Business Plan for 3-Year

MYT Control Period from FY 2015-16 to FY 2017-18

Submitted by:

Electricity Department

Andaman & Nicobar Administration

November-2014

GENERAL HEADINGS OF PROCEEDINGS

BEFORE HON'BLE JOINT ELECTRICITY REGULATORY COMMISSION FOR THE STATE OF GOA & UNION TERRITORIES

FILE No: _____

CASE No: _____

IN THE MATTER OF	:	**Petition for Approval of Business Plan for 3 year MYT Control Period From FY 2015-16 to 2017-18.**
AND		
IN THE MATTER OF THEPETITIONER	:	**The Electricity Department, Vidyut Bhawan, Port Blair-744101**
		……..Petitioner

Electricity Department of Union Territory of Andaman & Nicobar Administration (hereinafter referred to as "EDA&N"), files Petition for Approval of Business Plan for 3 year MYT Control Period From FY 2015-16 to 2017-18.

AFFIDAVIT

BEFORE HON'BLE JOINT ELECTRICITY REGULATORY COMMISSION FOR THE STATE OF GOA & UNION TERRITORIES

FILE No: _____

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IN THE MATTER OF	:	**Petition for Approval of Business Plan for 3 year MYT Control Period From FY 2015-16 to 2017-18.**
AND		
IN THE MATTER OF THE PETITIONER	:	**The Electricity Department, Vidyut Bhawan, Port Blair-744101, U.T. of Andaman & Nicobar**
		……..Petitioner

I, Anand Behari,S/o, Late Raj Behari,(aged 59 years),(occupation) Government Service residing at Shadipur, Port Blair, Andaman & Nicobar Islands, the deponent named above do hereby solemnly affirm and state on oath as under:-

1. That the deponent is the Superintending Engineer of Electricity Department of Andaman & Nicobar Administration and is acquainted with the facts deposed to below.

2. I, the deponent named above do hereby verify that the contents of the accompanying petition are based on the records of the Electricity Department, Andaman & Nicobar Administration maintained in the ordinary course of business and believed by them to be true and I believe that no part of it is false and no material has been concealed there from.

Details of enclosures:

a) Petition for Approval of Business Plan for 3 year MYT Control Period From FY 2015-16 to 2017-18
b) Petition Fee – Rs. 1,00,000/- vide DD No. dated

For The Electricity Department of A&N

Petitioner

Place: Port Blair, Andaman & Nicobar,

Dated:

I, _____ Advocate, _____,
do hereby declare that the person making this affidavit is known to me through the perusal of records and I am satisfied that he is the same person alleging to be deponent himself.

Advocate

Solemnly affirmed before me on this …… day of ……2014 at ……. a.m. /p.m. by the deponent who has been identified by the aforesaid Advocate. I have satisfied myself by examining the deponent that he understood the contents of the affidavit which has been read over and explained to him. He has also been explained about section 193 of Indian Penal Code that whoever intentionally gives false evidence in any of the proceedings of the Commission or fabricates evidence for purpose of being used in any of the proceedings shall be liable for punishment as per law.

BEFORE HON'BLE JOINT ELECTRICITY REGULATORY COMMISSION FOR THE STATE OF GOA & UNION TERRITORIES

FILE No: _____

CASE No: _____

IN THE MATTER OF : Petition for Approval of Business Plan for 3 year MYT Control Period From FY 2015-16 to 2017-18.

AND

IN THE MATTER OF THE PETITIONER :

The Electricity Department, Vidyut Bhawan, Port Blair-744101, U.T. of Andaman & Nicobar.

……..Petitioner

PETITIONER, UNDER JOINT ELECTRICITY REGULATORY COMMISSION FOR THE STATE OF GOA AND UNION TERRITORIES (MULTI YEAR DISTRIBUTION TARIFF) REGULATIONS, 2014 READ WITH JERC (CONDUCT OF BUSINESS), REGULATIONS, 2009 FILES FOR INITIATION OF PROCEEDINGS BY THE HON'BLE COMMISSION FOR APPROVAL OF BUSINESS PLAN FOR 3 YEAR MYT CONTROL PERIOD FROM FY 2015-16 TO 2017-18 OF ELECTRICITY DEPARTMENT OF ANDAMAN & NICOBAR ADMINISTRATION (HEREIN AFTER REFERRED TO AS "EDA&N").

THE ELECTRICITY DEPARTMENT OF ANDAMAN &NICOBAR ADMISTRATION RESPECTFULLY SUBMITS:

1. The Petitioner, The Electricity Department of Andaman & Nicobar Administration has been allowed to function as Distribution Utility for UT of Andaman & Nicobar.

2. Pursuant to the enactment of the Electricity Act, 2003, EDA&N is required to submit its Aggregate Revenue Requirement (ARR) and Tariff Petitions as per procedures outlined in section 61, 62 and 64, of EA 2003, and the governing regulations thereof.

3. The Joint Electricity Regulatory Commission For The State Of Goa And Union Territories (Multi Year Distribution Tariff) Regulations, 2014 requires the EDA&N to file Business Plan, for Control Period of three financial years from April 1, 2015 to March 31, 2018, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets.

4. Further, the regulation requires that, based on the Business Plan as approved by the Commission by order, submit the forecast of Aggregate Revenue Requirement and expected revenue from tariff, for the Control Period by a Petition.

5. EDA&N has submitted its Business Plan for Control Period of three financial years from April 1, 2015 to March 31, 2018 for approval of the Hon'ble Commission on the basis of the principles outlined in tariff regulations notified by the Joint Electricity Regulatory Commission.

6. EDA&N prays to the Hon'ble Commission to admit the attached Business Plan for Control Period of three financial years from April 1, 2015 to March 31, 2018and would like to submit that:

PRAYERS TO THE HON'BLE COMMISSION:

1. The petition provides, inter-alia, EDA&N's approach for formulating the present petition, the broad basis for projections used, summary of the proposals being made to the Hon'ble Commission, performance of EDA&N in the recent past, and certain issues impacting the performance of EDA&N in the Licensed Area.

2. Broadly, in formulating the Business Plan for Control Period of three financial years from April 1, 2015 to March 31, 2018, the principles specified by the Joint Electricity Regulatory Commission For The State Of Goa And Union Territories (Multi Year Distribution Tariff) Regulations, 2014 ("Tariff Regulations") have been considered as the basis.

3. In order to align the thoughts and principles behind the Business Plan, EDA&N respectfully seeks an opportunity to present their case prior to the finalization of the Business Plan. EDA&N believes that such an approach would go a long way towards providing a fair treatment to all the stakeholders and may eliminate the need for a review or clarification.

4. EDA&N may also be permitted to propose suitable changes to the Business Plan and the mechanism of meeting the revenue on further analysis, prior to the final approval by the Hon'ble Commission.

In view of the above, the petitioner respectfully prays that Hon'ble Commission may:

- Approve the Business Plan for Control Period of three financial years from April 1, 2015 to March 31, 2018 for EDA&N formulated in accordance with the guidelines outlined as per the regulation of Joint Electricity Regulatory Commission relating to Distribution Licensee and the principles contained in Tariff Regulations ;

- Condone any inadvertent delay/ omissions/ errors/ rounding off differences/shortcomings and EDA&N may please be permitted to add/ change/ modify/ alter the petition;

- Permit EDA&N to file additional data/ information as may be necessary;
- Pass such further and other orders, as the Hon'ble Commission may deem fit and proper, keeping in view the facts and circumstances of the case.

The Electricity Department of

Andaman & Nicobar administration

Petitioner

Place: Port Blair, Andaman& Nicobar Islands

Dated:

TABLE OF CONTENT

LIST OF TABLES

LIST OF ABBREVIATIONS

Abbreviation	Description
A&G	Administration & General
ARR	Annual Revenue Requirement
CAGR	Compound Annual Growth Rate
CD	Contract Demand
CERC	Central Electricity Regulatory Commission
CGS	Central Generating Stations
CoS	Cost of Supply
CPSU	Central Power Sector Undertakings
Crs	Crore
D/E	Debt Equity
EDA&N	Electricity Department Andaman & Nicobar Islands
FAC	Fuel Adjustment Costs
FDR	Fixed Deposits Receipts
FY	Financial Year
GFA	Gross Fixed Assets
HP	Horse Power
HT	High Tension
JERC	Joint Electricity Regulatory Commission
KV	Kilovolt
KVA	KilovoltAmps
kWh	kilo Watt hour
LT	Low Tension
LTC	Leave Travel Concession
MU	Million Units
MVA	Million VoltAmps
MW	Mega Watt
O&M	Operation & Maintenance
PLF	Plant Load Factor
PLR	Prime Lending Rate
R&M	Repairs and Maintenance
RoE	Rate of Return
Rs.	Rupees
S/s	Sub Station
SBI	State Bank of India
T&D	Transmission & Distribution
UI	Unscheduled Interchange
UT	Union Territory

1. INTRODUCTION

1.1 Historical Perspective

The Department of Electricity of Andaman & Nicobar Administration ("EDA&N") is responsible for power supply in the union territory. Power requirement of EDA&N is met by own generation station as well as power purchase.

Andaman & Nicobar Islands is cluster of islands scattered in the Bay of Bengal. These islands are truncated from rest of India by more than 1000 kms. The total area of the territory is 8249 sq. kms having population of 379944 as per 2011Census provisional records & average growth rate is 6.68%. The tempo of economic development has tremendously accelerated along with all-round expansion in the areas/sectors viz. (i) Shipping Services, (ii) Civil Supplies, (iii) Education, (iv) Fisheries, (v) Tourism & Information Technology, (vi) Health, (vii) Industries, (viii) Rural Development, (ix) Social Welfare, (x) Transport, (xi) Increase in District Headquarters (xii) Central Government Department, (xiii) Public Undertaking & other offices, (xiv) Services & Utilities, (xv) Defense Establishment (xvi) Commercial Organisations/Business Centers etc. Thus, these islands have reached at the take-off stage of total economic transformation. All these economic and infrastructure developments requires power as a vital input & to play a key role for achieving overall transformations.

1.2 Past History on Power

Prior to independence a small steam driven reciprocating DG Generator of 100 KW Capacity was installed by the British at Ross Island in 1926. Direct current DG Set of 100 KW Capacity was installed at Port Blair during 1929. After independence two steam turbine generating sets of 550 KW each were established during 1951 in the power house at Chatham Island. The boilers were operated on wood fuel and saw dust, which were the waste product of Chatham Saw Mill and later switched over to Mangrove wood as fuel. This was the start of alternating current power supply at Port Blair.

