.85 The Petitioner further submitted that due to a recent MOEF notification, the transportation charges have also increased for the Petitioner. The relevant extracts from the MoEF Notification dated January 25, 2016 has reproduced below which is further amendment of the MoEF Notification No. 2804 (E) dated November 3, 2009:

*"2. In the said notification, in paragraph 2:-*

*...*

*(b) after sub-paragraph (7), the following sub-paragraphs shall be inserted, namely:-*

*...*

*(10) The cost of transportation of ash for road construction projects or for manufacturing of ash based products or use as soil conditioner in agriculture activity within a radius of hundred kilometers from a coal or lignite based thermal power plant shall be borne by such coal or lignite based thermal power plant and the cost of transportation beyond the radius of hundred kilometers and up to three hundred kilometers shall be shared equally between the user and the coal or lignite based thermal power plant."*

- 6.86 The Petitioner in support to his claim had submitted “*MoEF Notification*” and “*JSPCB Consent to Operate*” along with the Petition.
- 6.87 The Commission after scrutinizing the above documents, and keeping in view the judgement and directive of the Hon’ble Tribunal dated August 10, 2016 which has been discussed in detail in para 5.89 has approved the Petitioners methodology to arrive at the approved Ash Disposal Expenses for FY 2016-17 to FY 2020-21. The Ash Disposal expenses as approved by the Commission (in Rs Cr) for the Control period has been tabulated below

**Table 97: Ash disposal expenses for Unit 2 & 3 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Ash Disposal Expenses of Unit 2	5.14	5.68	5.64	6.50	6.33
Ash Disposal Expenses of Unit 3	5.21	5.25	6.06	6.10	6.84

- 6.88 **Raw Water Consumption Charges:** The Commission projected the Raw Water Expenses for the Second Control Period FY 2016-17 to FY 2020-21 based on the Gross Generation during the year and estimated Specific Raw Water Consumption per Unit.
- 6.89 The Specific Raw Water Consumption has been computed by taking the weighted average of the actual specific Raw Water Consumption for the Transition Period and previous Control Period FY 2011-12 to FY 2015-16 as submitted by the Petitioner which comes out to 3.18 m<sup>3</sup>/MWh.
- 6.90 The Raw water charges have been computed taking into account, the revised base raw water expenses by Tata steel Corporate services and the revised raw water tax by GoJ with an escalation of 7.5% each in both the charges for each year of the MYT Period FY 2016-17 to FY 2020-21. The approved Raw water expenses by the Commission for the Control period along with detailed computation has been tabulated below

**Table 98: Raw Water expenses for Unit-2 (in Rs Cr) as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation	MU	852.49	886.58	835.32	890.71	831.00
Specific Raw Water Consumption	m <sup>3</sup> /MWh	3.18	3.18	3.18	3.18	3.18
Raw Water Consumption	m <sup>3</sup>	2708557	2816867	2653990	2829998	2640264
Raw Water Charges	Rs/m <sup>3</sup>	17.52	18.84	20.25	21.77	23.4
Total Raw Water Expenses	<b>Rs Cr</b>	<b>4.75</b>	<b>5.31</b>	<b>5.37</b>	<b>6.16</b>	<b>6.18</b>

**Table 99: Raw Water expenses for Unit-3 (in Rs Cr) as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation	MU's	860.98	815.52	893.52	832.40	893.52
Specific Raw Water Consumption	m <sup>3</sup> /MWh	3.18	3.18	3.18	3.18	3.18
Raw Water Consumption	m <sup>3</sup>	2741264	2596552	2918926	2650278	2913516
Raw Water Charges	Rs/m <sup>3</sup>	17.52	18.84	20.25	21.77	23.4
Total Raw Water Expenses	<b>Rs Cr.</b>	<b>4.80</b>	<b>4.89</b>	<b>5.76</b>	<b>5.77</b>	<b>6.66</b>

- 6.91 **Head Office and Shared Service (HO & SS expenses):** The Petitioner submitted that few heads which were inadvertently not included till FY 2014-15 were included in the H.O expenses during the FY 2015-16 which showed a sharp increase in the H.O expenses for the FY 2015-16 which has been used as base expense to arrive at the H.O expenses for the Control period FY 2016-17 to FY 2020-21.
- 6.92 The Commission in its discrepancy note had directed the Petitioner to submit a detailed breakup of the heads under H.O expenses and the ones which were included in the FY 2015-16.

- 6.93 The Petitioner vide its reply submitted that the information sought by the Commission is a voluminous work and requested the Commission for grant of additional time.
- 6.94 Since the Petitioner had not responded, the Commission had again directed the Petitioner to submit the aforementioned details. The Petitioner in its reply submitted breakup of expenses under different heads pertaining to H.O expenses for the FY 2015-16 and again submitted that few HO expenses were inadvertently not included in the formula for previous years, which was corrected in FY 2015-16 and, hence, the correct allocation for the FY 2015-16 seems to be higher than previous years.
- 6.95 The Commission observes that the HO & SS expenses has shown a sudden increase of around 125% in Unit-2 and around 230% in Unit-3 in the year FY 2015-16. In this scenario, the Commission finds it appropriate to consider the similar methodology as adopted in the computation of R&M expenses for the MYT control period as considering the HO & SS expenses for a single year as the base expenses would be inaccurate.
- 6.96 The Actual HO & SS expenses have been taken by first normalizing the actuals of the same over the past five years (FY 2011-12 to FY 2015-16) at the escalation rate of 8.40%, which has been used for the projection of HO & SS expenses the first control period in the Tariff Order dated May 31, 2012 and then taking an average of the same.
- 6.97 The HO & SS expenses as approved by the Commission for the MYT control period has been tabulated below

**Table 100: HO expenses allocated to Unit 2 &3 (in Rs Cr) as approved by the Commission**

Particulars	(Base year HO expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
HO Expenses – Unit-2	8.14	8.73	9.36	10.03	10.76	11.53
HO Expenses – Unit-3	7.13	7.65	8.20	8.79	9.43	10.11

- 6.98 **Application Fee & Publication Expenses:** The Commission has considered the revised submission of the Petitioner and approves the application fee as per JSERC Conduct of Business Regulations, 2016.
- 6.99 The Clause 11.7 of the Generation Tariff Regulation, 2015 as quoted below provide for recovery of expenses of Application Fee and Publication Expenses by a Generating Company from its Beneficiaries.

*“11.17 The application filing fee and the expenses incurred on publication of notices in the application for approval of tariff, may in the discretion of the Commission, be allowed to be recovered by the generating company or the transmission licensee, as the case may be, directly from the beneficiaries or the transmission customers, as the case may be”*

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

- 6.100 Accordingly, the Commission has decided to allow the ARR Application Fee and Publication expenses as proposed by the Petitioner. The same shall, however, be trued up as per the actual expenditure incurred by the Petitioner on the same.
- 6.101 The Commission adopts the methodology followed by the Petitioner to arrive at the publication expenses for the Control period FY 2016-17 to FY 2020-21. The expenses as approved by the Commission (in Rs Cr) has been tabulated below

**Table 101: Application fee and Publication expenses (in Rs Cr) for Unit-2 as approved by the Commission**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Application fees – Unit-2	0.06	0.12	0.07	0.07	0.07	0.07
Publication Expenses – Unit-2	0.19	0.20	0.21	0.23	0.24	0.26
<b>Total – Unit-2</b>	<b>0.24</b>	<b>0.32</b>	<b>0.28</b>	<b>0.30</b>	<b>0.31</b>	<b>0.33</b>

**Table 102: Application fee and Publication expenses (in Rs Cr) for Unit-3 as approved by the Commission**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Application fees – Unit-3	0.06	0.12	0.06	0.06	0.06	0.06
Publication Expenses – Unit-3	0.19	0.20	0.21	0.23	0.24	0.26
<b>Total – Unit-3</b>	<b>0.24</b>	<b>0.32</b>	<b>0.27</b>	<b>0.29</b>	<b>0.30</b>	<b>0.32</b>

- 6.102 **Other A&G expenses:** The Commission has considered the actual expenses incurred by the Petitioner for the FY 2015-16 and escalated the same at the proposed annual escalation factor of 7.22% each year to arrive at the expenses for the control period.

**Table 103: Other A&G expenses (in Rs Cr) as approved by the Commission**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Other A&G expenses – Unit-2	3.89	4.17	4.47	4.80	5.14	5.51
Other A&G expenses – Unit-3	3.55	3.81	4.09	4.38	4.70	5.04

- 6.103 **Capital Spares:** As per Generation Tariff Regulations, 2015



*"7.46 The Water Charges and **capital spares** for thermal generating stations shall be allowed separately:*

*Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details regarding the same shall be furnished along with the petition:*

*Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance as per Clause 7.47 of the Regulation or special allowance as per Clause 7.10 and 7.11 of the Regulation or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization."*

- 6.104 The Petitioner provided a detailed justification depicting the circumstances on why such claim has been made. The Commission after scrutinizing the details submitted by the Petitioner approves the Capital spares for the Control period FY 2016-17 to FY 2020-21 subject to True-Up.
- 6.105 The Commission directs the Petitioner to submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same as per JSERC Generation Tariff Regulations, 2015. The Capital spares as approved by the Commission (in Rs Cr) has been tabulated below.

**Table 104: Capital Spares (in Rs Cr) for Unit-2 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Turbine and Generator Bearing sets	-	0.5	0.5	-	-
Coal Mill Gear Box	-	-	-	1.0	-
Turbine Stop & Control Valve Actuator	-	0.5	0.5	-	-
Procurement of Critical Spares for Turbine and DCS Cards	-	-	0.7	0.7	-
<b>Total Capital Spares</b>	<b>-</b>	<b>1.0</b>	<b>1.7</b>	<b>1.7</b>	<b>-</b>

**Table 105: Capital Spares (in Rs Cr) for Unit-3 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Turbine and Generator Bearing sets	-	0.5	0.5	-	-
Coal Mill Gear Box	-	-	-	1.0	-
Turbine Stop & Control Valve Actuator	-	0.5	0.5	-	-
Procurement of Critical Spares for Turbine and DCS Cards	-	-	0.7	0.7	-
<b>Total Capital Spares</b>	<b>-</b>	<b>1.0</b>	<b>1.7</b>	<b>1.7</b>	<b>-</b>



6.106 The Summary of the O&M expenses as approved by the Commission has been tabulated below.

**Table 106: Total O&M expenses for Unit-2 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Employee Expenses</b>					
Employee Salaries	6.39	6.86	7.35	7.88	8.45
Terminal Benefits	0.25	0.25	0.25	0.25	0.25
<b>Total Employee expenses—(1)</b>	<b>6.65</b>	<b>7.11</b>	<b>7.60</b>	<b>8.14</b>	<b>8.70</b>
<b>R&amp;M expenses</b>					
<b>Total R&amp;M expenses – (2)</b>	<b>16.60</b>	<b>17.80</b>	<b>19.08</b>	<b>20.46</b>	<b>21.94</b>
<b>A&amp;G expenses</b>					
Ash Disposal expenses	5.14	5.68	5.64	6.50	6.33
Raw water Consumption charges	4.75	5.31	5.37	6.16	6.18
HO & SS expenses	8.73	9.36	10.03	10.76	11.53
Application and Publication expenses					
Application fee	0.12	0.07	0.07	0.07	0.07
Publication expenses	0.20	0.21	0.23	0.24	0.26
<b>Total (Application fee + Publication expenses)</b>	<b>0.32</b>	<b>0.28</b>	<b>0.30</b>	<b>0.31</b>	<b>0.33</b>
Other A&G expenses	4.17	4.47	4.80	5.14	5.51
<b>Total A&amp;G expenses - (3)</b>	<b>23.10</b>	<b>25.10</b>	<b>26.14</b>	<b>28.87</b>	<b>29.89</b>
Capital spares (4)	-	1.0	1.7	1.7	-
<b>Total O&amp;M expenses (1+2+3+4)</b>	<b>46.35</b>	<b>51.00</b>	<b>54.52</b>	<b>59.17</b>	<b>60.53</b>

**Table 107: Total O&M expenses for Unit-3 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Employee Expenses</b>					
Employee Salaries	6.39	6.86	7.35	7.88	8.45
Terminal Benefits	0.25	0.25	0.25	0.25	0.25

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Total Employee expenses—(1)	<b>6.65</b>	<b>7.11</b>	<b>7.60</b>	<b>8.14</b>	<b>8.70</b>
<b>R&amp;M expenses</b>					
Total R&M expenses – (2)	<b>11.85</b>	<b>12.71</b>	<b>13.62</b>	<b>14.61</b>	<b>15.66</b>
<b>A&amp;G expenses</b>					
Ash Disposal expenses	5.21	5.25	6.06	6.10	6.84
Raw water Consumption charges	4.80	4.89	5.76	5.77	6.66
HO &SS expenses	7.65	8.20	8.79	9.43	10.11
Application and Publication expenses					
Application fee	0.12	0.06	0.06	0.06	0.06
Publication expenses	0.20	0.21	0.23	0.24	0.26
Total (Application fee + Publication expenses)	0.32	0.27	0.29	0.30	0.32
Other A&G expenses	3.81	4.09	4.38	4.70	5.04
Total A&G expenses - (3)	<b>21.79</b>	<b>22.70</b>	<b>25.28</b>	<b>26.30</b>	<b>28.96</b>
Capital spares (4)	-	1.0	1.7	1.7	-
Total O&M expenses (1+2+3+ 4)	<b>40.29</b>	<b>43.51</b>	<b>48.21</b>	<b>50.74</b>	<b>53.33</b>

## Depreciation

### *Petitioner's submission*

6.107 The Petitioner submitted depreciation that the total depreciation for the Control Period FY 2016-17 to FY 2020-21 for Unit 2 and Unit 3 includes following:

- Depreciation on Original Project Cost
- Depreciation on Additional Capitalization approved for FY 2011-12 to FY 2014-15, and Trued-up Capitalization for FY 2015-16.
- Depreciation on Additional Capitalization proposed for FY 2017-21 (Including the Carry forward Schemes)

6.108 The depreciation on proposed Additional Capitalization for the period FY 2016-17 to FY 2020-21 has been considered for 6 months during the year of capitalization considering that asset addition will be spread over the course of the entire year and for full year for subsequent years of the Control Period FY 2016-17 to FY 2020-21.

- 6.109 The depreciation amount for Unit 2 and Unit 3 for each year of the Control Period as submitted by the Petitioner is summarized below

**Table 108: Depreciation (in Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on Original Project Cost	3.36	3.36	3.36	3.36	3.36
Depreciation on Additional Capitalization FY 12-16	2.68	2.67	2.66	2.65	2.63
Depreciation on Additional Capitalization FY 17-21	0.23	1.00	2.38	3.34	3.58
<b>Total Depreciation during the Year</b>	<b>6.27</b>	<b>7.03</b>	<b>8.4</b>	<b>9.35</b>	<b>9.57</b>

**Table 109: Depreciation (in Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on Original Project Cost	5.11	5.11	5.11	5.11	5.11
Depreciation on Additional Capitalization FY 12-16	2.36	2.36	2.36	2.35	2.33
Depreciation on Additional Capitalization FY 17-21	0.29	1.23	2.46	3.28	3.52
<b>Total Depreciation during the Year</b>	<b>7.76</b>	<b>8.70</b>	<b>9.93</b>	<b>10.74</b>	<b>10.96</b>

#### *Commission's analysis*

- 6.110 The Generation Tariff Regulations, 2015 have specified the following methodology for the calculation of depreciation expense for existing generating stations:

*“7.28 Depreciation shall be calculated for each year of the tariff period, on the amount of Capital Cost of the assets admitted by the Commission; Provided that depreciation shall not be allowed on assets funded by any capital subsidy / grant.*

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

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

*7.31 Depreciation shall be calculated annually based on ‘Straight Line Method’ and at rates specified in Appendix-I to these Regulations for the assets of the generating station:*

*Provided that, the remaining depreciable 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. ....*

*7.32 In case of the existing Projects, the balance depreciable value as on 1st April 2016 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31st March 2016 from the gross depreciable value of the assets.*

*The rate of depreciation shall be continued to be charged at the rate specified in Appendix-I till cumulative depreciation reaches 70%. Thereafter the remaining depreciable value shall be spread over the remaining life of the asset such that the maximum depreciation does not exceed 90%.*

*7.33 Depreciation shall be chargeable from the first Year of commercial operation. In case of commercial operation of the asset for part of the Year, depreciation shall be charged on pro rata basis.”*

- 6.111 The Commission has observed that both for Unit 2 and Unit 3, the cumulative depreciation on the Original Project Cost for some assets has exceeded 70%. For these assets, following the methodology adopted by it the previous Tariff Order, the Commission has spread the balance depreciable value of the assets (as on March 31, 2011) over the balance useful life of the asset.
- 6.112 In case of assets where cumulative depreciation has not reached 70%, the Commission has considered the depreciation on assets as per the rates specified in the Generation Tariff Regulation, 2015.
- 6.113 The Commission has also allowed depreciation on the approved additional capitalization during FY 2012-16 and the MYT control period FY 2016-17 to FY 2020-21 considering the depreciation rates specified in Generation Tariff Regulations, 2015.
- 6.114 Depreciation has been provided for twelve months on the approved additional capitalization at the beginning of the year; and for six months on the approved additional capitalization during the year, considering that asset addition will be spread over the course of the entire year. The Commission had followed a similar approach for the computation of depreciation in its earlier Tariff Order dated August 8, 2011. The relevant excerpts from the earlier tariff order is reproduced below.

*“9.89 The Commission has also allowed depreciation on the approved additional capitalization considering the depreciation rates specified in Generation Tariff Regulation, 2010. Depreciation has been provided for twelve months on the approved additional capitalization for FY 2007-08 to FY 2010-11; and for six months on the approved additional capitalization for FY 2011-12, considering that asset addition will be spread over the course of the entire year.”*

- 6.115 The depreciation approved for the control period i.e. FY 2016-17 to FY 2020-21 on Original Project Cost and additional capitalization during the year FY 2012-16 and the Control period FY 2016-17 to FY 2020-21 is given in the tables below.

**Table 110: Depreciation (in Rs Cr) for Unit-2 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on Original Project Cost	3.36	3.36	3.36	3.36	3.36
Depreciation on Additional Capitalization FY 12-16	2.68	2.67	2.66	2.65	2.63
Depreciation on Additional Capitalization FY 17-21	0.23	0.92	2.16	2.93	3.11
<b>Total Depreciation during the Year</b>	<b>6.27</b>	<b>6.95</b>	<b>8.18</b>	<b>8.94</b>	<b>9.10</b>

**Table 111: Depreciation (in Rs Cr) for Unit-3 as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on Original Project Cost	5.11	5.11	5.11	5.11	5.11
Depreciation on Additional Capitalization FY 12-16	2.36	2.36	2.36	2.35	2.33
Depreciation on Additional Capitalization FY 17-21	0.29	1.15	2.24	2.94	3.12
<b>Total Depreciation during the Year</b>	<b>7.76</b>	<b>8.62</b>	<b>9.71</b>	<b>10.40</b>	<b>10.56</b>

## Performance targets – FY 2016-17 to FY 2020-21

### Availability

#### *Petitioner's submission*

- 6.116 The Petitioner has projected the availability for both Unit 2 and Unit 3 considering past trends and performance and annual shut down plan for the control period. The availability as projected is shown in the table below.

**Table 112: Availability for the Control Period as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit-2	%	91.14%	98.63%	91.14%	98.63%	91.14%
Unit-3	%	91.32%	91.42%	98.63%	92.62%	98.63%

*Commission's analysis*

6.117 The Commission has considered Normative Annual Plant Availability Factor (NAPAF) of 85% as specified in the Clause 8.4 (Norms of Operation) of the Generation Tariff Regulations, 2015 for projection of availability during each year of the Control Period i.e. from FY 2016-17 to FY 2020-21.

