

CHAPTER - XII

POWER

In pursuance of the Indian Electricity Act 2003 and as a part of the Assam Power Sector Development Programme, the Government of Assam has set in motion the process of unbundling the Assam State Electric Board (ASEB) into five Government Companies in 2004. The five companies are – the Assam Power Generation Corporation Limited (APGCL), the Assam Electricity Grid Corporation Limited (AEGCL), Upper Assam Electricity Distribution Company Limited (UAEDCL) for the areas of supply in the Upper Assam Region, the Central Assam Electricity Distribution Company Limited (CAEDCL) for the central areas and the Lower Assam Electricity Distribution Company Limited (LAEDCL) for the areas of supply under the lower Assam Areas. These initiatives are in the interest of all the stakeholders in the electricity sector in the State, i.e. consumers, shareholders, suppliers, creditors, infrastructure builders and the Government of Assam. In the recent past the UAEDCL, CAEDCL, LAEDCL have been merged and renamed as Assam Power Distribution Company Ltd (APDCL). Thus, ASEB has three successor companies at present namely-(1) Assam Power Generation Corporation Limited (APGCL), (2) Assam Electricity Grid Corporation Limited (AEGCL) and (3) Assam Power Distribution Company Ltd (APDCL). However, the schemes like - Externally Aided Project, Rural Electrification, Accelerated Power Development and Reform Programme (APDRP) which are yet being executed under Assam State Electricity Board.

Installed capacity and Generation of Power

The installed capacity of generating plants at present in the State is 401.50 MW which include Hydel and Gas Plants of the State. The installed capacity for generating power has come down due to de-commissioning of Bongaigaon Thermal Power Station (BTSP) and Mobile Gas Turbine sets and de-rating of age-old units of Namrup (NTPS.)

Although the Chandrapur TPS was shut down due to exorbitant cost of fuel since June 1999[however the revival process of the Chandrapur TPS through PPP is on by using alternative fuel], the functioning of Hydel Power Project since 2006-07 has brought some changes to the power generation scenario in the State. In 2009-10, the power generation in the state increased to 1712.21 MU from 1682.82 MU in 2008-09 which was only 867.539 MU in 2006-07. The installed capacity of various generating plants and the generation of power in the State during the last three years have shown in the table – 12.1.

TABLE – 12.1
INSTALLED CAPACITY AND POWR GENERATION BY ASEB

Particulars	2007-08	2008-09	2009-10
A. Installed Capacity of Generating Plants (MW)			
1. Thermal (Coal/Oil)	60.00	60.00	60.00
2. Hydel	102.00	102.00	102.0
3. Gas	239.50	239.50	239.50
Total	401.50	401.50	401.50
B. Gross Unit Generated (MU)			
1. Thermal (Coal/Oil)	0.00	0.00	0.00
2. Hydel	510.18	434.40	401.91
3. Gas	1031.14	1248.20	1310.30
Total	1541.317	1682.820	1712.21

Particulars	2007-08	2008-09	2009-10
C. Auxiliary Consumption (MU)			
1. Thermal (Coal/Oil)	0.00	0.00	0.00
2. Hydel	0.98	0.79	2.01
3. Gas	42.20	52.16	86.01
Total	43.18	52.95	88.02
D. Net Unit Generated (MU)			
1. Thermal (Coal/Oil)	0.00	0.00	0.00
2. Hydel	509.20	433.61	399.90
3. Gas	988.94	1196.26	1224.29
Total	1498.13	1629.87	1624.19

Source: Assam Power Distribution Company Limited

Power supply position

The energy requirement in the State has been worked out at 5049 Million Units during the year 2009-10 as against 5039 Million Units in the previous year. But the availability of energy during the periods was 4590 Million Units and 4270 Million units respectively. To meet the demand of the requirement of power, the ASEB is purchasing power from other public and private sources. The following table shows the deficit in power supply in term of peak availability and of total energy availability in the State.

TABLE – 12.2
REQUIREMENT AND SHORTAGE OF ELECTRICITY IN ASSAM

ITEM	2007-08	2008-09	2009-10
A. Energy Requirement (MU)	4621	5039	5049
Availability (MU)	4018	4270	4590
Shortage (Percentage)	15.00	18.00	10.00
B. Peak Demand (MW)	891	972	974
Peak Demand Met (MW)	775	824	885
Shortage (Percentage)	13.04	15.25	9.09

Source: Assam Power Distribution Company Limited

The overall power supply position has not been satisfactory during the past several years. But since 2007-08, the power supply position has been improving slightly as compared to past years. The per capita availability for the last few years is shown in the following table.