Due to the geographical & topographical peculiarities of these islands including separation by sea over great distances there is no single power grid for the entire electrified island and instead a power house caters independently to the power requirements of area/islands.

The Electricity Department is operating and maintain power generation, transmission & distribution system network in these islands for providing electric power supply to general public and implements various schemes under Plan & Non Plan for augmentation of DG Generating Capacity and

establishment of new power houses and T&D Systems. This department isalso functioning as a Nodal Agency for implementing renewable energy

program of the Ministry of New & Renewable Energy in these islands. Presently, the department is headed by a Superintending Engineer, associated with seven EEs & around Thirty six AEs for carrying out the task of power generation, transmission & distribution to the general public including schemes under non-conventional energy sources

1.3 Power Scenario

1.3.1 The salient features about development of electric power supply in these islands during last 60 years are provided below:

ELECTRICITY DEPARTMENT AT A GLANCE (2013-14)

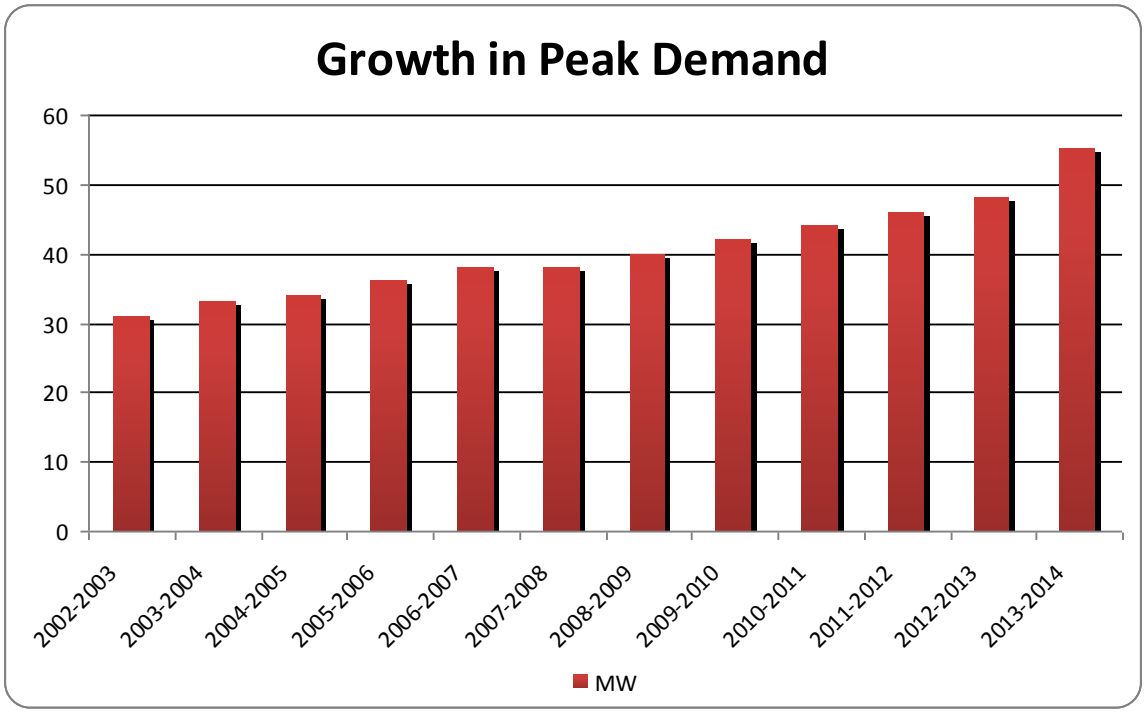
Total Installed capacity	:	104.65 MW *(94.30 MW Diesel, 5.25 MW Hydro, 5.10 MW solar)*
No. of Power Houses	:	53 Nos *49 nos. Diesel Power Plant,* *03 nos. solar power plants and* *01 No. Hydro Plant)*
Total Staff strength	:	2563 Nos
Peak Demand	:	55 MW
HT line	:	1294 Kms
LT line	:	3440 Kms
Distribution Transformers	:	864 Nos.
No. of consumers	:	1,17,046 Nos.
Annual unit generation	:	275.00 MU
Total unit sent out	:	267.00 MU
Total unit sold	:	216.00 MU
T&D loss	:	19.39%
No. of site offices	:	42 Nos.
No. of villages electrified	:	341 Nos.
No. of Households electrified	:	92,160 Nos.

POWER GROWTH IN A&N ISLANDS

Year	Power Houses (Nos.)	Total Capacity (MW)	Generation (MU)	Per Capita Consumption (Kwh)
1951	1	1.10	0.50	16
1961	1	1.10	1.60	20
1971	10	3.00	4.30	27
1981	16	7.50	10.80	41
1991	32	15.70	51.90	113
2001	34	44.00	118.60	250
2004	37	65.05	158.00	278
2005	38	65.25	168.00	272
2006	42	66.86	183.00	309
2009	43	68.46	201.00	458
2010	43	81.21	228.29	497
2011	43	83.71	241.38	492
2013	53	104.65	275.00	549

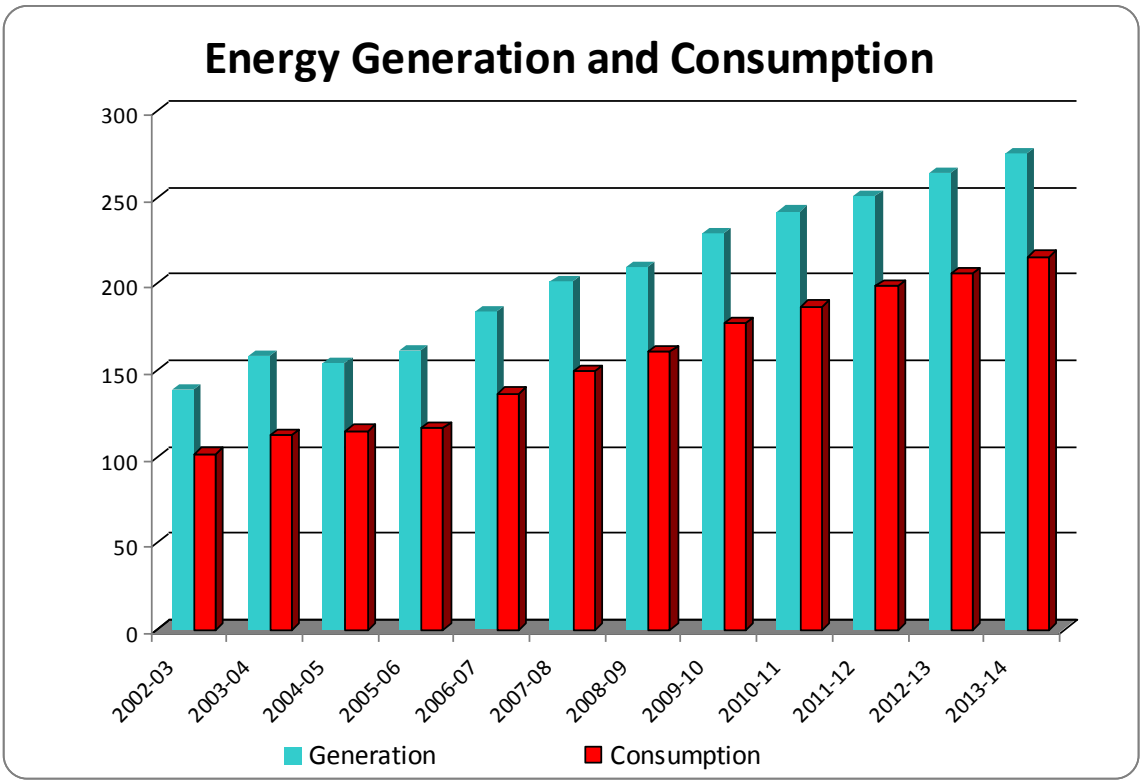
GROWTH IN PEAK DEMAND IN A & N ISLANDS

Year	MW
2002-2003	31
2003-2004	33
2004-2005	34
2005-2006	36
2006-2007	38
2007-2008	38
2008-2009	40
2009-2010	42
2010-2011	44
2011-2012	46
2012-2013	48
2013-2014	55



ENERGY GENERATION AND CONSUMPTION IN A & N ISLANDS

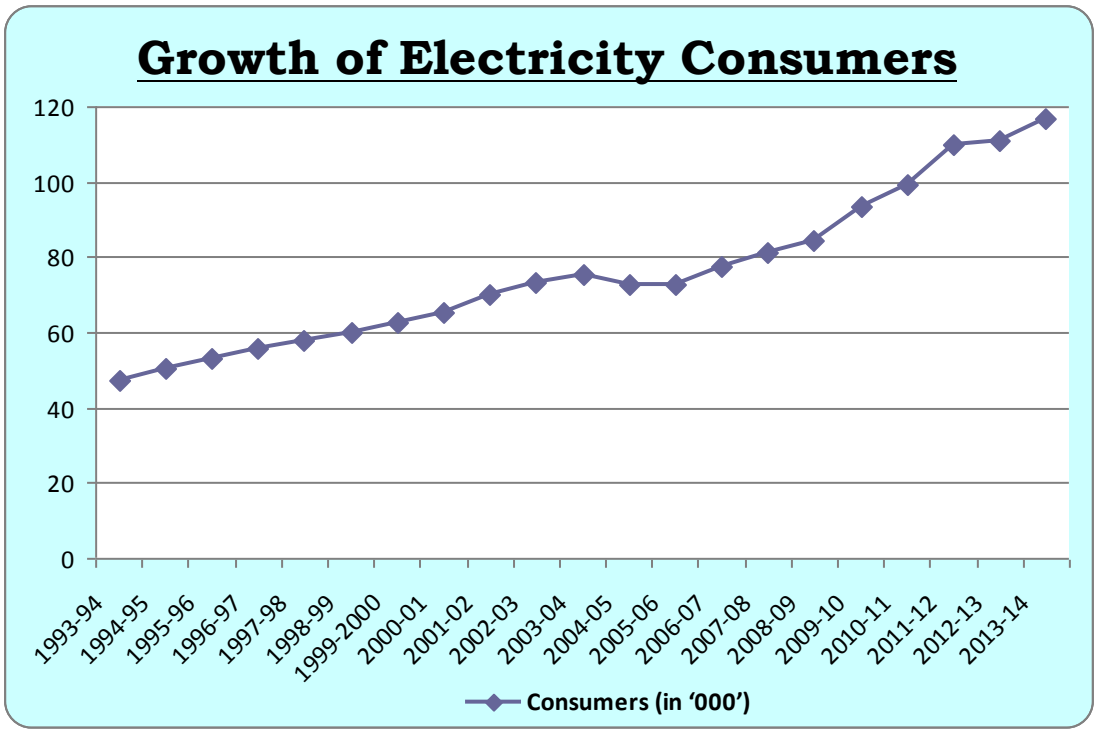
Year	Generation (MU)	Consumption (MU)
2002-2003	138.61	101.76
2003-2004	157.58	112.89
2004-2005	153.61	115.14
2005-2006	160.57	116.26
2006-2007	183.74	136.63
2007-2008	200.92	149.85
2008-2009	209.36	160.47
2009-2010	228.29	176.89
2010-2011	241.37	187.00
2011-2012	250.35	198.61
2012-2013	263.30	206.35
2013-2014	274.97	215.71