**Auxiliary consumption**

*Petitioner's submission*

6.118 The Petitioner has considered Auxiliary Consumption at 10% for both Unit 2 and Unit 3 during each year of the Control Period in accordance with the Generation Tariff Regulations, 2015.

*Commission's analysis*

6.119 The Commission has considered Auxiliary Consumption at 10% for both Unit 2 and Unit 3 for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 as specified in as specified in the Clause 8.4 (Norms of Operation) of the Generation Tariff Regulation, 2015.

**Plant Load factor and Generation**

*Petitioner's submission*

6.120 The Petitioner submitted that even though it expects to achieve high plant availability, the PLF and Gross Generation of the Units will depend upon the demand of the Tata Steel Distribution Licensee.

6.121 The Petitioner has projected the generation for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 taking into account the Annual Outage Plan and demand estimate from Tata Steel Distribution during each year. The projected generation and corresponding PLF for each year of the control period is shown in the table below.

**Table 113: Projected Generation (MU) and PLF (%) for Unit 2 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Demand from Licensee (Net Generation)	MU	767.24	797.92	751.78	801.64	747.9
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	852.49	886.58	835.32	890.71	831.00
Plant Load Factor (%)	%	81.10%	84.34%	79.46%	84.50%	79.05%

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 114: Projected Generation (MU) and PLF (%) for Unit 3 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Demand from Licensee (Net Generation)	MU	774.88	733.97	825.1	749.16	823.57
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	860.98	815.52	916.78	832.40	915.08
Plant Load Factor (%)	%	81.90%	77.58%	87.21%	78.97%	87.05%

*Commission's analysis*

- 6.122 The Commission has computed and approved the generation and corresponding PLF for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 considering the submissions of the Petitioner as per Generation Tariff Regulations, 2015 as shown in the table below. Any variation from the approved values shall be trued up as per Generation Tariff Regulations, 2015.

**Table 115: Generation (MU) and PLF (%) for Unit 2 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Net generation	MU	767.24	797.92	751.76	801.63	747.88
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	852.49	886.58	835.28	890.70	830.97
Plant Load Factor (%)	%	81.10%	84.34%	79.46%	84.50%	79.05%

**Table 116: Generation and PLF (%) for Unit 3 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Net Generation	MU	774.84	733.97	804.17	749.16	804.17
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	860.93	815.52	893.52	832.40	893.52
Plant Load Factor (%)	%	81.90%	77.58%	85.00%	78.97%	85.00%

**Station Heat Rate (SHR)**

*Petitioner's submission*

- 6.123 The Petitioner submitted that Jojobera Unit 2 and Unit 3 has already served for 15 years and 14 years respectively by the end of FY 2015-16 and shall be completing 20 years and 19 years by end of the Control Period at FY 2020-21 and with such vintage of the above Units coupled with the level of wear and tear of it key assets and equipment, it will be an uphill

task to maintain the Heat Rate of Jojobera Unit 2 and Unit 3 as notified in the Generation Tariff Regulations 2015 for the Control Period FY 2016-17 to FY 2020-21.

- 6.124 The Petitioner further submitted that the same had been brought the notice of the Hon'ble Commission vide his comments on Draft Generation Regulations, 2015. However, while notifying the Generation Tariff Regulations 2015, the Hon'ble Commission has fixed the Heat Rate norm similar to that approved during FY 2012-13 to FY 2015-16 at 2567 kcal/kWh and 2577 kcal/kWh for Unit 2 and Unit 3 respectively for the Control Period FY 2016-17 to FY 2020-21.
- 6.125 The Petitioner has sought relaxation from the Hon'ble Commission in the norms of Heat Rate for Jojobera Unit 2 and Unit 3 by exercising its powers conferred under Regulations 16.4 of Generation Tariff Regulations 2015 whenever the actual Heat Rate during the Second Control Period FY 2016-17 to FY 2020-21 is over and above the Normative Heat Rate on account of factors beyond the control of the Petitioner.
- 6.126 However, for the purpose of projection of Heat Rate for the Control Period FY 2016-17 to FY 2020-21, the Petitioner considered the Heat Rate at 2567 kcal/kWh and 2577 kcal/kWh for Unit 2 and Unit 3 respectively as specified in the Generation Tariff Regulations 2015.

*Commission's analysis*

- 6.127 The Commission specified the norms of operation for the two Units of Jojobera Plant in the Generation Tariff Regulations, 2015. The norms of operation were fixed by the Commission after study of the past performance for each plant in the state and as per the data made available by the Generation companies including the Petitioner for the two units - Unit 2 and Unit 3 of the Jojobera Plant. Before finalization of the norms, the Commission had also conducted a public hearing in which all the stakeholders, including the Petitioner, participated. The Commission after due deliberation finalized the Regulations.
- 6.128 It is to be noted that in the tariff petition for the truing up of FY 2011-12, the Petitioner had requested for relaxation of station heat rate approved by the Commission in the Generation Tariff Regulations, 2010. However, the Commission after considering the submissions made by the Petitioner in detail had declined to relax the norm for station heat Rate. The relevant portion of the order dated 28 April, 2014 is quoted below:

*“9.15 The Commission specified the norms of operation for the two Units of Jojobera Plant in the Clause 8.4 of the Generation Tariff Regulations, 2010. It is pertinent to mention that the norms of operation were fixed by the Commission after study of the past performance for each plant in the state and as per the data made available by the Generation companies including TPCL for the two units - Unit 2 and Unit 3 of Jojobera Plant. Before finalization of the norms, the Commission had also conducted a public hearing in which all the stakeholders, including TPCL, participated. The Commission after due deliberation finalized the Regulations.*



*9.16 The Regulations have been notified accordingly and the norms of operation are applicable and binding on each of the generation plants covered under the Regulations. As per the said Regulations, the Station Heat Rate for the two units has been fixed at 2567kCal/kWh and 2577 kCal/kWh respectively.*

*9.18 The Commission notes with concern that the CPRI Report clearly indicates that principal deviation (274.8 kCal/kWh) is a controllable loss and better SHR than the 2577 kCal/kWh currently allowed is achievable.*

*9.19 In view of the above observations, the Commission does not find any merit in allowing deviation in the norms fixed for SHR, for Unit 2 at 2567 kCal/kWh and Unit 3 at 2577 kCal/kWh, as per the Generation Tariff Regulations, 2010.”*

- 6.129 The Petitioner later filed an appeal (Appeal no 189 of 2011) before the Hon’ble APTEL for relaxation of the norm for station heat rate. The Hon’ble APTEL however upheld the decision of the Commission not to relax the norm for station heat rate.
- 6.130 The norms of operation are applicable and binding on each of the generation plants covered under the Regulations. As per the said Regulations, the Station Heat Rate for the units has been fixed at 2567Kcal/kWh and 2577 Kcal/kWh for unit-2 & unit-3 of the Jojobera Thermal Power station (TPCL) respectively.
- 6.131 Thus, for the calculation of energy charge rate and fuel cost the Commission has considered the SHR for Unit 2 at 2567 Kcal/kWh and for Unit 3 at 2577 Kcal/kWh for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 as specified in the JSERC Generation Tariff Regulation, 2015.

### **Specific Oil Consumption**

#### *Petitioner’s submission*

- 6.132 The Petitioner has considered the Specific LDO Consumption of 1.00 ml/kWh for Unit 2 and Unit 3 for the Control Period as specified in Clause 8.4 of Generation Tariff Regulations 2015.

#### *Commission’s analysis*

- 6.11 The Commission had observed that the consumption of secondary fuel oil consumption has been on the lower side than approved in the previous control period. The actual consumption details is given in the table below

**Table 117: Secondary fuel oil consumption in previous years**

Secondary fuel oil consumption (kL)	FY 2011- 12	FY 2012- 13	FY 2013- 14	FY 2014- 15	FY 2015- 16
Unit 2	397	262	206	336	78

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Secondary fuel oil consumption (kL)	FY 2011- 12	FY 2012- 13	FY 2013- 14	FY 2014- 15	FY 2015- 16
Unit 3	693	305	419	264	130

6.133 The Commission vide its discrepancy note had directed the Petitioner to submit actual LDO consumption for the FY 2016-17. The Petitioner vide its reply to discrepancy note submitted that the actual LDO consumption for FY 2016-17 stands at 164 KL for Unit-2 and 222 KL for Unit-3 which comes out to be 0.19 ml/kWh for Unit-2 and 0.26 ml/kWh.

6.134 The above submission of the Petitioner for first year of the second control period also highlights that the consumption is within the range of consumptions observed in the previous three years.

6.135 The Commission also referred to the report by CEA on “Recommendations on Operation Norms for Thermal Power Stations Tariff Period -2014-19” wherein it has also been observed that

*“Most stations have very low SFC- Overall SFC is 0.24 ml/kWh for about 75 % of the capacity considered and 0.75 ml/kWh for balance 25 % capacity. Extremely low yearly SFC of 0.08 to 0.10 ml/kWh are seen in many stations.*

*High SFC in select few stations appears to be due to station specific factors and can be lowered through proper identification and analysis of these factors and remedial measures. These stations have achieved low SFC in the past and in specific years).*

*Stations with low SFC have most of their oil consumption incurred in the start-ups and have very little oil consumption for flame support. About 60 % to 80 % of SFC (and even higher) in these cases is attributable to startups.”*

6.136 CEA in its report has also stated the following:

*“9.13 In the above context, it is felt that different approaches or philosophies for normative SFC are necessary for the two categories of stations viz- majority of stations having generally low SFC and select few stations having very high SFC. It is thus felt that norms for SFC may be provided separately for the high consuming stations in terms of station specific norms which could be progressively lowered as steps are taken by the utilities to address station specific issues leading to high oil consumption. For the rest of the stations, the SFC norms should be representative of their actual consumption level and very high SFC may not be allowed for these stations*

*9.14 The present normative provisions allowing SFC of 1 ml/kWh with provisions of 50:50 sharing are not considered appropriate in the prevailing situation as even in the case of very low actual SFC of 0.1 ml/kWh, it allows a normative SFC of about 0.5 to 0.6 ml/kWh which is considered far too liberal and unrealistic.”*

6.137 The JSERC Generation Tariff Regulations, 2015 specifies the following

*“16.4 The Commission may in public interest and for reasons to be recorded in writing, relax any of the provision of these Regulations.”*

6.138 Considering all of the above, the Commission has decided to approve the specific oil consumption (of LDO) at 0.5 ml/kWh for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 for both Unit 2 and Unit 3. This norm may be re-looked based on Petitioner’s actual performance during the Control period and as deemed fit by the Commission after due consideration of the actual performance of the Petitioner. In the subsequent APR and True up Petitions, the Petitioner is directed to also submit details of number of unit-wise startups taken after shutdown. Also details should include monthly quantity of secondary fuel consumed during plant startup and flame support if required.

### Summary of the Operational Performance Parameters

*Petitioner’s submission*

6.139 The Operational performance parameters as submitted by the Petitioner for unit-2 and unit-3 has been summarized below

**Table 118: Summary of Operational performance parameters for unit-2 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	91.14%	98.63%	91.14%	98.63%	91.14%
Demand from Licensee	MU	767.24	797.92	751.78	801.64	747.9
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	852.49	886.58	835.32	890.71	830.97
Plant Load Factor	%	81.10%	84.34%	79.46%	84.50%	79.05%
Station Heat Rate	kCal/kWh	2567	2567	2567	2567	2567
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00

**Table 119: Summary of Operational performance parameters for unit-3 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	91.32%	91.42%	98.63%	92.62%	98.63%
Demand from Licensee	MU	774.88	733.97	825.1	749.16	823.57
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	860.98	815.52	916.78	832.4	915.08
Plant Load Factor	%	81.90%	77.58%	87.21%	78.97%	87.05%
Station Heat Rate	kCal/kWh	2577	2577	2577	2577	2577

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00

*Commission's analysis*

6.140 The Operational Performance parameters as approved by the Commission for unit-2 and unit-3 has been summarized below

**Table 120: Summary of Operational performance parameters for unit-2 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	85%	85%	85%	85%	85%
Demand from Licensee	MU	767.24	797.92	751.76	801.63	747.88
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	852.49	886.58	835.28	890.70	830.97
Plant Load Factor	%	81.10%	84.34%	79.46%	84.50%	79.05%
Station Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Specific Oil Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5

**Table 121: Summary of Operational performance parameters for unit-3 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	85%	85%	85%	85%	85%
Demand from Licensee	MU	774.84	733.97	804.17	749.16	804.17
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	860.93	815.52	893.52	832.40	893.52
Plant Load Factor	%	81.90%	77.58%	85.00%	78.97%	85.00%
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Specific Oil Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5

## **A7: TARIFF DETERMINATION FOR THE MYT CONTROL PERIOD (FY 2016-17 TO FY 2020-21)**

7.1 The Petitioner submitted the petition for determination of generation tariff for the Control Period FY 2016-17 to FY 2020-21 on the basis of:

- Actual Operational & Financial Performance of the last Control Period i.e., FY 2012-13 to FY 2015-16 along with actual performance during the transition period i.e., FY 2011-12.
- The MYT Business Plan covering Operational & Financial Plan as submitted before the Hon'ble Commission dated October 28, 2016 to be read with the revised MYT Business Plan submitted dated February 10, 2017 for Jojobera Unit 2 and Unit 3 for the Control Period FY 2016-17 to FY 2020-21.
- Demand Projection of Tata Steel for the Second Control Period FY 2016-17 to FY 2020-21.
- Expected changes in each element of Cost for the Second Control Period FY 2016-17 to FY 2020-21.

7.2 The Commission has scrutinized the petition filed by TPCL for determination of Generation Tariff for the Control Period in accordance with the Generation Tariff Regulations, 2015. The component-wise description of the Petitioner's submission and the Commission's analysis thereon is given below.

### **Operational Performance – FY 2016-17 to FY 2020-21**

#### **Availability**

##### *Petitioner's submission*

7.3 The Petitioner has projected the availability for both Unit 2 and Unit 3 at 85% for the purpose of computation of tariff. However, considering past trends and performance, annual shut down plan for the control period, it has projected the availability of the units during the Control Period as shown in the table below.

**Table 122: Availability for the Control Period as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit-2	%	91.14%	98.63%	91.14%	98.63%	91.14%
Unit-3	%	91.32%	91.42%	98.63%	92.62%	98.63%

##### *Commission's analysis*

7.4 The Commission approved the norms for availability at 85% for Unit 2 and Unit 3 as discussed in paragraph 6.117 of this Tariff Order.

## Auxiliary Consumption

### *Petitioner's submission*

- 7.5 The Petitioner has considered Auxiliary Consumption at 10% for both Unit 2 and Unit 3 during each year of the Control Period in accordance with the Generation Tariff Regulations, 2015.

### *Commission's analysis*

- 7.6 The Commission has considered Auxiliary Consumption at 10% for both Unit 2 and Unit 3 for each year of the Control period as discussed in paragraph 6.119 of this Tariff Order.

## Plant Load factor and Generation

### *Petitioner's submission*

- 7.7 The Petitioner submitted that even though it expects to achieve high plant availability, the PLF and Gross Generation of the Units will depend upon the demand of the Tata Steel Distribution Licensee.
- 7.8 The Petitioner has projected the generation for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 taking into account the Annual Outage Plan and demand estimate from Tata Steel Distribution during each year. The projected generation and corresponding PLF for each year of the control period is shown in the table below.

**Table 123: Projected Generation (MU) and PLF (%) for Unit 2 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Demand from Licensee (Net Generation)	MU	767.24	797.92	751.78	801.64	747.9
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	852.49	886.58	835.32	890.71	831.00
Plant Load Factor (%)	%	81.10%	84.34%	79.46%	84.50%	79.05%

**Table 124: Projected Generation (MU) and PLF (%) for Unit 3 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Demand from Licensee (Net Generation)	MU	774.88	733.97	825.1	749.16	823.57
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.98	815.52	916.78	832.40	915.08
Plant Load Factor (%)	%	81.90%	77.58%	87.21%	78.97%	87.05%

*Commission's analysis*

- 7.9 The Commission has approved the generation and corresponding PLF for each year of the Control Period as discussed in Paragraph 6.122 of this Tariff Order.

**Station Heat Rate (SHR)**

*Petitioner's submission*

- 7.10 The Petitioner submitted that Jojobera Unit 2 and Unit 3 has already served for 15 years and 14 years respectively by the end of FY 2015-16 and shall be completing 20 years and 19 years by end of the Control Period at FY 2020-21 and with such vintage of the above Units coupled with the level of wear and tear of it key assets and equipment, it will be an uphill task to maintain the Heat Rate of Jojobera Unit 2 and Unit 3 as notified in the Generation Tariff Regulations 2015 for the Control Period FY 2016-17 to FY 2020-21.
- 7.11 The Petitioner further submitted that the same had been brought the notice of the Hon'ble Commission vide his comments on Draft Generation Regulations, 2015. However, while notifying the Generation Tariff Regulations 2015, the Hon'ble Commission has fixed the Heat Rate norm similar to that approved during FY 2012-13 to FY 2015-16 at 2567 kcal/kWh and 2577 kcal/kWh for Unit 2 and Unit 3 respectively for the Control Period FY 2016-17 to FY 2020-21.
- 7.12 The Petitioner seeks the liberty to approach the Hon'ble Commission for relaxation in the norms of Heat Rate for Jojobera Unit 2 and Unit 3 by exercising its powers conferred under Regulations 16.4 of Generation Tariff Regulations 2015 whenever the actual Heat Rate during the Second Control Period FY 2016-17 to FY 2020-21 is over and above the Normative Heat Rate on account of factors beyond the control of the Petitioner.
- 7.13 However, for the purpose of projection of Heat Rate for the Control Period FY 2016-17 to FY 2020-21, the Petitioner considered the Heat Rate at 2567 kcal/kWh and 2577 kcal/kWh for Unit 2 and Unit 3 respectively as specified in the Generation Tariff Regulations 2015.

*Commission's analysis*

- 7.14 The Commission has approved the SHR for Unit 2 at 2567 Kcal/kWh and for Unit 3 at 2577 Kcal/kWh for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 as discussed in detail in paragraph 6.127 of this Tariff Order.



## Specific Oil Consumption

### *Petitioner's submission*

- 7.15 The Petitioner has considered the Specific LDO Consumption of 1.00 ml/kWh for Unit 2 and Unit 3 for the Control Period as specified in Clause 8.4 of Generation Tariff Regulations 2015.

### *Commission's analysis*

- 7.16 The Commission has approved specific oil consumption (of LDO) at 0.5 ml/kWh for each year of the Control Period as discussed in paragraph 6.11 of this Tariff Order.