TABLE – 12.3
PER CAPITA AVAILABILITY STATUS

(Million Unit Kwh)

Year	Gross electrical energy availability (MU)	Projected Population (in'000)	*Per capita availability status (Kwh)
2005-06	3267.87	28506	115.00
2006-07	3344.30	28896	116.00
2007-08	4013.62	29282	137.00
2008-09	4270.00	29660	144.00
2009-10	4590.00	30037	153.00

*Per capita availability estimated on projected population

Source: Commercial Wing of ASEB

Power Consumption

As a result of improvement in the power generation, the Assam Power Generation Corporation Limited (APGCL) could able to sale more power to the consumers during the recent years. During the year 2008-09, the sale of power has increased to 3012551 MWH as against 2711547 MWH sold during 2007-08 which is further increased to 3258786 MWH in 2009-10 thereby registered more than 8.17 per cent increase in the sale of electricity over the year. The statistics of the pattern of consumption during the last three years reveal that the Domestic Sector has been consuming highest amount of power since long back, followed by the Industrial Sector and Commercial Sector in the State. The type of consumption of power in the State during the last three years can be seen in the following table.

TABLE – 12.4
SALES OF ELECTRICITY BY TYPE OF CONSUMPTION (in MWH)

Sl. No.	Type of consumption	Consumption			% of consumption to total		
		2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
1.	Jeeban Dhara (Upto 0.5 KW)	29612	32860	32860	1.09	1.09	1.01
2.	Domestic	964840	1071106	1191746	35.58	35.55	36.57
	a. Dom A LT (0.5 to 5 KW)	863850	960570	1070951	31.81	31.88	32.86
	b. Dom B LT (5 KW to 20 KW)	73570	79810	85331	2.71	2.65	2.62
	c. Dom HT (20KW to Above)	27420	30726	35464	1.01	1.02	1.09
3.	Commercial	345450	411190	449517	12.74	13.65	13.79
	A.Com. LT (Upto 20 KW)	226230	262810	272597	8.34	8.72	8.36
	b. Com. HT (20 KW & Above)	119220	148380	176920	4.40	4.92	5.46
4.	General Purpose	53457	57170	59480	1.97	1.90	1.82
5.	Public Lighting	6404	5210	5588	0.24	0.17	0.17
6.	Public Works	45250	47209	50531	1.67	1.57	1.55
7.	Irrigation	20680	20730	25100	0.76	0.69	0.77
8.	Industries	507960	595230	640903	18.73	19.76	19.67
	a. Small Ind LT (Rural upto 20 KW)	34920	40600	42466	1.29	1.35	1.30
	b. Small Ind LT (Urban)	24080	24470	24878	0.88	0.81	0.74
	c. Small Ind HT (upto 50 KW)	17650	21370	22890	0.65	0.71	0.70
	d. Ind -I HT (50 to 150 KW)	44010	46760	49587	1.62	1.55	1.52
	e. Ind -II HT (Above 150 KW)	387300	462030	501082	14.28	15.33	15.38
9.	Bulk (Govt.. Education)	37720	41859	47858	1.37	1.39	1.47
10.	Agriculture	2174	3727	6998	0.08	0.12	0.21
11.	Tea, Coffee and Rubber	333910	357810	360537	12.31	11.88	11.06
12.	Oil and Coal	80410	68640	69069	2.97	2.28	2.12
13.	Others	268680	272810	288597	9.91	9.05	8.86
14.	Temporary for all use & Misc. consumptions	15000	27000	30000	0.55	0.90	0.92
	Total	2711547	3012551	3258786	100	100	100

Source: Commercial Wing of ASEB

During the year 2009-10 the ASEB earned revenue to the tune of ` 1566.00 crore by selling power to the various consumers. It reveals from the table below that the total revenue earned by the ASEB was 9.64 percent less than the previous year.