GROWTH OF ELECTRICITY CONSUMERS IN A & N ISLANDS

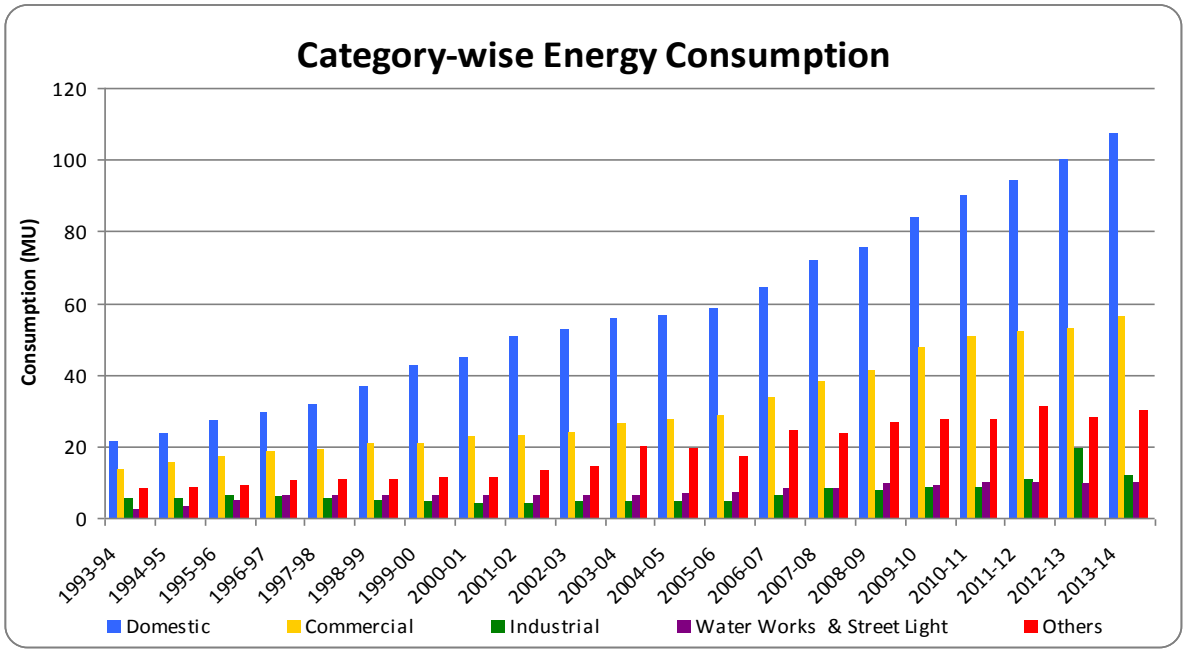
Year	Consumers (in '000')
1993-94	47.17
1994-95	50.26
1995-96	53.27
1996-97	55.75
1997-98	57.72
1998-99	59.83
1999-00	62.90
2000-01	65.19
2001-02	70.00
2002-03	73.50

Year	Consumers (in '000')
2003-04	75.46
2004-05	73.00
2005-06	73.00
2006-07	77.65
2007-08	80.99
2008-09	84.23
2009-10	93.22
2010-11	99.06
2011-12	110.00
2012-13	112.47
2013-14	117.05



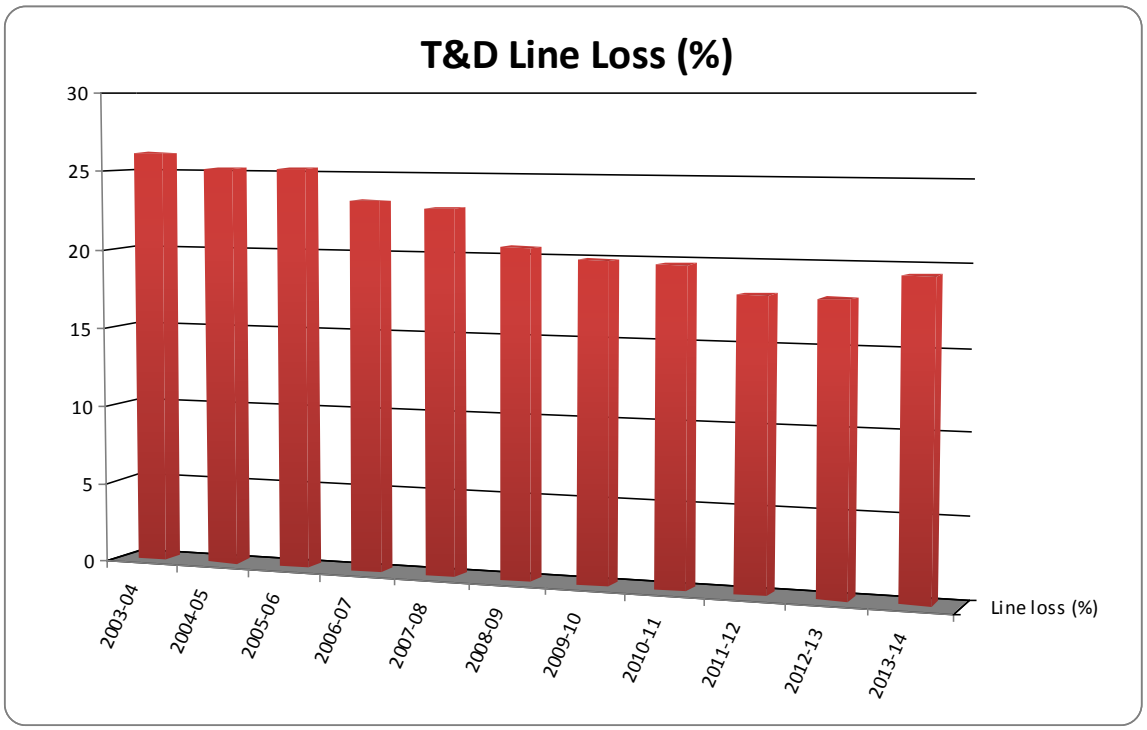
CATEGORYWISE ENERGY CONSUMPTION (MU)

Year	Domestic	Commercial	Industrial	Water Works & Street Light	Others	Total
1993-94	21.46	13.75	5.48	2.37	7.98	51.04
1994-95	23.34	15.38	5.52	3.15	8.7	56.09
1995-96	26.96	17.39	6.34	4.91	9.09	64.69
1996-97	29.29	18.70	5.83	6.39	10.29	70.50
1997-98	31.82	19.13	5.58	6.27	10.73	73.53
1998-99	36.72	20.78	5.09	6.28	10.73	79.60
1999-00	42.53	20.85	4.71	6.38	11.43	86.90
2000-01	44.67	22.76	4.24	6.18	11.24	89.10
2001-02	50.54	22.92	4.29	6.45	13.19	97.40
2002-03	52.34	23.93	4.53	6.37	14.59	101.76
2003-04	55.48	26.33	4.36	6.55	20.15	112.87
2004-05	56.54	27.44	4.66	6.84	19.63	115.14
2005-06	58.51	28.74	4.58	7.29	17.13	116.25
2006-07	64.46	33.33	6.15	8.19	24.50	136.63
2007-08	72.15	37.85	8.03	8.07	23.70	149.80
2008-09	75.48	41.24	7.68	9.31	26.76	160.47
2009-10	83.96	47.44	8.72	9.10	27.68	176.90
2010-11	90.20	52.17	8.64	9.98	26.02	187.01
2011-12	93.98	54.02	10.89	10.16	29.57	198.62
2012-13	101.36	55.21	11.17	9.63	28.98	206.35
2013-14	107.38	56.21	11.97	10.11	30.04	215.71



