

**Report on Evaluation of Rajiv  
Gandhi Grameen Vidyutikaran  
Yojana (RGGVY) in the state of  
Assam**

**Submitted to:  
Rural  
Electrification  
Corporation  
(REC), New Delhi**



**Submitted By:  
Integrated Research  
and Action for  
Development (IRADe),  
C-80, Shivalik, New Delhi  
- 110017**

## **Evaluation of the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) Programme: State of Assam**



**Submitted to: Rural Electrification Corporation (REC)**



**Submitted By: Integrated Research and Action for Development (IRADe)  
C-80 Shivalik, New Delhi - 110017**

**July 2012**

## **Contents**

Executive Summary of Evaluation of the “Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) Programme”: State of Assam.....	6
Chapter 1: Background of the RGGVY Evaluation Study .....	17
Chapter 2: Rural and Remote Village Electrification Programme .....	22
Chapter 3: Implementation Methodology of RGGVY Programme in Assam:.....	27
Chapter 4: Approach and Methodology used in village survey:.....	37
Chapter 5: Observations of Village Survey: .....	40
Chapter 6: Long term Village Electrification initiatives.....	78
Chapter 7: Decentralized Distribution Generation (DDGs).....	87
Chapter 8: Franchise Models in Operation .....	93
Chapter 9: Performance of Distribution Utilities and Rural Consumers .....	100
Chapter 10: Comments, Observations and Recommendations.....	109
Annexure 1: Progress Report Of Implementation of RVE programme.....	117
Annexure 2 Implementation Schedule Related Information .....	118
Annexure 3: Fortnightly Progress of installation of Sign Boards under RGGVY; As on 15-10-2011 .....	121
Annexure -4: Power Sourcing in the state of Assam .....	122
Annexure 5 Details of Gram Panchayat Certificate.....	126
Annexure 6: The Handover Statistics of Un-electrified and electrified Villages .....	128
Annexure 7 Infrastructure to Sustain RGGVY infrastructure .....	129
Annexure 8: Trench Two Component Details of ADB Funded Assam Power Sector Enhancement Investment Program (Loan No 2677 - Ind).....	131
Annexure 9 Circle wise Status of SPPS & IBDF (DTF) Scheme updated .....	134
The Data / Information collected During Survey and Stakeholders interaction .....	141
ABBREVIATION.....	161

**Authors:**

**Dr. Jyoti Parikh**  
**Dr K K Govil**  
**Mr. C.R. Dutta Biswas**  
**Mr. Rajiv Ratna Panda**  
**Mr. Litul Baruah**

Report Photos By – Rajiv Panda

© 2013 Integrated Research and Action for Development (IRADe)

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording or any information storage and retrieval system, without permission in writing from the publisher.

The presentation of material in this publication and in maps which appear herein does not imply the expression of any opinion on the part of IRADe concerning the legal status of any state, country, or the delineation of frontiers or boundaries.



C-80, Shivalik, Malviya Nagar, New Delhi – 110017  
Telephone: +91 11 2667 6181, +91 11 2667 6180 , +91 11 2668 2226  
E-Mail: [info@irade.org](mailto:info@irade.org), Website: [www.irade.org](http://www.irade.org)

## Acknowledgement

We are grateful to “Rural Electrification Corporation”, New Delhi, Government of India, undertaking, for providing financial support for the study entitled “The Evaluation of Rajiv Gandhi Grameen Vidyutikaran Yojana in the state of Assam”.

We are also grateful to Shri. Devender Singh, Joint Secretary (RE, Ministry of Power); Shri Sanjeev Kumar, Director; Shri A K Singh, Shri P Thakkar, Director (REC); Shri. Puneet Goel, Executive Director (REC); Shri. S K Lohani, Executive Director (REC); Shri T S C Bosh, GM (RGGVY-II); Shri Dinesh Kumar, GM (RGGVY); Shri Ajay K Gupta; Shri Fuzail Ahmed, Additional GM (RGGVY-NQM); Shri. Rishabh Jain; for their suggestions made during the various interactions and presentations made by IRADe team.

We are highly thankful to Mr. G M Das, Former Chief Engineer, ASEB; Mr Ashir Tazim for their cooperation in carrying out overall survey in the state of Assam. We are also thankful to Ms. Hanna Jaritz and Ms. Atika Pasha for assisting in editing of the report.

## **Executive Summary of Evaluation of the “Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) Programme”: State of Assam**

### **Progress of village electrification as per the approved DPR including revised DPR:**

The report on assigned project of “Evaluation of RGGVY Programme in the state of Assam” is based on survey, of 25 villages; in 25 blocks; in five districts; of Assam. The five districts are Dhubri, Karbi Anglong, Tinsukia, Dibrugarh, Lakhimpur. The districts Tinsukia, Dibrugarh, Lakhimpur are known for their tea gardens; however the population of the villages surveyed, were primarily engaged in agriculture. The RGGVY programme has been able to build a good quality infrastructure to sustain electricity supply for the rural Area, under multiple challenges faced by the state. The large percentage of marginalized population of the state has been provided electricity connection free of cost. The RGGVY project for Tinsukia was initiated in tenth plan, and other districts were included in 11<sup>th</sup> plan projects

Of the survey sample of 25 Assam villages, 32% of the total number of rural households (APL and BPL) had been connected via RGGVY. There were 1513 BPL households within the sample, of which 675 (45%) have been electrified. Among APL households, only 3% of the recorded 642 APL households; 22 households had access to electricity from RGGVY infrastructure.

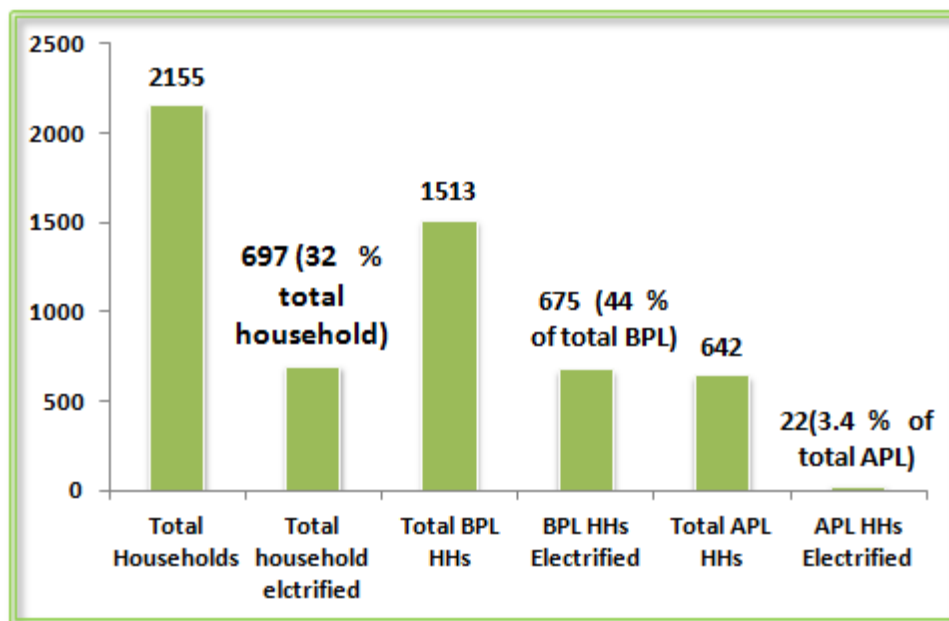


Figure 1: Status of RGGVY in surveyed villages in ASSAM

Of the five districts surveyed, we observed that only 4 out of the 20 public places had taken electricity connection. Growth of load demand for most of these surveyed villages is very unlikely, population in these villages are low, and earnings of people are comparatively low.

**To clearly list various Governments and their agencies responsible for the numerous tasks to successfully implement the RGGVY projects.**

APDCL has got a separate rural electrification wing headed by a chief general manager with a full-fledged office having head quarter at Guwahati. The office the General Manager (GM), is looking after the contract allotment including tendering and evaluation / monitoring, and also routine progress in all the projects and future programme. They have appointed AGM (REM) for each district to coordinate the implementation of rural electrification project. He facilitates charging the line and commissioning of substations. He provides enabling facilities to the contracting firm, and is responsible to connect the existing infrastructure to the new infrastructure, and coordinates backward linkages constraints; without adequate support staff. The existing programme management can be augmented with higher participation of the state government; being perceived as central

government scheme. The implementation process may be designed according to the management structure of electricity board.

Of the five districts surveyed, in four districts, DISCOM, ASEB is implementing the RGGVY programme. Electrification of Dibrugarh district is being executed by PGCIL (CPSU). Three villages, out of 5 surveyed villages in the Dibrugarh, are yet to be electrified. Three tier quality monitoring mechanism for XI Plan Schemes have been reporting quality of implementation. Their defect list is attended to by both PIA and DISCOM. Installed VEI appeared to be in good condition. Numbers of Consumers have in side house wiring done without energization.

**To study the RGGVY DPRs and assess whether DPRs have been developed taking in account various aspects**

The study was conducted with revised DPR, and it was observed that the work was being implemented according to DPR (Bill of Material/ quantity). The different equipments like Transformer, breaker & line materials are inspected & tested by competent authority as per ISI standard. Release of BPL connection is done as per sanction available. A supplementary DPR (prepared by PGCIL) for Dibrugarh district for sanction of extra 20% connection has been submitted; and it is at the final stage of approval. The DPR preparation should ensure total and optimised village electrification network, and probable load growth by estimating power for all including APL household. The VEI is designed with DT of 10, 16, 25 KVA capacities. Standard materials have been specified for REDB. Project execution is behind schedule, due to availability of working front, transport of material from distant manufacturers, delayed clearances and unavailability of local manpower for sub-contractors to execute task. Level of sub-contracting is high creating coordination problem. Sub-stations commissioning are delayed.

The DPR of the state has been made as per the guidelines of REC. However the assumptions made for preparing DPR is insufficient. Business Plan (Excel sheet F1—F4) has not been updated. The 12<sup>th</sup> plan DPR for incomplete work may be revised with the context of (a) experience of seven years of RGGVY implementation (b) BPL load can be increased (c) consumer base should comprise of APL, commercial, water works,



agriculture, small industries and DDG scheme. The state government department for rural development may provide assumption base for preparing 5 year business plan.

### **HVDS has been implemented through the RGGVY**

Though location of DT is at the village periphery, the HT/LT ratio is satisfactory. With present level of connection transformer capacity and VEI design is sufficient. The DT used are of 10, 16, 25 KVA capacity. The efficacy of High Voltage Distribution System (HVDS) at present may not be required for the villages where population is low. **State executive feel when more APL connections are released the Transformer capacity will be insufficient. A better clustering of population is desired and that is social issue.** The location of DT in the village may be reviewed by the design wing of AEGCL and land allocation be facilitated by District Monitoring committee and Panchayat.

### **Study the actual implementation schedule till the last milestone**

The project delays were analysed. Except for few Blocks in Lakhimpur the implementation time ranges from 30 to 50 Months. The state DISCOM is faced with natural, geographical, and political challenges in project implementation. Some of the reasons for delays are (a) forest clearances, clearance from the forest authority for drawing HT and LT lines, Delay is also due to land acquisition for the Substation, and right of way for installation of LT pole in the villages (b) Delay in materials receipt at site due to poor condition of road and bridge, and bad weather. There are damages during floods. (c) The BPLs list inconsistency; (d) Due to insurgency there are roads blocks, bandhs calls etc by the different organization for work stoppage (e) The project execution by PIAs and Sub-contractors depend on gang deployment drawn from the Local manpower (Skilled, and un-skilled). (f) For the success of RGGVY project, active participation of consumers is desired (g) Shortage of manpower of DISCOM at sites, for project monitoring, subsequent operation and maintenance after hand over, lines charging. The Gram Panchayats in some villages have not maintained record of date of electrification and they stay outside the village. Even in certain cases they could not provide the list of BPL.

### **Electricity supply per day in the village/ habitation electrified under RGGVY**

The data of average Electricity supply is based on the feedback received from consumers in the villages. The average hours of electricity supply was 13.5 hours, ranging from 9 hours per day in Karbi Anglong, to nearly 17 hours in Dhubri district. Their main demand was that they want uninterrupted electricity during evening and scheduled supply of power.

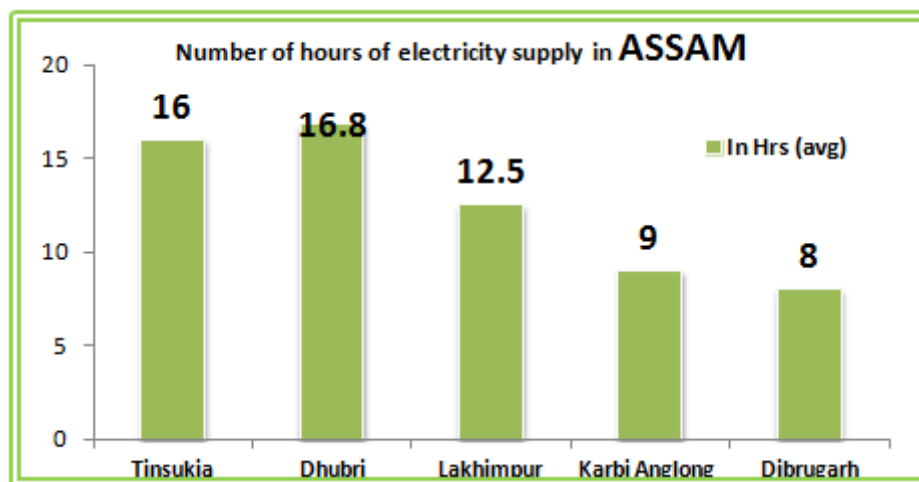


Figure 2: Hours of Power Supply (Response of Consumers) in Assam Districts

### **Number of APL connections released in the RGGVY village**

In Assam, only 3.4% of recorded APLs (Surveyed villages) have access to electricity with RGGVY infrastructure. APL consumers in the surveyed villages want new connection, but the department could not release connections. It is also reported that APL consumers have paid for the connection, are not getting connection due to shortage of meters. One of the suggestion highlighted that APDCL can provide list of approved brand of meter, so that the consumer can purchase the meter and apply for connection with test-certificate. APL consumers also felt cost of connection was high. In order to fulfil the vision of providing electricity for all and to facilitate revenue sustainability of rural electrification the APL connection to remaining APL consumers may be provided at a discounted rate. This is being practiced in the state of West Bengal. Central government can give certain financial support for release of APL connection, and cost of connection may be shared between state and centre.

**Issues of electricity bill to new connections including BPL connections; Examine instances of dis-connection of BPL connections released under RGGVY, if any, and reasons thereof;**

About 47% households in the surveyed villages were receiving bills, a majority (39%) of them received them bi-monthly month, while 8% had their bills dispatched later. Consumers mentioned that they all paid the bills regularly. No BPL disconnections have occurred in the surveyed villages; due to no meter reading and billing; may be due incomplete consumer indexing.

**To examine the efficacy of working of franchisee in distribution management**

The performance of old franchisee working in the district is not satisfactory. Despite VEI, the consumer connections in the newly electrified villages are few. The department has to take initiative to get more APL consumers. To sustain operation and maintenance (O&M) activities in the handed over infrastructure, adequate skilled manpower and vigilance of the asset is desired from the department. These needs are to be facilitated by the matured Franchisee. No new franchisee has come forward or franchisees in district are not accepting new villages. People have started taking unauthorized connection. Effectiveness of the franchisees has to improve and new Franchisees have to come forward.

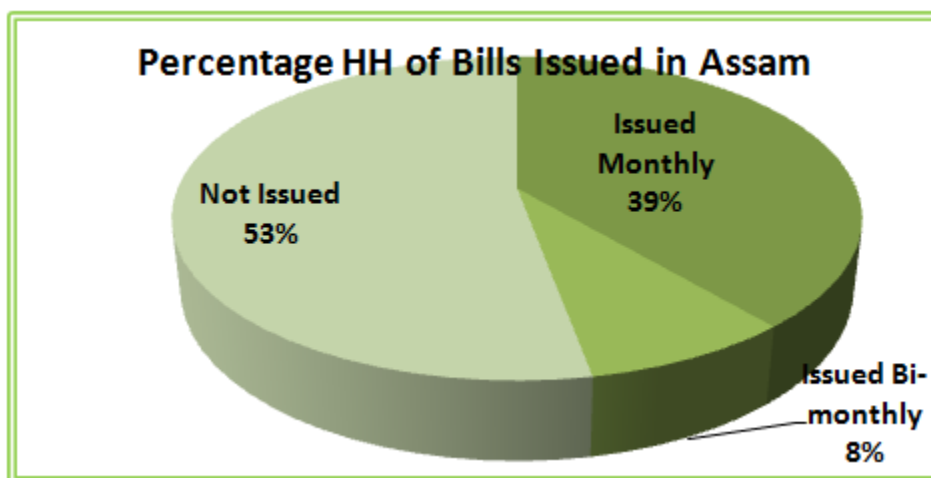


Figure 3: Billing status as observed during Survey (October 2011)

The power consumption in the villages is small hence revenue generation are small. There is shortage of power in some districts of upper Assam, and continuous power has to be ensured to tea gardens and paper mills. Franchisees find very limited income. A Public Private Partnership (PPP) model based on DDG can be modelled for RGGVY franchisee task, who can manage REDB, VEI, DDG, Revenue collection, vigilance, operation and maintenance etc for rural electrification. Assam state is rich in Biomass resources.

**Socio-economic impact of village electrification under the scheme in respect of standard of living, education, health, employment opportunities etc**

It is imperative that electrification has provided new generation of opportunities, better life style that is to be sustained by need based electricity supply. For enhancing socio-economic status of the villages, the public institutions (schools, health centres, panchayat office, and community centres) should take connection and get energized. The concerned authorities such as panchayati raj institution have to take action by integrating different development programmes with RGGVY to accrue commercial benefits and facilitate franchisee operation in the village.

Figure 4 is the compilation of perception of socioeconomic benefits felt by percentage of consumers in the surveyed villages in the district of Assam. The parameters selected were level of comfort, enhanced facilities in opportunities in education, employment opportunities, enhancement in feeling of security, drinking water availability and improved access to health services that included neighbouring villages. As 3 villages were not electrified in Dibrugarh districts, socio-economic data compile were not included in the study. Except for drinking water supply, health services and employment opportunities, there were positive response from the consumers.