## Summary of the Operational Performance Parameters

### *Petitioner's submission*

- 7.17 The Summary of Operational performance parameters as submitted by the Petitioner for unit-2 and unit-3 has been summarized below

**Table 125: Summary of Operational performance parameters for unit-2 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	91.14%	98.63%	91.14%	98.63%	91.14%
Demand from Licensee	MU	767.24	797.92	751.78	801.64	747.9
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	852.49	886.58	835.32	890.71	830.97
Plant Load Factor	%	81.10%	84.34%	79.46%	84.50%	79.05%
Station Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00

**Table 126: Summary of Operational performance parameters for unit-3 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	91.32%	91.42%	98.63%	92.62%	98.63%
Demand from Licensee	MU	774.88	733.97	825.1	749.16	823.57
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	860.98	815.52	916.78	832.4	915.08
Plant Load Factor	%	81.90%	77.58%	87.21%	78.97%	87.05%
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

*Commission's analysis*

7.18 The Summary of Operational Performance parameters as approved by the Commission for unit-2 and unit-3 has been summarized below

**Table 127: Summary of Operational performance parameters for unit-2 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	85%	85%	85%	85%	85%
Net Generation	MU	767.24	797.92	751.76	801.63	747.88
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	852.49	886.58	835.28	890.70	830.97
Plant Load Factor	%	81.10%	84.34%	79.46%	84.50%	79.05%
Station Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Specific Oil Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5

**Table 128: Summary of Operational performance parameters for unit-3 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Unit Capacity	MW	120	120	120	120	120
Plant Availability	%	85%	85%	85%	85%	85%
Net Generation	MU	774.84	733.97	804.17	749.16	804.17
Auxiliary Power Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Gross Generation	MU	860.93	815.52	893.52	832.40	893.52
Plant Load Factor	%	81.90%	77.58%	85.00%	78.97%	85.00%
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Specific Oil Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5

## Projected Fuel Parameters – FY 2016-17 to FY 2020-21

### Determination of Energy Charges

- 7.19 The Petitioner submitted that the components of Fuel Parameters for the Control Period FY 2016-17 - FY 2020-21 are computed in accordance with the guidelines prescribed by the Commission for the same in the Clauses 8.21 and 8.24 of the Generation Tariff Regulations 2015.
- 7.20 The Petitioner submitted that the Coal Procurement Plan for the Units 2 and 3 for the Control period is based on the power demand of Tata Steel Distribution Licensee for the year and Tata Power, Jojobera has made firm arrangements with West Bokaro Collieries of Tata Steel in Jharkhand and Mahanadi Coalfields in Orissa for supply of Coal.
- 7.21 The Petitioner further submitted that Tata Power, in case of acute shortages/crisis of supply from contracted sources, ensures procurement of indigenous Coal through e-auction and Imported Coal from Indonesia.

### Fuel Procurement Plan

#### *Petitioner's submission*

- 7.22 The Petitioner has projected total coal requirement of 1.2 million tonnes with a ratio of 70: 30 for the procurement of Middling coal and MCL coal for the entire control period based on the gross generation, secondary oil consumption and weighted average GCV of the coal used.
- 7.23 The Coal procurement plan for the Control period FY 2016-17 to FY 2020-21 as projected by the Petitioner has been tabulated below.

**Table 129 : Fuel Procurement plan for Unit-2 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	852.49	886.58	835.32	890.71	831.00
Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Total Heat Input to Boiler	Mkcal	2188341	2275849	2144254	2286458	2133165
Sp. LDO Consumption	mL/KWh	1.00	1.00	1.00	1.00	1.00
GCV of LDO	kcal/L	9100	9100	9100	9100	9100
LDO Consumption	KL	852	887	835	891	831
Heat Input by LDO	Mkcal	7758	8068	7601	8105	7562
Heat Input by Coal	Mkcal	2180583	2267781	2136653	2278353	2125603
GCV of Middling Coal	kcal/Kg	4041	4041	4041	4041	4041
GCV of MCL Coal	kcal/Kg	2670	2670	2670	2670	2670
Middling Coal in Mix	%	70.00%	70.00%	70.00%	70.00%	70.00%
MCL Coal in mix	%	30.00%	30.00%	30.00%	30.00%	30.00%

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Equivalent GCV of Coal	kcal/Kg	3630	3630	3630	3630	3630
Middling Coal Consumption	Ton	420505	437320	412033	439359	409902
MCL Coal Consumption	Ton	180216	187423	176586	188297	175672
Transit Loss in Coal	%	1.00%	1.00%	1.00%	1.00%	1.00%
Middling Coal Procurement	Ton	424752	441737	416195	443797	414043
MCL Coal Procurement	Ton	182037	189316	178369	190199	177447

**Table 130: Fuel Procurement plan for Unit-3 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.98	815.52	916.78	832.40	915.08
Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Total Heat Input to Boiler	Mkcal	2218735	2101607	2362532	2145093	2358153
Sp. LDO Consumption	mL/KWh	1.00	1.00	1.00	1.00	1.00
GCV of LDO	kcal/L	9100	9100	9100	9100	9100
LDO Consumption	KL	861	816	917	832	915
Heat Input by LDO	Mkcal	7835	7421	8343	7575	8327
Heat Input by Coal	Mkcal	2210900	2094186	2354189	2137518	2349826
GCV of Middling Coal	kcal/Kg	4036	4036	4036	4036	4036
GCV of MCL Coal	kcal/Kg	2651	2651	2651	2651	2651
Middling Coal in Mix	%	70.00%	70.00%	70.00%	70.00%	70.00%
MCL Coal in mix	%	30.00%	30.00%	30.00%	30.00%	30.00%
Equivalent GCV of Coal	kcal/Kg	3621	3621	3621	3621	3621
Middling Coal Consumption	Ton	427413	404850	455114	413227	454270
MCL Coal Consumption	Ton	183177	173507	195049	177097	194687
Transit Loss in Coal	%	1.00%	1.00%	1.00%	1.00%	1.00%
Middling Coal Procurement	<b>Ton</b>	431730	408939	459711	417401	458859
MCL Coal Procurement	<b>Ton</b>	185027	175260	197019	178886	196654

*Commission's analysis*

- 7.24 The Commission observes that the Petitioner in the last control period had used different types of coal other than what had been approved by the Commission in its earlier order dated May 31, 2012 owing to different reasons.
- 7.25 The Petitioner, while using alternate sources of coal other than what had been approved by the Commission, should ensure that the price (in Rs /MT) and GCV of the coal used should not vary much from the approved figures. Also, any usage of such coal should be brought to the notice of the Commission during the APR filings of the Petitioner.
- 7.26 The Commission approves the coal mix by considering 70:30 proportion for middling coal

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

and MCL coal as submitted by the Petitioner for the control period FY 2016-17 to FY 2020-21.

- 7.27 The Commission approved the coal procurement plan for the control period based on the approved gross generation, secondary oil consumption and approved weighted average GCV of the coal used. The Coal procurement plan for the Control period FY 2016-17 to FY 2020-21 as approved by the Commission has been tabulated below.

**Table 131 : Fuel Procurement plan for Unit-2 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	852.49	886.58	835.28	890.70	830.97
Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Total Heat Input to Boiler	Mkcal	2188341	2275856	2144173	2286421	2133109
Sp. LDO Consumption	mL/KWh	0.5	0.5	0.5	0.5	0.5
GCV of LDO	kcal/L	9100	9100	9100	9100	9100
LDO Consumption	KL	426.24	443.29	417.64	445.35	415.49
Heat Input by LDO	Mkcal	3879	4034	3801	4053	3781
Heat Input by Coal	Mkcal	2184462	2271822	2140372	2282368	2129328
GCV of Middling Coal	kcal/Kg	4149	4149	4149	4149	4149
GCV of MCL Coal	kcal/Kg	2662	2662	2662	2662	2662
Middling Coal in Mix	%	70.00%	70.00%	70.00%	70.00%	70.00%
MCL Coal in mix	%	30.00%	30.00%	30.00%	30.00%	30.00%
Equivalent GCV of Coal	kcal/Kg	3702.90	3702.90	3703	3703	3703
Middling Coal Consumption	Ton	412953	429468	404618	431461	402530
MCL Coal Consumption	Ton	176980	184058	173408	184912	172513
Transit Loss in Coal	%	0.80%	0.80%	0.80%	0.80%	0.80%
Middling Coal Procurement	<b>Ton</b>	<b>416283</b>	<b>432931</b>	<b>407881</b>	<b>434941</b>	<b>405777</b>
MCL Coal Procurement	<b>Ton</b>	<b>178407</b>	<b>185542</b>	<b>174806</b>	<b>186403</b>	<b>173904</b>

**Table 132: Fuel Procurement plan for Unit-3 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.93	815.52	893.52	832.40	893.52
Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Total Heat Input to Boiler	Mkcal	2218624	2101598	2302601	2145093	2302601
Sp. LDO Consumption	mL/KWh	0.5	0.5	0.5	0.5	0.5
GCV of LDO	kcal/L	9100	9100	9100	9100	9100
LDO Consumption	KL	430	408	447	416	447
Heat Input by LDO	Mkcal	3917	3711	4066	3787	4066
Heat Input by Coal	Mkcal	2214707	2097887	2298536	2141305	2298536

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

GCV of Middling Coal	kcal/Kg	4149	4149	4149	4149	4149
GCV of MCL Coal	kcal/Kg	2662	2662	2662	2662	2662
Middling Coal in Mix	%	70.00%	70.00%	70.00%	70.00%	70.00%
MCL Coal in mix	%	30.00%	30.00%	30.00%	30.00%	30.00%
Equivalent GCV of Coal	kcal/Kg	3702.90	3703	3703	3703	3703
Middling Coal Consumption	Ton	418670	396587	434518	404795	434518
MCL Coal Consumption	Ton	179430	169966	186222	173483	186222
Transit Loss in Coal	%	0.80%	0.80%	0.80%	0.80%	0.80%
Middling Coal Procurement	Ton	422047	399785	438022	408059	438022
MCL Coal Procurement	Ton	180877	171336	187724	174882	187724

### Gross Calorific Value (GCV) of Primary Fuel

#### *Petitioner's Submission*

- 7.28 The Petitioner submitted that Gross Calorific Value ("GCV") of two sources of Coal, i.e., Middling Coal and MCL Coal has been arrived at after calculating the weighted average GCV of Coal for the preceding three months before the Second Control Period of FY 2016-17 to 2020-21 (i.e from January 2016 to March 2016) for Unit 2 and Unit 3.

**Table 133: GCV for unit-2 ( in Kcal/Kg) as submitted by the Petitioner**

Particulars	UoM	Jan-16	Feb-16	Mar-16	Weighted Average GCV
Unit-2 Middling Coal					
Consumption	Ton	21458	18808	26471	4041
GCV	Kcal/Kg	4087	4014	4024	
Unit-2 MCL Coal					
Consumption	Ton	10502	15027	18362	2670
GCV	Kcal/Kg	2305	2806	2767	

**Table 134: GCV for unit-3 ( in Kcal/Kg) as submitted by the Petitioner**

Particulars	UoM	Jan-16	Feb-16	Mar-16	Weighted Average GCV
Unit-3 Middling Coal					
Consumption	Ton	22513	19133	23563	4036
GCV	Kcal/Kg	4079	4016	4012	
Unit-3 MCL Coal					
Consumption	Ton	10121	13109	13370	2651
GCV	Kcal/Kg	2299	2806	2767	

*Commission's Analysis*

7.29 As per Clause 8.24 of the Generation Tariff regulations, 2015

*“8.24 Initially, the Base value of price of fuel oils, price of coal incurred by the Generating Company/ generating station shall be taken based on actuals of the weighted average price of the three preceding months and in the absence of weighted average landed costs for the three preceding months, latest respective weighted average procurement price for the generating station, before the start of the year.*

*Initially the Base value of gross calorific value of fuel oils and gross calorific value of coal incurred by the Generating Company/ generating Station shall be taken based on actuals of the weighted average gross calorific value of the three preceding months and in the absence of weighted average gross calorific value for the three preceding months, latest weighted average gross calorific value for the generating station, before the start of the year.”*

7.30 The Commission in its discrepancy note directed the Petitioner to submit audited GCV of the coal used for Unit 2 & 3 for the FY 2015-16.

7.31 The Petitioner vide his reply submitted that the GCV of the coal from various years for FY 2015-16 and for the preceding years were analyzed and recorded as per the Industry standards at the chemical laboratory of the Petitioner located at Jojobera. The Petitioner has submitted month- wise actual consumption of coal along with the GCV of the coal used for the FY 2015-16.

7.32 Also, as per JSERC generation Tariff Regulations 2015, GCV is to be considered on ‘as received basis’ for the computation of ECR. The Commission vide its discrepancy note had directed the Petitioner to submit GCV of coal on ‘as received basis’ for the period of January 2016 to March 2016 for Unit-2 & 3. The Petitioner vide its reply submitted the details asked for and submitted that measurement of GCV on ‘as received basis’ has been done for total coal receipt at Jojobera plant and not for individual units.

7.33 Accordingly, the Commission has projected the GCV of the each type of coal to be used by the Petitioner in accordance with Clause 8.24 of the Generation Tariff Regulation, 2015 by considering the weighted average GCV of coal on ‘as received basis’ observed during the last three months of FY 2015-16 as shown in the Table below.

**Table 135: GCV for unit-2 & 3 (in Kcal/Kg) as approved by the Commission**

Particulars	UoM	Jan-16	Feb-16	Mar-16	Weighted Average GCV
Total Middling Coal					
Consumption	Ton	129187	93427	86363	4149
GCV	Kcal/Kg	4311	4134	3925	
Total MCL Coal					
Consumption	Ton	58382	64224	58366	2662

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	Jan-16	Feb-16	Mar-16	Weighted Average GCV
GCV	Kcal/Kg	2303	2825	2840	

## Transit Loss

### *Petitioner's Submission*

- 7.34 The Petitioner submitted that it has considered the Normative Transit Loss in Coal at 1% as per APR Order for FY 2013-14 dated May 31, 2015 for computation of Coal requirement.

### *Commission's Analysis*

- 7.35 As per clause 8.21 of the JSERC Generation Tariff Regulations, 2015

“8.21

....

*The landed cost of fuel for the month shall include price of fuel corresponding to the grade and quality of fuel inclusive of royalty, taxes and duties as applicable, transportation cost by rail / road or any other means, and, for the purpose of computation of energy charge, and in case of coal/lignite shall be arrived at after considering normative transit and handling losses as percentage of the quantity of coal or lignite dispatched by the coal or lignite supply company during the month as given below:*

*Pithead generating stations: 0.2%*

*Non-pithead generating stations: 0.8%*

*Provided that in case of pit head stations if coal or lignite is procured from sources other than the pit head mines which is transported to the station through rail, transit loss of 0.8% shall be applicable*

*Provided further that in case of imported coal, the transit and handling losses shall be 0.2%.”*

- 7.36 In view of the above, the Commission finds it appropriate to approve the transit loss at 0.8% as per JSERC Generation Tariff Regulations, 2015.

## Landed Cost of Primary Fuel

### *Petitioner's submission*

- 7.37 The Petitioner submitted that it has computed the base landed price of coal, base landed price of LDO, and base GCV of coal in accordance with the guidelines prescribed by the



Commission for the same in the Clauses 8.21 and 8.24 of the Generation Tariff Regulations 2015.

- 7.38 The base landed cost of each type of coal and the weighted average price of coal as projected by the Petitioner for each year of the Control Period is shown in the table below.

**Table 136: Landed Cost of Coal (in Rs/Ton) for Unit-2 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Landed Price – Middling coal	Rs/Ton	3831	3831	3831	3831	3831
Landed Price – MCL coal	Rs/Ton	2128	2128	2128	2128	2128

**Table 137: Landed Cost of Coal (in Rs /Ton) for Unit-3 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Landed Price – Middling coal	Rs/Ton	3832	3832	3832	3832	3832
Landed Price – MCL coal	Rs/Ton	2119	2119	2119	2119	2119

#### *Commission's analysis*

- 7.39 The Commission has projected the price of the various types of coal to be used by the Petitioner in accordance with Clause 8.21 of the Generation Tariff Regulation, 2015, which states that:

*“8.21. The landed fuel cost of primary fuel and secondary fuel for tariff determination shall be based on actual weighted average cost of primary fuel and secondary fuel of the three preceding months, and in the absence of landed costs for the three preceding months, latest procurement price of primary fuel and secondary fuel for the generating station, before the start of the tariff period for existing stations and immediately preceding three months in case of new generating stations shall be taken into account.*

*The landed cost of fuel for the month shall include price of fuel corresponding to the grade and quality of fuel inclusive of royalty, taxes and duties as applicable, transportation cost by rail / road or any other means, and, for the purpose of computation of energy charge, and in case of coal/lignite shall be arrived at after considering normative transit and handling losses as percentage of the quantity of coal or lignite dispatched by the coal or lignite supply company during the month as given below:*

*Pithead generating stations: 0.2%*

*Non-pithead generating stations: 0.8%*



*Provided that in case of pit head stations if coal or lignite is procured from sources other than the pit head mines which is transported to the station through rail, transit loss of 0.8% shall be applicable*

*Provided further that in case of imported coal, the transit and handling losses shall be 0.2%.”*

Accordingly, the Petitioner had submitted the landed cost of coal for the last three months prior to the start of the current financial year i.e. January to March 2016 and the calculation of the same.

- 7.40 For projection of coal price during each year of the Control Period i.e. from FY 2016-17 to FY 2020-21, the Commission has first recomputed the landed cost of coal for January to March 2016 considering:
- a. The actual base price of coal, other charges and tax, transportation and handling charges as submitted by the Petitioner for January to March 2016.
  - b. Transit loss equal to 0.8% i.e. the approved transit loss as per the Generation Tariff Regulations, 2015.
- 7.41 The Commission has considered the weighted average of the landed cost of coal for January to March 2016, arrived using the methodology stated above, for projecting the coal price during each year of the Control Period i.e. from FY 2016-17 to FY 2020-21.
- 7.42 The Commission has considered the actual proportion of the various types of coal used in January to March 2016 by the Petitioner for projection of the proportion of various types of coal to be used during each year of the Control Period i.e. from FY 2016-17 to FY 2020-21.
- 7.43 The landed price of each type of coal and the weighted average cost of coal as projected by the Commission based on the above assumptions is shown in the Table below.

**Table 138: Landed Cost of Coal (in Rs/Ton) for Unit-2 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Landed Price – Middling coal	Rs/Ton	3830.25	3830.25	3830.25	3830.25	3830.25
Landed Price – MCL coal	Rs/Ton	2127.80	2127.80	2127.80	2127.80	2127.80

**Table 139: Landed Cost of Coal (in Rs/Ton) for Unit-3 as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Landed Price – Middling coal	Rs/Ton	3831.73	3831.73	3831.73	3831.73	3831.73

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Landed Price – MCL coal	Rs/Ton	2119.13	2119.13	2119.13	2119.13	2119.13

### Energy Charge Rate (ECR)

#### *Petitioner's submission*

- 7.44 The Petitioner submitted that it has calculated the ECR for each year as per the formula stated in Generation Tariff Regulations, 2015 and considering the submitted values of the various fuel parameters. The table below contains the ECR as submitted by the Petitioner for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21.
- 7.45 The Petitioner further requested the Hon'ble Commission to allow for the recovery of the Energy Charges of Unit 2 and Unit 3 for the Control Period FY 2016-17 to FY 2020-21 along with the Fuel Price Adjustment, computed in accordance with the methodology specified in the Regulations 8.22 of Generation Tariff Regulations 2015.