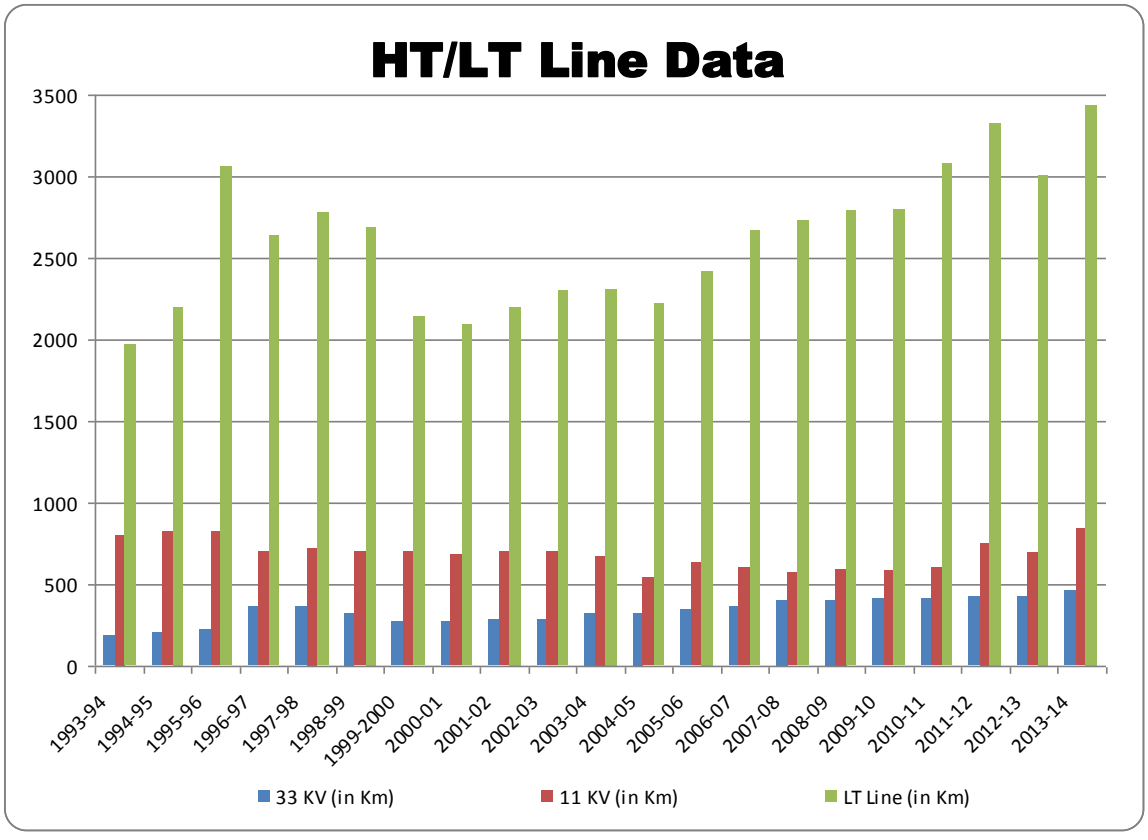
TREND OF T & D LOSSES IN A & N ISLANDS

Year	Line loss (%)
2003-04	26.14
2004-05	25.20
2005-06	25.23
2006-07	23.28
2007-08	22.91
2008-09	20.59
2009-10	19.89
2010-11	19.74
2011-12	18.03
2012-13	19.18
2013-14	19.39



HT/LT LINE DATA IN A & N ISLANDS

Year	33 KV (in Km)	11 KV (in Km)	LT Line (in Km)
1993-94	184.32	798.25	1973.78
1994-95	201.52	816.86	2198.31
1995-96	215.02	816.86	3063.24
1996-97	355.31	704.10	2638.97
1997-98	363.24	721.01	2784.63
1998-99	322.23	701.20	2691.38
1999-2000	272.43	695.83	2138.44
2000-01	267.08	678.40	2094.59
2001-02	277.66	695.48	2195.78
2002-03	282.23	701.35	2300.89
2003-04	320.79	670.95	2310.39
2004-05	320.14	539.09	2219.90
2005-06	338.77	628.54	2419.68
2006-07	361.59	600.46	2665.30
2007-08	400.63	571.53	2727.05
2008-09	401.53	586.11	2791.34
2009-10	408.13	581.27	2797.02
2010-11	408.16	604.01	3077.33
2011-12	422.82	747.71	3330.98
2012-13	423.22	691.66	3010.20
2013-14	458.32	836.13	3439.51



1.7 JERC Formation

In exercise of the powers conferred by the Electricity Act 2003, the Central Government constituted a Joint Electricity Regulatory Commission for all Union Territories to be known as "Joint Electricity Regulatory Commission for Union Territories" as notified on 2nd May 2005. Later with the joining of the State of Goa, the Commission came to be known as "Joint Electricity Regulatory Commission for the State of Goa and Union Territories" as notified on 30th May 2008.

The Hon'ble Commission is a two-member body designated to function as an autonomous authority responsible for regulation of the power sector in the State of Goa and Union Territories of Andaman & Nicobar, Lakshadweep, Chandigarh, Daman & Diu, Dadra Nagar & Haveli and Puducherry. The powers and the functions' of the Hon'ble Commission are as prescribed in the Electricity Act 2003. The Head Office of the Commission presently is located in the district town of Gurgaon, Haryana and falls in the National Capital Region.

The Joint Electricity Regulatory Commission for the State of Goa and Union Territories started to function with effect from August 2008 with the objectives and purposes for which the Commission has been established. Presently the Hon'ble Commission is framing various regulations as mandated in the Electricity Act 2003 to facilitate its functioning. Some of the Regulations notified by the Hon'ble Commission include the following:

- JERC Conduct of Business Regulations 2009;
- JERC Establishment of Forum for Redressal of Grievances of Consumers Regulations 2009;
- JERC Appointment and Functioning of Ombudsman Regulations 2009;
- JERC Recruitment, Control and Service Conditions of Officers and Staff Regulations 2009;
- JERC Treatment of other businesses of Transmission Licensees and Distribution Licensees Regulations, 2009.
- JERC Standard of Performance Regulations, 2009.
- JERC State Advisory Committee Regulations, 2009.
- JERC Appointment of Consultants Regulation, 2009.
- JERC Open Access in Transmission and Distribution Regulations, 2009.
- JERC Terms and condition for determination of Tariff Regulation 2009.
  (a) Addition / insertion of Clause 7(3) after 7(2)
  (b) Corrigendum

- JERC Electricity Supply Code Regulations 2010
  (a) 1st Amendments
  (b) 2nd Amendments
  (c) Corrigendum dt. 6th Jan. 2014
- JERC State Grid Code Regulations 2010
- JERC Electricity Trading Regulations 2010
- JERC Procurement of Renewal Energy Regulations 2010
- JERC (Distribution Code) Regulations 2010
- JERC (Procedure for filling Appeal before the Appellate Authority) Regulations 2013
- JERC for the State of Goa and Union Territories (Multi Year Distribution Tariff) Regulations, 2014.

1.8 Multi Year Distribution Tariff Regulations, 2014

EDA&N's tariff determination is now governed by "Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Multi Year Distribution Tariff) Regulations, 2014" (referred to as "MYT Regulations, 2014") which came into force from 30.06.2014. The MYT Regulations, 2014 provide a framework for calculating tariffs on a cost-plus basis initially for a period of three years and allow the licensee to recover operational expenses including depreciation, interest on working capital and debt,

and return on equity amongst others. The MYT Regulations, 2014 segregate the items impacting tariffs into controllable and uncontrollable factors. Items that are uncontrollable are passed through to the consumers. Further, the MYT Regulations, 2014 identifies the uncontrollable and controllable parameters as follows:

1.8.1 Uncontrollable factors

The "uncontrollable factors" comprises of the following factors:

(a) Force Majeure events, such as acts of war, fire, natural calamities, etc. (b) Change in law;
(c) Taxes and Duties;
(d) Variation in sales; and
(e) Variation in the cost of power generation and/or power purchase due to the circumstances specified in these Regulations;

1.8.2 Controllable factors

Controllable factors include, but are not limited to the following:

(a) Variations in capital expenditure on account of time and/or cost overruns/ efficiencies in the implementation of a capital expenditure project not attributable to an approved change in scope of such project, change in statutory levies or force majeure events;

(b) Variations in Transmission and Distribution Losses (T&D) losses in case of bundled utilities and Distribution losses in case of un-bundled utilities which shall be measured as the difference between the units input into the distribution system and the units supplied and billed.

(c) Depreciation and working capital requirements

(d) Failure to meet the standards specified in the Joint Electricity Regulatory Commission (Standards of Performance) Regulations, 2009 except where exempted;

(e) Variation in operation & maintenance expenses, except those attributable to directions of the Commission.

(f) Variation in Wires Availability and Supply availability.

(g) Variation on account of inflation.

1.9 Filing of Business Plan for 3 year MYT Control Period from FY 2015-16 to 2017-18

EDA&N hereby submits its Business Plan for approval of Multi Year Tariff for the first control period i.e. FY 2015-16, 2016-17 and 2017-18. This Plan is being submitted in compliance with the provisions of MYT Regulations, 2014. The petitioner has attempted to comply with the various guidelines in the Act and regulations within the limitations of availability of data.

2. OVERALL APPROACH FOR PRESENT FILING

2.1 Business Plan for 3 year MYT Control Period from FY 2015-16 to 2017-18

EDA&N hereby submits its Business Plan for approval of Multi Year Tariff for the first control period i.e. FY 2015-16, 2016-17 and 2017-18. This Plan is being submitted in compliance with the provisions of MYT Regulations, 2014. The petitioner has attempted to comply with the various guidelines in the Act and regulations within the limitations of availability of data

EDA&N is filing the Business Plan based on the past performance and expected changes in each element of cost and revenue for the ensuing year. EDA&N has studied the past trends and taken cognisance of other internal and external developments to estimate the likely performance during the control period i.e. FY 2015-16, 2016-17 and 2017-18.

2.2 Approach for the Filing

The subsequent sections provide projection for various expenses, the proposed investment plan for the control period and the expected revenue projections.

Projections of various cost components required for determination of Aggregate Revenue Requirement along with the rationale for estimation of such cost, the philosophy adopted by EDA&N for projecting sales, number of consumers and power generation &purchase cost for the control period has been covered in various sections.

For the purpose of projecting the financial & technical parameters, EDA&N has considered its actual performance during FY 2012-13, FY 2013-14 and FY 2014-15(H1) as base and has projected the figures for the control period with supporting rationales.

3. AGGREGATE REVENUE REQUIREMENT FOR CONTROL PERIOD I.E. FY 2015-16, 2016-17 AND 2017-18.

This section outlines the Aggregate Revenue Requirement of the EDA&N for control period i.e. FY 2015-16, 2016-17 AND 2017-18, which takes into consideration:

i. Actual Performance in FY 2012-13;
ii. Actual Performance in FY 2013-14;
iii. Estimated Performance for FY 2014-15 based on the Actual performance for the period 01.04.2014 to 30.09.2014;

iv. Projection based on the Actual performance in FY 2012-13 & 2013-14 and estimated performance in FY 2014-15;
v. Principles outlined in Tariff Regulations of JERC.

Past trends have been taken into cognisance in case of certain elements as deemed necessary. The present section has been structured in the following manner:

- Determination of Energy Requirement
  - Sales Projections
  - Loss Trajectory
  - Energy Balance

- Proposed Capital Expenditure and capitalization
  - Scheme wise details
    - Capital Expenditure
    - Asset Capitalisation

- Determination of the Aggregate Revenue Requirement
  - Power Generation/Purchase Costs
  - Transmission Charges
  - Operation and Maintenance Expenses
  - Depreciation
  - Interest charges (including interest on working capital)
  - Return on NFA
  - Provision for Bad and Doubtful Debts
  - Return on Equity

4.1 Energy Requirement

The energy requirement of the license area is determined based on the expected sales in the area during the period under consideration and the expected distribution losses in the network. Accordingly, the energy requirement projected by the EDA&N for the control period i.e. FY 2015-16, 2016-17 AND 2017-18 is as given in the succeeding paragraphs.