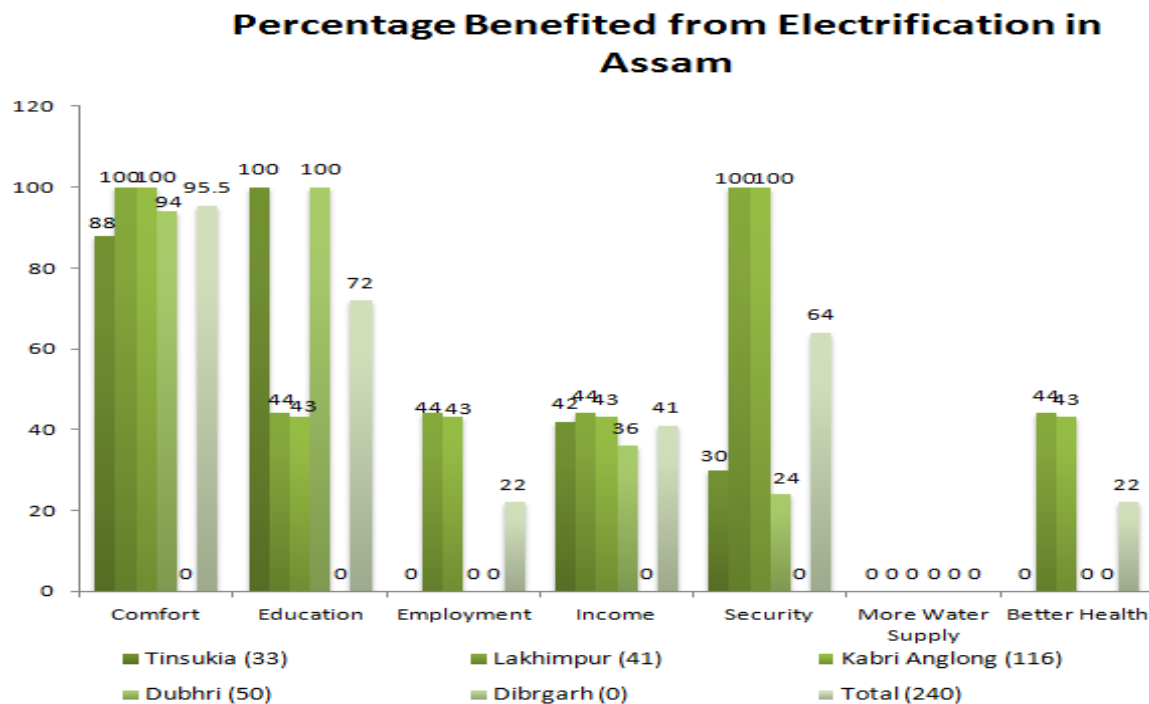


Figure 4: Socio-economic Benefits accrued from Rural Electrification in Percent in Districts of Assam (Response)

### Provision of subsidy made by the state government for supply of electricity

Power tariff to rural area is subsidized. The tariff in the state for BPL is higher in comparison to other states. The Profit and Loss accounts of DISCOMs show significant loss. Assam Branch of Indian Tea Association complains about cross-subsidy. There is provision for surcharge on tariff to compensate cross-subsidy. The Multiyear tariff order does not indicate subsidy management strategy.

### Extra power in the state to meet the need of newly electrified villages

The total power Availability from North East Region is 1119.5 MW, which is about 30% of available supply. In twelfth five year plan many projects are in pipeline that will provide additional 1150 MW power. Since power supply to rural consumers is a loss making proposition for DISCOM thus there is less and limited incentive for the DISCOM to serve rural consumer particularly in power deficit scenario. The central government may devise a mechanism by which it will allocate un-utilized power of NTPC at cheaper

rate to state government by emphasizing this will be provided to the rural areas where the incidences of load shedding in the rural areas are high. The Detail mechanism can be devised in proper consultation with the all the stakeholders including power exchange. ASEB should accelerate its renewable energy programme in rural areas that can be linked to the state Grid. This will provide employment in rural area, and benefit the utility by reducing AT & C losses.

### **DDG scheme in its present form**

Assam state has not applied for projects under DDG scheme of RGGVY programme. It has good resources of renewable energy in form of biomass, mini and micro hydro power system. The state has under taken many RVE projects under RVE programme of MNRE.

Figures from the Ministry of New and Renewable Energy sources, estimate the total capacity of small hydro potential in Assam at 238.69 MW.<sup>1</sup> The Government of Assam framed a policy for the development of small hydro power. Its main aim is to encourage the power generation through small hydro sources and initiating private participation.

### **Suggest methods for better and effective implementation:**

RGGVY programme has established good electricity network that is providing electricity to marginalized population free of cost, providing access facility to the APL families. DISCOMs have to continue to service network efficiently. In this context following points need attention;

- a. Around additional 200 MW demand will be injected to the APDCL network after the completion of RGGVY (1st Phase). There are 32, 33/11 KV sub-stations; 500 KM of 33 KV lines; 24,300 KM of 11 KV lines and around 20,000 KM of LT lines will soon be completed. The challenge is of operation and maintenance, and generating additional revenue for sustenance. The system breakdown will have an unusual impact on APDCL revenue earning.
- b. Shortage of skilled manpower and retaining them is a challenge. The present staff number earmarked is not sufficient to cater to the work demand. Responsible

---

<sup>1</sup> Ministry of New and Renewable Energy: Annual Report 2010-11; Chapter 5.31; [http://mnre.gov.in/annualreport/2010\\_11\\_English/Chapter%205/chapter%205.htm](http://mnre.gov.in/annualreport/2010_11_English/Chapter%205/chapter%205.htm) ; Accessed December 2011

- franchisees are the need of the programme implementation. Many former retired APDCL employees have got experience in these works, can be encouraged to be associated in the process with some honorariums or contractual amount so that burden of APDCL employee can be reduced.
- c. Theft control modalities may be devised by creating strong vigilance force, developed from retired Assam Rifles, Army personnel. They can help during project implementation. Protection to storage and supply of material to the site can be provided by the vigilance team.
  - d. Transport of materials to the work sites is very difficult due to bad condition of the village roads and bridges. The PWD department doesn't allow movement of trucks. Animal (elephant) transport can be tried in these areas.
  - e. Generating additional income for consumers using electricity with commercial ventures needs to be modelled and encouraged.
  - f. Energy Accounting is essential for rural electrification development. Electronic smart meters having data transmission facilities be provided with distribution transformer (DT). These DT can be linked to systems coming under R-APDRP scheme. ASEB may study the need for additional IT system for the Assam rural electrification.
  - g. Transformer capacity should be calculated for total village population i.e. including APL population. Current augmentation of transmission network with ADB loan may be in- adequate for RGGVY network.
  - h.

The government of Assam has issued Rural Electrification Plan vide Memo No PEL. 89/ 2005/ pt.III/141-A dated April 13, 2009. The document may be revised for 12<sup>th</sup> plan in the context of 2011 census and experienced gained during implementation of RGGVY programme. The state is in process of accelerated economic growth. The issue of scalability of rural economics will be viewed in the context of economic opportunities, and welfare society. National rural electrification policy should be the basis of evolving State rural electrification policy and plan so that electricity could reach each and every house hold. There needs to be compliance between tariff order and rural electrification plan.

Consumer load growth in rural area will occur rapidly over time, hence overall T&D system needs to be strengthened and improved to cater to the demand. Since the state funds are limited and financial health of Discom is poor, the central government may provide loan to these states government at concessional rates for strengthening the system.

DPRs for further investments in the remaining areas or future augmentations need not be District based. Centralised Investments should be made, Distribution Circle wise and these should be made cost and profit centres to improve the accountability and efficiency of investments. Rural electrification plans are difficult to become financially sustainable unless these become part of the commercial operations of Distribution Circles combining with urban and rural distribution network.

### **Conclusion:**

People are generally happy as soon as their villages are electrified. The normal life standard has also increased to some extent definitely. But in the long run when their demand of electricity will increase, it will be a difficult task for the APDCL to meet their demand and heavy load shedding will definitely jeopardize public interests. Implementation of RGGVY Programme in Assam has been constrained by a variety of reasons: both natural and manmade. Rapid strides in rural electrification are possible through mainstreaming and effective involvement of local population so that their own welfare is genuinely perceived to be embedded in the development oriented RGGVY/DDG Projects. Innovative business models are possible for this to be achieved, so as to provide wage employment and self-employment for the people of Assam. Capacity building for this purpose requires involvement of sector specific Non-profits, having multidisciplinary teams. Equally important is the need to be technically agnostic.

**The objective of rural electrification can be achieved more cost-effectively through decentralized generation from RE Systems.** This calls for effective coordination between Ministry of Power (MOP), MNRE and State Governments. Private Sector can play a transformational role. Unfortunately RGGVY's rigidity excludes the private sector's involvement. MNRE's off grid scheme offers useful lessons for reconstructing RGGVY and DDG. The results of Phase II of the Jawaharlal Nehru National Solar Mission (JNNSM) also provide serious food for thought. An in-depth, rigorous study in the nature of cost-benefit/cost-effectiveness analysis of available technological options is called for urgently to ensure optimal resource allocation in the rural electrification sector.



## **Chapter 1: Background of the RGGVY Evaluation Study**

Government of Assam has trifurcated Assam State Electricity Board (ASEB) into three companies: Assam Power Generation Corporation Limited (APGCL), Assam Electricity Grid Corporation Limited (AEGCL) and Assam Power Distribution Company Limited (APDCL). The APDCL is further divided into three DISCOMs, namely Upeer Assam electricity DCL (UAEDCL), Central Assam electricity DCL (CAEDCL), Lower Assam electricity DCL (LAEDCL). These are the Implementing Agencies (IA) for Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) programme.

The Assam Power Distribution Corporation LTD was formed in 23<sup>rd</sup> Oct, 2009 as a public limited company, in sole partnership with the Assam Government. The company was responsible for the distribution of power within Assam. All the events and liabilities of the Distribution Network, as well as the demand /sales/ supply were to be controlled by this organization. To facilitate the distribution, the company divided all of Assam into different electrical circles: Dibrugarh, Lakhimpur, Tinsukia, Nowgong, Sibsagar, Karbi-Anglong/ North Cachar, Jorhat, Silchar, Guwahati 1, Mangaldai, Guwahati 2, Tezpur, Bongaigaon, Kokrajahar, Dhubri.

As per the survey conducted by the CEA, the peak demand of power during 2013-2014 will be around 1428 MW, from the 1000 MW demanded at present. The estimated power requirement in 2015-2016 will be around 1715 MW.

The corporation has taken steps for implementing different plans & programmes as formulated by the GoA (Government of Assam), the Assam Infrastructure Development, RGGVY, APDRP (Accelerated Power Development and Reform Programme), R-APDRP (Restructured Accelerated Power Development & Reforms Programme), ACA (Additional Central Assistance), the NLCPR (Non Lapsable Central Pool of Resources) and TDF (Tribal Development Fund) etc. The Asian Development Bank (ADB) and the World Bank also contributed funds in the same Project.

As per the 2001 Census, the total number of villages in Assam was 25,124 and the number of villages electrified up to March, 2007 was 18,567. As per the new definition of village electrification, effective from February 2004, the number of un-electrified villages as on the 1<sup>st</sup> of April 2007 was 6,557, out of which 2,139 were remote villages i.e. these villages could not be electrified through conventional methods of drawing electrical lines.

Further, due to various natural calamities (flood, storm etc.) and other reasons (like theft etc.), 4051 villages got the de-electrified status.

The task of electrification of 2,139 remote villages has been taken up by the Rural Electrification Wing (REW) of ASEB under Chief General Manager (RE). Out of the total 2,139 villages, villages electrified up to June'08 were 157. The REW is working tirelessly to complete electrification of the remaining villages through non conventional means.

Assam electricity board is divided in 14 electrical distribution circles; not as district wise. APDCL has a separate RE wing with a Chief General Manager & Project Managers as per different circles. The project manager is co-ordinating with the district authority as well as APDCL authority, state REC also monitoring the job at the Headquarters at Guwahati. They have appointed AGM (REM) for each district (in scope of 8% project scope) to coordinate the implementation of rural electrification project. He facilitates charging the line and commissioning of substations. He provides enabling facilities to the contracting firm, and is responsible to connect the existing infrastructure to the new infrastructure, and coordinates backward linkages constraints without adequate support staff.

The status of village electrification in Assam as on 31<sup>st</sup> March 2007, is presented in a tabular form below:

**Table 1: Status of village electrification in Assam**

Total No. of villages as per 2001 census	Numbers of electrified villages	Numbers of un electrified villages	Numbers of remote villages	Numbers of un electrified villages left to be electrified through conventional method	No. of De electrified villages	Total No. of villages left to be electrified through conventional method
25124	18657	6557	2139	4418	4051	8469

The district wise break-up of un-electrified, de-electrified & already electrified villages, proposed to be covered under 1<sup>st</sup> phase of RGGVY are tabled in table 2;

For the strengthening of REDB, 33 new 33/11KV sub-stations are proposed under the present scheme, distribution companies' consolidated details of which are provided at the beginning of each section/ circle. With the implementation of the 1<sup>st</sup> phase of RGGVY,

**Table 2: District-wise status of village electrification in Assam**

<i><b>District</b></i>	<i><b>Un –electrified</b></i>	<i><b>De- electrified</b></i>	<i><b>Already electrified</b></i>
Jorhat	60	183	471
Golaghat	366	117	509
Sivsagar	25	77	360
Dibrugarh	132	139	786
Tinsukia	251	99	725
Lakhimpur	370	174	502
Dhemaji	441	190	394
Nagaon	172	186	1003
Marigaon	85	172	215
Sonitpur	503	104	1014
Karbi Anglong	1254	126	436
NC Hills	113	131	149
Cachar	82	148	660
Hailakandi	22	49	250
Karimganj	135	75	550
Darrang	40	164	1082
Kamrup	29	350	927
Nalbari	5	140	598
Barpeta	60	166	791
Bangaigaon	13	338	501
Goalpara	33	290	361
Dhubri	133	260	782
Kokrajhar	94	337	414
<b>ALL ASSAM TOTAL</b>	<b>4418</b>	<b>4051</b>	<b>13380</b>

24300.82 kms of 11KV line, 2291.70 kms of 3-ph LT line, 17682.35 kms of 1-ph LT line, 1042 10KVA DTRs; 15371 16KVA DTRs and 4871 25 KVA DTRs will be added to the existing distribution network of ASEB. Furthermore, 989411 service connections will be released free of charge to BPL families of the state. District wise break of the proposed parameters is as given below.

**Table 3: District wise RGGVY infrastructure created**

<i><b>District</b></i>	<i><b>11KV line (Km)</b></i>	<i><b>3-ph LT line (Km.)</b></i>	<i><b>1-ph LT line (Km.)</b></i>	<i><b>DTR 10KVA (Number s)</b></i>	<i><b>DTR 16KVA (Number s)</b></i>	<i><b>DTR 25KVA (Number s)</b></i>	<i><b>BPL service Connections (Numbers)</b></i>
Jorhat	509.41	0.00	465.00	0	240	146	36041
Golaghat	1017.80	41.30	696.40	0	599	180	43026
Sivsagar	715.50	165.50	234.00	252	207	322	13505

## Evaluation of RGGVY programme in the state of Assam

Dibrugarh	131.50	163.50	298.80	589	409	546	24240
Tinsukia	892.55	0	723.20	0	359	366	44548
Lakhimpur	1085.85	72.60	776.10	0	607	356	34745
Dhemaji	1139.82	70.70	655.40	0	597	138	31322
Nagaon	1062.70	81	1179.70	0	988	295	100514
Marigaon	317.80	41.50	428.55	0	498	81	35417
Sonitpur	1974.50	45.00	873.00	0	1597	112	65817
Karbi Anglong	4689.80	801.10	2616.40	0	820	186	31504
NC Hills	1032.90	139.00	446.40	0	170	216	4681
Cachar	798.00	30.40	427.80	0	861	76	73512
Hailakandi	378.50	13.40	88.50	201	94	67	9788
Karimganj	740.50	128.00	192.00	0	169	584	27488
Darrang	1297.40	98.35	955.10	0	1135	256	53092
Kamrup	1152.70	153.15	1608.50	0	1163	316	75070
Nalbari	374.20	1.10	417.15	0	591	7	45672
Barpeta	558.89	38.80	602.20	0	902	97	60595
Bongaigaon	876.90	71.70	1301.60	0	737	167	41969
Goalpara	537.90	32.90	442.85		606	74	31692
Dhubri	974.70	97.30	1348.60	0	1173	252	74274
Kokrajhar	857.00	12.40	604.80	0	849	31	40899
<b>ALL ASSAM TOTAL</b>	<b>24300.82</b>	<b>2291.70</b>	<b>17682.35</b>	<b>1042</b>	<b>15371</b>	<b>4871</b>	<b>989411</b>

It may be noted that the newly created 4 districts of Chirang, Baksa, Udalguri and Kamrup (Rural) are not separately mentioned in the above lists. The proposed parameters against these districts are included along with the Bongaigaon (Chirang), Nalbari (Baksa), Darrang (Udalguri) and Kamrup (Kamrup (Rural)) districts.

## **Chapter 2:**

### **Rural and Remote Village Electrification Programme**

The implementation of the Remote Village Programme was initiated by former ASEB in the State of Assam

- The villages of Assam to be electrified fall under two categories: accessibility from existing electricity network and non-accessibility from existing electricity network. The accessible un-electrified villages are being electrified under the RGGVY programme of the Central Government.
- The ASEB has identified 2139 villages, as on 31.3.2006, which is not accessible from the existing conventional grid due to various topographical constraints and other considerations, like natural calamities, recurring floods in plains of Brahmaputra Basin & Barak Valley; that deprive many villages from the access of electrical energy; in addition no payment structure is possible in the river char<sup>2</sup> area. Setting up of any power plant (renewable) and cost effectiveness are also factors to be considered.
- Out of 2139 remote villages, 1084 are located in the plains of Assam and the remaining 1055 are located in the hilly areas of the two hill districts of Assam: Karbi Anglong and North Cachar district. These villages are termed as Un-electrified Census Remote Villages. As per the preliminary survey by the State Government in the year 2011, there are 123918 households inhabited in the 2139 of remote villages.
- Field survey is being conducted to identify the left out remote villages of the state. ASEB has already sent a list of 182 of such villages to the MNRE (Ministry of New and Renewable Energy) through the Power Department. The Government of Assam and the MNRE have declared 63 villages out of 182 as remote.
- For 100% remote village electrification by 2009 and all the households by 2012, as specified by the Government of India policy; the Power Department under the Government of Assam has been assigned as the nodal department. The three government agencies, namely ASEB, AEDA and the Forest Department, of Government of Assam, have been appointed as the implementing and facilitating

---

<sup>2</sup> Post flood dried river bed areas

agencies for implementation of the remote village electrification works through new and renewable energy resources in the state of Assam.

- The sharing of the remote villages for electrification through non-conventional energy sources amongst the three implementing agencies are as follows:
  - ASEB = 1057 numbers
  - AEDA = 920 numbers
  - Forest Department = 162 numbers

**Table 4. District-wise List of Remote Village**

<i>Sl. No.</i>	<i>Name of district</i>	<i>No. of Remote Villages</i>
1	Barpeta	35
2	Darrang	29
3	Goalpara	77
4	Kokrajhar	40
5	Kamrup	36
6	Bangaigaon	29
7	Dhubri	86
9	Nagaon	3
10	Marigaon	14
11	Karbi Anglong	818
12	Sonitpur	45
13	NC Hills	237
14	Karimganj	45
15	Cachar	41
16	Hailakandi	14
17	Timnsukia	32
18	Lakhimpur	92
19	Sibsagar	3
20	Dibrugarh	6
21	Golaghat	74
22	Dhemaji	311
23	Jorhat	72
<b>TOTAL</b>		<b>2139</b>



The major agencies for various tasks executed in RGGVY programme are APDCL, Ministry of Power (Govt. of Assam), REC (Guwahati site office), DISCOM, Panchayat and PIA / contracting firm. APDCL has got a separate rural electrification wing, headed by a chief general manager with a full-fledged HQ office at Guwahati.

The office the General Manager (GM), is looking after the contract allotment including tendering and evaluation / monitoring, and also routine progress in all the project with future programme. Under him there are 2-3 Deputy General Manager (DGM) rank officers, who are assisted by 10 assistant general manager (AGM) rank officers. They are looking after the progress of work, release of fund & technical clarification /modification etc. The design wing under AEGCL is scrutinizing the evaluation of DPR & other technical & commercial matters. The different equipments like Transformer, breaker & line materials are inspected & tested as per ISI standard.

One AGM rank, executive engineers is posted as project manager REC to look after the construction and installation of RE works in one or two specific districts. He generally coordinates the REC works with the existing DISCOM. He has been authorized by the Government of Assam for charging up the line. The RE wing also properly coordinates efficiently with REC head quarter and rural local body.