TABLE 12.5
INTERNAL AND TOTAL REVENUE

(Rupees in crore)

Year	Internal Revenue	Total Revenue
2005-06	923.00	993.00
2006-07	1047.00	1130.00
2007-08	1176.00	1517.00
2008-09	1330.00	1733.00
2009-10	1483.00	1566.00

Source: Assam 2011- A Development perspective

Transmission and Distribution Losses

Power, which is supplied to various categories of consumers passes through various stages -from transformation to higher voltage level to final distribution in the premises of the consumers, involves energy losses is known as Transmission and Distribution losses. The Transmission and Distribution loss in the State was calculated as 31 percent during the year 2010-11(upto January 2011), which includes commercial losses as well. However, power loss through transmission is an area of concern for the power deficit State like Assam.

The trend of transmission and distribution losses in Assam during the period 2008-09 to 2010-11 (upto January 2011) is presented in the Table 12.6 below-

TABLE-12.6

TRASMISSION & DISTRIBUTION LOSSES AND TRANSMISSION & COMMERCIAL (AT&C) LOSSES

Sl.No.	Item	2008-09	2009-10	2010-11*
1	Energy Input(MUs)	3877.72	4391.90	3902.99
2	Energy Billed(MUs)	2797.60	3247.00	2803.17
3	T&D Losses(MUs)	1080.12	1144.90	1099.82
4	% of T&D Losses(MUs)	28	20	28
5	Amount Billed(Rs. in lac)	133100.84	146319.43	139951.30
6	Amount realized(Rs. in lac)	128990.55	142174.08	133985.49
7	Collection Efficiency(%age)	97	97	96
8	Overall Efficiency(%age)	70	72	69
9	AT&C Losses(%age)	30	28	31

*Up to January, 2011. AT&C losses: Aggregate Transmission and Commercial Losses. Source: Additional Chief Engineer, Commercial, ASEB.

Rural Electrification

Like most of the states of the country, Assam is also lagging behind in respect of rural household's electrification. In Assam, out of the total 25,124 numbers of inhabited villages (as per 2001 Population Census) 16814 villages [67.0 percent] have been electrified till the end of March, 2010.

On Going Schemes

For improvement of the power supply position, several projects have been undertaken in the State of Assam.

Thermal

A. Lakwa waste Heat Project (1 X 37.2 MW):

Construction work of one 37.2 MW Waste Heat Recovery unit has been going on since April' 2006 at Lakwa Thermal Power Station.

EPC contract for the main plant was awarded to M/s BHEL.

Total Project Cost: ` 236.4 crore.

Funding: 30% equity from Govt. of Assam and 0% loan from Power Finance Corporation Ltd.

Additional Central Assistance (ACA) accorded by the Govt. of ` 50,00.00 Lakh in 2005-06 and ` 18,33.00 Lakh in 2006-07. The balance fund ` 16548.00 crore procured from Power Finance Corporation Ltd (PFCL) as Loan.

So far 95% of equipment supply and 60% of overall project work is completed.

B. Namrup Replacement Power Project (Ph.-I & II, 2X100 MW):

M/s NTPC was entrusted to prepare the detailed Project Report (DPR) for 1st phase of the project. M/s DCPL of Kolkata was appointed as consultant. Finally, tender for 1st phase, i.e, 1X100 MW project was invited in Sept'07. Meanwhile, all statutory clearances like Environmental clearance, Aviation clearances etc were obtained. The gas fuel linkage of 0.66 MMSCMD for existing plant shall be utilized for the new project. M/s BHEL was awarded the EPC contract for ` 564.6 crore on 31st Dec'94 and initial advance of ` 17.795 crore Paid to BHEL on 09-02-09.

The preliminary project activities are currently in progress. Schedule date of commissioning of the project: Jan'2012 (35 months from Zero date).

Funding

Total Project cost is 693.92 crore. Out of the total project cost, the GOA is committed to provide 30% of the project cost i.e. ` 208.00 crore as equity fund and 70% (` 486.00 crore) as loan from PFCL 30% Govt. Equity (ACA) is 208.00 crore. & 70% (486.00 crore.) loan from PFCL.

An amount of ` 30.00 crore has been received under ACA/SPA- 2007-08. An amount of 12.25 crore was sanctioned for the project under ACA-2008-09 and the State Government was further requested to release balance amount of ` 17.75 cr. under ACA/SPA-2008-09.