4.1.1 Approach for Sales Projection

The consumer base of EDA&N consists of Domestic, Commercial and Industry, consumers. Sales mix is primarily dominated by Domestic consumers, followed by Commercial consumers. The total consumption of Domestic consumers is approximate 50 percent and Commercial consumers contribute to around 26 percent of total sales. Thus, the sales forecast would completely depend on the sales expected in the Domestic & Commercial Category.

The sales forecast is based on the trends observed in the sales pattern of various categories over the past years, new developments on account of Government Policies, Socio economic changes, industrial growth etc. that would affect consumption across various categories of consumers. The CAGR (%) for period of five years (FY 2013-14 over FY 2009-10) for different categories has been adopted for estimating the energy sales for the FY 2014-15 & for projecting the energy sales for the control period i.e. FY 2015-16, 2016-17 AND 2017-18. Energy sales towards temporary connections has been added to commercial category as it is observed that temporary connection are predominantly availed for commercial purposes. Consumption in temporary connection category in 2013-14 was 0.72MUs. The same has been projected for the year FY 2014-15, 2015-16, 2016-17 AND 2017-18 as CAGR for the category reflected abnormal growth trend. In addition to this, the growth trend in number of consumers and connected load have been taken as guiding factors in arriving at the requirement of demand and energy.

4.1.2 Category wise Sales Forecast

Based on the methodology outlined above, the projected energy sales of various categories of consumers FY 2015-16, 2016-17 AND 2017-18 are given below:

Table 4.1: Projected Energy Sales – FY 2015-16, 2016-17 AND 2017-18

Category	Sales in MU's					Assumed Growth Rate for FY 2014-15 &FY 2017-18	FY 2014-15 Estimated	FY 2015-16 Projected	FY 2016-17 Projected	FY 2017-18 Projected
	FY 2009-10 Actuals	FY 2010-11 Actuals	FY 2011-12 Actuals	FY 2012-13 Actuals	FY 2013-14 Actuals					
Domestic	83.96	90.2	93.98	101.36	107.38	5.04%	112.80	118.49	124.47	130.74
Commercial	49.12	52.17	54.02	55.22	56.93	3.13%	58.69	60.50	62.37	64.30
Industry	8.72	8.64	10.89	11.17	11.97	6.55%	12.76	13.59	14.48	15.43
Bulk	25.99	26.02	29.57	28.98	29.32	2.44%	30.03	30.77	31.52	32.28
Public Lighting	8.36	9.15	9.26	8.72	9.24	2.02%	9.42	9.61	9.81	10.00
Irrigation, Pumps & Agriculture	0.74	0.83	0.90	0.91	0.87	3.35%	0.90	0.93	0.96	1.00
Total	176.89	187.01	198.62	206.35	215.71		224.60	233.89	243.61	253.76

4.1.3 Number of Consumers

The forecast of number of consumers is based on the trends observed in the connections pattern of various categories over the past years, new developments on account of Government Policies, Socio economic changes, industrial growth, etc. that would affect consumption across various categories of consumers. The CAGR (%) for period of five years (FY 2013-14 over FY 2009-10) for different categories has been adopted for estimating the number of consumers for the FY 2014-15 & for projection for the control period i.e. FY 2015-16, 2016-17 AND 2017-18. However, normalization has been undertaken for certain categories where an abnormal

rise or reduction has been observed. Temporary Connections has been added to commercial category as it is observed that temporary connections are predominantly availed for commercial purposes. The number of consumers estimated for the FY 2015-16, 2016-17 AND 2017-18 are tabulated below:

Table 4.2: No. of Consumers – FY 2015-16, 2016-17 AND 2017-18

Category	Number of Consumers									
	FY 2009-10 Actuals	FY 2010-11 Actuals	FY 2011-12 Actuals	FY 2012-13 Actuals	FY 2013-14 Actuals	% Increase	FY 2014-15 Estimated	FY 2015-16 Projected	FY 2016-17 Projected	FY 2017-18 Projected
Domestic	76479	81741	91843	93757	97738	5.03%	102652	107813	113234	118927
Commercial	15626	16131	16822	17291	17885	2.27%	18257	18664	19079	19504
Industry	461	457	493	501	514	2.20%	525	537	549	561
Bulk	44	48	55	56	57	5.31%	60	63	67	70
Public Lighting	434	505	552	649	626	7.60%	674	725	780	839
Irrigation, Pumps & Agriculture	177	186	237	218	226	5.01%	237	249	262	275
Total	**92660**	**98070**	**110002**	**112472**	**117046**		**122406**	**128051**	**133970**	**140176**

4.1.4 Distribution Losses

EDA&N has been trying to reduce the distribution losses during recent years. EDA&N submits that the system improvement works executed every year under the plan schemes have also contributed to the reduction of distribution losses. However, it may also be noted that reduction of distribution losses may not be possible beyond a certain level due to topographical conditions and technical limitations. The distribution losses in the EDA&N distribution network have been in the range of approximately 18% to 20% in the past. For the purpose of FY 2015-16, 2016-17 AND 2017-18, the losses have been retained at 17%.

4.1.5 Energy Requirement & Sources of Power Purchase

Accordingly, the energy requirement for EDA&N is estimated based on the retail sales projections, grossed up by estimated loss levels. The energy balance expected for the FY 2015-16, 2016-17 AND 2017-18 is as given below:

Table 4.3: Energy Requirement – FY 2015-16, 2016-17 AND 2017-18

Energy Balance	FY 2013-14 (Estimates) MU's	FY 2014-2015 (Projected) MU's	FY 2015-2016 (Projected) MU's	FY 2016-2017 (Projected) MU's	FY 2017-2018 (Projected) MU's
ENERGY REQUIREMENT					
Energy Sales					
LT Supply	215.71	224.60	233.89	243.61	253.76
HT Supply	0	0	0	0	0
Total Energy Sales	215.71	224.60	233.89	243.61	253.76
Overall T & D Losses %	**19.39**	**17.00**	**17.00**	**17.00**	**17.00**
Overall T & D Losses (MUs)	51.91	46.00	47.91	49.90	51.98
Total Energy Requirement	**267.62**	**270.60**	**281.80**	**293.50**	**305.74**
ENERGY AVAILABILITY AT PERIPHERY					
Power Purchase	169.47	169.47	169.47	169.47	169.47
Own Generation	98.15	101.14	112.33	124.03	136.27
Total Energy Availability	**267.62**	**270.60**	**281.80**	**293.50**	**305.74**
ENERGY SURPLUS/(GAP)	**NIL**	**NIL**	**NIL**	**NIL**	**NIL**

The energy requirement of EDA&N is mainly met from own generation and power purchase from IPP (M/s Surya Chakra Corporation Limited), HPPs & NTPC(SPV).There is no availability of power from Central Generating Stations or from other sources/ open market/ power exchanges etc. Own generation accounts for around 46.56% & 36.68% of the total power requirement for FY 2012-13 & 2013-14 respectively and power purchase accounts for around 53.44% & 63.32% of the total power requirement for 2012-13 & 2013-14 respectively and is estimated that approximately 37.37% & 62.63% of the total energy requirement for FY 2014-15 shall be met by own generation and power purchase respectively. The present scenario is likely to continue and is projected that energy requirement for FY 2015-16, 2016-17 AND 2017-18 and mix of own generation and power purchase shall be in approximately in the ratio of 45 : 55.

The expected power generation/procurement sources for FY 2015-16, 2016-17 AND 2017-18 are provided in the table below.

Table 4.4: Details of Power Procurement Sources – FY 2015-16, 2016-17 AND 2017-18

Energy Balance	FY 2013-14 (Actual) MU's	FY 2014-15 (Estimated) MU's	FY 2015-16 (Projected) MU's	FY 2016-17 (Projected) MU's	FY 2017-18 (Projected) MU's
Power Purchase	169.47	169.47	169.47	169.47	169.47
Own Generation	98.15	101.14	112.33	124.03	136.27
Total	**267.62**	**270.60**	**281.80**	**293.50**	**305.74**

The estimated cost for such power purchases has been discussed in subsequent sections.

4.2 Capital Expenditure & Capitalisation

EDA&N has undertaken significant capital expenditure during FY 2013-14 & FY 2014-15 and has plans to implement schemes for development of infrastructure during FY 2015-16, 2016-17 AND 2017-18. The infrastructure inherited by EDA&N is insufficient to cater to the present load and hence to meet the increasing demand, capital expenditure is absolutely necessary.

The objective of incurring the capital expenditure is to continue the up-gradation and strengthening of the distribution network to meet the desirable standards of performance and provide better network reliability and sustainable performance to the consumers of EDA&N.

The capital expenditure plan envisaged will also assist in reducing system losses. EDA&N proposes to incur the capital expenditure of Rs.66.41 Crores for FY 2014-15. Out of total capital expenditure of Rs. 66.41 Crores, approximately Rs. 20.00 Crores are to be capitalized during the FY-2014-15.The details of the capital expenditure schemes proposed in FY 2014-15 are outlined in Format-5.

Further, estimated capital expenditure for FY 2015-16, 2016-17 AND 2017-18 is Rs.83.10 Crores, Rs. 90.50 Crores & Rs.99.00 Crores respectively. The summary of the proposed capital expenditure and capitalisation is outlined below:

Table 4.5: Summary of Proposed Capital Expenditure & Capitalisation FY 2015-16, 2016-17 AND 2017-18

(Rs. in crores)

Sr. No.	Particulars	2013-14 (actual)	2014-15 (Estimated)	2015-16 (projections)	2016-17 (projections)	2017-18 (projections)
1	**2**	**3**	**4**	**5**	**6**	**7**
1	Opening balance	354.87	425.63	400.44	415.31	425.56
2	Add: New investments	82.05	66.41	83.10	90.50	99.00
3	**Total**	**436.92**	**492.04**	**483.54**	**505.81**	**524.56**
4	Less investment capitalized	11.29	91.59	68.23	80.25	88.65
5	Closing balance	425.63	400.45	415.31	425.56	435.91

4.3 Aggregate Revenue Requirement for EDA&N

Based on the provisions of the Tariff Regulations, the estimate for the Aggregate Revenue Requirement (ARR) would consist of the following elements:

- Power Generation/Purchase Costs
- Transmission Charges
- Operation and Maintenance Expenses
- Depreciation
- Interest charges (including interest on working capital)
- Return on NFA
- Provision for Bad and Doubtful Debts
- Return on Equity

The above Aggregate Revenue Requirement is netted off for Non-Tariff Income for determining the net ARR for EDA&N.