Rural Electrification in the state of Assam has been a big challenge for the line management and the contractor executing the task. This has been due to the terrain, dense forest, frequent flood with change in river course, and farmer exploiting the char areas river for agriculture. There are social disturbances in various pockets of Assam leading to stoppage of work. In addition to that there are shortage manpower in line management and skilled workers.

Assam may be lagging behind with respect to other states, in the area of use of renewable energy sources. It has sufficient natural resources to develop this sector. If past records are seen in the present context of power generation and energy available in the state, the energy need in rural area should be given careful thinking. The greater importance to renewable energy is needed, appropriate technology have to be identified; an execution strategy have to be planned; so that people get full benefit of electricity and enhance day to day livelihood. In these areas renewable energy technology for providing power in stand-alone mode is the current solution, and later that can be extended to grid.

Full efforts are being exerted by ASEB and the nodal agency of MNRE to harness the renewable energy sources and to provide electricity to the rural masses of remote villages. There are various promotional incentives launches by the Government of India and thereby definitely is providing electricity for the rural masses.

During the survey the district heads of the DISCOMs (chief engineer and superintending engineer) were enquired about their perceptions of RGGVY, and they highlighted following:

- (a) Development of Village Electricity Infrastructure (VEI) in the un-electrified villages,
- (b) Upgrade of the partially electrified village electricity infrastructure,
- (c) Successful renovation of the damaged infrastructure,
- (d) Intensive electrification in villages where some gaps were identified to strengthen the infrastructure and
- (e) Release of BPL connections.

State REC provided the revised DPR and contact addresses, and with this background the field survey was conducted to collect information highlighted in the terms of references of REC. It was a feeling that strengthening of existing network for linking RGGVY network to state power grid; was not getting adequate importance. Commissioning of 33/11 KV substation was getting delayed. There are various shortcoming in execution of RGGVY projects, and one of the major concern is of skilled manpower that can be permitted to work charged grid. Many of the former APDCL employees, who have settled and have stakes in development of the area, who have got experience in these works can be encouraged to involve in the process with some honorarium or contractual amount so that burden of APDCL employee can be reduced. The subcontractors are also lacking in skilled manpower.

### **Chapter 3:**

## **Implementation Methodology of RGGVY Programme in Assam:**

DISCOMs in Assam have followed the standard REC procedure of implementation. The sequential procedure is as follows:

- Preparation of district based detailed project reports for execution on turnkey basis.
- Involvement of central public sector undertakings (CPSUs) of power ministry in implementation of some projects.
- Call for tenders for the rural electrification in the district on a turn-key basis from competent contractor.
- Provide enabling services to turn-key contractor to implement project according to schedule
- Adhere to the protocol of handing over of asset by contractor and taking over of Asset by DISCOM
- Certification of electrified villages by the concerned Gram Panchayat.
- Deployment of franchisees for better management of rural distribution, for better consumer services and reduction in losses.
- Undertaking by states for supply of electricity with minimum daily supply of 6- 8 hours of electricity in the RGGVY network.
- Making provision of requisite revenue subsidy by the state.
- Determination of Bulk Supply Tariff (BST) for franchisee in a manner that ensures commercial viability.
- Three tier quality monitoring mechanism for XI Plan Schemes have been made mandatory.
- Web based monitoring of progress.
- Release of funds linked to achievement of pre-determined milestones.
- Electronic transfer of funds right up to the contractor level.
- Notification of Rural Electrification Plans by the state governments.

The objective of evaluation study was to affirm the tasks performed by DISCOMs and RGGVY implementing agency in the context of Terms of Reference (TOR) issued by

REC and perception of DISCOMs in the following district-block-villages as indicated in Table 5.

Considering the size of project activities and also the organizational infrastructure available with the state utilities; the Central Government decided to provide the service of Central Public Sector Undertaking in order to complete the project in a compressed time schedule of five years. In case of Assam, PGCIL is helping APDCL by shouldering the responsibility of implementing RGGVY in seven districts namely: Dibrugarh, Sibsagar, Sonitpur, Cachar, Hailakandi, Karimganj and Kokrajhar District. Rest of the districts are also being done on turnkey basis. The turnkey contractors for rest of the projects are being selected by open tender. In the assigned project, the district of Dibrugarh is being done by PGCIL, and the contractors assigned the jobs are listed in Table 5A for the districts of Karbi Anglong, Dhubri, and Lakimpur.

**Table 5: Sample villages surveyed in the state of Assam listed under given blocks and districts<sup>3</sup>**

<i>Name of the District</i>		<i>Name of the Block</i>	<i>Name of the Village (Census Code)</i>	
1	KARBI ANGLONG	Bokajan	1	Christan Gaon (02296400)
		Howraghat	2	Dighliati Gaon (02200900)
		Lumbajang	3	Pattar Gaon (02124300)
		Nilip	4	Lekthe Gaon (02321500)
		Somelangso	5	Maghar Bosti (02247700)
2	DHUBRI	Bilasipara	1	Shaktola (00178200)
		Birshingjarua	2	Fulkatari (00160400)
		Chapar-Salkocha	3	Segunjhari (00196200)
		Fekamari	4	Kaliranga Pt.I (00222500)
		Rupsi Pt.	5	Rupshi Pt.II (00113600)
3	DIBRUGARH	Barbarua	1	Deori Gaon (01641600)
		Khowang	2	Kashi Pather (01706200)
		Lahowal	3	Gohain Gaon (01649500)
		Tengakhata	4	Fekelajan (01687800)
		Tingkhong	5	Kuli No.1 (01721300)
4	LAKHIMPUR	Boginodi	1	Goriamari (01325900)

<sup>3</sup> Villages specified by the Rural Electrification Corporation in the contract

## Evaluation of RGGVY programme in the state of Assam

		Dhakuakhana	2	Lahibari (01357700)
		Ghilamora	3	Barkalia N.C. (01373200)
		Karunabari	4	Nizlaluk (01287300)
		Narayanpur	5	Majgaon (01277200)
5	TINSUKIA	Hapjan	1	Lesenka Gaon (01552200)
		Kakapathar	2	Boka Pathar (01598800)
		Margherita	3	Lama Gaon (01613500)
		Sadiya	4	Ghahpur (01511700)
		Saikhowa	5	Chengeli Gaon (01537400)
<b>Districts: 5</b>		<b>Blocks: 25</b>		<b>Villages: 25</b>

The village electrification programme is sustained and energized by the substation shown in Table 5A. These are the units for strengthening REDB and the backward linkages to village electrification. The contractor engaged for the job is indicated.

**Table 5A**

Sl No	District	Coverage	Contractor
1	Tinsukia	2x2.5 MVA S/S at Chapakhowa alongwith associated 33KV line(30.0 km.) & 11KV line(8.4 km) in Sadia Circle	Pkg. TSK-1; (JV) of M/s North Eastern Cables & Conductors (P) Ltd., Jorhat, Assam.
2	Karbi Anglong	1x2.5 MVA S/S at Umpanai alongwith associated 33 kv & 11 kv lines.	M/s North Eastern Cables & Conductors (P) Ltd.,A.T.Road , Jorhat-1
3	Karbi Anglong	1x2.5 MVA S/S at Bokolia alongwith associated 33 kv & 11 kv lines.	M/s North Eastern Cables & Conductors (P) Ltd.,A.T.Road , Jorhat-1
4	Lakhimpur	1x2.5 MVA S/S at "Raidengia" alongwith associated 33 KV & 11 KV Lines.	<u>LKP-1:</u> M/s Jayanta Khaund,K.B.Road, North Lakhimpur
5	Lakhimpur		<u>LKP-2:</u> M/s North Eastern Cables (P) Ltd., A.T.Road,Jorhat-1
6	Lakhimpur		<u>LKP-3:</u> M/s Jayanta Khaund,K.B.Road, North Lakhimpur
7	Lakhimpur		<u>LKP-4:</u> M/s Chadalavada Infratech Ltd., Hyderabad.

## Evaluation of RGGVY programme in the state of Assam

8	Lakhimpur	LKP-5: M/s Win Power Marketing (P) Ltd., Jorhat.
---	-----------	--

**Table 6: Brief on RGGVY Implementation in Assam (10<sup>th</sup> and 11<sup>th</sup> Plan)<sup>4</sup>**

State/U T Name (Total No. of Districts )	No. of DPR s	5 Year Plan	Project cost Sanctio ned (in Rs. Cr.)	Awarde d cost/Re vised cost (in Rs. Cr.)	Total Amount Release d (in Rs. Cr.)	Electrification of Un-/De-Electrified villages		Intensive Electrification of Electrified villages		No. of Connections to BPL Households	
						Coverag e in No.	Achieve ment in No.(%)	Cover age in No.	Achieve ment in No.(%)	Cover age in No.	Achievem ent in No.(%)
ASSAM	3	10th Plan	158.04	199.1	175.32 (88.1%)	903	903(100.0%)	1746	1746(100.0%)	148971	123456(82.9%)
	20	11th Plan	1544.33	2154.97	1839.66 (85.4%)	7622	6109(80.1%)	11584	8752(75.6%)	842685	581420(69.0%)
		Othe rs		0	1.8		0		0		0
TOTAL of ASSAM	23		1702.37	2354.07	2016.78 (85.7%)	8525	7012(82.3%)	13330	10498(78.8%)	991656	704876(71.1%)

In Assam, there are Detailed Project Reports (DPRs) for 23 Districts, elucidating the planning, fund made available for the project and scope of work behind the electrification of each district. As shown in table 6, the DPR cost estimate was rupees 1702.37 crore, and the project cost was sanctioned, out of which the total amount released was 2016.78 crore Rupees. According to the reports, 82% of the un/de-Electrified villages had been electrified- accounting for 7012 households. Within the electrified villages, there were a planned 13330 households that had to be electrified, out of which nearly 79% were successfully achieved. Among the BPL households, there were over 9 lakh households to be connected, out of which 71% of the target had been accomplished.

**Table 7: Preliminary RGGVY relevant Information of Districts to be surveyed**

District	DPR Sanction date	Sanctioned Cost in lakhs	Name of Implementing Agency
Dibrugarh, 11th Plan	05-03-2008	6814.54	PGCIL
Tinsukia, 10th Plan	23-11-2005	5566.91	ASSAM SEB, APDCL
Lakhimpur, 11th Plan	05-03-2008	6797.56	ASSAM SEB, APDCL
Karbi Anglong, 11th Plan	25-03-2008		ASSAM,SEB, APDCL
Dhubri, 11th Plan	05-03-2008	9233.93	ASSAM,SEB, APDCL

<sup>4</sup> Information collected from the REC, New Delhi Office

**Table 7A:** Project wise achievement of electrification of villages & Households under 10th and 11 th plan in Assam<sup>5</sup>

Project wise achievement of electrification of villages & Households under 10th and 11 th plan in Assam											
sl no	District in the state	Achievement (ach) 2011-12			Cumulative achievement till 30-11-2011				Energization of UE & DE villages	% ach of UE Villages wrt Rev Cov	% ach of BPL HH wrt BPL HH
		UE/DE Villages	EV	BPL HH	UE/DE Villages	EV	RHH including BPL	BPL HH			
1	Tinsukia				350	725	51548	51548	350	100	100
2	Dhubri	75	229	15825	333	497	38160	38160	273	85	51
3	Dibrugarh	39	167	559	158	312	11157	11157	115	64	91
4	Karbi Anglong	189	29	8058	1226	406	21113	21113	985	89	67
5	Lakhimpur	113	82	12930	519	487	30905	30905	512	95	89

Table 7 and 7A indicates that project awarded in the 10th Five Year Plan has been completed, while the projects awarded in the 11th Five Year Plan are yet to be completed. Some of the surveyed villages in the district of Dibrugarh are unelectrified. The status of implementation of RGGVY in the surveyed villages is detailed in chapter 5. The table 7A indicates the implementation status for each district showing percentage achievement of UE Villages with respect to revised DPR coverage and percentage achievement of BPL HH with respect to total BPL HH.

The schedule of Implementation has been discussed with the SE in the district, for which the DPR is made. The time schedule of substation erection is detailed in Annexure 2. There is slippage in commissioning of the substation. It can be observed that main delay occurs in erection and commission of substation at site due to material transport to the site. Main delay occurs in village electrification infrastructure (VEI), and laying of 11 KV lines. This may be due to lot of public dealing during process of implementation that needs to be streamlined both for turnkey contractors and CPSU-PIA. VEI work is executed by deployment of gangs of few workers in the district. The deployment is constrained due to availability of local manpower interested to take up the task. The

<sup>5</sup> Information collected from CPM, REC, Guwahati



sanction of BPL households is received in batches. These delays are over and above the stoppage of work due to floods, insurgency, storms etc.

The status of VEI of the five districts covered and surveyed to evaluate implementation progress made in RGGVY programme is described in table 8. This was the context of Village survey.

**Table 8: District-wise Village Electrification Infrastructure of the Five Districts**

Sl No.	District	Propose BPL Connection	Proposed DTR in KVA			Proposed 11KV Line (In Kms.)	Proposed LT Line (In Kms.)	
			10 KVA	16 KVA	25 KVA		3 Ph	1 Ph
1	Dibrugarh	24,240	589	409	546	1315.5	164	299
2	Lakhimpur	34,745	Nil	607	356	1085.85	73	776
3	Karbi Anglong	31,504	Nil	820	1186	4689.8	801	2916
4	Dhubri	74,274	Nil	1173	252	794.7	97	1349
5	Tinsukia	44,584	Nil	359	366	892.55	0	723
	All District (Total), Assam	9,89,411	1042	15371	4871	24301	2292	17682

A major percentage of DISCOM executives appeared to be positive and committed about the RGGVY scheme and were hopeful of the success of Rural Electrification system, provided adequate power supply is allocated to rural area. They have under taken a RGGVY awareness programme. Power generation during off-peak hours are comfortable. Please refer to annexure 4. Challenge is to meet peak load demand.

As stated, ADB funding is also being used to strengthen the power distribution network. The proposed network development by erection of sub-station by Assam state electricity board is indicated in Figure 1. The schemes approved under ADB are listed in Annexure 8. Currently it appears the scheme will benefit the Urban Areas. The rural areas may benefit from the additional capacities of the installations.

**Figure 1: Proposed Substation site under ADB funding<sup>6</sup>**

<sup>6</sup> ADB funding report



**Table: 9- Demand and Supply of Power in the State of Assam<sup>7</sup>**

Referring to table 9, it is observed that the demand of power supply has increased from 3550.00 (MU) in 2002-2003 to 5966.5 (MU) in 2010-11. Similarly the availability has also risen from 3192.287 (MU) to 5034.113 (MU). Up till March 2011, the short fall also

34

increased from 357.713 to 932.380 (MU) that is deficit has increased from approximately 10% to approximately 17%. There is a likelihood that demand will further increase in the future and ultimately, shortfall may be more than 1000 MU within coming years.

Development of Power generation capacity needs to be addressed urgently, despite normally stated that north-east is surplus in power. The power demand shortfall is significant, and the state is importing power and that is increasing rapidly. The information provided in Annexure 4 shows that power import through open access is significantly high during peak hours. ASEB should carry out a plausible projection of power demand and go into power purchase agreement on a long term planning. As a long term measure ASEB should stress on power generation through renewable energy, small hydro projects, and thermal power plant using both coal and gas. Renewable energy will facilitate in various form by supporting peak load and reducing T &D Losses.

The government of Assam has issued Rural Electrification Plan vide Memo No PEL. 89/ 2005/ pt.III/141-A dated April 13, 2009.

The document has following Sections

1. Status of Rural Electrification (works executed GOI programme of MNP (MNRE], PMGY, TSP, and SCCP ETC)
2. Load Forecast for Rural Areas, where grid connection feasible
3. Rural Electrification Delivery mechanism
4. Generation Plan
5. Transmission Plan
6. Rural Electricity Distribution backbone
7. System and Revenue Sustainability
8. Implementation Mechanism

The document was prepared with the experiences of the 10th Five Year Plan, hence each strategy and plan had a context. However this document may be revised in the context of the 12th Five Year Plan Census 2011, and the experience of RGGVY project, specific to load forecast, revenue sustainability, socio-economic development and delivery mechanism. The issue of scalability of rural economics will be viewed in the context of economic opportunities, and welfare society. State has issued the Economic Development plan. This can provide inputs for Rural Electrification Plan.

The expectation of the rural consumers to get the benefit of electricity throughout the day is very much uncertain. The villages primarily need the power from 6 pm to 10 PM. The focus should be on peak load management, where the state can take advantage of hydel power projects.

Actual implementation schedule vis-à-vis planned implementation schedules have being taken care of by the respective DISCOM, however there have been delays. Incidentally there was no common factor other than floods as a cause of delay. The causes of delays have been highlighted in next chapter, where the survey observations have been described. The parameters for delays in substations have been highlighted for three districts and the implementation in Tinsukia. It is evident that in Assam the implementation schedule in totality is more than 24 months, and the approved REC schedule is of 18 months for the eleventh plan with additional month for North-East states.

Assam has diversified geography and varied socio-political challenges. The delays in each district has unique feature. Hence same has been discussed in chapter separately.

## **Chapter 4:**

### **Approach and Methodology used in village survey:**

The field survey was conducted with reference to questionnaires submitted with the inception report. Initial reference of state contact and facilitating agency were obtained from the REC headquarters. Initial interactions with state level REC-CPM and DISCOMs were established.

For conducting field surveys, contacts were established with former DISCOM employees. With their assistance local IRADe team was established. Following activities were executed with their participation.

- DPR was collected from the office of CPM, REC to understand project base-line
- Stake holders identified and their role was enquired based on the questionnaire
- Field survey was undertaken to interact with consumers, panchayati raj Institutions, district committee members. Design of questionnaires for village were reviewed in context of district survey and stakeholders.
- Evaluation of APL/BPL households.
- Evaluation of RGGVY implementation (REDB & VEI) and quality of work done.
- Evaluation of socio-economic status due to village electrification.
- Evaluation of franchise system.
- Understand socio-economic impact of village electrification.

Assam State Energy Ministry has issued Rural Electrification Plan in the year 2009. But survey team could not get the copy. In view of enhanced capacity of State DISCOM executives, it is proposed that State Rural Electrification Plan can be redrafted.

Trace process of selecting Implementing agencies: The REC through their empowerment by MoP assignment request the state energy and power ministry/ department to enable development of rural electricity infrastructure. The department delegates the planning task of facilitating development of RE for each district to the Current DISCOMs. DISCOMS evaluate their capacity, resources plan RGGVY project implementation through (a) internal resources or (b) Central Public Sector units such as NTPC, PGCIL, NHPC, and DVC.

## Evaluation of RGGVY programme in the state of Assam

- Status of REDB and VEI in the concerned districts/blocks.
- Status of electrification in villages surveyed.
- Status of village electrification in associated districts/blocks.
- Status of BPL connections in villages surveyed.
- Status of APL connections in villages surveyed.

## **Chapter 5:**

### **Observations of Village Survey:**



The field survey was conducted as per terms of reference issued by the REC, who earmarked the villages that are listed in Table 5. Five districts (Tinsukia, Dibrugarh, Lakhimpur, Karbi Anglong, Dhubri) had been selected, in which 5 villages were chosen from five blocks of each district. For the survey to assess the impact and reach of RGGVY programme, questionnaire based interview was conducted. In the sample of 25 Assam villages surveyed, 32% of the total number of rural households has been connected under RGGVY. There were 1513 BPL households within the sample, of which 675 (45%) have been electrified. Among APL households, only 3% of the recorded 642 APL households (22 households) had access to electricity with RGGVY infrastructure. The RGGVY project for Tinsukia district was undertaken in the tenth five-year plan; The rural electrification of districts Dibrugarh, Lakhimpur, Karbi Anglong, Dhubri were undertaken in 11th five year plan. The project implementation of Dibrugarh is being executed by CPSU, PGCIL and for other project ASEB is responsible for implementation. The summary of village survey is shown in Figure 2.