**Table 140: Submitted Energy Charge Rate for the Control Period for Unit 2**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	852.49	886.58	835.32	890.71	831
Station Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Base Calorific Value of LDO	Kcal/l	9100	9100	9100	9100	9100
Auxiliary Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Net Generation	MU	767.24	797.92	751.78	801.64	747.9
Base Weighted Average Calorific Value of Coal	Kcal/kg	3630	3630	3630	3630	3630
Base Weighted Average cost of Coal	Rs/Ton	3320	3320	3320	3320	3320
Energy Charge Rate	Rs/kWh	<b>2.650</b>	<b>2.650</b>	<b>2.650</b>	<b>2.650</b>	<b>2.650</b>

**Table 141: Submitted Energy Charge Rate for the Control Period for Unit 3**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.98	815.52	916.78	832.4	915.08
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Base Calorific Value of LDO	Kcal/l	9100	9100	9100	9100	9100
Auxiliary Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Net Generation	MU	774.88	733.97	825.1	749.16	823.57

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Base Weighted Average Calorific Value of Coal	Kcal/kg	3621	3621	3621	3621	3621
Base Weighted Average cost of Coal	Rs/Ton	3318	3318	3318	3318	3318
Energy Charge Rate	Rs/kWh	<b>2.666</b>	<b>2.666</b>	<b>2.666</b>	<b>2.666</b>	<b>2.666</b>

*Commission's analysis*

- 7.46 As per the Generation Tariff Regulation, 2015, the energy (variable) charge shall cover primary fuel and secondary fuel costs and and limestone consumption cost (where applicable), shall be payable by every Beneficiary for the total energy scheduled to be supplied to such Beneficiary during the calendar month on ex-power plant basis, at the specified energy charge rate of the month (with fuel price adjustment and limestone adjustment).
- 7.47 The formula for calculation of energy charge and energy charge rate (ECR) payable to a Generating Company is specified in Clause 8.18 and 8.19 of the Generation Tariff Regulation, 2015 as quoted below:

*“8.18 Total Energy charge payable to the Generating Company for a month shall be:  
= (Energy charge rate in Rs. /kWh) x {Scheduled energy (ex-bus) for the month in kWh.}*

*8.19 Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:*

*(a) For coal based stations*

$$ECR = \{(GHR - SFC \times CVSF) \times LPPF/CVPF + SFC \times LPSFi + LC \times LPL\} \times 100 / (100 - AUX)\}$$

*Where,*

*AUX - Normative auxiliary energy consumption in percentage*

*CVPF – (a) Weighted Average Gross calorific value of coal as received, in kCal per kg for coal based stations*

*(b) Weighted Average Gross calorific value of primary fuel as received in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, gas and liquid fuel based stations.*

*(c )In case of blending of fuel from different sources, the weighted average Gross calorific value of primary fuel shall be arrived in proportion to blending ratio.*

*CVSF - Calorific value of secondary fuel, in kCal per ml*

*ECR - Energy charge rate, in Rupees per kWh sent out.*

*GHR - Gross station heat rate, in kCal per kWh.*

*LC = Normative limestone consumption in kg per kWh*

*LPPF - Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month. (In case of blending of fuel from different sources, the weighted average landed price of primary fuel shall be arrived in proportion to blending ratio)*

*LPSFi=Weighted Average Landed Price of Secondary Fuel in Rs./ml during the month*

*LPL = Weighted average landed price of limestone in Rupees per kg.*

*SFC - Specific fuel oil consumption, in ml per kWh”*

- 7.48 The Commission has calculated the ECR to be charged by the Petitioner as per the formula stated above and considering the approved values of the various fuel parameters. The table below contains the ECR for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 as approved by the Commission.

**Table 142: Approved Energy Charge Rate for the Control Period for Unit 2**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	852.49	886.58	835.28	890.70	830.97
Station Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Specific Oil Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5
Base Calorific Value of LDO	Kcal/l	9100	9100	9100	9100	9100
Auxiliary Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Net Generation	MU	767.24	797.92	751.76	801.63	747.88
Base Weighted Average Calorific Value of Coal	Kcal/kg	3702.90	3702.90	3702.90	3702.90	3702.90

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Base Weighted Average cost of Coal	Rs/Ton	3319.43	3319.43	3319.43	3319.43	3319.43
Energy Charge Rate	Rs/kWh	2.578	2.578	2.578	2.578	2.578

**Table 143: Approved Energy Charge Rate for the Control Period for Unit 3**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.93	815.52	893.52	832.40	893.52
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Specific Oil Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5
Base Calorific Value of LDO	Kcal/l	9100	9100	9100	9100	9100
Auxiliary Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Net Generation	MU	774.84	733.97	804.17	749.16	804.17
Base Weighted Average Calorific Value of Coal	Kcal/kg	3702.90	3702.90	3702.90	3702.90	3702.90
Base Weighted Average cost of Coal	Rs/Ton	3317.89	3317.89	3317.89	3317.89	3317.89
Energy Charge Rate	Rs/kWh	2.587	2.587	2.587	2.587	2.587

- 7.49 Any variation in fuel prices on account of change in the Gross Calorific Value (GCV) of coal shall be adjusted on a monthly basis on the basis of weighted average GCV of coal and weighted average landed cost incurred by the Petitioner for procurement of coal, oil etc. utilizing the fuel price adjustment mechanism in the clause 8.17 of the Generation Tariff Regulations, 2015 as stated below

*“8.17 The energy (variable) charge shall cover primary fuel and secondary fuel costs and limestone consumption cost (where applicable), shall be payable by every Beneficiary for the total energy scheduled to be supplied to such Beneficiary during the calendar month on ex-power plant basis, at the specified energy charge rate of the month (with fuel price adjustment and limestone adjustment)”*

## **Determination of Fixed Cost**

### **Capital Investment Plan for the Control Period FY 2016-17 to FY 2020-21**

#### *Petitioner's submission*

7.50 The Petitioner has projected capital expenditure and additional capitalization for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 in its MYT Business Plan. The proposed Additional Capitalization for Jojobera Unit 2 and Unit 3 for the Control Period FY 2016-17 to FY 2020-21 includes the following:

- Additional Capitalization pertaining to Capital Expenditure Schemes carried forward from the first Control Period FY 2012-13 to FY 2015-16.
- Additional Capitalization pertaining to Capital Expenditure Schemes proposed for FY 2016-17 to FY 2020-21 through MYT Business Plan and their capitalization phasing.

7.51 The Petitioner submitted that the Hon'ble Commission had approved various Additional Capital Expenditure Schemes for capitalization during the Control Period FY 2012-13 to FY 2015-16 through the MYT Order dated May 31, 2012 and the APR Order for FY 2013-14 dated May 31, 2015. However, few of the above approved Capital Expenditure Schemes could not be completed by the end of the first Control Period i.e March 31, 2016 due to various uncontrollable reasons as listed below

- i. Changes in the maintenance plan in view of variation in the operational plan or variations in technical requirements.
- ii. Changes in the Annual Shutdown Plan or duration of the Annual Outage of the Units due to unavoidable circumstances viz. high lead time in delivery of the equipment, non-availability of specialized OEM Engineers, etc.
- iii. Re-negotiations with the vendors on account of deviations in Cost and Budgeting as planned.
- iv. Reassessment of necessity/usefulness of Schemes owing to ever-changing scenario.
- v. Time Constraint: A significant amount of time is required for planning, obtaining internal approval, engineering, placement of Purchase Orders, delivery of materials and execution of the Projects. It is pertinent to note that APR Order for FY 2013-14 has been disposed of by the Hon'ble Commission on 31.05.2015 wherein few of the critical Additional Capital Expenditure Schemes have been approved. The execution of such Additional Capital Expenditure Schemes shall require some more time for complete execution and capitalization.

- 7.52 The Petitioner requested the Hon'ble Commission to allow capitalization of already approved Capital Expenditure Schemes pertaining to the first control period amounting to Rs. 21.27 Crores in FY 2016-17 for Unit 2 and Unit 3.
- 7.53 The Petitioner further submitted that through its MYT Business Plan for FY 2016-17 to FY 2020-21 submitted the projected Capital Expenditure for the Control Period FY 2017-21 and proposed capitalized cost has been categorized under following 2 broad categories:
- **Capitalization – Standalone:** This category includes the Capitalized Costs incurred for Assets/Schemes exclusively for Unit 2 & 3.
  - **Capitalization – Common Facilities:** This category includes the Capitalized Costs which have been incurred or proposed to be incurred for all Generating Units within the Jojobera Power Plant i.e. Units 1, 2, 3 & 4 of Tata Power and Unit 5 of IEL. These Assets/Schemes provide facilities to all the above Units and therefore the capitalized cost of such Assets/Schemes must be apportioned to the GFA of Unit 2 and Unit 3 appropriately.
- 7.54 The Petitioner has worked out the apportionment ratio individually for unit 2 and unit 3 and combined based on the Installed Capacity of the above Units with respect to the Installed Capacity of Units 1, 2, 3, 4 and 5 operating within the Jojobera Power Plant. The methodology of such apportionment is shown in the following table.

**Table 144: Methodology of apportionment ratio as submitted by the Petitioner**

Apportionment Ratio for Additional Capitalization of Common Facilities to Unit 2 & 3		
Installed Capacity of Unit-1	MW	67.5
Installed Capacity of Unit-2	MW	120
Installed Capacity of Unit-3	MW	120
Installed Capacity of Unit-4	MW	120
Installed Capacity of Unit-5 (IEL)	MW	120
<b>Installed Capacity of Jojobera Power Plant</b>	<b>MW</b>	<b>547.5</b>
Contribution of Unit 2 in Total Installed Capacity	%	21.92%
Contribution of Unit 3 in Total Installed Capacity	%	21.92%
<b>Combined Contribution of Unit 2 &amp; 3 in Total Installed Capacity</b>	<b>%</b>	<b>43.84%</b>

- 7.55 The additional capitalization as proposed by the Petitioner for the Control period FY 2016-17 to FY 2020-21 is shown in the following table.

**Table 145: Additional Capitalization for Control Period for Unit 2 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Additional Capitalisation - Standalone Assets</b>	4.1	6.53	16.03	2.75	4.2

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation - apportioned for Common Facilities	5.31	1.84	0.55	1.17	0.34
<b>Total</b>	<b>9.41</b>	<b>8.37</b>	<b>16.58</b>	<b>3.92</b>	<b>4.54</b>

**Table 146: Additional Capitalization for Control Period for Unit 3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation- Standalone Assets	6.55	10.53	10.03	6.95	0
Additional Capitalisation - apportioned for Common Facilities	5.31	1.84	0.55	1.17	0.34
<b>Total</b>	<b>11.86</b>	<b>12.37</b>	<b>10.58</b>	<b>8.12</b>	<b>0.34</b>

- 7.56 Accordingly, the Petitioner has worked out the Gross Fixed Assets of Unit 2 and Unit 3 for the Control Period FY 2017-21 has been shown in the following Tables. The closing Gross Fixed Asset ("GFA") for FY 2015-16 has been considered as the opening GFA for the Control Period FY 2016-17 to FY 2020-21.

**Table 147: GFA of Unit-2 (in Rs. Cr) for the Control period as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA	482.5	491.91	500.27	516.85	520.77
Additional Capitalisation	9.41	8.37	16.58	3.92	4.54
<b>Closing GFA</b>	<b>491.91</b>	<b>500.27</b>	<b>516.85</b>	<b>520.77</b>	<b>525.31</b>

**Table 148: GFA of Unit-3 (in Rs Cr) for the control period as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA	463.33	475.19	487.56	498.13	506.26
Additional Capitalisation	11.86	12.37	10.58	8.12	0.34
<b>Closing GFA</b>	<b>475.19</b>	<b>487.56</b>	<b>498.13</b>	<b>506.26</b>	<b>506.60</b>

### *Commission's analysis*

- 7.57 The Commission has approved capitalization and GFA for each year of the control period in paragraph 6.17 of this Tariff Order.



## Capital Structure (Financing of Additional Capitalization)

### *Petitioner's Submission*

- 7.58 The Petitioner submitted that it is planning to finance the projected Additional Capitalization for FY 2016-17 to FY 2020-21 from internal accruals and hence, no project specific debt for any of the proposed Capex Schemes is anticipated.
- 7.59 However, for the purpose of tariff computation, the Petitioner has considered the financing of Projected Additional Capitalization for FY 2016-17 to FY 2020-21 at Normative Debt: Equity ratio of 70:30 as per the provisions of Generation Tariff Regulations 2015.
- 7.60 The financing structure of proposed Additional Capitalization for Unit 2 and Unit 3 for the Control Period from FY 2016-17 to FY 2020-21 are summarized in the following tables

**Table 149: Financing of Additional Capitalization (in Rs Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation	9.41	8.37	16.58	3.92	4.54
Normative Debt Component (70% of Capitalized Cost)	6.59	5.86	11.6	2.75	3.18
Normative Equity Component (30% of Capitalized Cost)	2.82	2.51	4.97	1.18	1.36

**Table 150: Financing of Additional Capitalization (in Rs Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Additional Capitalisation	11.86	12.37	10.58	8.12	0.34
Normative Debt Component (70% of Capitalized Cost)	8.3	8.66	7.4	5.69	0.24
Normative Equity Component (30% of Capitalized Cost)	3.56	3.71	3.17	2.44	0.10

### *Commission's Analysis*

- 7.61 The Commission approved the capital structure as discussed in paragraph 6.28 of this Tariff Order.

## Operation & Maintenance Expenses

### *Petitioner's submission*

- 7.62 The Petitioner has presented the O&M expenses for the Control Period under four broad categories

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

- Projected O&M Expenses for the Control Period FY 2017-21
  - Employee Expenses with terminal benefits
  - Repairs & Maintenance (R&M) Expenses
  - Administrative and General (A&G) Expenses
- Raw Water Charges
- Capital Spares
- Application Fee & Publication Expenses

- 7.63 The Petitioner submitted that the Hon'ble Commission had approved the O&M Expenses for Jojobera Unit 2 & Unit 3 for the First Control Period FY 2012-13 to FY 2015-16 after due diligence and prudence check of the O&M Expenses of previous years. However, the actual O&M Expenses have been significantly higher during the First Control Period FY 2012-16 due to various uncontrollable reasons such as increase in R&M Expenses, Ash Disposal Expenses and other A&G Expenses (including HO & SS Expenses) as compared to the Normative O&M Expenses approved in the MYT Order for FY 2012-16.
- 7.64 The Petitioner had considered an Annual Escalation Factor of **7.22%** for escalating the normalized O&M Expenses of FY 2015-16 considering it as the Base Year as per JSERC Generation tariff Regulations 2015. The O&M expenses as submitted by the Petitioner has been summarized below
- 7.65 **Employee Expenses:** The Petitioner submitted that it had considered the actual Employee Expenses (including Terminal Benefits) for FY 2015-16, which is the Base Year as per Generation Tariff Regulations 2015 and applied the proposed Annual Escalation Factor of 7.22% on the same to arrive at the proposed Employee Expenses for each year of the Control Period FY 2016-17 to 2020-21.
- 7.66 The Petitioner further submitted that the actual Terminal Benefits shall be submitted during the Truing-Up of the subsequent years of the present Control Period. The Proposed Employee expenses for the MYT period are tabulated below.

**Table 151: Employee expenses (in Rs Cr) for Unit 2 & 3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Employee Salaries– Unit-2	6.39	6.86	7.35	7.88	8.45
Terminal Benefits– Unit-2	0.27	0.29	0.31	0.33	0.36
<b>Total Employee Expenses – Unit-2</b>	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>
Employee Salaries– Unit-3	6.39	6.86	7.35	7.88	8.45
Terminal Benefits– Unit-3	0.27	0.29	0.31	0.33	0.36
<b>Total Employee Expenses – Unit-3</b>	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>

- 7.67 **Repairs & Maintenance (R&M) Expenses:** The Petitioner computed the base R&M Expenses of FY 2015-16 by normalizing the actual R&M Expenses for past five years, i.e., FY 2011-12 to FY 2015-16 with the Annual Escalation Factor of 8.40% as approved by the Hon'ble Commission the last MYT Order dated May 31, 2012 and averaging out the same. The R&M Expenses for FY 2016-17 to 2020-21 have been projected by applying the Annual Escalation Factor of 7.22% on the base R&M Expenses of FY 2015-16.
- 7.68 The Petitioner further submitted that R&M Expenses are projected to increase significantly for the present Control Period FY 2016-17 to 2020-21 as compared to First Control Period of FY 2012-16 due to vintage of both the Units, and also, due to the significant rise in spares and services cost towards contract manpower especially during annual shutdown of the Units over the years. The Petitioner further submitted that the units exhibit natural wear & tear which increases the cost of repairing the equipment. The Proposed R&M expenses for the MYT Control period has been tabulated below

**Table 152: R&M Expenses (in Rs Cr) for Unit-2 & 3 as submitted by the Petitioner**

Particulars	FY 2015-16 (Normalized R&M expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
R&M expenses (Plant & Machinery) – Unit-2	15.48	16.6	17.79	19.08	20.46	21.93
R&M expenses (Plant & Machinery) – Unit-3	11.05	11.85	12.71	13.62	14.61	15.66

### Administration & General Expenses

- 7.69 **Ash Disposal Expenses:** The Petitioner further submitted that there has been an increase in Ash Disposal Expenses during the present Control Period FY 2016-17 to 2020-21 due to higher Ash percentage in Coal, increase in Transportation and Handling Charges and increase in Ash Disposal distances in compliance with “Consent to Operate” issued by JSPCB and also the notification of Ministry of Environment and Forests ("MoEF"), which states that the utilization of both Fly Ash and Pond Ash should be maximized especially through the construction of roads and pavements within 45 Km radius of the Thermal Power Plant which had increased the transportation charges.
- 7.70 The Petitioner submitted that the opening stock of the Ash for the financial year FY 2016-17 is computed by considering 65% of the closing stock of the Ash Pond, i.e., excluding 35% moisture content, at the end of previous financial year FY 2015-16. The wet Ash added in the financial year FY 2016-17 consists of the sum of Bottom Ash for wet disposal and the unutilized balance Fly Ash. Further, it has been considered that 10% of the opening stock of Ash already accumulated in Ash Pond shall be evacuated every

year. The Petitioner has considered proposed Annual Escalation Factor at 7.22% on year-on-year basis for the computation of Ash Disposal Expenses for the present Control Period FY 2016-17 to 2020-21.

- 7.71 Thereafter, the Petitioner submitted that the calculated Ash Disposal Expenses of Unit 1, Unit 2, Unit 3 and Unit 4 for FY 2016-17 to FY 2020-21 has been apportioned to Unit 2 and Unit 3 in the ratio of the Coal consumption.
- 7.72 The Ash Disposal expenses as submitted by the Petitioner for the MYT control period has been tabulated below

**Table 153: Ash disposal expenses for Unit 2 & 3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Ash Disposal Expenses of Unit 2	5.28	5.84	5.84	6.68	6.56
Ash Disposal Expenses of Unit 3	5.37	5.41	6.45	6.29	7.27

- 7.73 **Raw Water Consumption expenses:** The Petitioner projected the Raw Water Expenses for the Second Control Period i.e. FY 2016-17 to FY 2020-21 based on the Gross Generation during the year and estimated Specific Raw Water Consumption per Unit.
- 7.74 The Specific Raw Water Consumption has been considered by taking the weighted average of the Specific Raw Water Consumption for the Transition Period and previous Control Period FY 2011-12 to FY 2015-16 which works out to **3.18 m<sup>3</sup>/MWh**.
- 7.75 The Petitioner further submitted that the Raw Water Expenses projected for the present Control Period FY 2016- 17 to 2020-21 has considerably increased on account of mainly two reasons as follows:
- Increase in Rate of Raw Water Charges in wake of revision of Water Tax by Government of Jharkhand (“GoJ”) from Rs 0.99/KL to Rs 5.81/KL w.e.f. 01.04.2011 with an escalation of 7.50% year-on-year.
  - Revision in Base Charges from Rs 4.53/KL to Rs 8.54/KL w.e.f. 01.09.2015 by Tata Steel Corporate Services in light of considerable increase in production cost of clarified water with an escalation of 7.5% year-on-year.
- 7.76 The Projected Raw Water expenses for the Control period FY 2016-17 to FY 2020-21 are tabulated below

**Table 154: Raw Water expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation	MU	852.49	886.58	835.32	890.71	831.00
Specific Raw Water Consumption	m <sup>3</sup> /MWh	3.18	3.18	3.18	3.18	3.18

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Raw Water Consumption	m <sup>3</sup>	2708557	2816867	2653990	2829998	2640264
Raw Water Charges	Rs/m <sup>3</sup>	17.52	18.84	20.25	21.77	23.4
Total Raw Water Expenses	Rs Cr	4.75	5.31	5.37	6.16	6.18

**Table 155: Raw Water expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Gross Generation	MU's	860.98	815.52	916.78	832.40	915.08
Specific Raw Water Consumption	m <sup>3</sup> /MWh	3.18	3.18	3.18	3.18	3.18
Raw Water Consumption	m <sup>3</sup>	2741264	2596552	2918926	2650278	2913516
Raw Water Charges	Rs/m <sup>3</sup>	17.52	18.84	20.25	21.77	23.4
Total Raw Water Expenses	Rs Cr.	4.80	4.89	5.91	5.77	6.82

7.77 **Head Office & Shared Service (HO & SS) Expenses:** The Petitioner submitted that its Corporate Offices at Mumbai and Noida provide the specialized support services like Engineering, Legal, Regulatory, Commercial etc. to all Divisions of Tata Power and, accordingly, the costs pertaining to these functions are allocated to all the operating Divisions. Such expenses are called Head Office ("HO") and Shared Services ("SS") Expenses. The basis of allocation of HO expenses to any Unit of Tata Power is as per the given methodology.