4.3.1 Power Purchase

4.3.1.1 Source of Power

EDA&N has 53 own generating stations and meets around 40%-45%of its total energy requirement from own generation. Balance requirement of power is met from purchase from IPP (SPCL), HPPs & NTPC (SPV). The present power availability of EDA&N is as listed below:

Table 4.6: Power Availability

Generating Station	Purchase of Power (MW)	Own generation (MW)	Total Availability (MW)
Purchase			
IPP (SPCL)	20		20
HPP- I	5		5
HPP-II	10		10
NTPC (SPV)	5		5
HPP - Others	1.23		1.23
Own Generation			
Diesel		58.17	58.17
Hydro		5.25	5.25
Solar		0.00	0.00
Total	**41.23**	**63.42**	**104.65**

4.3.2 Assumption for Power Generation/Purchase Projection

The merit order dispatch principles are typically adopted when determining the power purchases from various generating stations. However, in the present case there are limited sources of purchase of power and 100% of the generation is available to EDA&N. Accordingly, EDA&N has considered utilization /purchase of the entire power available from all the possible sources during FY 2015-16, 2016-17 AND 2017-18 to meet the demand to the extent possible.

Power Purchase cost is a function of the energy requirement and price of available power from the different sources for meeting the energy requirement. The energy requirement of EDA&N for FY 2015-16, 2016-17 AND 2017-18 is proposed to be met from own generation & power purchase from sources as detailed above.

EDA&N has projected the quantum of power generation from own generating stations based on the units generated for the FY2012-13 & 2013-14. The details of the computation of power generation and purchases are provided below:

Considering the above the Hon'ble Commission is requested to allow the power purchase costs as estimated by EDA&N for FY 2015-16, 2016-17 AND 2017-18:

Table 4.7.1: Summary of EDA&N Power Purchase Expenses for FY 2014-15

Source	Purchase (MU)	Pool losses	Energy recd. by Licensee (MU)	FC (Rs. crores)	VC (Rs.crore)	Others (Rs. crore)	Total (Rs.crore)	Avg. cost (Rs./unit)
IPP (SPCL)	94.13	0	94.13	16.30	131.19	0.00	147.50	15.67
HPP- I	2.65	0	2.65	0.36	4.06	0.00	4.43	16.71
HPP-II	69.39	0	69.39	9.59	106.45	0.00	116.03	16.72
(SPV) NTPC	6.48	0	6.48	0.00	5.03	0.00	5.03	7.76
Others	4.48		4.48	1.69	6.87	0.00	8.56	19.12
Total	**177.12**	**0.00**	**177.12**	**27.95**	**253.60**	**0.00**	**281.55**	**15.90**

Table 4.7.2: Summary of EDA&N Power Purchase Expenses for FY 2015-16

Source	Purchase (MU)	Pool losses	Energy recd. by Licensee (MU)	FC (Rs. crores)	VC (Rs.crore)	Others (Rs. crore)	Total (Rs.crore)	Avg. cost (Rs./unit)
IPP (SPCL)	94.13	0	94.13	17.12	137.75	0.00	154.87	16.45
HPP- I	2.65	0	2.65	0.36	4.27	0.00	4.63	17.48
HPP-II	69.39	0	69.39	9.59	111.77	0.00	121.36	17.49
(SPV) NTPC	6.48	0	6.48	0.00	5.03	0.00	5.03	7.76
Others	4.48		4.48	1.69	7.21	0.00	8.91	19.89
Total	**177.12**	**0.00**	**177.12**	**28.76**	**266.03**	**0.00**	**294.79**	**16.64**

Table 4.7.3: Summary of EDA&N Power Purchase Expenses for FY 2016-17

Source	Purchase (MU)	Pool losses	Energy recd. by Licensee (MU)	FC (Rs. crores)	VC (Rs.crore)	Others (Rs. crore)	Total (Rs.crore)	Avg. cost (Rs./unit)
IPP (SPCL)	94.13	0	94.13	17.97	144.64	0.00	162.61	17.28
HPP- I	2.65	0	2.65	0.36	4.48	0.00	4.84	18.28
HPP-II	69.39	0	69.39	10.55	117.36	0.00	127.90	18.43
(SPV) NTPC	6.48	0	6.48	0.00	5.03	0.00	5.03	7.76
Others	4.48		4.48	1.69	7.57	0.00	9.27	20.69
Total	**177.12**	**0.00**	**177.12**	**30.58**	**279.08**	**0.00**	**309.66**	**17.48**

Table 4.7.4: Summary of EDA&N Power Purchase Expenses for FY 2017-18

Source	Purchase (MU)	Pool losses	Energy recd. by Licensee (MU)	FC (Rs. crores)	VC (Rs.crore)	Others (Rs. crore)	Total (Rs.crore)	Avg. cost (Rs./unit)
IPP (SPCL)	94.13	0	94.13	18.87	151.87	0.00	170.75	18.14
HPP- I	2.65	0	2.65	0.36	4.70	0.00	5.07	19.13
HPP-II	69.39	0	69.39	10.55	123.23	0.00	133.77	19.28
(SPV) NTPC	6.48	0	6.48	0.00	5.03	0.00	5.03	7.76
Others	4.48		4.48	1.69	7.95	0.00	9.64	21.54
Total	**177.12**	**0.00**	**177.12**	**31.47**	**292.78**	**0.00**	**324.26**	**18.31**

4.3.3 Details Own Generation

Details own Generating Stations with Installed Capacity and type of plants provided as **Annexure -2**

Summary of units generated

The Generation forecast is based on the plant availability and energy demand for the period. Accordingly generation for FY 2014-15, FY 2015-16, 2016-17 AND 2017-18 is estimated.

Table 4.8: Projected Power Generation– FY 2015-16, 2016-17 AND 2017-18

Units Generated & Sent Out (MUs)									
	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
Units Generated	94.28	99.24	109.41	123.29	102.19	106.92	118.49	130.58	143.23
Auxiliary Consumption	3.57	4.14	4.05	4.42	4.04	5.78	6.16	6.55	6.96
Sent Out	90.72	95.09	105.36	118.87	98.15	101.14	112.33	124.03	136.27

4.3.4 Cost of Fuel:

Out of total own generation of 102.19 MUs in FY 2013-14, 89.77 MUs were generated from Diesel power houses and only12.42 MUs were generated from Hydro Power Station. Hence, cost of fuel (HSD and lubricants) is a major component of the cost of generation. Details of cost of fuel are provided below:

Table 4.9

Rs. In Crores.

Cost of Fuel					
Type of Fuel	FY 2013-14 (Actual)	FY 2014-15 (Estimated)	FY 2015-16 (Projected)	FY 2016-17 (Projected)	FY 2017-18 (Projected)
HSD	162.07	178.04	207.17	239.73	276.10
Lubricant	2.29	2.51	2.92	3.38	3.90
Total	164.36	180.55	210.09	243.12	279.99

Cost of fuel for FY 2014-15 has been arrived at by taking actual rate of fuel cost for the period April to September, 2014 and at the rates for the month of October, 2014 for the period October to March, 2014. Cost of fuel for FY 2015-16, 2016-17 AND 2017-18 has been projected by escalating per unit cost of fuel for FY 2014-15 YOY by 5%.

Considering the above, the Hon'ble Commission is requested to allow the cost of fuel as estimated by EDA&N for FY 2015-16, 2016-17 AND 2017-18.

4.3.5 Transmission and Other Charges

There are no separate transmission charges as the transmission and distribution system is being operated& maintained by EDA&N and same is included in operation and maintenance cost. Details of Transmission & Distribution system is provided in the table below:

Table 4.10

Line Data for the year 2013-14	
Category	KM
HT Line	
33 KV	458
11KV	836
Sub Total	1294
LT Line	
415 KV	3440
Sub Total	3440
Total	4734

Table 4.11

Details of Transformers as on 31.03.2014	
Category	Nos.
Power Transformer	28
Distribution Transformer	864

4.4 Operation and Maintenance Expenses

Operation & Maintenance expenses comprise of the following heads of expenditure viz.

- Employee Expenses
- Administration & General Expenses
- Repairs & Maintenance Expenses

O&M expenses for past few years are provided as under:

Table 4.12: O&M Expenditure – Past Trend

Year	O&M Expenses (Rs. Crores)
2006-2007	57.1
2007-2008	60.7
2008-2009	63.9
2009-2010	68.7
2010-2011	71.6
2011-2012	78.26
2012-2013	86.86
2013-2014	98.87
2014-2015	104.79
2015-2016	111.05
2016-2017	117.69
2017-2018	124.73

4.4.1 Employee Expenses

The expense head of employee cost consists of salary and allowance, bonus, Leave Travel Concession (LTC) & Honorarium etc. EDA&N has projected the employee cost as Rs.68.36 crores, Rs.72.45 crores & Rs.76.78 crores for FY 2015-16, 2016-17 AND 2017-18 respectively taking into consideration increase in the basic salary and related other remunerations at the rate of 5.98% i.e. (WPI from 2012-13 to 2013-14) over cost for the year 2013-14.It is therefore kindly requested that Hon'ble Commission may approve the employee expenses as projected.

4.4.2 Administration and General Expenses

A&G expenses comprise of the following broad subheads of expenditure, viz.

- Domestic Travelling Expenses
- Office Expenses
- Legal, Regulatory & Consultancy Fees
- Insurance etc.

The A&G expenses of EDA&N for FY 2013-14 are Rs. 1.23 crores. A&G expenses for the FY 2014-15 is estimated at Rs. 1.30 crores which are escalated by 5.98%i.e (WPI from 2012-13 to 2013-14) to arrive at the A&G expenses of Rs. 1.38 crores, Rs. 1.46 crores & Rs. 1.55 crores for the FY 2015-16, 2016-17 AND 2017-18 respectively. It is therefore kindly requested to Hon'ble Commission to approve the A&G expenses of as proposed. The escalation is to absorb the normal inflationary increases in the costs.