**Figure: 2 Consumer Profile in the Districts Surveyed**

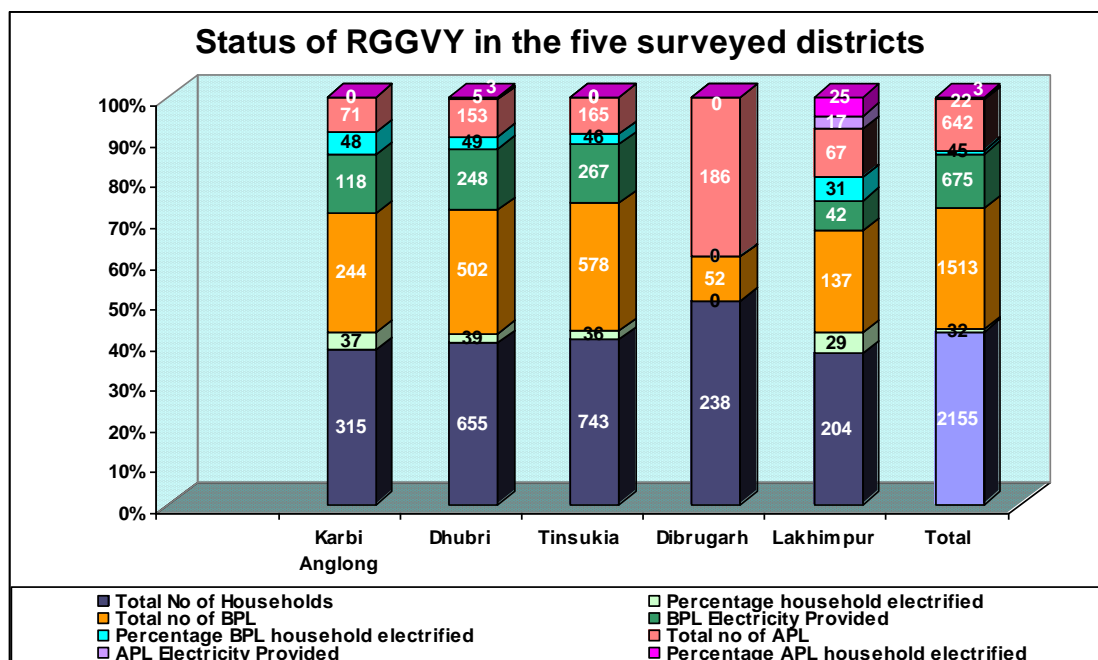
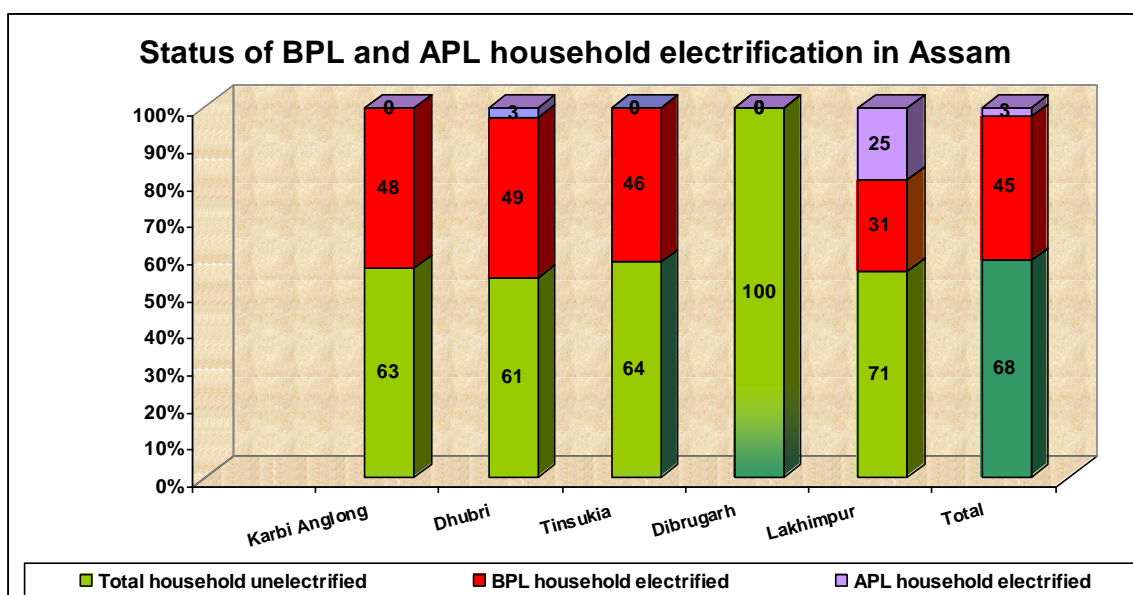
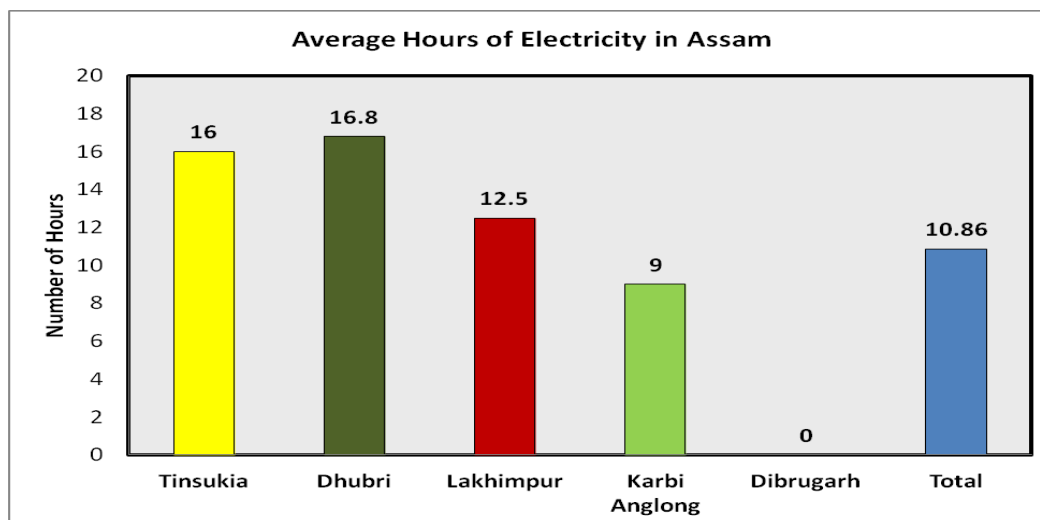


Figure 2A shows the status of electrification in the surveyed districts of Assam. It is found that out of the total households to be electrified, in total 68% of the households have yet to be connected. In this case, Dibrugarh fares the worst with not even a single household considered electrified. Dhubri district, with 49% BPL household electrified, and 3% of the APL household electrified seems to be the most likely to achieve complete rural electrification. Interestingly, Lakhimpur district, though having nearly 70% household still un-electrified, has electrified around 25% of its APL households

**Figure 2A: Status of households connected within Assam**



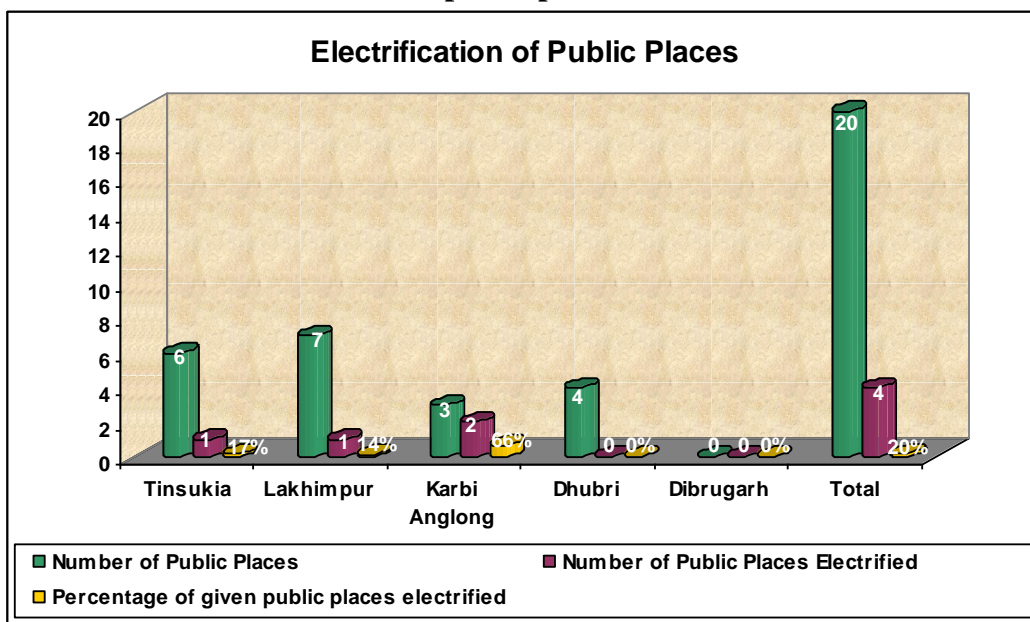
**Figure 3: Status of Electricity supply in villages.**



As can be seen from the Figure 3, the number of average hours of electricity supplied in the surveyed districts of Assam (excluding the district Dibrugarh) ranged anywhere from 9 hours per day to 17 hours per day. In the five villages of the district of Dhubri, the average hours of electricity received stood at 16.8 hours a day. On the other end, the lowest recorder number of average hours was in the district of Karbi Anglong. At the time of the survey, the district Dibrugarh was termed de-electrified and the given villages were yet to be electrified as per the RGGVY guidelines. Excluding Dibrugarh, the average hours of electricity availability is 13.575 hours (otherwise 10.86 hours).

The reach of the RGGVY facilities to public places, is indicated within Figure 4. Of the given five districts, we assessed the data for public places that had access to electricity. It was found that in totality only 20% of the 20 public places looked at i.e. only 4 public places had undergone electrification, or were receiving electricity. Out of these, there was provision only enough for basic appliances like fans and lighting to operate.

**Figure-4: Status of electrification of public places in Assam**



The reach of the RGGVY to public places is determined within this figure 4. Of the given five districts, we assessed the data for public places that had access to electricity. It is found that in totality only 20% of the 20 public places looked at i.e. only 4 public places

have been electrified and energized. There is provision only enough for basic appliances like fans and lighting to operate. . The concerned authorities such as panchayati raj institution have to take action by integrating different development programmes with RGGVY to accrue commercial benefits and facilitate franchisee operation in the village.

Karbi Anglong is the district with the highest percentage of electrification of its public buildings. Only one out of 6 and 7 public places examined in Tinsukia and Lakhimpur respectively, are receiving electricity.

According to population density and load demand at village level, the use of HVDS distribution system is very unlikely. Population in these villages are low. There is no indication that load demand may grow in these hamlets as the earnings of people are comparatively low. The habitations were remote and dispersed. Here only traditional infrastructure development is adequate. Placement of transformer may be an issue. BPL connectivity is being provided according to RGGVY guidelines. Few APLs are applying for new connection. Use of irrigation pump-sets working in the village and other heavy duty electrical machines was not observed in the villages. To facilitate development of small scale industry, a more 3 phase supply should be provided.

#### **Observation on Interaction with the Contracting firm PGCIL in Dibrugarh:**

- 1) The DPR for the district is prepared by the ASEB.
- 2) The implementation agency is the Power Grid Corporation India Ltd.
- 3) During the survey by the contracting firm of M/S PGCIL; various anomalies were found. Few villages could not be located, some villages were already electrified, and some of the villages could not be approached due to bad vehicular traffic and hazardous transportation. Amendments to DPR had to be made twice.
- 4) Total villages included in RGGVY for the district are 931.
- 5) For about 25 villages, there are problems due to right of way; for the Tea Estate Authority, oil authority and recalcitrant villagers. This problem is to be solved by PGCIL. Six villages that were ready for charging, and to be handed over to the PGCIL/ASEB by the contracting firm, could not be completed in all aspects.

- 6) Insufficient parameters (material quantity) as per BOQ are causing a lot of problems in execution. Villages are obstructing the work of the contracting firms, demanding complete electrification of their respective villages.
- 7) In most of the villages, the capacity of DTR is not in accordance with the population. Once all the APL consumers are connected with electricity, the connected DTR will be overloaded and will be damaged before the defect liability period. Already some transformers are reported to have failed.
- 8) The contracting firms have completed about 450 villages and handed over another 50 villages. But during May 2011, PGCIL has amended that there were additions made thrice during the executing period, with the addition of further parameters in those completed villages making the situation even more difficult.
- 9) In lots of villages, villagers have forcibly captured poles and other materials. These villages are not (fully or partly) included in the list and did not allow shifting of materials to the nearby villages.
- 10) At the very beginning of the project, PGCIL forced the contracting firm to install BPL power service connections in the premises of the beneficiaries without developing infrastructure to achieve a target fixed by the REC for BPL connection. In the infrastructure of around 450 villages, it has been observed that only 15-18% power service connections to BPL consumers can be provided with installed infrastructure whereas BPL kit has been installed two years back; which has created an unnecessary inconvenience to the consumers as well as with the PGCIL contracting firms.
- 11) Village wise amended BOQ parameters are not coming to most of the villages. There are few villages where 11KV parameters with DTR, is defined, where there is no option of LT parameters.
- 12) Due to shortage of manpower PGCIL and contracting firm work progress is hampered.
- 13) PGCIL's initiative to take up certain issues in LOA with their HQ is also hampering the progress.

- 14) Frequent bandh call by different organizations and insurgents are the reason of shortage of manpower within the contracting firm, and lower coordination, and work continuity have greatly affected progress in work.
- 15) The district is susceptible to floods. Due to floods and paddy field activities, the works get slowed down.
- 16) a) As per the procedure accepted for charging the line, submission of test report with details of DTR, HT and LT parameters will be submitted to the Nodal office RE/ASEB.  
b) Nodal officer RE/ASEB will inspect the respective villages' current BPL installation and issue clearance certificate for charging handing over, if work is satisfactory and complies with the REC standard. Sometimes certain verification may also become necessary.  
c) The village charging programme is scheduled by PGCIL and also the average shutdown of existing old lines of APDCL (ASEB), for connection of the new infrastructure installed. However due to communication gaps, charging as well as handling are delayed. Sometimes, it is very difficult to shutdown charge due to shortages of manpower in ASEB.

## **1. Quality of implementation of RGGVY DPRs in State Districts.**

### **Survey Observations: Dibrugarh District**

The RGGVY scheme of Dibrugarh District is entrusted to PGCIL by the Government. Indo Power Project Ltd (IPPL), a Calcutta based party is the main contractor.

Altogether, 963 villages at Dibrugarh District have been included for village electrification for the 1<sup>st</sup> phase and approximately 24,000 BPL beneficiaries have to be given an electric connection. For this purpose, Rupees 68 crore has been sanctioned already, and work has been going on since 2 years.

In practical consideration, it is observed that only 60% to 70% of the individual villages can be electrified with that 68 crores amount. A supplementary DPR for sanctioning extra 20% of Rupees 68 crores has been submitted by PGCIL, DIB and it is at the final stage of approval. If it is sanctioned, then additional 15% to 20% incomplete work of individual

villages can be finished and another 10% of the individual villages can be electrified. But, still 10% of the individual villages will be left out without electrification as stated by PGCIL, DIB.

Out of 24000 BPL list, PGCIL has already identified approximately 12,000 BPL beneficiaries and kits (Meter Box, switch Board etc) have already been installed at houses of approximately 10,000 BPL beneficiaries.

Electrical Circle Infrastructure Development under RGGVY in the five surveyed villages of Dibrugarh District is indicated in Table 12. General information of the district is as under

1. Village electrified and handed over to different sub-divisions for acceptance -119
2. Approval for charging 11KV line and DTRs issued – 350
3. Total BPL beneficiaries received electric facilities – 1700
4. Total work in progress (Both H.T. – L.T.-DTR)- 450 villages.

**Table 12: Infrastructure Development under RGGVY in the five villages of Dibrugarh District surveyed**

Block	Village Name	Electrification status as per PIA	No of poles		DTRs in KVA			HT length (Kms)	LT length (Kms)	
			HT	LT	10	16	25		1 PH	3PH
Borbaruah	Deori Gaon	Yet to be started	7	8	1	0	0	0.41	0.35	0.00
Lahoal	Gohain Gaon	Electrified	12	8	0	0	1	0.77	0.00	0.33
Moran	Kashipathar Gaon	Yet to be charged	16	17	1	0	0	0.84	0.68	0.00
Tingkhong	Koolie No 1	Yet to be charged	12	6	0	1	0	0.80	0.35	0.00
Tengakhata	Fekelajan	Electrified	13	9	0	1	0	0.70	0.40	0.00

Five villages as allotted by the REC have been surveyed. The survey team consisted of a local technical expert and a Research Assistant from IRADe. The local technical expert was provided by the Implementing Agency. The village president or the ward member of the village was informed beforehand of the visit. The single line diagram and the BPL list

were collected from the Implementation Agency office. It was then confirmed with the panchayat member interviewed in the village.

The village electrification infrastructure was checked on the basis of the single line diagram. Then the households were visited based on the final list. Wherever possible, focus group discussions on RGGVY were also organized.

### **Findings**

#### **Village1: Deori Gaon, Borborua Block (Census code: 01641600)**

Profile: The village has 37 households out of which 9 are BPL households. The REDB and VEI have not been developed for the village under RGGVY. The village has an existing line of ASEB. Few households are getting around 16 hours of electricity per day from the existing line. The school and Anganwadi in the village are not electrified.

Electrification Status: The village has been classified as de-electrified village in the DPR. The present status as per PIA is “work yet to be started”.

Interview with the Panchayat Member: The Ward member and Head of the village were interviewed. They expressed the fact that it is very difficult to reach the village for carrying out work. The village head also said that most of the villagers in the village are poor and dependent on subsistence agriculture which itself is very much dependent on rainfall.

#### **Village2: Gohain Gaon, Lahual Block (Census code: 01649500).**

Profile: The village consists of 27 BPL households. The REDB and VEI have been developed for the village and the charging has been done but no connection has been given to the APL households. Almost all the households are using electricity without any meter. Under RGGVY 12 HT poles and 8 LT poles have been erected. There is one 25 KVA transformer. The length of HT is 0.765 kms and the length of the 3 phase LT is 0.331 kms. Though, the households haven't got electricity connections under RGGVY legally, the survey team asked them questions on the benefits of having electricity in the village. The village gets electricity for more than 12 hours a day on an average but the villagers complained about unavailability of electricity during evening. They mentioned that it is more important to have electricity during the evenings as most of them are out



during the day. The public places like schools, sub centres and Anganwadis have no access to electricity.

Electrification Status: The village has been classified as de-electrified village in the DPR. The present status as per PIA is “electrified”.

**Village3: Kashipathar, Moran Block (Census code: 01706200).**

Profile: The village consists of 46 households out of which there are 10 BPL. The REDB and VEI have been partially developed for the village. The erection of poles as per the single line diagram has been done but the stringing still hasn't been done. 16 HT poles and 17 LT poles were erected. Thus, none of the villagers have received electricity connection under RGGVY. The public places like schools, sub centres and Anganwadis have no access to electricity. A nearby village with existing electricity line was visited to get an understanding of the area. The survey team found out that the franchise is collecting money without proper meter reading and bills.

Electrification Status: The village has been classified as de-electrified village in the DPR. The present status as per PIA is “yet to be charged”.