- iii. *Allocation of Head Office and management expenses = Head office and management expenses allocable to cost of generation\*Generation expenses of Unit/Total generation expenses (excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel (including related exchange loss/gain) etc.).*
- iv. *Head office and Management expenses allocable to cost of generation = Head office and management expenses\* Total generation expenses (excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel (including related exchange loss/gain),etc.)/{Total generation expenses(excluding cost of power purchase, depreciation, borrowing costs, exchange loss/gain, non-recurring onetime expenses, fuel(including related exchange loss/gain),etc.) + Total distribution, transmission expenses and expenses related to other business (excluding wheeling/transmission charges, depreciation, exchange loss/gain and borrowing costs, components consumed, non-recurring one-time expenses, etc.)}*

7.78 The Petitioner further submitted that had such services not been utilized by Jojobera from HO and SS, they would have to be provided in-house, i.e., in Units 2 and 3 themselves which would have entailed higher expenditure for the Units. The Petitioner escalated the base year H.O expenses at the escalation factor of 7.22% as proposed earlier. The expenditure for HO & SS expenses as projected by the Petitioner for the MYT period are tabulated below.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 156: HO expenses allocated to Unit 2 &3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2015-16 (Base year HO expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
HO Expenses – Unit-2	13.52	14.5	15.55	16.67	17.87	19.16
HO Expenses – Unit-3	14.05	15.06	16.15	17.31	18.56	19.90

- 7.79 **Application Fees and Publication Expenses:** The Petitioner in its business plan submitted that Application Fees for Control Period FY 2016-17 to FY 2020-21 has been calculated prescribed in JSERC Conduct of Business Regulations 2011.
- 7.80 Later, the Commission had notified (Conduct of Business) Regulations, 2016 wherein the Fees Schedule has been revised.
- 7.81 The Petitioner accordingly revised the Application Fees for the Control Period based on the Fee Schedule specified under (Conduct of Business) Regulations, 2016 in the instant petition and request the Commission to consider the same.
- 7.82 The Petitioner submitted that it had not incurred Publications expenses in FY 2015-16. Hence, for arriving at the base year publication expenses it has considered the actual publication expenses for FY 2014-15 with a onetime escalation of 8.4% based on the annual escalation factor as approved by the Hon'ble Commission in MYT Order dated May 31, 2012. Thereafter, the base year publication expense is escalated with the proposed annual escalation of 7.22% for projecting the publication expenses for FY 2016-17 to 2020-21.

**Table 157: Application fee and Publication expenses (in Rs Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Application fees – Unit-2	0.06	0.1	0.06	0.06	0.06	0.06
Publication Expenses – Unit-2	0.19	0.2	0.21	0.23	0.24	0.26
<b>Total – Unit-2</b>	<b>0.24</b>	<b>0.3</b>	<b>0.27</b>	<b>0.29</b>	<b>0.3</b>	<b>0.32</b>

**Table 158: Application fee and Publication expenses (in Rs Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Application fees – Unit-3	0.06	0	0.06	0.06	0.06	0.06
Publication Expenses – Unit-3	0.19	0.2	0.21	0.23	0.24	0.26
<b>Total – Unit-3</b>	<b>0.24</b>	<b>0.2</b>	<b>0.27</b>	<b>0.29</b>	<b>0.3</b>	<b>0.32</b>

7.83 **Other A&G expenses:** In addition to the above, the Petitioner had proposed other A&G expenses which has been tabulated below.

7.84 A similar methodology has been adopted where the Petitioner had escalated the base year expenses at the proposed annual escalation factor to arrive at the expenses for the control period.

**Table 159: Other A&G expenses (in Rs Cr) as proposed by the Petitioner**

Particulars	FY 2015-16 (Base Year expenses)	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Other A&G expenses – Unit-2	3.89	4.17	4.47	4.79	5.14	5.51
Other A&G expenses – Unit-3	3.55	3.81	4.09	4.38	4.7	5.04

7.85 **Capital Spares:** The Petitioner submitted that it had claimed Capital Spares for the Control Period FY 2016-17 to 2020-21 as per norms of Generation Tariff Regulations 2015.

7.86 The Capital Spares proposed by the Petitioner for Jojobera Unit 2 and Unit 3 for the Control Period FY 2016-17 to 2020-21 has been summarized in the following tables.

**Table 160: Capital Spares (in Rs Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Turbine and Generator Bearing sets	-	0.5	0.5	-	-
Coal Mill Gear Box	-	-	-	1.0	-
Turbine Stop & Control Valve Actuator	-	0.5	0.5	-	-
Procurement of Critical Spares for Turbine and DCS Cards	-	-	0.7	0.7	-
<b>Total Capital Spares</b>	<b>-</b>	<b>1.0</b>	<b>1.7</b>	<b>1.7</b>	<b>-</b>



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 161: Capital Spares (in Rs Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Turbine and Generator Bearing sets	-	0.5	0.5	-	-
Coal Mill Gear Box	-	-	-	1.0	-
Turbine Stop & Control Valve Actuator	-	0.5	0.5	-	-
Procurement of Critical Spares for Turbine and DCS Cards	-	-	0.7	0.7	-
<b>Total Capital Spares</b>	<b>-</b>	<b>1.0</b>	<b>1.7</b>	<b>1.7</b>	<b>-</b>

7.87 A summary of the O&M expenses as submitted by the Petitioner for Unit 2 &3 has been summarized below

**Table 162: Total O&M expenses for Unit-2 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Employee Expenses</b>					
Employee Salaries	6.39	6.86	7.35	7.88	8.45
Terminal Benefits	0.27	0.29	0.31	0.33	0.36
<b>Total Employee expenses—(1)</b>	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>
<b>R&amp;M expenses</b>					
<b>Total R&amp;M expenses – (2)</b>	<b>16.6</b>	<b>17.79</b>	<b>19.08</b>	<b>20.46</b>	<b>21.93</b>
<b>A&amp;G expenses</b>					
Ash Disposal expenses	5.28	5.84	5.84	6.68	6.56
Raw water Consumption charges	4.75	5.31	5.37	6.16	6.18
Head Office expenses	14.5	15.55	16.67	17.87	19.16
Application and Publication expenses					
Application fee	0.1	0.06	0.06	0.06	0.06
Publication expenses	0.2	0.21	0.23	0.24	0.26
<b>Total (Application fee + Publication expenses)</b>	<b>0.3</b>	<b>0.27</b>	<b>0.29</b>	<b>0.3</b>	<b>0.32</b>
Other A&G expenses	4.17	4.47	4.79	5.14	5.51
<b>Total A&amp;G expenses - (3)</b>	<b>23.95</b>	<b>25.86</b>	<b>27.3</b>	<b>29.7</b>	<b>31.23</b>
Capital spares (4)	-	1.0	1.7	1.7	-
<b>Total O&amp;M expenses (1+2+3+4)</b>	<b>52.28</b>	<b>57.39</b>	<b>61.42</b>	<b>66.55</b>	<b>68.49</b>



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 163: Total O&M expenses for Unit-3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
<b>Employee Expenses</b>					
Employee Salaries	6.39	6.86	7.35	7.88	8.45
Terminal Benefits	0.27	0.29	0.31	0.33	0.36
<b>Total Employee expenses—(1)</b>	<b>6.67</b>	<b>7.15</b>	<b>7.66</b>	<b>8.22</b>	<b>8.81</b>
<b>R&amp;M expenses</b>					
<b>Total R&amp;M expenses – (2)</b>	<b>11.85</b>	<b>12.71</b>	<b>13.62</b>	<b>14.61</b>	<b>15.66</b>
<b>A&amp;G expenses</b>					
Ash Disposal expenses	5.37	5.41	6.45	6.29	7.27
Raw water Consumption charges	4.8	4.89	5.91	5.77	6.82
Head Office expenses	15.06	16.15	17.31	18.56	19.9
Application and Publication expenses					
Application fee	0	0.06	0.06	0.06	0.06
Publication expenses	0.2	0.21	0.23	0.24	0.26
<b>Total (Application fee + Publication expenses)</b>	<b>0.2</b>	<b>0.27</b>	<b>0.29</b>	<b>0.3</b>	<b>0.32</b>
Other A&G expenses	3.81	4.09	4.38	4.7	5.04
<b>Total A&amp;G expenses - (3)</b>	<b>24.24</b>	<b>25.64</b>	<b>28.15</b>	<b>29.55</b>	<b>32.21</b>
Capital spares (4)	-	1.0	1.7	1.7	-
<b>Total O&amp;M expenses (1+2+3+4)</b>	<b>47.88</b>	<b>51.67</b>	<b>57.34</b>	<b>60.15</b>	<b>63.83</b>

*Commission's analysis*

7.88 The Commission approved the O&M expenses for each year of the control period in detail in paragraphs 6.74 to 6.106 of this Tariff Order.

**Depreciation**

*Petitioner's submission*

7.89 The Petitioner submitted depreciation that the total depreciation for the Control Period FY 2016-17 to FY 2020-21 for Unit 2 and Unit 3 includes following:

- Depreciation on Original Project Cost
- Depreciation on Additional Capitalization approved for FY 2011-12 to FY 2014-15, and Trued-up Capitalization for FY 2015-16.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

- Depreciation on Additional Capitalization proposed for FY 2017-21 (Including the Carry forward Schemes)

7.90 The depreciation on proposed Additional Capitalization for the period FY 2016-17 to FY 2020-21 has been considered for 6 months during the year of capitalization considering that asset addition will be spread over the course of the entire year and for full year for subsequent years of the Control Period FY 2016-17 to FY 2020-21.

7.91 The depreciation amount for Unit 2 and Unit 3 for each year of the Control Period as submitted by the Petitioner is summarized below

**Table 164: Depreciation (in Cr) for Unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on Original Project Cost	3.36	3.36	3.36	3.36	3.36
Depreciation on Additional Capitalization FY 12-16	2.68	2.67	2.66	2.65	2.63
Depreciation on Additional Capitalization FY 17-21	0.23	1.00	2.38	3.34	3.58
<b>Total Depreciation during the Year</b>	<b>6.27</b>	<b>7.03</b>	<b>8.4</b>	<b>9.35</b>	<b>9.57</b>

**Table 165: Depreciation (in Cr) for Unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation on Original Project Cost	5.11	5.11	5.11	5.11	5.11
Depreciation on Additional Capitalization FY 12-16	2.36	2.36	2.36	2.35	2.33
Depreciation on Additional Capitalization FY 17-21	0.29	1.23	2.46	3.28	3.52
<b>Total Depreciation during the Year</b>	<b>7.76</b>	<b>8.70</b>	<b>9.93</b>	<b>10.74</b>	<b>10.96</b>

*Commission's analysis*

7.92 The Commission approved the Depreciation for each year of the control period in detail in paragraph 6.110 of this Tariff Order.

## Interest on Loan

### *Petitioner's submission*

- 7.93 The Petitioner submitted that the repayment of the long term debt of the original project cost for Unit 2 and Unit 3 has been completed in year FY 2009-10 and FY 2010-11 respectively.
- 7.94 The Petitioner further submitted that no loan has been availed for the financing of the additional capitalization and normative debt has been considered for working out the interest on loan on Additional Capitalization as discussed earlier.
- 7.95 The Petitioner considered the rate of interest as weighted average rate of interest of the actual loan portfolio at 13.02% for Unit 2 and 12.33% for Unit 3 in accordance with Regulations 7.23 of the JSERC Generation Tariff Regulations 2015.

**Table 166: Interest on Loan (in Rs Cr) for Unit-2 as proposed by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Debt for the year	30.23	33.91	36.1	42.66	39.42
Additions during the year	6.59	5.86	11.6	2.75	3.18
Repayment	2.91	3.67	5.04	5.99	6.21
Closing Debt	33.91	36.10	42.66	39.42	36.38
Average Debt	32.07	35.00	39.38	41.04	37.90
Rate of Interest	13.02%	13.02%	13.02%	13.02%	13.02%
Interest on Debt	<b>4.18</b>	<b>4.56</b>	<b>5.13</b>	<b>5.34</b>	<b>4.93</b>

**Table 167: Interest on Loan (in Rs Cr) for Unit-3 as proposed by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening Debt for the year	26.94	32.59	37.66	40.24	40.3
Additions during the year	8.3	8.66	7.40	5.69	0.24
Repayment	2.65	3.59	4.82	5.63	5.85
Closing Debt	32.59	37.66	40.24	40.3	34.69
Average Debt	29.77	35.13	38.95	40.27	37.5
Rate of Interest	12.33%	12.33%	12.33%	12.33%	12.33%
Interest on Debt	<b>3.67</b>	<b>4.33</b>	<b>4.80</b>	<b>4.97</b>	<b>4.62</b>

### *Commission's analysis*

- 7.96 The Commission approved the Interest on Loan in Paragraph 6.33 of this Tariff Order.

## Return on Equity (RoE)

### *Petitioner's submission*

- 7.97 The Petitioner had considered the Post-Tax Return on Equity at 15.5% (to be grossed-up by the applicable Tax rate) on Equity component of the Original Project Cost, Additional Capitalization from FY 2011-12 to FY 2015-16 and projected Additional Capitalization for FY 2017-21 including the schemes being carried forward from the 1st Control Period as per Generation Tariff Regulations 2015.
- 7.98 The Petitioner considered the Debt-Equity Ratio for Unit 2 and Unit 3 as per the Regulations 7.3, 7.13 & 7.14 of Generation Tariff Regulations 2015, as stated earlier, at 70:30.

**Table 168: Return on Equity (in Rs Cr) for unit-2 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA (Original project Cost)	431.34	431.34	431.34	431.34	431.34
Regulatory Equity on above (=30% of above)	129.4	129.4	129.4	129.4	129.4
Rate of Return on Equity on Original Project Cost	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%
Return on Equity (Original Project Cost) – (I)	<b>25.50</b>	<b>25.5</b>	<b>25.5</b>	<b>25.5</b>	<b>25.5</b>
Opening GFA on Additional Capitalization during the year( Additional Capitalization held during FY 2012-16)	51.16	60.57	68.94	85.51	89.44
Regulatory Equity at the beginning of the year (=30% of above)	15.35	18.17	20.68	25.65	26.83
Additional Capitalization during the year	9.41	8.37	16.58	3.92	4.54
Equity Component of above (=30% of above)	2.82	2.51	4.97	1.18	1.36
Regulatory Equity at the end of the year	18.17	20.68	25.65	26.83	28.19
Rate of Return on Equity (on Additional Capitalization)	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Return on Equity (on Additional Capitalization during FY 17-21) – (2)	<b>3.30</b>	<b>3.83</b>	<b>4.57</b>	<b>5.17</b>	<b>5.42</b>
Total Return on Equity (Pre-Tax) – (1+2)	<b>28.80</b>	<b>29.33</b>	<b>30.06</b>	<b>30.67</b>	<b>30.92</b>

**Table 169: ROE for the MYT period for unit-3 as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Opening GFA (Original project Cost)	418.14	418.14	418.14	418.14	418.14
Regulatory Equity on above (=30% of above)	125.44	125.44	125.44	125.44	125.44
Rate of Return on Equity on Original Project Cost	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%
Return on Equity (Original Project Cost) – (1)	<b>24.72</b>	<b>24.72</b>	<b>24.72</b>	<b>24.72</b>	<b>24.72</b>
Opening GFA on Additional Capitalization during the year( Additional Capitalization held during FY 2012-16)	45.19	57.05	69.42	79.99	88.12
Regulatory Equity at the beginning of the year (=30% of above)	13.56	17.12	20.83	24.00	26.44
Additional Capitalization during the year	11.86	12.37	10.58	8.12	0.34
Equity Component of above (=30% of above)	3.56	3.71	3.17	2.44	0.1
Regulatory Equity at the end of the year	17.12	20.83	24	26.44	26.54
Rate of Return on Equity (on Additional Capitalization)	15.50%	15.50%	15.50%	15.50%	15.50%
MAT Rate	21.34%	21.34%	21.34%	21.34%	21.34%
Rate of Pre-tax Return on Equity	19.71%	19.71%	19.71%	19.71%	19.71%
Return on Equity (on Additional Capitalization during FY 17-21) – (2)	<b>3.02</b>	<b>3.74</b>	<b>4.42</b>	<b>4.97</b>	<b>5.22</b>
Total Return on Equity (Pre-Tax) – (1+2)	<b>27.74</b>	<b>28.46</b>	<b>29.14</b>	<b>29.69</b>	<b>29.94</b>

*Commission's analysis*

7.99 The Commission has approved Return on Equity in paragraph 6.41 of this Tariff Order.

### Interest on Working Capital

*Petitioner's Submission*

7.100 The Petitioner submitted that for the purpose of computing Working Capital, the components of Coal Cost, Secondary Fuel Oil Cost and Receivables have been computed at Normative Plant Availability of 85% for the whole year and apportioned to 2 months as specified in the Generation Tariff Regulations 2015.

7.101 Further, as specified in the above Regulations, the Working Capital for Unit 2 and Unit 3 also includes projected Annual O&M Expenses apportioned to 1 month and the cost of Maintenance Spares at 20% of Annual O&M Expenses.

7.102 The Petitioner further submitted that the Rate of Interest on Working Capital has been projected considering the Bank Rate (SBI Base Rate as on 01.04.2016 at 9.30% + 3.50%) 12.80% prevalent on 01.04.2016. The Bank rate as shown above shall be applicable for computation of Interest on Working Capital for each year of the Control Period FY 2016-17 to FY 2020-21.

**Table 170: Interest on Working Capital for Unit-2 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Working Capital as Coal Cost for 2 months	34.84	34.84	34.84	34.93	34.84
Working Capital as LDO Cost for 2 months	0.68	0.68	0.68	0.68	0.68
Working Capital as Receivables for 2 months	52.97	54.16	55.33	56.64	56.89
Working Capital as O&M Expenses for 1 month	4.36	4.78	5.12	5.55	5.71
Working Capital as Maintenance Spares (at 20% of O&M Expenses)	10.46	11.48	12.28	13.31	13.7
<b>Total Working Capital</b>	<b>103.3</b>	<b>105.94</b>	<b>108.24</b>	<b>111.1</b>	<b>111.81</b>
Bank Rate as on 1st April 2016 (%)	12.80%	12.80%	12.80%	12.80%	12.80%
<b>Interest on Working Capital</b>	<b>13.22</b>	<b>13.56</b>	<b>13.86</b>	<b>14.22</b>	<b>14.31</b>

**Table 171: Interest on working capital for unit-3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Working Capital as Coal Cost for 2 months	35.05	35.05	35.05	35.14	35.05

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Working Capital as LDO Cost for 2 months	0.68	0.68	0.68	0.68	0.68
Working Capital as Receivables for 2 months	52.41	53.47	54.88	55.73	56.3
Working Capital as O&M Expenses for 1 month	3.99	4.31	4.78	5.01	5.32
Working Capital as Maintenance Spares (at 20% of O&M Expenses)	9.58	10.33	11.47	12.03	12.77
<b>Total Working Capital</b>	<b>101.7</b>	<b>103.84</b>	<b>106.85</b>	<b>108.6</b>	<b>110.12</b>
Bank Rate as on 1st April 2016 (%)	12.80%	12.80%	12.80%	12.80%	12.80%
<b>Interest on Working Capital</b>	<b>13.02</b>	<b>13.29</b>	<b>13.68</b>	<b>13.9</b>	<b>14.09</b>

*Commission's analysis*

7.103 As per Clause 7.34 and 7.38 of the Generation Tariff Regulations, 2015

*“7.34 The Commission shall determine the Working Capital requirement for coal-based Generating stations containing the following components:*

- a) Cost of coal or lignite and limestone towards stock, if applicable, for 15 days for pit-head generating stations and 30 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;*
- b) Cost of coal or lignite and limestone for 30 days for generation corresponding to normative annual plant availability factor;*
- c) Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;*
- d) Maintenance spares @ 20% of Operation and maintenance expenses specified in clauses 7.40 to 7.48 of these regulations;*
- e) Operation and Maintenance expenses for 1 month; and*
- f) Receivables equivalent to 2 months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.”*

*“7.38 Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 01.04.2016 or as on 1st April of the year during the tariff period 2016-17 to 2020-21 in which the generating station or a unit thereof, is declared under commercial operation, whichever is later.*

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

*Provided that the rate of interest on working capital shall be trued up on the basis of actual bank rate as on 1st April of the respective year at the time of true up for that year.”*

- 7.104 The rate of interest on working capital has been taken as 12.80% (9.30% + 3.50%) as per regulation 2.1 (8) of the Generation Tariff Regulations, 2015 which is:

“2.1

....