Table 4.13: A&G Expenditure – Past Trend

Year	A&G Expenses (Rs. Crores)
2006-2007	1.60
2007-2008	1.69
2008-2009	1.71
2009-2010	1.88
2010-2011	2.02
2011-2012	2.20
2012-2013	2.25
2013-2014	1.23
2014-2015	1.30
2015-2016	1.38
2016-2017	1.46
2017-2018	1.55

4.4.3 Repairs and Maintenance Expenses

EDA&N has been undertaking various Repairs and Maintenance activities as a step towards improvement of systems, reduction in breakdowns, reduction in response time and increasing preventive maintenance. The estimated R&M expenses for FY 2014-15 are escalated by 5.98% YOY to project the expenses for FY 2015-16, 2016-17 AND 2017-18 to capture the inflationary increases in the costs. It is requested to Hon'ble Commission to approve R&M expenses as proposed.

4.4.4 O&M Expenditure as a whole

The overall estimated O&M Expenditure for FY 2015-16, 2016-17 AND 2017-18 is tabulated below:

Table 4.14: O&M Expenditure – FY 2015-16, 2016-17 AND 2017-18

Rs. In Crores.

Particulars	FY 2014-15 Estimates	FY 2015-16 Estimates	FY 2016-17 Estimates	FY 2017-18 Estimates
Employee Expenses	64.50	68.36	72.45	76.78
A&G Expenses	1.30	1.38	1.46	1.55
R&M Expenses	38.98	41.31	43.79	46.40
O&M Expenditure	**104.79**	**111.05**	**117.69**	**124.73**

It is submitted that EDA&N is now gearing up for meeting the operational requirement of servicing existing and additional new consumers in line with the Standards of performance which the licensees have to adhere to. Hence there would be an increase in O&M expenditure to support full-fledged distribution business operations.

4.5 Gross Fixed Assets

It is submitted that opening value of gross fixed assets (GFA) for 2013-14 has been taken from the audited accounts for the FY 2011-12 and the same has been increased by addition of assets during the FY 2012-13 and FY 2013-14 & estimated addition during FY 2014-15. Thereafter, planned additions during 2015-16, 2016-17 AND 2017-18 have been considered and accordingly, GFA has been computed for FY 2015-16, 2016-17 AND 2017-18. The GFA movement is given in the table below:

Table 4.15: Gross Fixed Assets Movement

Financial Year	Opening Balance (Rs. Crores)	Addition during year (Rs. Crores)	Closing Balance (Rs. Crores)
FY2012-13	62.78	36.85	99.63
FY2013-14	99.63	11.29	110.92
FY2014-15	110.92	91.59	202.51
FY2015-16	202.51	68.23	270.74
FY2016-17	270.74	80.25	350.99
FY2017-18	350.99	88.65	439.64

4.6 Depreciation

The depreciation for FY 2013-14, FY2014-15, FY2015-16, 2016-17 AND 2017-18 is computed on the basis of rates outlined as under:

Table 4.16: Depreciation Rates

Assets	Dep. Rate
Plant & Machinery	5.28%
Buildings	3.34%
Vehicles	5.28%
Furniture	6.33%
Computer	5.28%

Depreciation has been calculated at the above rates on the average assets for the FY2015-16, 2016-17 AND 2017-18. Accordingly, the depreciation for the control period is depicted below:

Table 4.17.1: Depreciation – FY 2015-16

Particulars	Opening Assets (Rs. Crores	Addition during year (Rs. Crores)	Closing Assets (Rs. Crores)	Average Assets (Rs. Crores)	Depn Rates (%)	Depn Amount (Rs. Crores)
Plant and Machinery	149.79	62.28	212.07	180.93	5.28%	9.55
Buildings	42.87	4.90	47.77	45.32	3.34%	1.51
Vehicles	6.30	0.00	6.30	6.30	5.28%	0.33
Furniture and Fixtures	2.40	0.90	3.30	2.85	6.33%	0.18
Computer	1.15	0.15	1.30	1.22	5.28%	0.06
Total	**202.51**	**68.23**	270.74	236.62		**11.64**

Table 4.17.2: Depreciation – FY 2016-17

Particulars	Opening Assets (Rs. Crores	Addition during year (Rs. Crores)	Closing Assets (Rs. Crores)	Average Assets (Rs. Crores)	Depn Rates (%)	Depn Amount (Rs. Crores)
Plant and Machinery	212.07	73.70	285.77	248.92	5.28%	13.14
Buildings	47.77	5.40	53.17	50.47	3.34%	1.69
Vehicles	6.30	0.00	6.30	6.30	5.28%	0.33
Furniture and Fixtures	3.30	0.95	4.25	3.78	6.33%	0.24
Computer	1.30	0.20	1.50	1.40	5.28%	0.07
Total	**270.74**	**80.25**	**350.99**	**310.86**		**15.47**

Table 4.17.3: Depreciation – FY 2017-18

Particulars	Opening Assets (Rs. Crores	Addition during year (Rs. Crores)	Closing Assets (Rs. Crores)	Average Assets (Rs. Crores)	Depn Rates (%)	Depn Amount (Rs. Crores)
Plant and Machinery	285.77	81.40	367.17	326.47	5.28%	17.24
Buildings	53.17	6.00	59.17	56.17	3.34%	1.88
Vehicles	6.30	0.00	6.30	6.30	5.28%	0.33
Furniture and Fixtures	4.25	1.00	5.25	4.75	6.33%	0.30
Computer	1.50	0.25	1.75	1.62	5.28%	0.09
Total	**350.99**	**88.65**	**439.64**	**395.31**		**19.83**

4.7Capital Based Return

On the basis of JERC Regulation for determination of tariff, the capital based return has been computed as outlined below:

Table 4.18: Capital Base and Return

(Rs. In Crore)

Sr. No.	Particulars	Previous Year (Actuals)	Current Year (R.E)	Ensuing Year (Projection)	Ensuing Year (Projection)	Ensuing Year (Projection)
		2013-14	2014-15	2015-16	2016-17	2017-18
1	2	3	4	5	6	7
1	Gross block at beginning of the year	99.63	110.92	202.51	270.74	350.99
2	Less accumulated depreciation	6.45	11.31	18.82	30.46	45.94
3	Net block at beginning of the year	93.18	99.60	183.69	240.27	305.05
4	Less accumulated consumer contribution	0.00	0.00	0.00	0.00	0.00
5	Net fixed assets at beginning of the year	93.18	99.60	183.69	240.27	305.05
6	Reasonable return @3% of NFA	2.80	2.99	5.51	7.21	9.15

4.8 Interest and Financial Charges

The Interest costs have been estimated under following three heads:

- Interest on Debt/ Long term loans
- Interest on Working Capital
- Interest on Security Deposit

4.8.1 Interest on Loan/Debt

The EDA&N being a Government Department, the entire capital employed till date has been funded through equity infusion by the Central Government through budgetary support without any external borrowings. The interest on debt/loan has been calculated considering debt to be 70% of GFA. The details of interest calculation are detailed in the table below:

Table 4.19: Interest on Loan

(Rs. In Crore)

Sr. No	Particulars	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
1	2	3	4	5	6	7
1	Opening Normative Loan/WIP	64.67	69.22	126.82	165.36	209.84
2	Add: Normative Loan during the year/GFA during the year	7.90	64.11	47.76	56.18	62.06
3	Less: Normative Repayment allowed during previous years	4.39	10.86	17.78	30.47	47.00
4	Less: Normative Repayment for the year	6.47	6.92	12.68	16.54	20.98
5	Closing Normative Loan/ GFA	**66.10**	**126.41**	**161.90**	**205.00**	**250.91**
6	Average Normative Loan	**65.39**	**97.82**	**144.36**	**185.18**	**230.37**
7	Rate of Interest (@ SBI SBAR rate)	**14.45%**	**14.75%**	**14.75%**	**14.75%**	**14.75%**
8	Interest on Normative Loan	**9.45**	**14.43**	**21.29**	**27.31**	**33.98**

4.8.2 Interest on Working Capital

The EDA&N has computed the Interest on Working Capital for FY 2015-16, 2016-17 AND 2017-18 on normative basis. As per the JERC Tariff Regulations, for the purpose of computation of normative working capital and Interest on working capital, the components of working capital are as follows:

- Two month's fuel cost
- One month's power purchase cost
- One month's employee costs
- One month's administration &general expenses
- One month's R&M Cost

The rate of interest on working capital has been considered as per SBI Prime lending rate as on 1st April of the respective year, which is 14.45% as on 1st April 2014.

The interest on normative working capital for FY 2015-16, 2016-17 AND 2017-18 works out to Rs. 7.57 crores, Rs.8.24 crores & Rs. 8.96 crores respectively and is given in the table below:

Table 4.20: Interest on Working Capital

(Rs. In Crore)

Sr. No	Particulars	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
1	2	3	4	5	6	7
1	Fuel Cost for two months	13.70	15.05	17.51	20.26	23.33
2	Power Purchase Cost for one month	22.39	23.46	24.57	25.80	27.02
3	Employee Cost for one month	5.07	5.38	5.70	6.04	6.40
4	A&G Expenses for one month	0.10	0.11	0.11	0.12	0.13
5	R&M Expenses for one month	3.07	3.25	3.44	3.65	3.87
6	**Total Working Capital for one month**	44.33	47.24	51.33	55.87	60.75
7	**Security Deposit of Consumers**	0.00	0.00	0.00	0.00	0.00
8	**Net Working Cpital for one month after deducting security deposit considered by the Commission**	44.33	47.24	51.33	55.87	60.75
9	SBI PLR Rate	14.45%	14.75%	14.75%	14.75%	14.75%
10	Interest on Working Capital	6.41	6.97	7.57	8.24	8.96

The Hon'ble Commission is requested to kindly approve the interest on working capital as proposed.

4.8.3 Interest on Security Deposit

The Electricity Department collects deposits from consumers and contractors (as Earnest Money Deposit or security). While security deposit from consumers is taken at the time of providing the connection and has to be repaid to the consumers at the time of surrender of the connection; security deposit from contractors is adjusted subsequent to satisfactory completion of the contracted

work. These deposits are in the form of Fixed Deposits Receipts (FDR)/ Bank Guarantee and in case of FDR the interest is directly paid to the consumer. Hence, no interest on security deposits has been projected in the petition.