Interview with the Panchayat Member: The President of the village panchayat was interviewed. There are 10 villages under the president including the one we surveyed. None of the 10 villages have received electricity connection under RGGVY. The President says that there are serious delays in implementation of the program. According to her the BPL meters in some of the villages are distributed without electricity. The survey maps for electrification were not properly drawn.

**Village 4: Koolie No 1, Tingkhong Block(Census code: 01721300).**

Profile: The village consists of 85 households out of which there are 44 BPL households. The REDB and VEI have been developed for the village. 12 HT poles and 6 LT poles were erected and one 16 KVA transformer was given under RGGVY. The public places like schools; sub centres and Anganwadis have no access to electricity. The number of poles as per the diagram is 8 whereas 6 poles were approved and erected under RGGVY. The RGGVY implementation created political problems in the village as all the

households did not get electricity. The line was not charged as the villagers did not allow the implementation agency to charge it.

Electrification Status: The village has been classified as de-electrified village in the DPR. The present status as per PIA is “yet to be charged”.

Interview with the Panchayat Member: The President and the Secretary of the Village Panchayat were interviewed by the survey team. Few people from the village were also there during the meeting. The approved number of poles is less than the number of poles shown in the single line diagram. Only few households will receive electricity connections under RGGVY

**Village 5: Fekelajan, Tengakhat Block (Census code: 01687800).**

Profile: The village consists of 77 households out of which 41 households are BPL households. The REDB and VEI have been developed for the village. The charging has not been done yet. No households have been given the connection. 13 HT poles, 9 LT poles have been erected and one 16 KVA transformer was given under RGGVY. The HT length is 0.7 kms and the LT length is 0.4 kms. The public places like schools; sub centres and Anganwadis have no access to electricity. The village has an existing electricity line which is providing electricity to 10 households but none of the households have meters in their house. The village has no proper road access. The survey team had to walk considerable distance.

Electrification Status: The village has been classified as un-electrified village in the DPR. The present status as per PIA is “electrified”.

Interview with the Panchayat Member: The ward member of the village was interviewed. The ward member accepted the fact that it is very difficult to carry out the work in the village. The works was on halt for 4-5 months due to bad roads. Animal transport had to be used to carry materials during the building of the infrastructure.

**Conclusions of Dibrugarh Village survey:**

None of the households in five villages have received electricity connections under RGGVY. Most of the households are not aware of the RGGVY scheme. There is a lack of co-ordination between the Implementing Agency and the DISCOM. There are a lot of

political problems at the village level, which is hampering the effective implementation of RGGVY. The villagers who have not received connections are not letting the agencies give connections to other approved households. In one of the villages, meters have been given to BPL households even before the infrastructure was set up. The engineers of the contracting firm were beaten up due to slow work by villagers and work was on hold for a while till some local hiring was done. There are considerable infrastructure problems like bad roads and lack of transport which leads to delay in delivery of goods. In addition there are weather constraints which sometimes lead to stoppage of work for few months. During the time of the visit, the cultivation season was going on and erection of poles in the field was not allowed by the villagers which were also leading to delay. There is a huge time lag between building of infrastructure and release of connections in spite of the fact that people are willing to pay for the connections. This might be due to shortage of manpower of DISCOM as the final clearance for Implementation Agency takes time.

**Observations:**

1. There needs to be proper co-ordination between the Implementation Agency and DISCOM. They should plan together properly, to implement the scheme in a time bound manner.
2. There needs to be sound co-ordination between the villagers, village panchayat and agencies involved in the implementation process. This will help in avoiding the delays due to local political problems as a consensus will be formed before starting the project.
3. Politically motivated activities like distribution of meter before development of infrastructure should be avoided as it hampers the long term welfare goals of the people.
4. The State Government should deploy more manpower towards rural electrification as the employees are overburdened with work which often leads to lack of human resource for rural electrification.

5. The seasonal and weather constraints should be kept in mind before making the implementation schedule.

Interview with the Panchayat Member: No Panchayat representative of the village stays close to the village. The villagers also complained of the unavailability of any public representative. Many of their concerns could not be conveyed due to this.

**Survey Observation: Lakhimpur District:**

**(a) Background:** Lakhimpur is the 12<sup>th</sup> district of Assam as per 2001 census. It is situated in the North Bank of Upper Assam. The mighty Brahmaputra is flowing through the southern part of the district and neighbouring state Arunachal Pradesh is on the north side. Dhemaji and Sonitpur districts border the eastern and western sides of the district. The geographical area of the district is 2277 sq. km. and tea gardens, reserve forests and low-lying areas cover a sizeable area. The Lakhimpur district consists of nine Blocks, namely Narayanpur, Karunabari, Bihpuria, Naoboicha, Boginadi, Lakhimpur, Telahi, Dhakuakhana, Ghilamora. There are 1139 numbers of inhabited villages in the district. The break up of these inhabited villages as per their electrification status is as below: -

- (i) Electrified villages : 677 Numbers
- (a) Presently Electrified villages : 503 Numbers
- (b) De-Electrified Villages : 174 Numbers
- (ii) Virgin villages : 462 Numbers
- (a) Virgin villages (Non-Remote) : 370 Numbers
- (b) Virgin villages ( Remote ) : 92 Numbers

The Remote Villages are located in remote areas and are inaccessible from the existing grid. 174 numbers of villages became de-electrified because of damage of the existing infrastructures due to natural calamities such as erosion, flood, storm etc.

**(b) Project Objectives:** This DPR under RGGVY for Lakhimpur district proposes for electrification of 370 numbers of villages, 174 numbers of de-electrified villages and intensification of 413 numbers of already electrified villages covering 547, 314 and 555 numbers of habitations respectively. The project proposes to provide electricity to 51638

numbers of Rural Households including 34745 numbers of BPL Households. The project aims to cover about 45% of Rural HHs including 100% BPL HHs excluding 2134 numbers of BPL households in remote villages. To achieve 100% BPL HH connections, 8916 numbers of BPL HHs from already electrified villages ( not considered in this scheme), are proposed for providing electricity connections. Due to non-availability of readymade data, no. of BPL HHs is assumed to be in between 25% to 30% of the total HHs depending upon the financial status of the villagers of the revenue circles. This is against 21.64 % of BPL households for the state of Assam as per record of Ministry of Rural Development, Govt. of India, in the year 2001. However, the actual number of BPL Households will be assessed only after proper survey during implementation of the scheme.

The total numbers of Remote villages in the districts are 92 numbers Their electrification is challenging task. This is due to the following facts: -

- i) Isolation of some villages by the river Brahmaputra & its tributaries due to change of their courses.
- ii) Some of the villages are located in such area where there are forest reserves on either side. Therefore, extension of the existing network through the forest is not feasible.

The implementation of the scheme will create an additional peak load demand of 7.15 MVA against the existing peak load demand of 12.85 MVA from 132/33, 2x10 MVA Nalkata S/S' which feeds 7 nos of blocks out of 9 nos of Lakhimpur District and 2 nos of blocks (Majuli and Ujani Majuli) of Jorhat District. The remaining 2 nos of blocks (Dhakuakhana and Ghilamora) under Lakhimpur District are being fed from 132/33 KV, 1x16 MVA Dhemaji S/S under Dhemaji District, present and anticipated peak load demand being 1.0 MVA and 2.1 MVA respectively. The power supply to Lakhimpur district is received from the following sources – From 220/132 KV, 2x50MVA, Samaguri (under Nagaon District) via 132 KV, Gahpur (under Sonitpur District)

(c) **Beneficiaries:** Through the implementation of the project, it is intended to provide access to electricity to all households within the district including 100% BPL households.

Out of 143412 numbers of total households, only 20827 numbers (14.52 %) have access to electricity at present and with implementation of the project, from the remaining 122585 nos of households, 115202 nos of households will have access to electricity (94.85 %). The balance 7383 nos of households are located in the 92 numbers of remote villages and therefore cannot be provided electricity from the grid. For preparation of the project report and required data collection, the Gram Panchayats and village heads were consulted in many cases and after the implementation of the project; participation will be sought from the Gram Panchayats and other local bodies to make the scheme commercially viable. It is to be mentioned here that the ASEB is presently initiating some schemes for revenue collection in rural areas by involving the actual beneficiaries and similar action will also be taken for the villages to be electrified through this project.

**(d) On-going initiatives:** In Lakhimpur District, ASEB is presently executing village electrification works out of scheme allocations for the financial years 2002-03 & 2003-04 against RE MNP & PMGY, on 90:10 basis, through “Partial Turnkey” & “Full Turnkey” mode respectively. In “Partial Turnkey Mode”, four key items; namely: PSC Pole, AAA Conductor, Transformer & PVC cable were supplied by the Board. A total of 11 number of virgin villages are covered under the above schemes (Ref: Annex. These villages are categorised as ‘electrified villages’ in Form C-4.

**(e) Technology:** It is decided to carry out the proposed project works under “Full Turnkey” mode. The single-phase LT lines have been reduced by ASEB due to problem of imbalance load in sub-transmission network. The villages, which have 5 to 10 numbers of households, will be covered by non-conventional sources. So, 5 / 10 kVA S/S are not considered in this project. This has been agreed in the F.C.C. meeting of the ASEB.

**(f) Management Arrangement:** The Chief General Manager (RE) will be the Head of the Project Management Wing. He is responsible for floating of tender(s), evaluation and subsequent issuing of work orders. At the field level, works will be supervised by the concerned CEO’s of the electrical circles, who is under the administrative control of the Chief General Manager (D) of the respective DISCOM. For necessary assistance to the CEO, there is a Project Manager in each elect. Circle, who is the coordinator among the contractors & field officials at different levels.

**(g) Cost Estimates:** The detailed Cost Estimates (along with relevant Annexure from I to XXV) & Phasing out of the expenditure is enclosed in Form – A of the DPR

The total estimated cost of the project is Rs. 6764 lakh. This is inclusive of construction of 1 no of 1X2.5 MVA Sub-Station at Raidengia in Ghilamora Block along with associated 33 KV and 11 KV lines. The sub-station has been proposed due to increase of load demand after implementation of RGGVY. This will enable ASEB for electrification of 957 numbers of villages in addition to providing electricity to 34745 numbers of BPL households.

The proposed line parameters of villages under Naoboicha, Narayanpur, Telahi, Dhakuakhana and Ghilamora Blocks, especially of 11 KV lines, are on higher sides, as these Blocks have sizeable low-lying areas and are badly affected by flood water from mighty Brahmaputra and its tributaries every year . Therefore erection of 11 KV lines through shortest route is not possible in many cases. For all round development of these villages, which are located in far away north-east corner of Assam, electrification for the same has been proposed. This has led to the rise in the estimated cost. However, due to fund limitation imposed by M/s R.E.C. Ltd., especially in case of village intensification, the line parameters and substations have been restricted to the bare minimum. So there is likelihood that additional fund may be required to provide access of electricity to 100% households of already electrified villages.

**(h) Time frame:** The works under the project are scheduled to be completed within two years after sanction of the project.

**(i) Success criteria:** With the implementation of the scheme, 100% households of the district will have access to electricity and electrification of 100% BPL households (exclusive of habitations of Remote villages) will be completed. At Raidengia at Ghilamora Block, one 1X2.5 MVA; 33/11kV S/S has been proposed and with the construction of this S/S, a major problem of that area will be solved. It is hoped that, after the execution of the project the power scenario of the district will be improved to a great extent.

It is hoped that, after the execution of the project the power scenario of the district will be improved to a great extent.



**(j) Sustainability:** ASEB is planning to manage the revenue collection and maintenance of the village areas by involving various agencies at the Panchayats & village level. Already, such schemes have been implemented by ASEB successfully on experimental basis in few areas. Further, several initiatives have also been undertaken by ASEB to encourage villagers to take service connection through simple procedure and reduced cost. Such steps will help a lot in sustainability of this project.

**(k) About new 33/11 KV S/S :** 1 no. of 1x2.5 MVA, 33/11 KV Sub Station has been proposed at Raidengia in Ghilamora Block. There is no Sub Station in Ghilamora Block at present.

**(l) About supply of electricity to BPL H/Hs in already electrified village habitations not proposed in the Scheme :** No infrastructure has been proposed in 548 no.s of already electrified village habitations. The existing infrastructure is sufficient to provide electricity to all BPL households of these villages. Only BPL connections (8916 no.s) have been proposed in these villages.

Village Particulars (General) of Lakhimpur:								
Name of the block	Name of the village	village census code	sarpanch name	Total no. of families (in village)	Total no. of BPL	Electricity provided (BPL)	Total no. APL	Electricity provided (APL)
Boginadi	Goriamari	1325900	Montan Basing	79	54	10	25	7
Dhakuakhana	Lahibari	1357700	Putuli Barua	26	18	7	8	7
Ghilamara	Barkalia NC	1373200	Kiran Patir	11	8	1	3	3
Karunabari	Nijlaluk	1287300	Dibyajyoti Hazarika	28	22	16	6	Nil
Narayanpur	Majgaon	1277200	Munindra Deori	60	35	8	25	Nil

The remote villages are located in remote areas and are inaccessible from the existing grid. 174 villages were de-electrified because of the damage to the existing infrastructure due to natural calamities such as floods, storms and erosion.

Electrification of 370 virgin villages and 174 de-electrified villages is proposed as well as intensive electrification of 413 already electrified villages- covering 547, 314 and 555



habitations respectively. It is planned to provide electricity to 51638 rural households, including 34745 BPL households.

There are 92 remote villages having 2130 BPL households. The reason for their being considered remote is –

- I. Isolation of some villages by the rivers Brahmaputra and its tributaries due to change in their courses.
- II. Some of the villages are located in areas that are notified as forest reserve. Therefore extension of the existing network is not feasible.

In majority of the blocks within the districts, electricity will be fed from the Nalkata 132/33 KV 2×10 MVA grid S/S and in the remaining two blocks from the 1×10 MVA 132/33 KV Dhemaji S/S.

In many cases it has been observed that the GP has not maintained electrification records (kept any date of electrification). In certain cases, they could not even give the list of BPL households. Their involvement in their matter is not satisfactory. There is every possibility of manipulation in the name of beneficiaries. It has been noticed that the BPL individuals have not benefitted by the service connection. To cite one specific case- though in the list, the name of the eldest lady of the family is there, the benefit has been given to eldest son. There is every possibility of using fake names of the beneficiaries.

Though the service connection of BPL households should be provided without any charge by the contractor, there are complaints that the sub-contractors are asking for money in the range of Rupees 1500 to 2000 per household for the connections.

In a particular village, through the listed connections shown within July 11, it has been observed that only electrical items are handed over to them but no service connection. It is also reported that some families are passing even for the post along with transport of the same which amounts to Rs.1500-2000/-. This is perhaps by same middle man or sub contractor.

In one village, people reported paying the cost of a new transformer when the old was damaged. Besides it is reported that most of the households are paying for their connections, to the sub-contractor/ middleman, and this is not known to the department.

The department has given public notices in the newspapers and also to the local panchayat, but people have indulged in various types of malpractices for getting their electricity.

Many unauthorized connections are found in the district. They are taking the advantages of in-accessibility of the village due to logistics constraint of the department. Though many villages have paid their connection deposits to the department, connections are not done. The O&M activities in that infrastructure will be a challenging job due to the shortage of manpower and the vigilance of the department. No franchisee has come forward to the area of the electrified villages and the performance of old franchisee working in the district is not at all satisfactory.

The consumer connections in the newly electrified village are very few, although the infrastructure for electricity connection already exists. The department has not taken proper initiative- most probably to avoid the additional work load and since they will have to maintain the infrastructure due to shortage of manpower. Due to this, people have taken unauthorized connections, which in turn heightens the overall AT & C losses of APDCL

### **Survey Observation of Karbi Anglong district**

**(a) Background:** KARBI ANGLONG is the 19th District of Assam as per 2001 census. The Karbi Anglong District is situated in the central part of Assam. It is bounded by Golaghat district in the east, Meghalaya state and Morigaon district in the west, Nagaon and Golaghat district and Nagaland state in the south. The district with dense tropical forest covered hills and flat plains is situated between 25° 33' N to 26°35' N Latitude and 92°10' to 93°50' E Longitude. Majority of the population of the District are Karbis. The Karbis, mentioned in the Constitution Order, Govt. of India, constitute an important ethnic group in the hill areas of present Assam. Although at present they are found to inhabit mainly in the Karbi Anglong District. The Karbis, like other hill tribes, have a tendency to live on the hill tops. To electrify or any other construction works, material are to be carried by head and those materials also are to be carried from far away places as it is very much underdeveloped district. Hence cost of carrying the material is very much high and time consuming. The geographical area of the district is **10434** Sq.km.

The Karbi Anlong district consists of 11 (eleven) Blocks namely:- Amri, Chinthong, Socheng, Rongkhag, Lumbajang, Howraghat, Somelangso, Rongmongway, Long somepi, Bokajan and Nilip. There are, out of **2931** numbers villages: **2634 numbers are populated villages** (including Remote villages & excluding of **297** numbers of zero populated villages) in the District, the break up of which as per electrification status is as below. Out of **562 numbers of already electrified** villages, **126 numbers are De-electrified**. There are **2198 (Un Electrified 1254+ De-Electrified 126)** numbers of villages of which **818** numbers are declared remote in the district. Now **1254** numbers Un-Electrified villages and **126** nos de electrified villages are proposed in this scheme.

Block	Total Numbers of Villages	Zero Populated Villages	No. of Inhabited Villages	Electrified Villages (Electrified + De Electrified)	Remote Villages	Un Electrified Villages.
Amri	151	5	146	19	35	92
Chinthong	104	9	95	23	26	46
Socheng	116	3	113	79	11	23
Rongkhag	194	2	192	31	22	139
Lumbajang	379	36	343	77	62	204
Howraghat	535	13	522	164	150	208
Somelangso	190	25	165	29	71	65
Rongmongway	233	20	213	14	180	19
Longsomepi	282	10	272	50	105	117
Bokajan	522	144	378	48	86	244
Nilip	225	30	195	28	70	97
<b>Total</b>	<b>2931</b>	<b>297</b>	<b>2634</b>	<b>562</b>	<b>818</b>	<b>1254</b>

**(b) Project Objectives:** This DPR under RGGVY for **KARBI ANGLONG** district is prepared for electrification of **1254** numbers Un-Electrified villages, **126** numbers of De-Electrified villages and Intensification network in **436** numbers villages with free access of electricity to all the BPL beneficiaries.

The line loss & voltage regulations are not within the limit in the district. However the same will be looked into from ASEB's own resources or from other's sources if any circumstances arise for augmentation/installation etc. of the network in future.

The project proposes to provide electricity to **62467** numbers of rural households, which includes **31504** numbers of BPL households. The project will cover 61% of Rural households including 100% BPL households. Due to non-availability of readymade data, no. of BPL household is assumed to be in between 25% to 45% of the total household depending upon the financial status of the villagers of the respective blocks. This is against 21.64% of BPL households for the state of Assam as per record of the ministry of Rural development, Govt. of India for the year 2001. However, the actual number of households will be assessed only during implementation of the scheme.

In brief, the implementation of this project shall accomplish the vision of “100% village electrification by 2009 and electricity for all by 2012”

(C) **Beneficiaries:** Through the implementation of the project, it is intended to provide access to electricity to all households within the district including 100% BPL households. Out of **101423** numbers (Excluding Remote villages) of total households only **20475** numbers (20%) have access to electricity at present and with implementation of the project, the remaining **62467** numbers (77 %) of households will have access to electricity. **818** numbers of Remote villages with **23716** numbers of rural households with **11908** numbers BPL Households are not considered in this scheme .However, they will be considered through **MNES**. For preparation of the project report and required data collection, the Autonomous District Council and village heads were consulted in many cases and after the implementation of the project; the **Autonomous District Council** and other local bodies participation will be sought to make the scheme commercially viable. It is to be mentioned here that the ASEB is presently initiating some schemes for revenue collection in rural areas by engaging franchisees and similar action will also be taken for the villages to be electrified through this project. After implementation of the scheme, the socio economic scenario of the District as a whole will improve along with the revenue boost up.