8) “Bank Rate” means the base rate of interest as specified by the State Bank of India from time to time or any replacement thereof for the time being in effect plus 350 basis points;”

- 7.105 Accordingly, the Commission has computed the interest on working capital for Unit 2 and Unit 3 for each year of the Control Period i.e. from FY 2016-17 to FY 2020-21 as shown in the tables below.

**Table 172: Interest on Working Capital for Unit-2 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Working Capital as Coal Cost for 2 months	32.19	33.48	31.54	33.54	31.38
Working Capital as LDO Cost for 2 months	0.32	0.34	0.32	0.34	0.31
Working Capital as Receivables for 2 months	49.25	51.70	50.63	53.92	51.74
Working Capital as O&M Expenses for 1 month	3.86	4.25	4.54	4.93	5.04
Working Capital as Maintenance Spares (at 20% of O&M Expenses)	9.27	10.20	10.90	11.83	12.11
<b>Total Working Capital</b>	<b>94.89</b>	<b>99.96</b>	<b>97.94</b>	<b>104.56</b>	<b>100.59</b>
Bank Rate as on 1st April 2016 (%)	12.80%	12.80%	12.80%	12.80%	12.80%
<b>Interest on Working Capital</b>	<b>12.15</b>	<b>12.79</b>	<b>12.54</b>	<b>13.38</b>	<b>12.88</b>

**Table 173: Interest on working capital for unit-3 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Working Capital as Coal Cost for 2 months	32.62	30.90	33.86	31.45	33.86
Working Capital as LDO Cost for 2 months	0.33	0.31	0.34	0.32	0.34
Working Capital as Receivables for 2 months	48.63	47.72	52.04	50.22	53.15



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Working Capital as O&M Expenses for 1 month	3.36	3.63	4.02	4.23	4.44
Working Capital as Maintenance Spares (at 20% of O&M Expenses)	8.06	8.70	9.64	10.15	10.67
<b>Total Working Capital</b>	<b>92.99</b>	<b>91.26</b>	<b>99.90</b>	<b>96.37</b>	<b>102.46</b>
Bank Rate as on 1st April 2016 (%)	12.80%	12.80%	12.80%	12.80%	12.80%
<b>Interest on Working Capital</b>	<b>11.90</b>	<b>11.68</b>	<b>12.79</b>	<b>12.33</b>	<b>13.11</b>

## Incentive

### *Petitioner's submission*

- 7.106 The Petitioner submitted that the regulation 8.15 of the Generation Tariff Regulations 2015 stipulates the norm for the Incentive applicable to a Generating Station as below:

*“8.15 Incentive to a generating station or unit thereof shall be payable at a flat rate of 50 paise/kWh for ex-bus scheduled energy corresponding to scheduled generation in excess of ex-bus energy corresponding to Normative Annual Plant Load Factor (NAPLF).”*

- 7.107 The Petitioner accordingly computed Incentive for the Control Period FY 2016-17 to FY 2020-21 on the excess of ex-bus Generation projected for FY 2017-21 vis-à-vis the ex-bus Generation corresponding to NAPLF for Unit 2 and Unit 3. The incentive shall be recoverable from the Licensee through Monthly Billing subject to truing-up at actual PLF of Unit 2 and Unit 3 during the respective years of the Control Period FY 2016-17 to FY 2020-21.
- 7.108 The detailed computation of Incentive for the Control Period FY 2016-17 to FY 2020-21 are provided in the following Tables

**Table 174: Submitted Cost of Incentive for the Control Period for Unit 2 (in Rs Cr)**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
No. of Days in a Year	Days	365	365	365	366	365
Installed Capacity	MW	120	120	120	120	120
Normative Aux Power Consumption	%	10%	10%	10%	10%	10%
Normative PLF (NAPLF)	%	85%	85%	85%	85%	85%
Gross Generation at NAPLF	MU	893.52	893.52	893.52	895.97	893.52
Ex-Bus Generation at NAPLF	MU	804.17	804.17	804.17	806.37	804.17
Projected Gross Generation	MU	852.49	886.58	835.32	890.71	831
Projected Ex-Bus Generation	MU	767.24	797.92	751.78	801.64	747.9

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Excess Generation Corresponding to NAPLF	MU	0	0	0	0	0
Rate of Incentive Rs/kWh	Rs/kWh	0.5	0.5	0.5	0.5	0.5
Incentive Post-Tax	Rs Cr	0	0	0	0	0
MAT Rate	%	21.34%	21.34%	21.34%	21.34%	21.34%
Incentive Pre-Tax	<b>Rs Cr</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Table 175: Submitted Cost of Incentive for the Control Period for Unit 3 (in Rs Cr)**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
No. of Days in a Year	Days	365	365	365	366	365
Installed Capacity	MW	120	120	120	120	120
Normative Aux Power Consumption	%	10%	10%	10%	10%	10%
Normative PLF (NAPLF)	%	85%	85%	85%	85%	85%
Gross Generation at NAPLF	MU	893.52	893.52	893.52	895.97	893.52
Ex-Bus Generation at NAPLF	MU	804.17	804.17	804.17	806.37	804.17
Projected Gross Generation	MU	860.98	815.52	916.78	832.4	915.08
Projected Ex-Bus Generation	MU	774.88	733.97	825.1	749.16	823.57
Excess Generation Corresponding to NAPLF	MU	0	0	20.93	0	19.4
Rate of Incentive Rs/kWh	Rs/kWh	0.5	0.5	0.5	0.5	0.5
Incentive Post-Tax	Rs Cr	0	0	1.05	0	0.97
MAT Rate	%	21.34%	21.34%	21.34%	21.34%	21.34%
Incentive Pre-Tax	<b>Rs Cr</b>	<b>0</b>	<b>0</b>	<b>1.33</b>	<b>0</b>	<b>1.23</b>

*Commission's analysis*

7.109 The Commission will consider the norms for incentives as per the Generation Tariff Regulations, 2015 subject to submission of actual values during True-up by the Petitioner.

**Summary of Fixed Cost Determinants**

*Petitioner's submission*

7.110 The Annual Fixed Charges as submitted by the Petitioner for each year of the Control Period are shown in the following tables –

**Table 176: Annual Fixed Charges for Unit 2 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	6.27	7.03	8.4	9.35	9.57
Interest on Loan	4.18	4.56	5.13	5.34	4.93
O&M expenses	52.28	57.39	61.42	66.55	68.49
Return on Equity (Pretax)	28.8	29.33	30.06	30.67	30.92

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Interest on Working Capital	13.22	13.56	13.86	14.22	14.31
<b>Total Annual Fixed Charges</b>	<b>104.75</b>	<b>111.86</b>	<b>118.87</b>	<b>126.13</b>	<b>128.23</b>

**Table 177: Annual Fixed Charges for Unit 3 (in Rs Cr) as submitted by the Petitioner**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	7.76	8.7	9.93	10.74	10.96
Interest on Loan	3.67	4.33	4.8	4.97	4.62
O&M expenses	47.88	51.67	57.34	60.15	63.83
Return on Equity (Pre tax)	27.74	28.46	29.14	29.69	29.94
Interest on Working Capital	13.02	13.29	13.68	13.9	14.09
<b>Total Annual Fixed Charges</b>	<b>100.07</b>	<b>106.45</b>	<b>114.89</b>	<b>119.45</b>	<b>123.45</b>

*Commission's analysis*

7.111 Clause 8.2 of the Generation Tariff Regulations, 2015 states that the annual fixed cost of a thermal generating station shall consist of the following

- Return on Equity;
- Interest and Financing Charges on Loan Capital;
- Depreciation;
- Operation and Maintenance Expenses;
- Interest Charges on Working Capital
- Special allowance in lieu of R&M or separate compensation allowance, wherever applicable

7.112 The Annual Fixed Charges as approved by the Commission for each year of the Control Period are shown in the following tables –

**Table 178: Annual Fixed Charges for Unit 2 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	6.27	6.95	8.18	8.94	9.10
Interest on Loan	4.18	4.48	4.89	5.00	4.58
O&M expenses	46.35	51.00	54.52	59.17	60.53
Return on Equity (Pretax)	28.80	29.27	29.89	30.41	30.61
Interest on Working Capital	12.15	12.79	12.54	13.38	12.88
<b>Total Annual Fixed Charges</b>	<b>197.76</b>	<b>205.67</b>	<b>193.77</b>	<b>206.62</b>	<b>192.77</b>

**Table 179: Annual Fixed Charges for Unit 3 (in Rs Cr) as approved by the Commission**

Particulars	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Depreciation	7.76	8.62	9.71	10.40	10.56
Interest on Loan	3.67	4.26	4.58	4.64	4.27

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

O&M expenses	40.29	43.51	48.21	50.74	53.33
Return on Equity (Pretax)	27.74	28.40	28.97	29.42	29.63
Interest on Working Capital	11.90	11.68	12.79	12.33	13.11
<b>Total Annual Fixed Charges</b>	<b>91.36</b>	<b>96.47</b>	<b>104.24</b>	<b>107.54</b>	<b>110.90</b>

**Revenue requirement for the control period FY 2016-17 to FY 2020-21**

*Petitioner's Submission*

7.113 The following Tables summarize the Revenue Requirement & Generation Tariff for Unit 2 and Unit 3 for the Control Period FY 2016-17 to FY 2020-21 as submitted by the Petitioner

**Table 180: Annual Revenue requirement (in Rs Cr) for unit-2 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	852.49	886.58	835.32	890.71	831
Auxiliary Consumption	%	10%	10%	10%	10%	10%
Ex-Bus Generation	MU	767.24	797.92	751.78	801.64	747.9
Station Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Normative Sp LDO Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Fixed Charges						
Depreciation	Rs Cr	6.27	7.03	8.4	9.35	9.57
Interest on Loan	Rs Cr	4.18	4.56	5.13	5.34	4.93
O&M expenses	Rs Cr	52.28	57.39	61.42	66.55	68.49
Return on Equity (Pre tax)	Rs Cr	28.8	29.33	30.06	30.67	30.92
Interest on Working Capital	Rs Cr	13.22	13.56	13.86	14.22	14.31
<b>Total Annual Fixed Charges – (1)</b>	<b>Rs Cr</b>	<b>104.75</b>	<b>111.86</b>	<b>118.87</b>	<b>126.13</b>	<b>128.23</b>
Incentive (Pre-Tax) – (2)	Rs Cr	0.00	0.00	0.00	0.00	0.00
<b>Total Annual Fixed Charges including Incentive (pre-tax) –(3) = (1+2)</b>	<b>Rs Cr</b>	<b>104.75</b>	<b>111.86</b>	<b>118.87</b>	<b>126.13</b>	<b>128.23</b>
Rate of Energy Charges	Rs/kWh	2.650	2.650	2.650	2.650	2.650
<b>Total Energy Charges – (4)</b>	<b>Rs Cr</b>	<b>203.31</b>	<b>211.44</b>	<b>199.21</b>	<b>212.43</b>	<b>198.18</b>
<b>Annual Revenue Requirement – (3) + (4)</b>	<b>Rs Cr</b>	<b>308.06</b>	<b>323.30</b>	<b>318.08</b>	<b>338.56</b>	<b>326.41</b>

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Table 181: Annual Revenue requirement (in Rs Cr) for unit-3 as submitted by the Petitioner**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.98	815.52	916.78	832.4	915.08
Auxillary Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Ex-Bus Generation	MU	774.88	733.97	825.1	749.16	823.57
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Normative Sp LDO Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00
Fixed Charges						
Depreciation	Rs Cr	7.76	8.7	9.93	10.74	10.96
Interest on Loan	Rs Cr	3.67	4.33	4.8	4.97	4.62
O&M expenses	Rs Cr	47.88	51.67	57.34	60.15	63.83
Return on Equity (Pre tax)	Rs Cr	27.74	28.46	29.14	29.69	29.94
Interest on Working Capital	Rs Cr	13.02	13.29	13.68	13.9	14.09
Total Annual Fixed Charges – (1)	Rs Cr	100.07	106.45	114.89	119.45	123.45
Incentive (Pre-Tax) – (2)	Rs Cr	0	0	1.33	0	1.23
Total Annual Fixed Charges including Incentive (pre-tax) –(3) = (1+2)	Rs Cr	<b>100.07</b>	<b>106.45</b>	<b>116.22</b>	<b>119.45</b>	<b>124.68</b>
Rate of Energy Charges	Rs/kWh	2.666	2.666	2.666	2.666	2.666
Total Energy Charges – (4)	Rs Cr	<b>206.56</b>	<b>195.66</b>	<b>219.95</b>	<b>199.71</b>	<b>219.54</b>
Annual Revenue Requirement – (3) + (4)	Rs Cr	<b>306.63</b>	<b>302.11</b>	<b>336.17</b>	<b>319.16</b>	<b>344.22</b>

Commission's analysis

7.114 The Revenue Requirement & Generation Tariff for Unit 2 and Unit 3 for the Control Period FY 2016-17 to FY 2020-21 as approved by the Commission are tabulated below.

**Table 182: Annual Revenue requirement for unit-2 (in Rs Cr) as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	852.49	886.58	835.28	890.70	830.97
Auxiliary Consumption	%	10%	10%	10%	10%	10%
Ex-Bus Generation	MU	767.24	797.92	751.76	801.63	747.88
Station Heat Rate	kcal/kWh	2567	2567	2567	2567	2567
Normative Sp LDO Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5
Fixed Charges						
Depreciation	Rs Cr	6.27	6.95	8.18	8.94	9.10
Interest on Loan	Rs Cr	4.18	4.48	4.89	5.00	4.58
O&M expenses	Rs Cr	46.35	51.00	54.52	59.17	60.53
Return on Equity (Pretax)	Rs Cr	28.80	29.27	29.89	30.41	30.61

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Interest on Working Capital	Rs Cr	12.15	12.79	12.54	13.38	12.88
Total Annual Fixed Charges – (1)	Rs Cr	<b>97.74</b>	<b>104.50</b>	<b>110.02</b>	<b>116.90</b>	<b>117.70</b>
Rate of Energy Charges	Rs/kWh	2.578	2.578	2.578	2.578	2.578
Total Energy Charges – (2)	Rs Cr	<b>197.76</b>	<b>205.67</b>	<b>193.77</b>	<b>206.62</b>	<b>192.77</b>
Annual Revenue Requirement – (1) + (2)	<b>Rs Cr</b>	<b>295.50</b>	<b>310.17</b>	<b>303.79</b>	<b>323.53</b>	<b>310.47</b>

**Table 183: Annual Revenue requirement for unit-3 (in Rs Cr) as approved by the Commission**

Particulars	UoM	FY 2016-17	FY 2017-18	FY 2018-19	FY 2020-21	FY 2020-21
Gross Generation	MU	860.93	815.52	893.52	832.40	893.52
Auxiliary Consumption	%	10.00%	10.00%	10.00%	10.00%	10.00%
Ex-Bus Generation	MU	774.84	733.97	804.17	749.16	804.17
Station Heat Rate	kcal/kWh	2577	2577	2577	2577	2577
Normative Sp LDO Consumption	ml/kWh	0.5	0.5	0.5	0.5	0.5
Fixed Charges						
Depreciation	Rs Cr	7.76	8.62	9.71	10.40	10.56
Interest on Loan	Rs Cr	3.67	4.26	4.58	4.64	4.27
O&M expenses	Rs Cr	40.29	43.51	48.21	50.74	53.33
Return on Equity (Pretax)	Rs Cr	27.74	28.40	28.97	29.42	29.63
Interest on Working Capital	Rs Cr	11.90	11.68	12.79	12.33	13.11
Total Annual Fixed Charges – (1)	Rs Cr	<b>91.36</b>	<b>96.47</b>	<b>104.24</b>	<b>107.54</b>	<b>110.90</b>
Rate of Energy Charges	Rs/kWh	2.587	2.587	2.587	2.587	2.587
Total Energy Charges – (2)	Rs Cr	<b>200.42</b>	<b>189.84</b>	<b>208.00</b>	<b>193.77</b>	<b>208.00</b>
Annual Revenue Requirement – (1) + (2)	<b>Rs Cr</b>	<b>291.78</b>	<b>286.32</b>	<b>312.24</b>	<b>301.31</b>	<b>318.91</b>

## A8: COMPLIANCE TO DIRECTIVES

Directives as per Order dated Dec 31, 2016	Response of the Petitioner	Views of the Commission
<p><b>Filing of True up Petition for FY 2015-16 and APR for 2016-17</b></p> <p>The Commission directs the Petitioner to submit a petition for final truing up of FY 2015-16 and annual performance review for FY 2016-17 within 2 months of this Order.</p>	<p>Tata Power submits that the Hon'ble Commission may appreciate the fact that filing of True up Petition requires bulk data collation from various departments and requires extensive time to compile the Petition considering direction of the Hon'ble Commission in the previous Order. The True-up Proposal for FY 2015-16 and MYT Proposal for FY 2017-21 has been initially prepared considering the True-up Proposal for FY 2014-15 submitted before Hon'ble Commission in Case No. 03 of 2016 and the MYT Business Plan dated 28.10.2016. However, the same has been re-worked considering the True-up Order for FY 2013-14 and FY 2014-15 passed by the Hon'ble Commission on 13.01.2017 and the revised MYT Business Plan dated 10.02.2017 in compliance to the directive of the Hon'ble Commission dated 21.12.2016. It is humbly submitted such exercise is a rigorous task and took considerable time. In view of the foregoing, Tata Power humbly requests the Hon'ble Commission to condone the delay of 4-5 weeks. Pursuant to the directives, the True up proposal for FY 2015-16 along with the MYT Petition for FY 2016-17 to FY 2020-21, is submitted vide the instant submission for kind consideration of the Hon'ble Commission</p>	<p>The Commission is of the view that the Petitioner is required to adhere to the timelines specified as per JSERC Generation Tariff Regulations, 2015.</p>

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Directives as per Order dated Dec 31, 2016	Response of the Petitioner	Views of the Commission
<b>Data adequacy in next Tariff petition</b>  The Commission directs the Petitioner to note the data deficiencies highlighted throughout the present petition and submit the required details and certificates along with the next petition while submitting for true up of FY 2015-16.	Tata Power submits that it has followed the directives of the Hon'ble Commission as highlighted in the earlier petition and has tried to comply with such directives in the subsequent paragraphs and furnish relevant details in the instant petition. However, requests Hon'ble Commission to condone inadvertent miss out, if any. Such data deficiency shall be provided during course of the proceedings based on further direction of the Hon'ble Commission	The Commission notes compliance of this directive
<b>Competitive Procurement</b>  The Commission directs the Petitioner to submit the details of procurement process followed for each year of the Control Period.	The Petitioner submits that in compliance to the directive of the Hon'ble Commission, the Competitive Procurement Process for the FY 2015-16 has been submitted in the instant petition and marked as Annexure - 17.	The Commission notes compliance of this directive
<b>Landed Cost of Coal</b>  The Commission directs the Petitioner to submit the requisite certificates of breakup of landed cost for true up of subsequent years along with the instant petition.	The monthly break-up of Landed cost of Coal for FY 2015-16 is annexed hereto and marked as Annexure - 19 for the kind perusal and consideration of the Hon'ble Commission.	The Commission notes compliance of this directive