4.9 Provision for Bad and Doubtful Debts

EDA&N is not proposing any provision for bad debts of revenue from sale of power to the consumers. An exercise is being done to determine category wise bad debts and the same shall be claimed in future filings. Thus, for FY 2015-16, 2016-17 AND 2017-18 EDA&N has not projected provision for bad debts.

4.10 Return on Equity

EDA&N would like to submit that Distribution Business has always been perceived to be a business having a greater inherent risk than the Generation or Transmission Business due to various factors amongst which the direct interface with the retail consumers is the biggest risk. The same has been recognized by many Commissions across the country and they have proposed a higher rate of return on the equity invested in distribution business as compared to generation and transmission business. This has been demonstrated by the various Commissions by offering rate of return @16% for distribution business in their Tariff Regulations.

Debt: Equity norm of 70:30 and RoE of 16% for FY 2015-16, 2016-17 AND 2017-18 has been considered and accordingly, the return on equity is calculated as given below:

Table 4.21: Return on Equity – FY 2015-16, 2016-17 AND 2017-18

Sr. No.	Particulars	FY 2014-15 Estimates (Rs. Crores)	FY 2015-16 Estimates (Rs. Crores)	FY 2016-17 Estimates (Rs. Crores)	FY 2017-18 Estimates (Rs. Crores)
1	Opening Equity Amount	33.27	60.75	81.22	105.30
2	Equity Addition during year (30% of Capitalisation)	27.48	20.47	24.08	26.60
3	Closing Equity Amount	60.75	81.22	105.30	131.89
4	Average Equity Amount	47.01	70.99	93.26	118.59
5	Rate of Return on Equity	16.00%	16.00%	16.00%	16.00%
6	Return on Equity	7.52	11.36	14.92	18.97

4.11 Non-Tariff Income

Non-tariff income for the FY 2015-16, 2016-17 AND 2017-18 has been projected by escalating the estimated Non-tariff income of FY 2014-15 by 5% YOY. Accordingly, Non-tariff income for the FY 2015-16, 2016-17 AND 2017-18 has been calculated at Rs. 2.57 Crores, Rs. 2.70 Crores & Rs. 2.83 Crores respectively.

4.12 Aggregate Revenue Requirement

Based on the above estimates and projections, the ARR for EDA&N for FY 2015-16, 2016-17 AND 2017-18 works out as under:

Table 4.22: Annual Revenue Requirement

Sr. No	Particulars	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18
1	2	4	5	6	7	8
1	Cost of fuel	164.36	180.55	210.09	243.12	279.99
2	Cost of power purchase	268.69	281.55	294.79	309.66	324.26
3	Employee costs	60.86	64.50	68.36	72.45	76.78
4	R&M expenses	36.78	38.98	41.31	43.79	46.40
5	Administration and general expenses	1.23	1.30	1.38	1.46	1.55
6	Depreciation	4.87	7.51	11.64	15.47	19.83
7	Interest charges (including interest on working capital)	9.45	14.43	21.29	27.31	33.98
8	Return on NFA /Equity	6.41	6.97	7.57	8.24	8.96
9	Provision for Bad Debit	2.80	2.99	5.51	7.21	9.15
10	Total revenue requirement	0.00	0.00	0.00	0.00	0.00
11	Less: non tariff income	0.00	0.00	0.00	0.00	0.00
12	Net revenue requirement	555.43	598.77	661.96	728.70	800.91
13	Revenue from tariff	2.34	2.45	2.57	2.70	2.83
14	Gap (12-13)	0.00	0.00	0.00	0.00	0.00
15	Gap for ----------	0.00	0.00	0.00	0.00	0.00
16	**Total gap (14+15)**	553.09	596.32	659.38	726.00	798.07

P-17

Annexure – II

Details of Installed Capacity in A & N Islands

Sl. No.	Island	Power house Sl. No.	Particulars	Total Installed capacity			Power House wise installed capacity	Make	Date / Year of installation
				DG size	Qty.	Total			
				KW	Nos.	MW	MW		
1	2	3	4	5	6	7	8	9	10
1	South Andaman	1	IPP	5000	4	20.000	20.000	Mak - Catterpillar	Apr-03
		2	Chatham	2500	6	15.000	15.000	Bergen	02 Nos - February 1990 03 Nos - May 1991 01 No - August 2011
		3	Phoneix Bay	1000	2	2.000	8.000	Cummins	Deccember 1997
				1200	5	6.000			February 2005
		4	HPP - I	1000	5	5.000	5.000		May 2012
		5	HPP-II	1250	8	10.000	10.000		December 2012
		6	Raj Niwas	256	2	0.512	1.024	Cummins	April 1994
		7	Medical	256	1	0.256		Cummins	
		8	Secretarait	256	1	0.256		Cummins	
		9	G/Ch. SPV	5000	1	5.000	5.000		March 31st' 2013
2	Rutland	10	RutLand	12	1	0.012	0.024	Cummins	
		11	45 Acre*	12	1	0.012			July 2010
3	Neil	12	Neil	128	3	0.384	0.634	Greaves	February 2006
				100	2	0.200		Cummins	
				50	1	0.050			February 1994
4	Havelock	13	Havelock	256	5	1.280	1.730	Greaves	August 2003
				50	1	0.050			November 1993
				400	1	0.400		Greaves	
5	Little Andaman	14	Hutbay	250	1	0.250	5.650	Cummins	March 1992
				800	3	2.400			November 1998
				1000	3	3.000			July 2010
		15	Dugong Creek	16	2	0.032	0.047	Cummins	
				15	1	0.015		Greaves	
6	Strait Is.	16	Strait Island	15	1	0.015	0.015	Cummins	
South Andaman District					**61**	**72.124**	**72.124**		

P-18

Sl. No.	Island	Power house Sl. No.	Particulars	Total Installed capacity			Power House wise installed capacity	Make	Date / Year of installation
				DG size	Qty.	Total			
				KW	Nos.	MW	MW		
1	2	3	4	5	6	7	8	9	10
7	Baratang	17	Baratang	256	1	0.256	0.512	Cummins	
				256	1	0.256			
8	Middle Andaman	18	Rangat	800	4	3.200	10.036	Cummins	March 1992
				1000	5	5.000			March 2010
				248	7	1.736		Kirloskar	June 1986
				100	1	0.100		Cummins	
		19	Bangaon*	16	1	0.016	0.016		June 2008
		20	Hanspuri	12	1	0.012	0.027	Cummins	
				15	1	0.015			
		21	Long Island	128	4	0.512	0.892	Greaves	December 2003
				65	2	0.130			
				50	5	0.250		Ruston	
Middle Andaman					**33**	**11.483**	**11.483**		
9		22	Gandhinagar*	60	1	0.060	0.060		November 2012
		23	Ganesh Nagar	65	1	0.065	0.065		October 2012
		24	Shanti Nagar	65	1	0.065	0.065		October 2012
		25	Smith Island	40	1	0.040	0.040		November 2012
		26	Sita Nagar	256	3	0.768	2.368	Cummins	1987
				800	2	1.600			
		27	Mayabunder	1000	1	1.000	1.000		March 2013
		28	KHEP **	1750	3	5.250	5.250		August 2001
North Andaman					**13**	**8.848**	**8.848**		
Middle & North Andaman District					**46**	**20.331**	**20.331**		
10	Car Nicobar	29	Kinyuka NPH	1000	4	4.000	5.636	Cummins	June 2010
				100	1	0.100			
		30	Head Quarter	256	5	1.280		Greaves Cotton	March 1992
				128	2	0.256		Cummins	February 2005
		31	Kamorta	256	4	1.024		Cummins	

p-19

Sl. No.	Island	Power house Sl. No.	Particulars	Total Installed capacity			Power House wise installed capacity	Make	Date / Year of installation
				DG size	Qty.	Total			
				KW	Nos.	MW	MW		
1	2	3	4	5	6	7	8	9	10
11	Kamorta	32	Bunderkhari	12	1	0.012	1.236		October 2005
		33	Derring*	8	1	0.008			
				12	1	0.012			October 2003
		34	Alukheak*	6	1	0.006			May 2010
		35	Changua*	12	1	0.012			
				6	1	0.006			October 2003
		36	Munak*	24	1	0.024			
				12	1	0.012			
				8	1	0.008			April 2001
		37	Pillpillow	24	1	0.024		Kirloskar	
				32	1	0.032			
		38	Kakana	24	1	0.024		Kirloskar	
				32	1	0.032			
12	Nancowry	39	Champion	65	3	0.195	0.323	Greaves	
				50	2	0.100		Ruston	
		40	Hitoi*	12	1	0.012			
				8	2	0.016			September 2003
13	Katchal	41	Katchal	250	3	0.750	1.230	Cummins	March 2010
		42	Katchal NPH	256	1	0.256			
				100	1	0.100			
				50	2	0.100		Kirloskar	
		43	Upper Katchal*	12	2	0.024			August 2010
14	Teressa	44	Teressa	50	3	0.150	0.756	Kirloskar	
				256	2	0.512		Cummins	
		45	Minyuk	50	1	0.050		Kirloskar	
		46	Chukmachi	32	1	0.032		Cummins	
				12	1	0.012		Kirloskar	
15	Chowra	47	Chowra	50	2	0.100	0.164	Kirloskar	
				32	2	0.064			

P-20

Sl. No.	Island	Power house Sl. No.	Particulars	Total Installed capacity			Power House wise installed capacity	Make	Date / Year of installation
				DG size	Qty.	Total			
				KW	Nos.	MW	MW		
1	2	3	4	5	6	7	8	9	10
16	Great Nicobar	48	Campbell Bay	800	3	2.400	2.848	Cummins	June 1987
				256	1	0.256		Cummins	December 1992
				50	1	0.050		Ruston	February 1984
				24	1	0.024		Kirloskar	
		49	Afra Bay*	32	1	0.032			December 2010
		50	Pilpilow*	12	1	0.012			December 2010
		51	Pilowbha*	12	1	0.012			December 2010
		52	Pilowpanja*	12	1	0.012			December 2010
		53	Macachuwa*	50	1	0.05			December 2010
Nicobar District					**69**	**12.193**	**12.193**		
Grand Total					**176**	**104.648**	**104.648**		

Note: * Community Power House ***** Hydro Power Station*** ****** SPV Power Plant***

Total Installed Capacity - 104.65 MW