(d) **On-going initiatives:** In **KARBI ANGLONG** district, ASEB is presently executing village electrification works out of scheme allocations for the financial years 2002-03 & 2003-04 against RE MNP & PMGY, on 90:10 basis, through “Partial Turnkey” & “Full Turnkey” mode respectively. In “Partial Turnkey Mode”, four key items; namely: PSC Pole, AAA Conductor, and Transformer & PVC cable were supplied by the Board.

Voltage regulation in some 33 & 11 KV lines are high and they will be considered in due time by ASEB.

(e) **Technology**: It is decided to carry out the proposed project works under “Full Turnkey” mode. The single phase LT lines have been proposed only although ASEB tries to reduce single phase LT line due to problem of imbalance load in sub-transmission network. The villages, which have 5 to 10 numbers of households, will be covered by nearby higher rating DTR. So, 5/10 KVA S/S are not considered in this project. This has been agreed in the F.C.C meeting of the ASEB.

(f) **Management Arrangement**: The CGM (RE) will be the Head of the Project Management Wing. He will be responsible for floating of tender(s), evaluation and subsequent issuing of work orders. At the field level, works will be supervised by the concerned CEO's of the electrical circles, who are under the administrative control of the CE (D) of the respective DISCOM. For necessary assistance to the CEO there is a Project Manager (RE) in each elect. Circle, who is the coordinator among the contractors & field officials at different levels.

(g) **Cost Estimates**: The detailed Cost Estimates (along with relevant Annexures) & Phasing out of the expenditure is enclosed in Form – A of the DPR.

(h) **Time frame**: The works under the project are proposed to be completed within two years after sanction of the project.

(j) **Success criteria**: With the implementation of the scheme, 100% households of the district will have access to electricity and 100% BPL household electrification will be completed.

(k) **Sustainability**: ASEB is planning to manage the revenue collection and maintenance of the village areas by involving various agencies at the Council & village level. Already, such schemes have been implemented by ASEB successfully on experimental basis in few areas. Further, several initiatives have also been undertaken by ASEB to encourage villagers to take service connection through simple procedure and reduced cost. Such steps will help a lot in sustainability of this project.

The Karbi Anglong district is situated in the central part of Assam. The area within the district has dense forest cover, with hills and flat plains. Majority of the population of the district are Karbis. The Karbis, mentioned in the constitution codes, GoI, constitute an

## Evaluation of RGGVY programme in the state of Assam

important ethnic group in the hill area of present day Assam. They are mainly found inhabiting in the Karbi Anglong district. The Karbis, like other hill tribes have a tendency to live in the hill tops. For electrification, or for any other construction works, materials have to be carried from faraway places, as it is very much an under-developed district. There are a total of 2931 villages, out of which 2634 are populated villages and 297 are zero populated villages. 818 villages are remote villages, which cannot be electrified through conventional methods. Out of the total 818 villages, 562 villages are already electrified and 126 are de-electrified (un-electrified 1254 + de electrified 126). Now these 1254 un-electrified villages and 126 de-electrified villages are proposed in the scheme for electrification.

Surveyed Village Particulars of Karbi Anlong								
Name of the block	Name of the village	village census code	sarpanch name	Total no. of families (in village)	Total no. of BPL	Electricity provided (BPL)	Total no. APL	Electricity provided (APL)
Bokajan	Christan Gaon	2296400	Ajoy Singnar	62	62	21	Nil	Nil
Howraghat	Dighilati gaon	2200900	Bali basumatary	61	52	29	9	Nil
Lumbajang	Pattor Gaon	2124300	Jonasing Bey	60	26	23	34	Nil
Bokajan	Lekthe Gaon	2321500	Boron Teron	22	22	6	Nil	Nil
Semelangso	Maghar Bosti	2247700	Baini Majowar	110	82	39	28	Nil

### Summary

- Total number of Villages : 2931
- Zero populated villages : 297
- Number of Inhabited villages : 2634
- Remote villages : 818
- Un-electrified villages : 1254
- De-electrified villages : 126
- Proposed number of households for Electrification : 62467
- BPL consumers : 31504

The total area of the district is 10434 square km, in which 10347 square km from the rural area. The area under forest cover is about 4922 square km.

Survey work of this district of the RGGVY scheme was started in March 2009. Due to verification in the topography, survey of the HT/LT line in this hilly zone is found to be very difficult in some of the villages.

Supply of the material at the work site is also found very difficult due to bad conditions of the village road and bridge. The PWD department does not allow movement of trucks through certain areas as the bridges are weak and not healthy for the steel tubular poles and materials are manually carried by labour or the soldiers at the work site. But with the co-operation of the villagers, electrification of 1816 villages i.e. 70% of the total declared, has been completed. Out of 31504 BPL households sanctioned, 20000 connections have been released.

Due to the vast forest area, some of the villages are under the reserve forest area. So the execution of those villages could not be started because of the problems raised by the forest department.

The district is a store house of bamboo production. This is creating problems in drawing the lines and it seem to be that in the future, the O&M of the line will be problematic.

It is also reported that the theft of energy has increased due to inaccessibility. It will be difficult to stop this as all these reported villages are located in remote places and there are no motorable roads. There are shortages of manpower in APDCL to look after the routine monitoring and to detect unauthorized connections. Meanwhile reports of transformer burning have been verified, though the contracting firms have replaced them since the damage occurred within the liability period. However in future, any damage to the transformer and other infrastructural restoration will take more time, which may create an undesirable situation. The district has suffered politically due to insurgency problems. There are all together 8-9 insurgent groups operating in the district. Generally they have a tendency to disturb the contracting firm by demanding money and other extra benefit. Again, certain underground organizations have also got the tendency to collect the so called “donation”.

Still the contracting firm has given over 4 packages within November and December 2011. The APL connections in the district are not satisfactory due to following fact:



- Charge of the overloading transformer.
- Shortage of Manpower in APDCL.
- The theft of energy noticed frequently, which will cause the AT&C loss.

**Survey Observation: Tinsukia District (UNDER ASEB)**

**(a) Background:** Tinsukia is the 14<sup>th</sup> District of Assam as per 2001 census. It is situated in the northern part of Assam and is surrounded by Arunachal Pradesh on the north and the east, Dibrugarh district on the west and the Sivasagar district on the south. The mighty Brahmaputra flows through the northern part of the district. The geographical area of the district is 3790 sq. km. and tea gardens, reserve forests and low-lying areas cover a sizeable area.

The Tinsukia district consists of four circles, namely: Sadiya, Doomdooma, Tinsukia and Margherita. There are 1107 numbers of villages in the district. The break up of the villages as per their electrification status is as below: -

- |     |                                  |               |
|-----|----------------------------------|---------------|
| i)  | Electrified villages             | : 824 Numbers |
|     | (a) Already electrified Villages | : 725 Numbers |
|     | (b) De-Electrified Villages      | : 99 Nos      |
| ii) | Virgin villages                  | : 283 Nos     |
|     | (a) Non-Remote                   | : 251 Nos     |
|     | (b) Remote Villages              | : 32 Nos      |

The Remote Villages are located in remote areas and are inaccessible from the existing grid. The 99 numbers of villages become de-electrified because of damage of the existing infrastructures due to natural calamities such as erosion, flood, storm etc.

**(b) Project Objectives:** This DPR under RGGVY for Tinsukia district proposes to construct 1 no. of new 33/11kV sub-stations to help electrification of 251 numbers of virgin & 99 numbers of de-electrified villages and intensification of 725 numbers of already electrified villages covering 322, 109 and 920 numbers of habitations respectively. The project proposes to provide electricity to 62132 numbers of Rural Households including 44548 numbers of BPL Households. The project aims to cover 45% of Rural HHs including 100% BPL HHs excluding 720 numbers of BPL households in remote villages. To achieve 100% BPL HH connections, 11786 numbers of



BPL HHs are proposed to be covered from villages, which are already electrified but not considered in this scheme. Due to non-availability of readymade data, numbers of BPL HHs is assumed to be in between 25% to 30% of the total HHs depending upon the financial status of the villagers of the revenue circles. This is against 21.64 % of BPL households for the state of Assam as per record of Ministry of Rural Development, Govt. of India, in the year 2001. However, the actual number of BPL Households will be assessed only after proper survey during implementation of the scheme.

After extensive field survey, the total numbers of Remote villages are found to be 32 numbers.

The implementation of the scheme will create an additional demand of 9.35 MVA against the existing demand of 48.2 MVA. The power supply for Tinsukia district is received from

(i) Namrup Thermal Power Station to Tinsukia and Ledo Grid Sub-Station by 132 KV System, connected with 2x20 MVA and 2x10 MVA Power Transformers respectively.

(ii) Kathalguri Power Station to Tinsukia Grid Sub-Station by 220 KV System, 2x50 MVA Power Transformers, 132/66 KV System, 3x20 MVA Power Transformers and 66/33 KV, 1x20MVA.

The present system will be able to cater the additional demand after implementation of the scheme.

(c) **Beneficiaries:** Through the implementation of the project, it is intended to provide access to electricity to all households within the district including 100% BPL households. Out of 174399 numbers of total households only 19324 numbers (11.08%) have access to electricity at present and with implementation of the project, the remaining 153193 numbers (87.84 %) of households will have access to electricity excluding the households in the 32 numbers of remote villages, which are 1882 numbers. For preparation of the project report and required data collection, the Gram Panchayats and village heads were consulted in many cases and after the implementation of the project; the Gram Panchayats and other local bodies participation will be sought to make the scheme commercially viable. It is to be mentioned here that the ASEB is presently initiating some schemes for revenue collection in rural areas by involving the actual

beneficiaries and similar action will also be taken for the villages to be electrified through this project.

**(d) On-going initiatives:** In Tinisukia district, ASEB is presently executing village electrification works out of scheme allocations for the financial years 2002-03 & 2003-04 against RE MNP & PMGY, on 90:10 basis, through “Partial Turnkey” & “Full Turnkey” mode respectively. In “Partial Turnkey Mode”, four key items; namely: PSC Pole, AAA Conductor, Transformer & PVC cable were supplied by the Board total . A total of 30 numbers of previously virgin villages are covered under above schemes and therefore these villages are considered are electrified villages.

**(e) Technology:** It is decided to carry out the proposed project works under “Full Turnkey” mode. The single phase LT lines have been reduced by ASEB due to problem of imbalance load in sub-transmission net-work. The villages, which have 5 to 10 numbers of households will be covered by non-conventional sources. So, 5 /10 kVA S/S are not considered in this project. This has been agreed in the F.C.C. meeting of the ASEB.

**(f) Management Arrangement:** The CE (RE) will be the Head of the Project Management Wing. He will be responsible for floating of tender(s), evaluation and subsequent issuing of work orders. At the field level, works will be supervised by the concerned CEO’s of the electrical circles, who is under the administrative control of the CE (D) of the respective DISCOM. For necessary assistance to the CEO, there is a Project Manager in each elect. Circle, who is the coordinator among the contractors & field officials at different levels.

**(g) Cost Estimates:** The detailed Cost Estimates (along with relevant Annexure from I to XXV) & Phasing out of the expenditure is enclosed in Form – A of the DPR

Though the total cost of the project is Rs. 5500 lakh, the estimated amount against 8 numbers of 1X2.5 MVA Sub-Stations along with associated 33 KV lines are not considered for funding under RGGVY. This is inclusive of providing electrical connections to 11786 BPL households in 287 nos .of already electrified villages not covered under RGGVY, where existing network is sufficient to cater the need of electrification.

Due to existence of sub-stations in respective blocks, the sub-stations, as referred above, could not be proposed in RGGVY as per guideline of M/s REC Ltd. However the installation of these sub-stations are very essential to keep Voltage Regulation within permissible limit. For this purpose, assistance from M/s REC Ltd./ other financial institutions will be sought.

Due to fund limitation imposed by M/s REC Ltd., especially in case of intensification of villages, a bare minimum of the line parameters and sub-stations have been proposed. So there is likelihood that additional fund may be required to provide access to 100% households.

**(h) Time frame:** The works under the project are proposed to be completed within two years after sanction of the project.

**(j) Success criteria:** With the implementation of the scheme, 100% households of the district will have access to electricity and 100% BPL household electrification will be completed. In Sadiya Circle, one 2X2.5 MVA; 33/11kV S/S has been proposed and with the construction of this S/S, a major problem of that area will be solved. Further, eight additional 1X2.5 MVA; 33/11KV S/S are proposed considering the present load and future load growth in the district. For these eight S/S, financial assistance in the form of loan from other financial institutions will be explored. It is hoped that, after the execution of the project the power scenario of the district will be improved to a great extent.

**(k) About new 33/11 KV Sub-Station:** The 33/11 KV Sunpura S/S is in the state of Arunachal Pradesh. As there exists no 33/11 KV SSs in Sadiya block, a new 2x2.5 MVA, 33/11 KV has been proposed.

**(l) About remaining 287 numbers already electrified villages :** No infrastructure has been proposed in 287 numbers already electrified villages. The existing infrastructure is sufficient enough to provide access of electricity to all households of these villages. Only BPL connections (11786 Numbers) have been proposed in these villages.

**(m) Regarding use of RS Joist poles in Sadiya block :** The Sadiya block is situate across the river Brahmaputra and the soil is sandy. The lines, 33/11KV S/S has been proposed on RS Joist Poles considering the soil condition and difficulty involved in transportation of poles.

In Tinsukia District, the total infrastructures created are as follows:

**Table 11: Infrastructure in Tinsukia District**

Sl No.	Infrastructure particulars	As per LOA	Executed
1	11 KV line	892.55 Km	874.55 Km
2	LT 1 ph 2 w line	723.20 Km	1062.775 Km
3	16 KVA DTR	359	419
4	25 KVA DTR	366	419
5	BPL service connection	44548	51548

From the above it is observed that except for the 11KV line, excess amount of works have been executed as mentioned below:

LT 1 ph 2 w lines: 339.575 km

BPL service connection: 16 nos

25 KVA DTR: 53

16 KVA DTR: 7000

The total package amount including supply and erection was Rupees 64.66 Crore. The contracting firm submitted the bills for extra works carried out by them to the APDCL. Within the district, 16 villages couldn't be located. Three villages now do not exist in Margherita region where now the North-east coal field of Coal India Ltd is located. Perhaps the inhabitants had left the area quite a long time. The Sadia Block also was located on the other bank of the river Brahmaputra where normal transports are not available.

The contracting firm of APDCL has faced a lot of problems in the execution of the job, especially in send their materials to the site by ferry. All these areas are flood prone, and normal transport itself is disturbed for atleast 6 to 8 months. However contracting firm has executed the contracts despite the additional troubles and work also.

It is also gathered that the revenue return from the villages electrified is not at all satisfactory due to in-convenience of transport facility. The movement of meter readers and dispatch of electricity bills are difficult. Though the entire infrastructure had been taken care of by the APDCL, their effort for the service connection to the APL category of consumer is very less, due to which unauthorized connections are noticed almost everywhere. This will increase the loss of revenue and it will contribute the AT & C loss also. Also, the APDCL has got shortage of manpower on all fronts of task execution. The operations and maintenance of infrastructure already created will be some-what

troublesome. The theft of energy will also increase as the infrastructures created connect not catch the demand of the consumer that includes unauthorized connection. At a later date, there are every possibilities of over loading the transformer, which may damage the DTR as well as created infrastructure.

Survey Information of Villages in Tinsukia District								
Name of the block	Name of the village	village census code	sarpanch name	Total no. of families (in village)	Total no. of BPL	Electricity provided (BPL)	Total no. APL	Electricity provided (APL)
Kakopather	Bokapathar	1598800	Kakopathar	125	90	55	35	nil
Saikhowa	Pualipathar NC	1528200	Hakhathi	110	70	10	40	nil
Margherita	Lamagaon	1613500	Vitar Pawei	250	220	47	30	nil
Hapjan	Lesengkar Gaon	1552200	Barekuri	128	108	96	20	nil
Saikhowa	Chengeli Gaon	1537400	Dhola-Dhadum	130	90	59	40	nil

No franchisee is interested in taking up an area which is newly electrified village due to in-accessibility as well other unwanted reasons. APDCL has initiated action to allot the feeders. The social environment is also not conducive and it has been a total failure to handle situation, which is not up to the mark. The consumers have resentment about the power supply and this is creating an uncomfortable atmosphere. They are also not willing to pay the electricity bill unless quality of electricity is not improved.

Though there is lot of unauthorized connection in the electrified villages, till now not a single transformer is damaged during the defect liability period due to the constant watch and sincere effort of the contracting firms.

#### **Observation of Dhubri District (RGGVY Survey)**

The Dhubri District is situated in the western most part of lower Assam. The geographical area of the district is 2838 sq. km and most of the area is cultivated.

There are 1261 inhabited villages in the district, the breakup of which, as per their electrification status, is as described below:

1. Electrification villages : 1042

## Evaluation of RGGVY programme in the state of Assam

2. Presently electrified : 782
3. De- electrified villages :260
4. Un-electrfied village : 133
5. Remote Village : 86
6. Total Number of Rural Households : 260558

Surveyed Village Particulars (General) Dhubri								
Name of the block	Name of the village	village census code	sarpanch name	Total no. of families (in village)	Total no. of BPL	Electricity provided (BPL)	Total no. APL	Electricity provided (APL)
Rupsi	Rupsi Part II	113600	Samsul Haque	76	16	16	60	nil
Bilasipara	Siberdabri	183800	Ajit Nath Sharma	45	22	22	23	5
Birshingjaura	Fulkatari	160400	Vitar Pawei	250	220	47	30	nil
Chapar-Salkocha	Segunjari	196200	Barekuri	128	108	96	20	nil
Fekamari	Kalir Alga Pt.I	1537400	Abdullah Ashiq	156	136	67	20	nil

The Dhubri district has 260,558 rural households distributed over 1261 villages, out of which 86 villages have been given the status of remote- amounting to a total population of 14937 households. We found that out of the total 83398 BPL households, 74274 are considered in the RGGVY electrification scheme. Out of this total, 34531 connections are to be achieved completely till Oct, 2011. There are a total of 393 un-electrified villages covered for electrification. In Dhubri, erection and commissioning of total works including intensification, electrification, DTR installation work are in progress with a completion percentage of around 80%.

### Summary:

1. 11KV line (Kms.) : 974.70
2. 3 ph LT : 93.30 (kms)
3. 1ph LT : 1348.60 (Kms.)
4. 16KV DTR : 1173
5. 25 KV DTR : 252

6. BPL Connection: 747274 have to be completed for total project of Dhubri district.

The project is lagging behind due to the following reasons.

- Inaccessibility to the prescribed village due to bad road conditions.
- Particularly, South Salmara, Fekamari and Mankachar block are located in the interior area, and due to areas are linked to main town without bridges to communicate, people are communicating by small country boats. Therefore carriage of materials for the project is always a matter of concern.
- During the survey it had also been found that the villagers are always creating obstructions as some of these villages are not included in the project. Ultimately construction works are lowered.
- Even the included villages where project work is completed and ready for charging, there is significant delay due to obstruction and objection from the nearby villagers for the same above concern.
- Due to insurgency as well as frequent bandhs and road blocks by different organization for some specific demands, the work progress is jeopardized.
- RE work for drawing LT line is also affected in some villages, due to jungles and bamboos, which locals are objecting on clearing.