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Directives as per Order dated Dec 31, 2016	Response of the Petitioner	Views of the Commission
<p><b>Additional details for additional capitalization plans</b></p> <p><i>“The Commission directs the Petitioner to furnish details related to cost benefit analysis, the details related to the savings in the operating norms due to improvement in availability, auxiliary consumption, heat rates, secondary fuel consumption, etc. which shall benefit the consumers, certificates from Board of Directors, justification for emergency works, for provisionally approved schemes in this order and also while submitting revised or new additional capitalisation plans.”</i></p> <p>The Commission views that the Petitioner has not taken directive seriously and directs the Petitioner to comply and submit the status report along with the next petition.</p> <p>The Commission is of the view that every work that is carried out should be backed by detailed analysis and supported with sufficient justifications as this has implications on the cost that is to be borne by the final consumer.</p>	<p>Tata Power humbly submits that the Capital Expenditure Schemes approved by the Hon'ble Commission through the APR Order FY 2013-14 are mostly related to Safety and Security of the Plant, Technological Up-gradation &amp; Obsolescence. In compliance to the directives of the Hon'ble Commission, Tata Power Submits that the Cost Benefit Analysis of such schemes is submitted as Annexure 18 in the instant Petition for the kind perusal and consideration of the Hon'ble Commission. However, considering the intangible benefits provided by most of the Capital Expenditure Schemes the Petitioner has put an endeavor to arrive at a Quantifiable Benefit, to the extent possible.</p>	<p>The Commission notes compliance of this directive</p>
<p><b>Ash Disposal Expenses</b></p> <p>The Commission is concerned regarding the year on year increasing trend of ash disposal expense due to various reasons as mentioned in the petition. The Commission appreciates the steps taken by the Petitioner to contain the ash disposal expenses and further directs the Petitioner to devise ways to control the expenses.</p>	<p>Tata Power submits that it has pro-actively taken up in-house research project under the name 'Sankalp' as an initiative to reduce the Ash Disposal Expenses. Currently, the project is at a nascent stage and therefore the exact reduction in the Ash Disposal Expenses cannot be determined. It is submitted that after due deliberation with various internal stake holders following projects has been initially finalized</p>	<p>The Commission appreciates the steps taken by the Petitioner in controlling Ash-disposal expenses. However, the Petitioner is directed to submit a quarterly report to the Commission regarding the status of the projects proposed to be undertaken and also as per the statutory norms.</p>

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Directives as per Order dated Dec 31, 2016	Response of the Petitioner	Views of the Commission
	<p>to put check on the increasing Ash disposal Expenses.</p> <ul style="list-style-type: none"> <li>• To optimize off take of Pond Ash by decreasing average moisture content of Pond Ash :- The moisture content can be reduced by increasing retention time of Ash in Pond by dividing the pond into various small ponds and employing effective pond cutting strategy such that retention time increases thereby minimizing the moisture content.</li> <li>• The ash spillage during bagging is an unavoidable process and hence, water sprinkling is used to convert the scattered Fly Ash into ash slurry. Thereafter, the Ash Slurry is channelized to Effluent Treatment Pond ("<b>ETP</b>") for decanting the water, leaving the ash in the pond. The Ash is then transferred to the adjacent pond for drying and making space to receive new slurry and later disposed off to the designated Low lying areas. This involves double cutting of Ash in ETP. To avoid double cutting of Pond the Ash Slurry has been envisaged to be directly conveyed to JEMCO Ash Pond by providing a new pit in which ash slurry will be store temporarily and a new sump pump which will transfer that slurry to the main ash slurry line .</li> <li>• Increasing the Ash evacuation and Transportation frequency by implementing following technique: <ol style="list-style-type: none"> <li>1. Installation of second weighbridge at JEMCO Ash Pond.</li> <li>2. Installation of Automatic Number Plate Reading for reducing time at weighbridge</li> </ol> </li> </ul>	

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Directives as per Order dated Dec 31, 2016	Response of the Petitioner	Views of the Commission
	<p>and manual entry of Number Plates.</p> <p>The implementation of such projects shall considerably reduce the queuing time of vehicle and time taken for weighing and manual recording of the trip details. The reduction in time thereby will enable the vendors to maximize their number of trips per day and consequently productivity of any vehicle. Accordingly, the rate can be re-negotiated to bring down the cost.</p> <p>The Hon'ble Commission may appreciate the fact that success of the above project can be ascertained only with passage of time considering challenges and Cost involved in it.</p>	

## **A9: DIRECTIVES**

### **Filling of True up Petition for FY 2016-17 and APR for 2017-18**

- 9.1 The Commission directs the Petitioner to submit the petition for truing up of FY 2016-17 and annual performance review for FY 2017-18 as the timelines set by the Commission for the same have already passed. The Petitioner should adhere to the timelines as provided in the JSERC Generation tariff Regulations 2015.

### **Data adequacy in next Tariff petition**

- 9.2 The Commission directs the Petitioner to note the data deficiencies highlighted throughout the present petition and submit the required details and certificates along with the next petition while submitting for true up of FY 2016-17.

### **Transit Loss**

- 9.3 The Commission is concerned regarding the year on year increasing trend of Transit loss due to various reasons as mentioned in the petition. The Commission directs the Petitioner to devise ways to control the expenses and maintain transit loss at the levels specified as per Generation Tariff regulations, 2015.

### **Fuel mix**

- 9.4 The Commission has observed that due to various reasons, the Petitioner has procured coal from sources other than what had been approved. Such variations lead to change in fuel mix and the landed cost. The Petitioner is directed to bring to the notice of the Commission any such changes during the APR order in case coal is to be procured from sources other than what has been approved.

### **Specific Fuel Consumption**

- 9.5 The Petitioner is directed to submit monthly details of number of unit-wise start-ups taken after shutdown. Also details should include monthly quantity of secondary fuel consumed during plant start-up and flame support if required. The same should be submitted with subsequent APR and True-up Petitions.

### **Ash disposal**

- 9.6 The Petitioner is directed to submit status report of actions taken for disposal of ashes generated from the plant as per the statutory guidelines specified by MoEF and JSPCB and submit quarterly reports to the Commission. Such reports should also form part of the subsequent APR and True-up Petitions.

**Detailed Project Report (DPR)**

- 9.7 The Petitioner has submitted DPR of schemes that has been proposed along with the Petition. In the DPRs the Petitioner has submitted details about the project along with costs and have also worked out the impact of such schemes. The Commission has observed that such analysis and costs have not been supported by rate reasonability and should have approval of the competent authority of Tata Power. The Petitioner should provide supporting documents in the form of ordered rates, order for work carried out previously, quotations etc. The Petitioner is directed to ensure compliance.

**New addition/ increase in scope of work during execution of approved schemes**

- 9.8 The Petitioner is hereby directed that during execution of work pertaining to any pre-approved schemes, any increase in scope of work, procurement, services etc. should be brought to the notice of the Commission immediately.

**This Order is signed and issued by the Jharkhand State Electricity Regulatory Commission on this the 19<sup>th</sup> of February, 2018.**

Date: 19<sup>th</sup> of February, 2018

Place: Ranchi

Sd/-  
**(R. N. Singh)**  
**MEMBER (Engg.)**

Sd/-  
**(Dr. Arbind Prasad)**  
**CHAIRPERSON**

## A10: ANNEXURES

### Annexure I: List of participating members of public in the public hearing

Sl. No.	Name	Address / Organization if any
1	Bishwajeet Kumar	Tata Steel Ltd.
2	Rasmimayu Lenka	Tata Steel Ltd.
3	Atul	JUSCO
4	Anshul Agarwal	JUSCO
5	N. Leena	JUSCO
6	Rajesh Kumar	Jamshedpur
7	Bijendra Kumar	Dainik Bhaskar
8	Ajay Kumar	Tata Steel Ltd.
9	Dilip Kumar	Tata Power Ltd.
10	L. N. Rana	Tata Power Ltd.
11	D. Swain	Tata Power Ltd.
12	A. N. Choudhary	JUSCO
13	Bimal Kumar	Tata Power Ltd.
14	S. Sanyal	Tata Power Ltd.
15	M. K. Panda	JUSCO
16	V. V. Namjoshi	Tata Power Ltd.
17	Bijay Mohanty	Tata Power Ltd.
18	Vijay Prakash Singh	JUSCO
19	S. K. Panigarh	Tata Power Ltd.
20	Khilendra Singh	Tata Power Ltd.
21	L. P. Gaimy	Tata Power Ltd.
22	V. Singh	Tata Power Ltd.
23	Prabhakar Kumar	Tata Power Ltd.
24	S. Dutta	Tata Power Ltd.
25	Nayan Modak	Tata Power Ltd.
26	Tarun Kumar Singh	Tata Power Ltd.
27	Dinesh Kumar Das	Tata Power Ltd.
28	Mohan	Tata Power Ltd.
29	R. K. Sinha	Golmuri, Jamshedpur
30	Anshul De	Tata Power Ltd.
31	V. B. Srivastava	Tata Power Ltd.
32	S. Dang	Tata Power Ltd.
33	N. K. Srivastava	CGRF, Tata Steel, Chairman
34	S.C. Jha	Secretary, CGRF, TSL
35	Deb Kumar	Jamshedpur
36	Ajay B.Sachdev	Jamshedpur
37	D. K. Panday	Jamshedpur

## Annexure-II: List of Capex schemes (in Rs Lacs) approved by the Commission for the FY 2015-16

### i. Stand-alone Capitalization of Unit-2 (in Rs Lacs) for the FY 2015-16

Standalone Capitalization for Unit-2 (in Rs Lacs)					
S.No	Scheme Name	Asset-class	Value (in Rs Lacs)	Used in Unit	Apportioned Value for Unit 2 (in Rs Lacs)
1	Unit-2 UPS Battery Set-1	Batteries	3.86	2	3.86
2	APH Tubes for Unit 2	Plant and Machinery in Generating Stations	179.72	2	179.72
3	Reheater Coils	Plant and Machinery in Generating Stations	56.91	2	56.91
4	Burner Panel Bends	Plant and Machinery in Generating Stations	132.89	2	132.89
5	Coal Nozzle Tip & Compartment	Plant and Machinery in Generating Stations	29.91	2	29.91
6	Axial Fan Critical Components	Plant and Machinery in Generating Stations	28.89	2	28.89
7	Fly Ash Line Pipes	Plant and Machinery in Generating Stations	24.68	2	24.68
8	Turbine Spares	Plant and Machinery in Generating Stations	7.49	2	7.49
9	HT Motor for Critical Equipments	Plant and Machinery in Generating Stations	119.85	2,3	59.93
10	Upgradation of ESP	Plant and Machinery in Generating Stations	241.24	2,3	120.62
11	Centrifugal Compressor for Ash Plant	Plant and Machinery in Generating Stations	5.62	2,3	2.81
	<b>Sub-Total of Unit 2 (in Rs Lacs)</b>		<b>831</b>		<b>647.71</b>

### ii. Stand-alone Capitalization of Unit-3 (in Rs Lacs) for the FY 2015-16

Standalone Capitalization for Unit-3 (in Rs Lacs)					
S.No	Scheme Name	Asset-class	Value (in Rs Lacs)	Used in Unit	Apportioned Value for Unit 3 (in Rs Lacs)
1	Unit-3 220v DC Unit Battery Set	Batteries	20.53	3	20.53
2	Unit-3 UPS Battery Set-2	Batteries	32.94	3	32.94
3	Insurance Spare for LPBP Unit 3	Plant and Machinery in Generating Stations	19.99	3	19.99
4	Economiser Coil Assembly (Upper Bank & Lower Bank) 50% - Unit 3	Plant and Machinery in Generating Stations	39.29	3	39.29
5	LTSH Tubes and Bends 50% - Unit 3	Plant and Machinery in Generating Stations	278.97	3	278.97

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Standalone Capitalization for Unit-3 (in Rs Lacs)					
S.No	Scheme Name	Asset-class	Value (in Rs Lacs)	Used in Unit	Apportioned Value for Unit 3 (in Rs Lacs)
6	Steam Cooled Wall Bottom Header	Plant and Machinery in Generating Stations	108.53	3	108.53
7	Turbine Parting Plane Bolts & Coupling Bolts	Plant and Machinery in Generating Stations	20.65	3	20.65
8	Insurance Spares	Plant and Machinery in Generating Stations	21.94	3	21.94
9	Boiler Pressure Part Bends U 3	Plant and Machinery in Generating Stations	27.55	3	27.55
10	APH Tubes for Unit 3	Plant and Machinery in Generating Stations	44.95	3	44.95
11	HT Motor for Critical Equipments	Plant and Machinery in Generating Stations	119.85	2,3	59.93
12	Upgradation of ESP	Plant and Machinery in Generating Stations	241.24	2,3	120.62
13	Centrifugal Compressor for Ash Plant	Plant and Machinery in Generating Stations	5.62	2,3	2.81
<b>Sub-Total of Unit 3 (in Rs Lacs)</b>			<b>982</b>		<b>798.70</b>

**iii. Capitalization of Common facilities (in Rs Lacs) for the FY 2015-16**

Capitalization of Common Facilities (in Rs Lacs)					
S.No	Scheme Name	Asset-class	Value (in Rs Lacs)	Used in Unit	Apportioned Value for Unit 2 & 3 (in Rs Lacs)
1	Renovation of DM Plant	Plant and Machinery in Generating Stations	54.37	1,2,3,4,5	23.83
2	VT A1710L Diesel Engine	Plant and Machinery in Generating Stations	18.46	1,2,3,4,5	8.09
3	Retaining Wall around Uncrushed Yard	Building & Civil Engineering Works	37.65	1,2,3,4,5	16.51
4	Sector Gear and Pinion Set for Wagon Tippler	Plant and Machinery in Generating Stations	59.96	1,2,3,4,5	26.28
5	Extension Job of Conveyor 5	Plant and Machinery in Generating Stations	297.37	1,2,3,4,5	130.35
6	Construction of Road and Boundry Wall	Building & Civil Engineering Works	49.71	1,2,3,4,5	21.79
7	Paving of Switchyard	Building & Civil Engineering Works	29.36	1,2,3,4	16.48
8	145 KV CT	Transformers, kiosk sub-station equipment & other fixed apparatus (including plant	20.35	1,2,3,4	11.42



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Capitalization of Common Facilities (in Rs Lacs)					
S.No	Scheme Name	Asset-class	Value (in Rs Lacs)	Used in Unit	Apportioned Value for Unit 2 & 3 (in Rs Lacs)
		foundations): having a rating of 100 kilo volt amperes and over & (ii) Others			
9	Revamping of Instrumentation Systems in DM Plant	Plant and Machinery in Generating Stations	19.32	1,2,3,4	10.85
10	Slurry Line Pipes	Plant and Machinery in Generating Stations	177.69	1,2,3,4	99.75
11	Modified Recovery Pump	Plant and Machinery in Generating Stations	50.33	1,2,3,4	28.26
12	Anhydrous Ammonia System	Plant and Machinery in Generating Stations	161.51	1,2,3,4	90.67
13	Relining of Ash Ponds	Building & Civil Engineering Works	138.96	1,2,3,4,5	60.91
14	Renovation of Main Store	Building & Civil Engineering Works	87.11	1,2,3,4,5	38.19
15	Fire Tender	Plant and Machinery in Generating Stations	127.11	1,2,3,4,5	55.72
	<b>Sub- Total of Common facilities (in Rs Lacs)</b>		<b>1,329</b>		<b>639.11</b>

### Annexure-III: List of carry forward schemes approved by the Commission for the FY 2016-17

#### i. Stand-alone Capitalization of Unit-2 (in Rs Lacs) for the FY 2016-17

Standalone Capitalization for Unit-2 (in Rs Lacs) for the FY 2016-17							
S.No	Name of Scheme	Category	Approved Hard Cost	Used in Unit	Capitalization Phasing in FY 2016-17	Capitalization Phasing (Apportioned to Unit 2)	Justification
1	Flame Scanner Panel Upgradation	Other Assets - Unclassified	50	2	50.00	50.00	The Petitioner submitted that up-gradation is only possible during Annual outage of the Units which is supposed to happen in FY 2016-17.
2	Turbine IPSV Actuator	Plant and Machinery in Generating Stations	35.01	2,3,4	35.01	11.67	The Petitioner submitted that IPSV actuator is an imported equipment and thus takes considerable time to procure. Due to delay in processing the above requisition by BHEL, overseas supplier has delayed delivery of the item due to prior commitment at their ends.
3	Reheater Coils	Plant and Machinery in Generating Stations	500	2	122.21	122.21	The Petitioner submitted that the replacement of the Coils could only be carried out within limited shutdown duration or during forced outages to avoid any disruption of power to the beneficiaries.
4	Burner Panel Bends	Plant and Machinery in Generating Stations	350	2	85.33	85.33	The Petitioner submitted that the replacement of Burner Panel Bends could only be carried out within limited shutdown duration or during forced outages to avoid any disruption of power to the beneficiaries
5	Centrifugal Compressor for Ash Plant	Plant and Machinery in Generating Stations	136.32	2,3	130.71	65.36	The Petitioner submitted that considerable time has incurred to follow the processes involved in finalizing the L1 bidder and fixing terms and conditions and that supply

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Standalone Capitalization for Unit-2 (in Rs Lacs) for the FY 2016-17							
S.No	Name of Scheme	Category	Approved Hard Cost	Used in Unit	Capitalization Phasing in FY 2016-17	Capitalization Phasing (Apportioned to Unit 2)	Justification
							of material is expected in FY 2016-17 and hence Capitalization has been phased in FY 2016-17.
6	Anhydrous Ammonia System	Plant and Machinery in Generating Stations	369.28	2,3	110.35	55.18	The Petitioner submitted that 70% of the Capitalization has been achieved in phase wise manner during 1st Control Period and the balance capitalization has been scheduled in the forthcoming Annual shutdown scheduled in FY 2016-17 for Unit 2 and Unit 3
7	Replacement of Battery Chargers for Unit 2	Batteries	20.38	2	20.38	20.38	The Petitioner submitted that scheme for Replacement of Battery Chargers has been approved in May 2015 through APR Order for FY 2013-14 and that some of the essential component of battery chargers are to be imported and had a high lead time which caused delay in capitalization.
	<b>Total Scheme Value for Unit-2 (in Rs Lacs)</b>		<b>1460.99</b>		<b>553.99</b>	<b>410.12</b>	

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**ii. Stand-alone Capitalization of Unit-3 (in Rs Lacs) for the FY 2016-17**

Stand-alone Capitalization for Unit-3 (in Rs Lacs) for the FY 2016-17							
S.No	Name of Scheme	Category	Approved Hard Cost	Used in Unit	Capitalization Phasing	Capitalization Phasing (Apportioned to Unit 3)	Justification
1	Upgradation of Electromechanical Relay by numerical relay of Unit 3	Plant and Machinery in Generating Stations	20	3	20.00	20.00	The Petitioner submitted that the implementation of the project got delayed due to short supply of special shielded imported cable which is required specifically for the earth fault protection.
2	Unit-3 24 V DC Battery Bank-2	Batteries	14	3	5.53	5.53	The Petitioner submitted that the major component of the scheme has been capitalized as per schedule in FY 2015-16. The balance amount of the scheme is deferred to FY 16-17 for the purchase of small accessories required to monitor battery banks which were not supplied with the main order.
3	Turbine IPSV Actuator	Plant and Machinery in Generating Stations	35.01	2,3,4	35.00	11.67	The Petitioner submitted that IPSV actuator is an imported equipment and thus takes considerable time to procure. Due to delay in processing the above requisition by BHEL, overseas supplier has delayed delivery of the item due to prior commitment at their ends.
4	Flame Scanner Panel Upgradation	Plant and Machinery in Generating Stations	50	3	50.00	50.00	The Petitioner submitted that up-gradation is only possible during Annual outage of the Unit-3 which has been deferred from March 2016

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Standalone Capitalization for Unit-3 (in Rs Lacs) for the FY 2016-17							
S.No	Name of Scheme	Category	Approved Hard Cost	Used in Unit	Capitalization Phasing	Capitalization Phasing (Apportioned to Unit 3)	Justification
							to month of April 2016 due to unavoidable reason.
5	LTSH Tubes and Bends 50% - Unit 3	Plant and Machinery in Generating Stations	450	3	114.36	114.36	The Petitioner submitted that the replacement of the LTSH tubes and bends could only be carried out within limited shutdown duration or during forced outages, if any, to avoid any disruption of power to beneficiaries.
6	Steam Cooled Wall Bottom Header	Plant and Machinery in Generating Stations	190	3	81.47	81.47	The Petitioner submitted that Steam Cooled wall bottom header of Unit 3 has been replaced partially and balance was planned during Annual Shutdown scheduled in March 2016 which has been rescheduled to April 2016.
7	HRH & MS Safety Valve	Plant and Machinery in Generating Stations	60	3	28.47	28.47	The Petitioner submitted that although the material was timely despatched by BHEL, various dents and damages of the component has been observed which may have occurred during transport on account of which such damaged material was rejected and accordingly informed to M/s BHEL. BHEL has agreed to the observation and has taken initiative of supplying the items in FY 2016-17 only.