HYDEL

As per the Govt. of Assam's Policy for development of Small hydro Project in the State APGCL has taken up implementation of the following SHP's:

i) Lungnit SHEP (2 x 2 x 1.5 MW):

The proposed Lungnit Small Hydroelectric Project, is in the Karbi Anglong district of Assam, envisages utilization of 355 sq. km. of catchments area of Lungnit River in two stages.

Financial Status:

Total Project cost with (IDC): ` 55.81crore.

Funding Pattern:

MNRES: ` 18.00 crore.

PFCL: ` 30.00 crore.

GoA: ` 2.81 crore.

NEC: ` 5.00 crore.

Fund Sanctioned

From MNRES:

Stage I & Stage-II = ` 1800 lakh.

From PFCL:

Stage-I & Stage-II = ` 3000 lakh.

From G. O. A. /NEC

Stage-I & Stage-II = ` 781 lakh.

Present Status:

The preliminary project work was started. The acquisition of 25.775 hector of forest land for project was completed. Pre-construction work like construction of Road, Buildings etc has been taken up.

EPC contractor for the project (Stage-I & II) has completed the Preliminary survey. Preliminary Project activities are going on.

The project is scheduled to be commissioned by 2011-12.

ii) Myntriang SHEP (2 x 3 + 2 x 1.5 MW):

The Myntriang Small Hydro Electric Project is located in Karbi-Anglong District of Assam. It envisages utilization of 432 sq. Km. of catchments area of Myntriang River in two stages.

Financial Status:

Total Project cost with (IDC) : ` 78.17 crore.

Funding Pattern:

MNRES: ` 15.75 crore.

NABARD: ` 46.14 crore.

GOA: ` 6.03 crore.

Matching fund required. : ` 10.25 crore.

Present Status:

EPC contract awarded to M/s Sarda Eco- Power Ltd. The draft EIA study report has been submitted by M/s National Productivity Council. Preliminary Project activities are going on.

The project is scheduled to be commissioned by 2011-12.

iii) Dhansiri H.E. Project (5x3x1.33 MW):

BTC has expressed willingness through GOA to execute the Project. APGCL has furnished its comment to the GOA. Decision from GOA is awaited.

New Schemes

Status and Target of New Schemes undertaken by the Assam Power Generation Corporation Ltd.

(A) Thermal						
Fuel - Gas						
Sl No	Name of the Project	Location	Capacity (in MW)	Estimated Cost (Rs. in Crore)	Target of Completion	Brief Status
1	Amguri CCGT	Amguri District Sivasagar (Upper Assam)	100	700.0	12 th Plan	<p>Pre-feasibility Report (PFR) has been prepared in house and forwarded to GOA for necessary approval.</p> <p>Requested MOP & NG, GOI for fresh allocation of 0.65 mm scmd gas, beside this; Govt. of Assam has also been requested to move MOP & NG for early allocation of the required gas.</p> <p>The required gas is expected to be made available by private developer, M/S Canoro Resources Ltd from nearby Amguri field. M/S Canoro Resources Ltd (CRL) has been requested to submit the detailed terms & conditions for supply of natural gas at least for thirty years including proven reserve of gas certified by the Director General of Hydro Carbon (DGHC). The reply is awaited.</p>
Fuel - Coal						

Sl No	Name of the Project	Location	Capacity (in MW)	Estimated Cost (Rs. in Crore)	Target of Completion	Brief Status
2	Margherita Thermal Power Project	Borgolai District Tinsukia (Upper Assam)	500	3750.0	12 th plan	<p>The Draft Joint Venture (JV) Agreement between NEEPCO & APGCL for 500 MW Thermal Power Project was drawn up and forwarded to Govt. of Assam towards implementation. Although Govt. of Assam accorded in principle approval for execution of the Project through JV between APGCL & NEEPCO, in the formal approval put an option for JVA with NPTC and APGCL under the same terms and conditions.</p> <p>A team of officials of NTPC along with APGCL officials visited the project site. NTPC proposed for acquisition of about 1000 acres of land so that a 2x250 MW project may be taken up. Government of Assam is being moved for additional land requirement.</p> <p>Ministry of Coal, Government of India is being approached for establishment of Coal Linkage.</p> <p>Land proposed for Margherita Thermal Power Project at SALIKI N.C. covering an area of 1500 bighas (200 Hectare, approximate) surrounded by TIKOK N.C. on west, SINGORI N.C. North and Lekhapani on eastern and southern side is being acquired from Government of Assam.</p>