As usual many unauthorized connections are found in the District, taking advantage in the inaccessibility of the village and also the negligence of the department. Though many villages are handed over to the department, regular bill/connections are not done. The O&M activities in that infrastructure will be a challenging job due to the shortage of manpower and the vigilance of the department. No franchisee has come forward to this area for electrifying the villages and the performance of the old franchisee working in the district is not at all satisfactory.

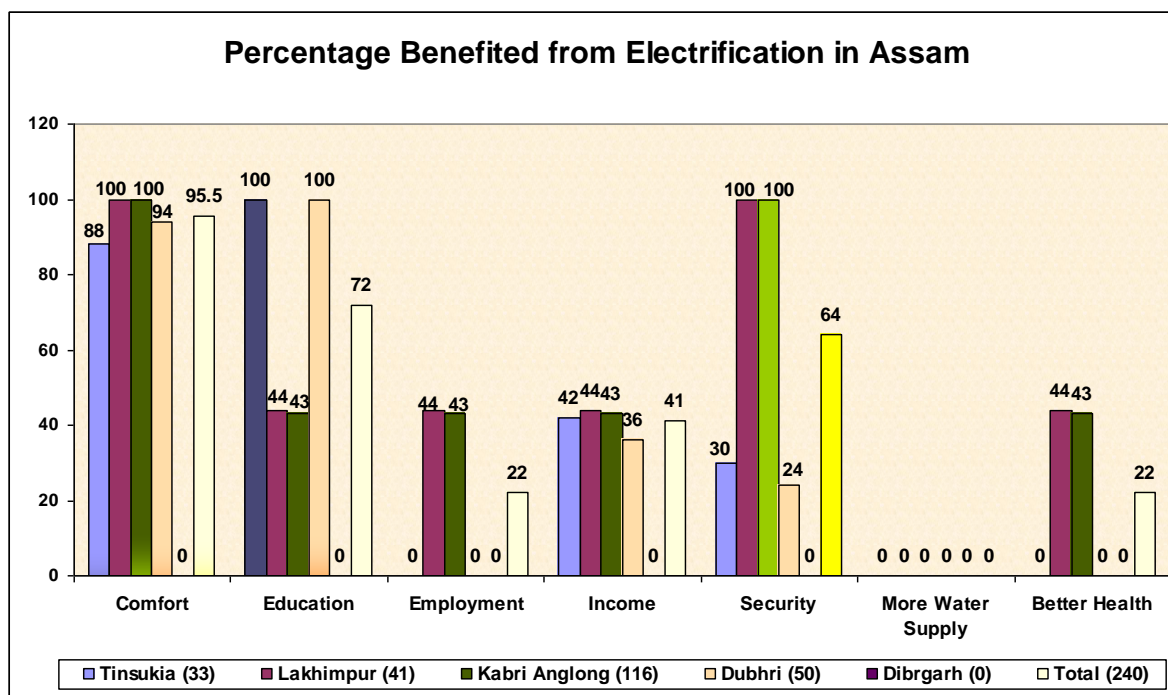
Due to this, the people have taken the law in their own hands. A number of unauthorized connections prevailed in most areas and this enhances the overall AT &C losses of APDCL. Though there are many challenges in smooth progress of the work, the department and contractors have taken up the work in good spirit and co operation is found to be in order generally. However the involvement of the panchayat could not be judged properly as we couldn't interact with competent persons.

The household number in the surveyed hamlets/ villages in upper Assam, and Karbi Anglong are quite less, and they are surrounded by natural constraints of periodic floods etc. These communities need special capacity building to enhance their economic position. The various programmes of the government of India such as Bharat Nirman etc should be so designed to enable them to generate additional income using benefits of electrification.

### Summary of Impact of Village Survey

The respondents of the survey were asked about the benefits there perceivably felt after electrification. Their responses are displayed in the figure below.

**Figure 5- . Improvements in standard of living with electrification in Assam**

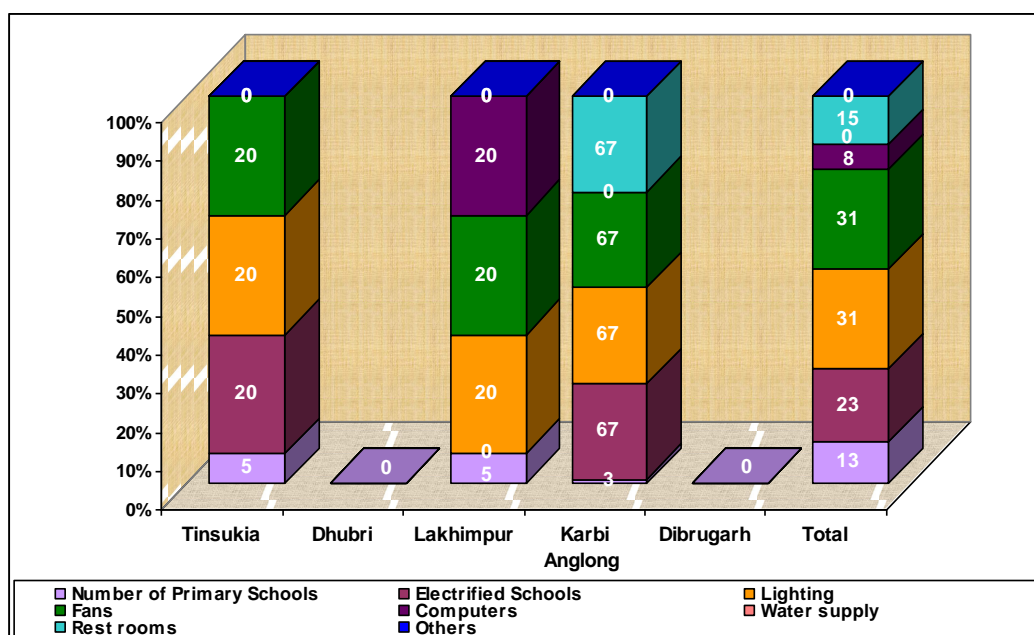


Out of all the choices, nearly 96% of the population said that they were more comfortable now, as they are able to use electrical appliances like lights, fans, mobiles, radios and television. Another 72% responded that with electricity, there was a decided improvement in the level and access to education. There is also evidence of improved security as was told by nearly 64% of the households. Increases in income were reported by nearly 41% of the respondents, while 22% reported increases in income and reduced unemployment as benefits.

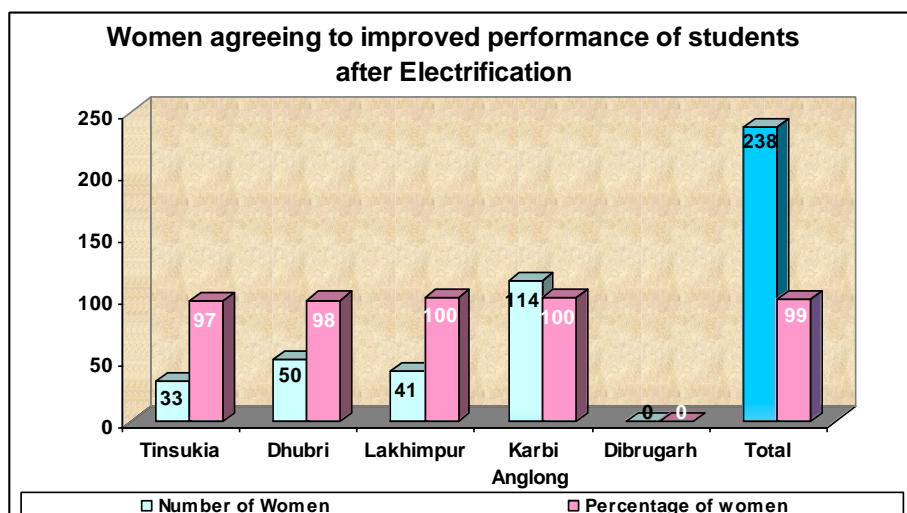


As far as the gains of upon education is concerned, we see from the previous figure 6 that out of the total 13 schools, there are only 23% schools that were electrified. Out of this total figure, we find that there are both lighting and fans present in 31% of the schools. Only around 8% of the schools boasted of computer facilities and another meagre 15% reported restroom facilities. Also, there were no schools with a water supply. Lakhimpur and Karbi Anglong are both districts which have better results in the reported electrification benefits to schooling.

**Figure 6: Electrical facilities in School**

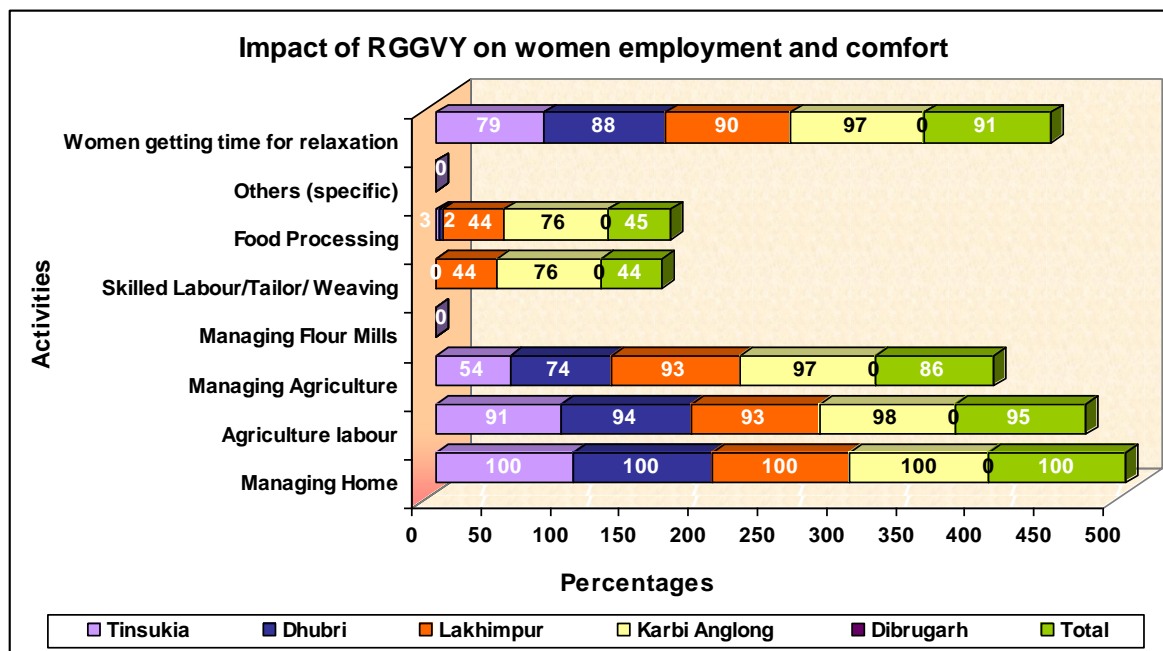


**Figure 7: Improvements in students' performance after RGGVY**



As can be seen from the figure 7, around 99% of the women agreed that after electrification, their children have had better academic performances and records. In fact, all the women in Karbhi Anglong and Lakhimpur attested to this.

**Figure 8. Benefits of RGGVY felt by women in Assam**



To assess the impact of RGGVY we examine the benefits to electrification that women reported. All of the respondents agreed that they are better able to manage their homes after access to electricity. Agricultural labour, managing agriculture and additional time for relaxation were other benefits that are largely felt by women after electrification. Some women even felt that they were able to perform duties like food processing and tailoring/weaving more adroitly (see figure 8).

The Gram Panchayats issue the Electrification completion certificates (refer to Annexure 5) for the villages under his jurisdiction. The completion is also followed by erection of RGGVY certificate for the village. The statuses of progress of installation of signboard under RGGVY as on 15.10.2011 for the districts are shown in Annexure 3.

We cannot make a general statement regarding the awareness of the RGGVY programme in Assam as the response rate of the questioning was un-evaluable. Villagers, it appeared that were in know that team from Delhi had come for survey, and knew the context.

Instances of BPL electrical connection being disconnected, after connection was released to them under RGGVY, were not observed in the surveyed villages. This may be due to no meter reading & billing in most cases. However in three villages in Dibrugarh and other districts the assets were not handed over as per protocol.

In view of the above observations (Villages Surveyed -25), as a consolidation it is observed that 32% of rural households have been electrified. This includes 44% BPL HH is electrified, (REC website indicates 69% BPL Household has been electrified at the State Level). The value of total APL and BPL population and beneficiary is indicated in Table 8. During survey few APL households electrification were observed (only 22 APL have been electrified out of total 642 APL household). 3 villages in Dibrugarh districts are yet to be electrified. This has lowered the figure of beneficiary percentage of BPL and APL household. DISCOM.

Response on power availability varied from district to district. This can be a measure of level of satisfaction observed on RGGVY villages. The villagers in Dhubri and Tinsukia receive approximately 16 hours of power. Consumers of Dibrugarh had complaints and they received 8 hours of supply. The villagers mentioned that their main demand was continuous supply in the evening hours.

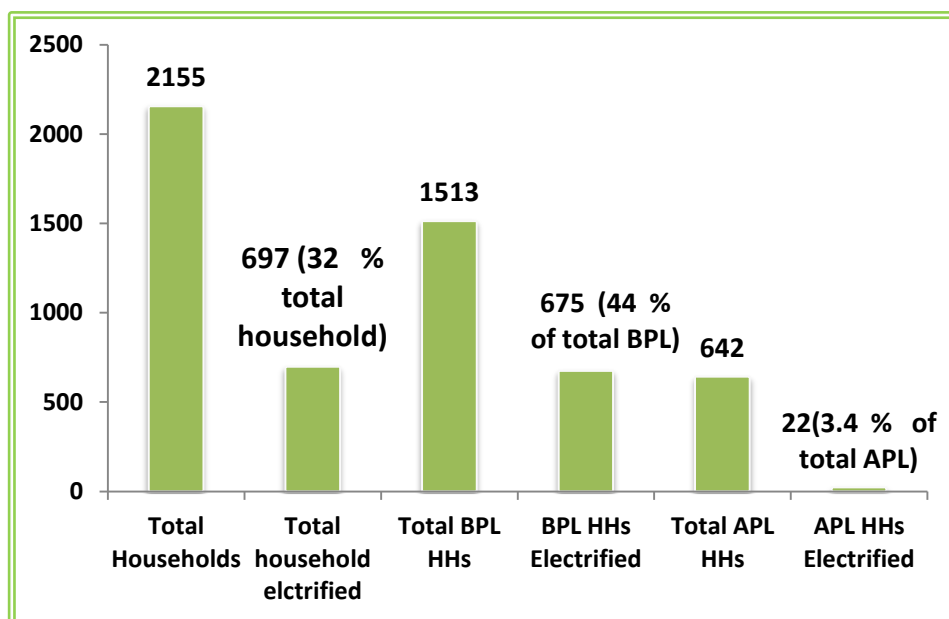


Figure 8A, Status of RGGVY in surveyed villages in ASSAM,

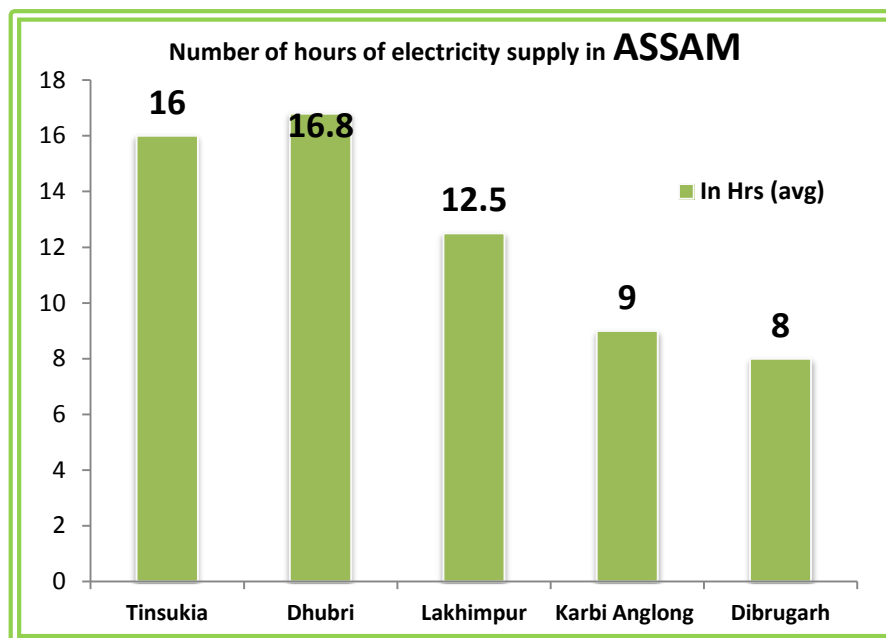


Figure 8B: Number of Hours availability of Power

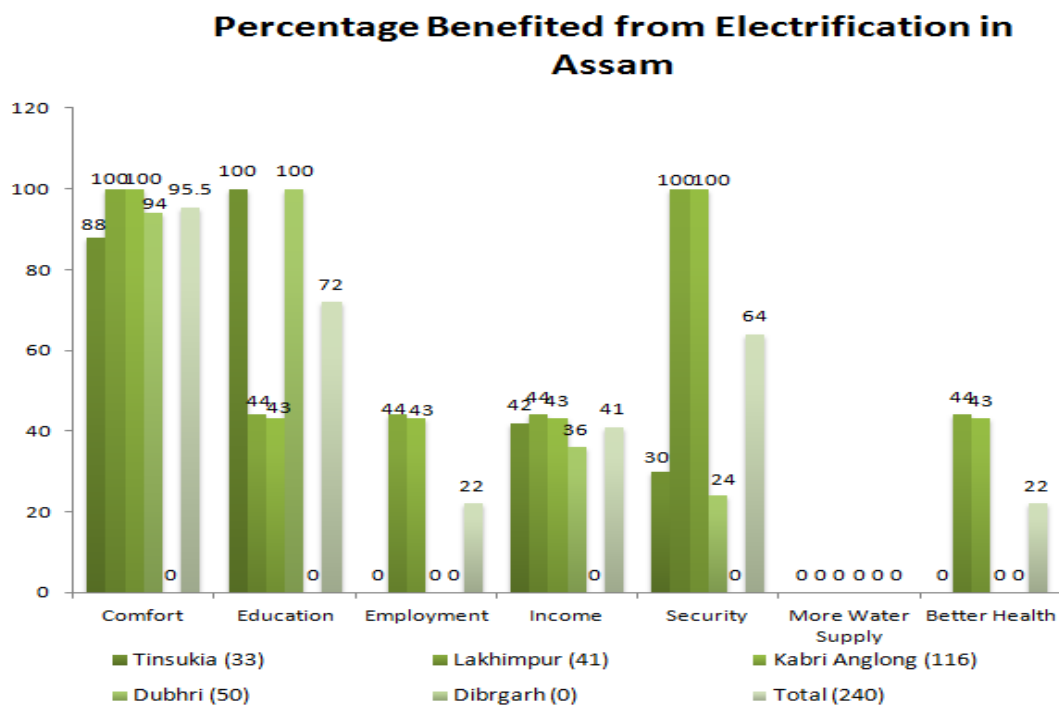


Figure 8 c: Socio-economic benefits from RGGVY

## Evaluation of RGGVY programme in the state of Assam

RGGVY programme has benefitted the consumers. 100% consumers indicated that the scheme has increased comfort by multiplying use of electrical appliances for comfort. Participation of youth in education has improved. In Tinsukia, Dibrugarh, and Lakhimpur consumers mentioned that there is improvement in health services. These are the areas where there are tea gardens. Water supply in the Villages is poor, and has not improved. Though there was no visible increase in economic activities, some consumers responded that the income and employment opportunities were available. Sense of Security has improved due to lights in evening hours. Though their main complaint was that availability of power in evening time; was only for one to two hours.