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Standalone Capitalization for Unit-3 (in Rs Lacs) for the FY 2016-17							
S.No	Name of Scheme	Category	Approved Hard Cost	Used in Unit	Capitalization Phasing	Capitalization Phasing (Apportioned to Unit 3)	Justification
8	Centrifugal Compressor for Ash Plant	Plant and Machinery in Generating Stations	136.32	2,3	130.71	65.36	The Petitioner submitted that considerable time has incurred to follow the processes involved in finalizing the L1 bidder and fixing terms and conditions and that supply of material is expected in FY 2016-17 and hence Capitalization has been phased in FY 2016-17.
9	Anhydrous Ammonia System	Plant and Machinery in Generating Stations	369.28	2,3	110.35	55.18	The Petitioner submitted that 70% of the Capitalization has been achieved in phase wise manner during 1st Control Period and the balance capitalization has been scheduled in the forthcoming Annual shutdown scheduled in FY 2016-17 for Unit 2 and Unit 3
10	APH Tubes for Unit 3	Plant and Machinery in Generating Stations	440	3	203.14	203.14	Tata Power submits that APH tubes have been replaced partially and the balance was planned during Annual Shutdown scheduled in March 2016 which has been further rescheduled to April 2016.
11	Replacement of Battery Chargers for Unit 3	Batteries	20.14	3	20.14	20.14	The Petitioner submitted that scheme for Replacement of Battery Chargers has been approved in May 2015 through APR Order for FY 2013-14 and that some of the essential component of battery chargers are to

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Standalone Capitalization for Unit-3 (in Rs Lacs) for the FY 2016-17							
S.No	Name of Scheme	Category	Approved Hard Cost	Used in Unit	Capitalization Phasing	Capitalization Phasing (Apportioned to Unit 3)	Justification
							be imported and had a high lead time which caused delay in capitalization.
	<b>Total Scheme Value for Unit-3 (in Rs Lacs)</b>		<b>1784.75</b>		<b>799.17</b>	<b>655.31</b>	

**iii. Capitalization of Common facilities (in Rs Lacs) for the FY 2016-17**

Capitalization of Common facilities (in Rs Lacs) for the FY 2016-17							
S.No	Name of Scheme	Category	Approved Hard Cost	Used in Unit	Capitalization Phasing	Capitalization Phasing (Apportioned to Unit 2&3)	Justification
1	Relining of Ash Ponds	Building and Civil Engg Works	1561.515	1,2,3,4,5	966.94	423.87	The Petitioner submitted that this scheme is in line with the MYT Tariff Order dated 31.05.2012
2	Renovation of Main Store	Building and Civil Engg Works	100.70	1,2,3,4,5	13.61	5.96	The Petitioner submitted that the scheme of renovation of main store was proposed through APR petition for the FY 2013-14 for which the Commission provided the approval in May 2015. The capitalization had to be deferred due to time elapsed in the initial stage in delivery of the materials from the manufacturers.
3	Installation of Fire Detection and Monitoring System	Plant and Machinery in Generating Stations	1,290.97	1,2,3,4,5	1290.97	565.90	The Petitioner submitted that the schemes were approved by Hon'ble Commission in May 2015 through APR Order for FY 2013-14. The

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

S.No	Name of Scheme	Category	Capitalization of Common facilities (in Rs Lacs) for the FY 2016-17				Justification
			Approved Hard Cost	Used in Unit	Capitalization Phasing	Capitalization Phasing (AppORTioned to Unit 2&3)	
							schemes required considerable time to carry out detailed engineering and finalisation of vendor.
4	Fire Hydrant Line for CHP	Other Assets - Unclassified	72.00	1,2,3,4,5	72.00	31.56	The Petitioner submitted that the schemes were approved by Hon'ble Commission in May 2015 through APR Order for FY 2013-14. The schemes required considerable time to carry out detailed engineering and finalisation of vendor.
5	Fire Detection & Protection System for LDO Storage Tank Area	Other Assets - Unclassified	78.00	1,2,3,4,5	78.00	34.19	The Petitioner submitted that the schemes were approved by Hon'ble Commission in May 2015 through APR Order for FY 2013-14. The schemes required considerable time to carry out detailed engineering and finalisation of vendor.
	<b>Total Scheme Value for Common facilities (in Rs Lacs)</b>		<b>3103.19</b>		<b>2421.52</b>	<b>1061.48</b>	



### Annexure-IV: List of Capex schemes approved by the Commission for the period FY 2017-18 to FY 2020-21

#### Mandatory –Statutory

Mandatory - Statutory									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Unit-2</b>								
1	Upgradation of Metering System	Meters	55.00	27.50	27.50			Y	The Petitioner submitted that the Meter reading will be accurate and reliable and Energy Accounting will be precise and will benefit both the generators and discoms
2	Hydraulic Auger for CHP	Other Assets Unclassified	100.00		100.00			Y	The Petitioner submitted that this will help the reduction in human error or bias and time required for Coal sample collection, and risk to the safety of the personnel collecting coal sample.
	<b>Total Capitalization for Unit-2 (Rs in Lacs)</b>		<b>155.00</b>	<b>27.50</b>	<b>127.50</b>	<b>0.00</b>	<b>0.00</b>		
	<b>Unit 3</b>								

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Mandatory - Statutory									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved (Y/N)	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21		
1	Upgradation of Metering System	Meters	55.00	27.50	27.50			Y	The Petitioner submitted that the Meter reading will be accurate and reliable and Energy Accounting will be precise and will benefit both the generators and discoms.
2	Hydraulic Auger for CHP	Other Assets Unclassified	100.00		100.00			Y	The Petitioner submitted that this will help the reduction in human error or bias and time required for Coal sample collection, and risk to the safety of the personnel collecting coal sample.
	<b>Total Capitalization for Unit-3 (in Rs Lacs)</b>		<b>155.00</b>	<b>27.50</b>	<b>127.50</b>	<b>0.00</b>	<b>0.00</b>		

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Mandatory – Technical**

Mandatory - Technical									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Unit-2</b>								
1	Compressed Air System for Fly Ash handling Plant.	Plant and Machinery in Generating Stations	175.00			175.00		Y	The Petitioner submitted that this schemes provides Saving in Auxiliary Consumption, reduced preventive maintenance and break-down time and Reduced Environment pollution due to less blockages.
2	Oil Filtration system for Coal Mill	Plant and Machinery in Generating Stations	50.00	25.00	25.00			Y	The Petitioner submitted that this scheme prevents bearings, and gears of the coal mill from being damaged , Reduction in handling loss of lube oil ,Reduction in LDO consumption fired during non-availability of coal mill to overcome flame instability
	<b>Total Capitalization for Unit-2 (Rs in Laacs)</b>		<b>225.00</b>	<b>25.00</b>	<b>25.00</b>	<b>175.00</b>	<b>0.00</b>		
	<b>Unit 3</b>								

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Mandatory - Technical									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved (Y/N)	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21		
1	Compressed Air System for Fly Ash handling Plant.	Plant and Machinery in Generating Stations	175.00			175.00		Y	The Petitioner submitted that this schemes provides Saving in Auxiliary Consumption, reduced preventive maintenance and break-down time and Reduced Environment pollution due to less blockages.
2	Oil Filtration system for Coal Mill	Plant and Machinery in Generating Stations	50.00	25.00	25.00			Y	The Petitioner submitted that this scheme prevents bearings, and gears of the coal mill from being damaged , Reduction in handling loss of lube oil ,Reduction in LDO consumption fired during non-availability of coal mill to overcome flame instability
	<b>Total Capitalization for Unit-3 (Rs in Lacs)</b>		<b>225.00</b>	<b>25.00</b>	<b>25.00</b>	<b>175.00</b>	<b>0.00</b>		

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Reliability Improvement**

Reliability improvement									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Unit-2</b>								
1	Up-Gradation of Cooling Tower System	Cooling towers and circulating water systems	200.00		100.00	100.00		Y	The Petitioner submitted that Upgradation of Cooling Tower will help in improving the efficiency resulting in better performance and reliability of the system
2	210 AH UPS battery bank	Batteries	50.00				50.00	Y	The Petitioner submitted that battery bank is required to maintain the reliable supply of DC power to the relay system
	<b>Total Capitalization for Unit-2 (Rs in Lacs)</b>		<b>250.00</b>		<b>100.00</b>	<b>100.00</b>	<b>50.00</b>		
	<b>Unit 3</b>								
1	Up-Gradation of Cooling Tower System	Cooling towers and circulating water systems	200.00		100.00	100.00		Y	The Petitioner submitted that Upgradation of Cooling Tower will help in improving the efficiency resulting in better performance and reliability of the system

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Reliability improvement									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
2	210 AH UPS battery bank	Batteries	50.00			50.00		Y	The Petitioner submitted that battery bank is required to maintain the reliable supply of DC power to the relay system
	<b>Total Capitalization for Unit-3 (Rs in Lacs)</b>		<b>250.00</b>		<b>100.00</b>	<b>150.00</b>			

### Technology Upgradation

Technology Upgradation									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Unit-2</b>								
1	6.6 Kv Switchboard Replacement	Switchgear, including cable connections	400.00		400.00			Y	The Petitioner submitted that this scheme is useful to mitigate the safety hazard of rack in/out of the existing high voltage breakers.
2	2X 60 KVA UPS	Batteries	40.00				40.00	Y	The Petitioner submitted that the Service and

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Technology Upgradation									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
									Spare support by the OEM will be available due to updated technology.
3	Up gradation of Unit 2 Turbine Super Visory System	IT Equipments	200.00		200.00			Y	The Petitioner submitted that this scheme helps in reliable and efficient supervision of the turbine and monitor the abnormalities in the vibration pattern of the turbine.
4	Up Gradation of Furnace Safeguard & Supervisory System and BOP Control System	IT Equipments	1200.00	600.00	600.00			Y	The Petitioner submitted that this scheme ensures safe, and orderly operating sequence of the start-up and shutdown of fuel firing equipment of the Boiler.
5	Implementation of SCALE-BAN for Optimization of Cooling Water System operation	Plant and Machinery in Generating Stations	330.00				330.00	Y	The Petitioner submitted that this scheme ensures operation of Cooling Water System at Optimum Cycle of Concentration.
	<b>Total Capitalization for Unit-2 (Rs in Lacs)</b>		<b>2170.00</b>	<b>600.00</b>	<b>1200.00</b>		<b>370.00</b>		

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Technology Upgradation									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Unit 3</b>								
1	6.6 Kv Switchboard Replacement	Switchgear, including cable connections	400.00	400.00				Y	The Petitioner submitted that this scheme is useful to mitigate the safety hazard of rack in/out of the existing high voltage breakers.
2	2X 60 KVA UPS	Batteries	40.00			40.00		Y	The Petitioner submitted that the Service and Spare support by the OEM will be available due to updated technology.
3	Up Gradation of Furnace Safeguard & Supervisory System and BOP Control System	IT Equipments	1200.00	600.00	600.00			Y	The Petitioner submitted that this scheme ensures safe, and orderly operating sequence of the start-up and shutdown of fuel firing equipment of the Boiler.
4	Implementation of SCALE-BAN for Optimization of Cooling Water System operation	Plant and Machinery in Generating Stations	330.00			330.00		Y	The Petitioner submitted that this scheme ensures operation of Cooling Water System at Optimum Cycle of Concentration.



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Technology Upgradation									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Total Capitalization for Unit-3 (Rs in Lacs)</b>		<b>1970.00</b>	<b>1000.00</b>	<b>600.00</b>	<b>370.00</b>			

**Summary of the Total Capitalization approved for the Period FY 2017-18 to FY 2020-21**

Approved Capitalization of Unit-2 (in Rs Lacs)					
S No	Particulars of the Scheme	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
1	Mandatory-Statutory	27.50	127.50	0.00	0.00
2	Mandatory-Technical	25.00	25.00	175.00	0.00
3	Reliability Improvement	-	100.00	100.00	50.00
4	Technology upgradation	600.00	1200.00	-	370.00
	<b>Total –(1+2+3+4)</b>	<b>652.50</b>	<b>1452.50</b>	<b>275.00</b>	<b>420.00</b>

Approved Capitalization of Unit-3 (in Rs Lacs)					
SNo	Particulars of the Scheme	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
1	Mandatory-Statutory	27.5	127.5	-	-
2	Mandatory-Technical	25	25	175	-

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

---

Approved Capitalization of Unit-3 (in Rs Lacs)					
SNo	Particulars of the Scheme	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
3	Reliability Improvement	-	100	150	-
4	Technology upgradation	1000	600	370	-
	<b>Total –(1+2+3+4)</b>	<b>1052.50</b>	<b>852.50</b>	<b>695.00</b>	<b>0.00</b>

## Annexure-V: List of Capex schemes un-approved by the Commission for the period FY 2017-18 to FY 2020-21

### Mandatory –Statutory

Mandatory - Statutory									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Common facilities</b>								
1	Refurbishment of Stack data Monitoring System	Plant and Machinery in Generating Stations	105.21	0.00	35.07	35.07	35.07	N	The Petitioner submitted that this is a environment sustainability measure. The Commission appreciates such efforts undertaken by TPCL. However, such activities may be carried out from internal accruals/own funds of the Petitioner and their cost should not be loaded on to the beneficiaries.
	<b>Total Capitalization (Rs in Lacs)</b>		<b>105.21</b>	<b>0.00</b>	<b>35.07</b>	<b>35.07</b>	<b>35.07</b>		

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Reliability Improvement**

Reliability improvement									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Unit-2</b>								
1	Up-Gradation of Control Room AC System	Air conditioning plants: (i) Static	150.00		150.00			N	The Petitioner submitted that this scheme results in better efficiency and performance of the AC system due to reduction in power consumption This scheme is not allowable under Clause 7.6 of the Generation Tariff Regulations 2015. The Petitioner may implement the scheme using through internal accruals/own funds if required.
	<b>Total Capitalization for Unit-2 (Rs in Lacs)</b>		<b>150.00</b>		<b>150.00</b>				
	<b>Unit 3</b>								
1	Up-Gradation of Control Room AC System	Air conditioning plants: (i) Static	150.00		150.00			N	The Petitioner submitted that this scheme results in better efficiency and performance of the AC system due to reduction in power consumption This scheme is not allowable under Clause

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Reliability improvement									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
									7.6 of the Generation Tariff Regulations 2015. The Petitioner may implement the scheme using through internal accruals/own funds if required.
	<b>Total Capitalization for Unit-3 (Rs in Lacs)</b>		<b>150.00</b>		<b>150.00</b>				
	<b>Common facilities</b>								
1	Wagon Tippler A & B Life Enhancement	Other Assets - Unclassified	131.51	43.84		87.67		N	The Petitioner submitted that this scheme results in reduction in Repair & Maintenance cost due to less number of breakdown thereby reducing the O&M Expenses. However, such activities may be carried out from internal accruals/own funds of the Petitioner and their cost should not be loaded on to the beneficiaries.
2	Side Arm Charger A & B - Life Enhancement	Other Assets - Unclassified	30.68	15.34	15.34			N	The Petitioner submitted that this scheme results in reduction in Repair & Maintenance cost due to

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Reliability improvement									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
									less number of breakdown thereby reducing the O&M Expenses. However, such activities may be carried out from internal accruals/own funds of the Petitioner and their cost should not be loaded on to the beneficiaries.
3	Apron Feeder A & B-Life Enhancement	Other Assets - Unclassified	105.2	52.60		52.60		N	The Petitioner submitted that this scheme results in reduction in Repair & Maintenance cost due to less number of breakdown thereby reducing the O&M Expenses. However, such activities may be carried out from internal accruals/own funds of the Petitioner and their cost should not be loaded on to the beneficiaries.
4	Bulldozer for Coal Movement	Self-Propelled Vehicles	210.41	210.41				N	The Petitioner submitted that this scheme results in reduction O&M Expenses. However, such activities may be

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Reliability improvement									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
									carried out from internal accruals/own funds of the Petitioner and their cost should not be loaded on to the beneficiaries.
	<b>Total Capitalization of Common facilities</b>		<b>477.80</b>	<b>322.19</b>	<b>15.34</b>	<b>140.27</b>	<b>0.00</b>		

### Technology Upgradation

Technology Upgradation									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Common facilities</b>								
1	Upgradation of OFF-SITE Plant PLC	IT Equipments	78.90	26.30	26.30	26.30	0.00	N	The Petitioner submitted that Software and Diagnostic support by the OEM will be available due to updated technology resulting in smooth running of the

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Technology Upgradation									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
									plant However, such activities may be carried out from internal accruals/own funds of the Petitioner and their cost should not be loaded on to the beneficiaries.
2	Migration of OS from windows XP to latest window of Operator Station	IT Equipments	100	0.00	33.34	33.34	33.34	N	The Petitioner submitted that Software and Diagnostic support by the OEM will be available due to updated technology resulting in smooth running of the plant However, such activities may be carried out from internal accruals/own funds of the Petitioner and their cost should not be loaded on to the beneficiaries.
	<b>Total Capitalization</b>		<b>178.90</b>	<b>26.30</b>	<b>59.64</b>	<b>59.64</b>	<b>33.34</b>		



Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

**Safety and Security**

Safety and Security									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
	<b>Common facilities</b>								
1	Installation of Turnstile at Gate	Other Assets Unclassified	8.77	8.77				N	The Petitioner submitted that this scheme provides controlled access/exit of persons to the plant. However, This scheme is not allowable under Clause 7.6 of the Generation Tariff Regulations 2015. The Petitioner may implement the scheme using through internal accruals/own funds if required.
2	Installation of Bollards at Gate	Other Assets Unclassified	10.96	10.96				N	The Petitioner submitted that this scheme provides controlled access/exit of persons to the plant. However, This scheme is not allowable under Clause 7.6 of the Generation Tariff Regulations 2015. The Petitioner may implement the scheme using through internal

Approval of Business plan and Determination of ARR for the Control period  
FY 2016-17 to FY 2020-21 (including True up for FY 2015-16)

Safety and Security									
S.No	Project /Scheme Name	Asset Class	Scheme Value	Capitalization Phasing over the Years (in Rs. Lakhs)				Scheme approved	Comments
			Rs. Lakhs	FY 18	FY 19	FY 20	FY 21	(Y/N)	
									accruals/own funds if required.
	<b>Total Capitalization</b>		<b>19.73</b>	<b>19.73</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		