B) Hydro

Sl No.	Name of the Project	Location	Capacity (MW)	Estimated Cost (Rs. in Crore)	Target of Completion	Remarks
Identified by CEA						
1	Karbi Langpi (Upper Stage) HE Project	K a r b i Anglong District	60	360.0	12 th plan	<p>The proposed project envisaged for construction of a concrete gravity dam on the river Borapani at Mawrap together with the water conductor system. The proposed installation in the power house is 60 MW (2x30 MW).</p> <p>The DPR has been revised at an estimated cost ` 637.00 Crore. The DPR is forwarded to CEA for techno economic clearance. Detail joint survey for land with Karbi Anglong Autonomous Council is being fixed by the MOEF, New Delhi. APGCL appointed consultant for carrying out the Environmental Impact Assessment study for the project.</p>
2	Lower Kopili HE Project	K a r b i Anglong & NC Hills District	150	900.0	12 th plan	<p>The Detailed project report was prepared and submitted to the Central Electricity Authority for Techno Economic clearance. The CEA returned the DPR with observations which are being complied.</p> <p>Meanwhile APGCL has taken possession of 10 Bigha of land allotted by the N C Hills district authority out of the total 1577 Ha (1386.12 ha fall in N C Hills and rest 190.88 ha fall in is in Karbi Anglong district) required for the project. Zirat survey has been conducted in the land which falls under NC Hills which is nearly completed. APGCL appointed consultant for carrying out the Environmental Impact Assessment study for the project. TOR for EIA study is being fixed by the MOEF, New Delhi.</p>

Implementation of Other Schemes

Development of other SHEP

As per the Govt. of Assam's Policy for development of SHEP, following projects are also taken up by the APGCL.

Reconnaissance Survey & Pre-feasibility report and DPR for Sunani (2MW), Killing SHP (MW), Umat (2MW), Amring (20MW) are going on. Detailed survey and investigation of Basistha (120MW) has been completed.

Further, APGCL has undertaken an exercise to augment its capacity to generate power through new SHPs. APGCL has identified 37 nos. different locations in Assam as a first phase. Process has been initiated for engaging reputed consultancy to prepare Economic Studies including preparation of DPRs.

Revival of Chandrapur TPS

APGCL has decided to revive Chandrapur TPS (60MW) with new FBC boiler by using the existing steam turbine in Joint Venture (JV) mode with a potential private developer. Accordingly a consortium of M/s Imperial Energy & Construction Pvt. Ltd as a lead partner has been selected through Expression of Interest (EOI) bid along with M/s Intellimine and M/s Imperial Fastners Pvt. Ltd for revival of the TPS in a joint venture with APGCL in Build, Operate and Transfer (BOT) basis.

Cabinet approval on the Draft MOA/AOA has been accorded. APGCL has taken follow up action for execution of the scheme.

Externally Aided Project (EAP)

Assam Power Sector Development Project:

ADB provided 250 m US\$ loan (Programme Loan 150 m US\$ and Project Loan 100m US\$). Programme Loan of 150m US\$ had been utilised to liquidate liabilities of ASEB. Project Loan of 100m US\$ utilised for construction of 220KV/132/KV transmission line, 132/33 KV new Sub station, Augmentation and extension of existing Sub station, replacement of breakers, CT/PT, 33 KV Bus capacitors, SCADA, Replacement of meters, Installation of meter testing benches etc. ADB loan disbursement of 100 m US\$ completed in June 2009.

Assam Power Sector Enhancement Programme

ADB will provide loan of 200 m US\$ under MFF Multi-tranche Financing Facility (MFF) to ASEB for strengthening and loss reduction of Transmission and Distribution companies by construction of new lines, new sub station, up-gradation of ground wire to OPGW, HVDS, ABC in the period from 2009 to 2014.

World Bank Project

For development of Power sector in the State ` 1871 crore has been invested under World Bank Project. The Project includes improvement of:

Transformation Capacity addition	:	1320	MVA
Transmission Lines	:	830	Ckt KM