## **Chapter 6:**

### **Long term Village Electrification initiatives**

According to the central government guidelines the Assam state electricity board, undertook the strengthening of the electricity distribution system network. The primary aim of the task was to enhance efficiency of the network so as to reduce transmission and distribution losses. Subsequently, the task was undertaken by the DISCOMs. They have been able to accomplish 98.9% of their planned target. Table 10 highlights the summary of tasks fulfilled by the DISCOMs as of yet.

**Table 10: Physical Target Achievement of APDRP<sup>8</sup>**

Sl No.	Description	Target	Achievement	% Achievement
1	New 33/11KV S/S (numbers)	52	52	100
2	R&M of S/S	102	101	99
3	Construction of 33KV new line (CKM)	540	540	100
4	Construction of 11KV new line (CKM)	957	894	93
5	Construction of LT new line (CKM)	422	389	92
6	Revamping of 33KV line(CKM)	179	165	92
7	Revamping of 11KV line	1598	1580	99
8	Revamping of LT line	3328	3234	97
9	Installation of new DTR	1873	1849	99
10	R&M of DTR	11338	9893	87
11	Computerized of Billing (S/D)	211	203	96
12	Consumer metering (numbers)	165928	161730	97

The Government of Assam through the efforts of APDCL has been able to maintain compliances in the infrastructure development of Transmission and distribution by implementing APDRP. They have taken loan from ADB to augment the distribution network. Table 10 indicates the 33KV/11 KV network development. The 132/ 33KV substations are also being upgraded. The only issues which were identified while analysing the backward linkages provisions was the inadequate capacity of the village level distribution transformer and the laying of 11 KV line through the forest. Provision of laying under-ground cables can be looked into.

<sup>8</sup> As a part of backward linkages the information was collected from DISCOMs

## Evaluation of RGGVY programme in the state of Assam

Tables 14, 15 and 16 provide the brief of the proposed REDB works in LAEDCL, CAEDCL, and UAEDCL; that will facilitate electrification under the RGGVY programme. The Implementing Agency is ASEB, and the ASEB has delegated part of its task to CPSU (PGCIL). The APDCL has taken proactive initiative of backward linkages of RGGVY infrastructure to main-line grid. At the time of survey it may not be possible to evaluate the capacity of substation providing power supply to rural and urban. APDCL is being supported by AEGCL (Assam Electricity Grid Corporation Limited) in backward linkages by taking capacity scalability of transmission line. Present Development activities of AEGCL are mentioned in Annexure 7. The total task is progressing in coordination.

**Table 14: Proposed REDB Works in LAEDCL under RGGVY (Implementing Agency ASEB)**

Sl No	District	Capacity of 33/11 KV Sub-Station	Proposed Site	Length of 33KV incoming Line (km)	Length of 11KV outgoing line (Km)
1	Kamrup	1×2.5 MVA	At “Chamaria” in Chamaria Block	23	11.5
		1×2.5 MVA	At ‘Bongaon ‘ in Bamunigaon Block	1.00	11.00
2	Darrang	1×2.5 MVA	At Barangajuli in Bhergaon Block	18.00	15.00
3	Goalpara	1×2.5 MVA	At Simlabari in Joleswar Block	23.00	Nil
		1×2.5 MVA	At ‘Chutki’ in Kharmuja Block	20.00	Nil
4	Barpeta	1×2.5 MVA	At Sarthebarai in Sarukhetri Block	25.00	Nil
5	Nalbari	1×2.5 MVA	At Masalpur in Baska Block	27.00	Nil
		1×2.5 MVA	At Kamarkucjhi in Barbhag Block	25.00	Nil
6	Dhubri	1×2.5 MVA	At Panbari in Mahamaya Block	5.00	11.00
		1×2.5 MVA	At Jhowdanga in Mankachar Block	20.00	7.00



## Evaluation of RGGVY programme in the state of Assam

*(Implementing Agency PGCIL)*

7	Kokrajhar	1×2.5 MVA	At Kachugaon in Kachugaon Block	15.00	20.00
		1×2.5 MVA	At Hatidhura in Hatidhura Block	15.00	20.00

**Table 15: Proposed REDB works in CAEDCL under RGGVY (Implementing Agency ASEB)**

Sl No.	District	Capacity of 33/11 KV Sub-Station	Proposed Site	Length of 33KV incoming Line (km)	Length of 11KV outgoing line (Km)
1	Nagaon	1×2.5 MVA	At “Ambagan” in Chamuguri Block	15.00	10.5
		1×2.5 MVA	At ‘Juria ‘ in Rupahi Block	14.00	11.00
		1×2.5 MVA	At Batadrava in Dhing Block	19.00	11.00
		1×2.5 MVA	At Barhampur in Nagaon Block	14.00	9.5
2	Karbi Anglong	1×2.5 MVA	At Umpani in Amri Block	30.00	12.00
			At Bokolia In Longsompai block	18.00	15.00

*(Implementing Agency PGCIL)*

3	Cachar	1×5 MVA	At Baskabdi in Baskandi Block	15.00	20.00
		1×5 MVA	At Borkhola in Borkhola Block	158.00	20.00
		1×5 MVA	At ‘Sonai’ in Sonai Block	15.00	20.00
4	Hailakandi	1×5 MVA	At Monipur in South Hailakandi Block	18.00	20.00
5	Karimganj	1×5 MVA	At Nilambajar in Nilambajar Block	15.00	20.00

**Table 16: Proposed REDB works in UAEDCL under RGGVY (Implementing Agency ASEB)**

Sl No.	District	Capacity of 33/11 KV Sub-Station	Proposed Site	Length of 33KV incoming Line (km)	Length of 11KV outgoing line (Km)
1	Jorhat	1×3.15 MVA	At “Phulani” in Ujani Majuli Block	16.12	11.5
2	Golaghat	1×2.5 MVA	At Kasomari in Gomariguri Block	22.00	12.5
		1×3.15MVA	At Rongiliting in North Block	3.00	12.00
3	Sivsagar	1×5 MVA	At Mahmora Banfera in Mahmara Block	20.00	20.00
4	Dibrugarh	2×5 MVA	At Rajgarh in Moran Block	20.00	20.00
5	Tinsukia	2×2.5 MVA	At Chapakhua in Sadia Civil Block	30.00	8.4
6	Lakhimpur	1×2.5 MVA	At Raidingia in Ghilamara Block	16.00	6.4
7	Dhemaji	1×2.5 MVA	At Juli Chariali in Machkhowa Block	3.00	12.00

(Implementing Agency PGCIL)

8	Sivsagar	1×5 MVA	At Mahmora in Mahmara Block	20.00	20.00
9	Dibrugarh	2×5 MVA	At Moran in Moran Block	20.00	20.00

## REFORMED MEASURES TAKEN BY APDCL (ASSAM) UNDER R-APDRP

A total of 67 towns of Assam have been selected by the Power Finance Corporation (Nodal Agency) to take up following works as per the R-APDRP task in a separate programme, which will sustain development and facilitate implementation of RGGVY programme. The project is designed to re-engineer the distribution network, monitor and control the system using incorporated IT facilities. The project will be implemented in two parts, as described below.

### Part-A:

- Consumer Indexing.
- GIS mapping, Asset mapping of the distribution network.
- Automatic meter reading, DT and feeders.

- Metering of DT and feeders.
- Feeders segregation /ring fencing
- IT application redressal of consumers grievances, integrated meter reading billing and collection.
- Energy audit and accounting.
- SCADA system in big town and cities ( population over 4 lakh and annual input energy 350mu)
- Establishment of the bare line data system.

Part-B:

- Renovation, modernization and strengthening of 11KV line substation transformer.
- Re-conducting of lines at 11KV level and below.
- Load bifurcation /Load balancing.
- HVDS (11KV)
- Strengthening at 33/66KV levels.
- Installation of capacitor banks and mobile centre.
- Arial bunched conductor in populated area.
- Replacement of electromagnetic energy meter with temper proof electronic meter.

**Supervisory Control and Data Acquisition (SCADA) in APDCL:**

Only Guwahati city is qualified for SCADA in APDCL. APDCL has selected 5 more towns to reform using SCADA system as per guidelines of R-APDRP from its own resources. The R-APDRP system should be extended in phases for RGGVY infrastructure. This will facilitate in evaluating actual losses in village infrastructure

**CAPACITY ENHANCEMENT PROGRAMME BY APDRP IN ASEB (APDCL)**

The APDRP programme had been carried out successfully in ASEB and the achievement record is **98.90%**.

- After the APDRP programme total capacity added by installation of the **52** numbers of 33/11 KV sub-station is **257.26 KVA**.
- Capacity augmentation by R&M work of **102** no S/S is **165.52 KVA**.
- Capacity up-gradation by **1854** no New DTRs is **181633 KVA**.

**Observation interaction with the AGM (REM)/APDCL**

APDCL has appointed an AGM (REM) in each district to monitor and provided enabling services to the turnkey contractors. In the surveyed district his support staff were not observed. Their observations in brief is as follows

- 1) The government of Assam entrusted the power for issuing approval of charging 11KV line and DTR (only for RGGVY works) to the Senior Manager (Electrical) presently “AGM” posted at DIB Electrical circles as rural electrification works.
- 2) The AGM (Rural Electrification Monitoring) responsibility includes progress monitoring/ quality of work being executed/ spot inspection/ verification of the BPL connection / handing over and taking over and other related tasks of the entire works of the RGGVY. It is essential that the task be performed by responsible rank of executive ASEB. As operation and maintenance works of all the electrified villages of RGGVY after being handed over by PGCIL/ Subcontractor is overlooked by ASEB. The statistics of hand-over and takeover of en-electrified/ de-electrified/ partially electrified villages are indicated in Annexure 6.
- 3) Groups of almost 25 to 30 men have been engaged by the IPPL (PGCIL contracting firms) for works; it is sometimes observed that hired workers are not up to the mark;
- 4) AGM (Rural Electrification Monitoring) the implementation of work faces problem due to the following reasons:
  - a) Lack of proper vigilance of the works at the site and follow up of safety norms
  - b) Unskilled labourer working at the sites
  - c) Lack of proper manpower having appropriate skill of the contractor
  - d) Site conditions and access to the site, and capacity to handle site condition are challenging due to dense forest, and social insurgency
  - e) Lack of cooperation between the villagers and contractors etc.
  - f) AGM (RE monitoring) of APDCL has to visit every village of RGGVY who is the only person from the APDCL side, for monitoring the works and

approving the charging. Also DTRs (10KVA, 16KVA, 25 KVA) are to be approved by him.

- g) Test reports for 11KV line and DTR have been submitted to the AGM (RE monitoring) regularly through PGCIL. But in actual practice works are not found as per test reports for this reason the progress is slow. In some cases AGM has to visit number of times in single village for issuing charging approval.
- h) Theft of DTR is also another factor. Almost 20 DTRs erected at different villages of RGGVY, Dibrugarh have been stolen by miscreants. FIRs have been lodged by the contracting firms at different police stations regularly. The issue has been discussed at the district development committee meeting in the conference hall of Deputy Commissioner and also the Superintendent of Police.
- i) The sub contractor working at the site sometimes reports non availability of materials at stores of contracting firms for which work cannot be completed on schedule. Conditions of all the routes to the villages are not proper and in the rainy season, vehicles cannot be used up to the site. Rather, in some cases, for inspection, the person concerned has to walk several kilometres. In some cases there is no route up to the DTR and the waiting period persists till the end of the rainy season.
- j) Jungles/ bamboos also stand against the progress of the RGGVY works. As the villages are almost full of trees and bamboos it creates problems for the quality of the 11 KV line.
- k) In BPL service connections some problems have appeared. As LOA, the maximum distance of the BPL beneficiary from pole is 30 metres. But as the houses of beneficiaries in some cases are found to be more than 30 metres, those BPL beneficiaries are not getting electricity facility as in the present scope. The contracting firm cannot provide extra 1 or 2 poles for those beneficiaries as this is beyond their scope of work.
- l) The procurement process of materials e.g. DTR, line materials, hardware conductors etc. take sufficient time after testing at manufactures. Work and

timely arrival of this material at site and carriage to the actual size /field, which becomes a challenging job.

- m) Franchisee: For giving the RGGVY transformer to the franchisee, a minor modification of the LT distribution board of the DTR substation has to be made as the energy meter box of the DTR box cannot be seen if the box is sealed from outside. The modified LTDB drawing has been sent to headquarters already, for approval so that the LTDB of RGGVY already erected can be replaced by new one for franchisee development.

## **Chapter 7**

### **Decentralized Distribution Generation (DDGs)**

The state has not submitted any DPR for the DDG scheme, and their nodal agency for renewable energy has not prepared any DPR that can be put up for sanction under RGGVY. The state is rich in biomass, and has micro-hydel potential. The state has undertaken many RVE programme under RVE scheme, that are listed in Annexure 1. Assam has undertaken the following projects for non-fossil fuel energy and power generation; these are

**A. Champamati:** This small hydro plant (3×133) = 4MW was commissioned on 01/01/2010 and is running satisfactorily. It was developed by a private firm- ECI Ltd. on boot basis and in a PPA with APDCL, in agreement with Bodoland Infrastructure development company (BIDC). This project was completed under the total supervision of M/S ELFS. The tariff rate is 3.19/unit. The company has to operate the plant up to 35 years before handing over.

**B.** The following projects are under construction as joint venture of the Government of Assam and ELFS or PPP mode.

a) **Pahumara:** (2×1) 2MW. Expected commissioning date March, 2013.

Tariff 2.911/Unit

b) **Bardokarai:** 4.7 MW. Expected commissioning date March, 2013.

Tariff 2.70/Unit

c) **Desang:** (3×3) = 9MW. Work allotted and started, progress hampered due to forest clearance.

Tariff 2.82/Unit

d) **Kalanga I & II:** (3×2) = 6MW. Work allotted and started,

Tariff 2.98/Unit

e) **Dronpara:** 1.6 MW. DPR Completed. Bidding stage arrived.

All this progress on BOOT basis and PPA are signed with APDCL.



**C.** APGCL Assam had agreed to handover the following projects to M/S IL &FS for its revival.

- a) **Bordikharu:** 2MW. This was the first mini hydro plant of ASEB, during the 1980s, but could not be made operative due to technical snags. APGCL has made arrangements to completely handover this project to M/S IL &FS for revival along with the assets and for new construction.
- b) **Dansri:** 20 MW. The same technical snags held up this project; however the Government of Assam allotted this for retention of water. The matter is pending with the Ministry.
- c) **Upper Borapani:** 90 MW. In process to be handed over to EL & FS.

**D.** On-going Hydro project of APGCL :

- a) Lungit , 6MW (under construction)
- b) Mytarang. 9MW (EPC contract)
- c) Amring ,20 MW (EPC contract)
- d) Lower Kopili : 150 MW (EPC contract)

**E.** Initiative taken by APDCL /APGCL in compliance with concept of decentralized distributed generation:

APDCL and APGCL have already selected 2 mini hydro plants at the following locations for as DDG to electrify nearby villages in Karbi Anglong district.

- Horn Nala: 300 KW.
- Longsomepi: 100KW.
- Whether DDGs operationalized in state: isolated or grid connected.
- Present form of DDG scheme.
- Proposed modification in DDG scheme.
- Physical Progress Report Of Implementation of RVE programme through Solar

**F.** Table 17 highlights the Solar Photo Voltaic Home Lighting (HLS) & Solar Photo Street lighting (SLS) in the State of Assam State Electricity Board as on 31.08.2011. Projects initiated in 2007-2008 and after is still in progress

**Table 17: Photo Voltaic Home Lighting (HLS) & Solar Photo Street lighting (SLS)  
in the State of Assam State Electricity Board as on 31.08.2011**

Sl No.	Sanction phases	Nos of Sanction Villages	Nos, of Villeges, installation	Physical Prograss				Remarks
				HLS		SLS		
				As per Sanction (Numbers)	System Installed (Numbers)	As per Sanction (Numbers)	System Installed (Numbers)	
1	1 <sup>st</sup> Phase (2005-06)	16	16	1963	1963	Nil	Nil	Project has already been closed
2	2nd Phase (2006-07)	141	141	8682	8682	366	366	Completion report for 104villages submitted to MNRE, remaining villages as per DC, certificate some systems are missing & a high court case is pending.
3	3rd Phase (2007-08)	203	203	8753	8753	146	146	Project completed & completion report submitted to MNRE.
4	4 <sup>th</sup> Phase (2007-08)	55	55	2762	2762	20	20	Project completed and completion report for 54 villages submitted to MNRE.
5	5 <sup>th</sup> Phase (2007-08)	105	102	5960	5327	Nil	Nil	102 villages completed, completion report for 100villages submitted to MNRE
6	6 <sup>th</sup> Phase (2007-08)	287	279	9676	9392	Nil	Nil	279 villages completed, completion report for 273 villages submitted to MNRE.
7	7 <sup>th</sup> Phase (2007-08)	134	111	6073	4957	Nil	Nil	Work in Progress
8	8 <sup>th</sup> Phase (2008-09)	110	33	3978	1180	252	83	Work in Progress
9	9 <sup>th</sup> Phase (2009-10)	61	45	13050	6467	Nil	Nil	Work in Progress
	<b>Total</b>	<b>1112</b>	<b>985</b>	<b>60897</b>	<b>49483</b>	<b>784</b>	<b>608</b>	

**APGCL'S INITIATIVE FOR SMALL HYDRO DEVELOPMENT IN ASSAM**

Assam has Hydro- Power potential of the order of 541 MW against which 2.00 MW has been harnessed so far from the Bardikharu Small Hydro Project (that became inoperative

since April'99 due to technical snags). The GoA has decided to encourage generation of Power through small Hydro (SHP) sources of energy and has framed a policy, so that development of their sector serves as an engine to achieve the objective of promoting all round development of the region by inducting private participation.”<sup>9</sup>

The SHP may be envisaged as decentralized distributed generation (DDG) in the state. Figures from the Ministry of New and Renewable Energy source the total capacity of small hydro potential in Assam with 238.69 MW.<sup>10</sup>

The DDG guidelines (No.44/1/2007-RE) have been issued by the Government of India, Ministry of Power. They have specified the expected capital costs that are indicated in the table below. The table also shows the costs of generation as reported in “Indian Renewable Energy Status Report, Background report for DIREC 2010”. The estimated cost of power in various SHP is within the one rupee range of tariff for JeebanDhara consumers. The SHP in Assam can be covered within the viable gap funding. With appropriate Biomass technology viable gap funding can be justified for Biomass gasifier, provided continuous operation of Biomass gasifier is ensured.

**Table 18: Capital Costs and Electricity Generation Costs by Energy Sources**

Energy Type	Capital Cost (Rs/ KWh) <sup>11</sup>	Electricity Generation Cost in INR/ KWh	
		<sup>12</sup>	<sup>13</sup>
Biomass gasifier	~78000	2.25	4 to 5
SPV	~300000	14.5	8 to 15
Solar (CSP)			10 to 15
Biogas DG Set	~85000	0.75	
Biofuels DG Set	~20000	10.75	

<sup>9</sup> Alternate Hydro Energy Centre, IIT Roorkee: Government of Assam – Policy for Small Hydropower Development, Assam State Electricity Board, Guwahati; March 2007; page 4;  
[www.ireda.gov.in/Compendium/Data/Assam/SHP.pdf](http://www.ireda.gov.in/Compendium/Data/Assam/SHP.pdf); Accessed December 2011

<sup>10</sup> Ministry of New and Renewable Energy: Annual Report 2010-11; Chapter 5.31;  
[http://mnre.gov.in/annualreport/2010\\_11\\_English/Chapter%205/chapter%205.htm](http://mnre.gov.in/annualreport/2010_11_English/Chapter%205/chapter%205.htm) ; Accessed December 2011

<sup>11</sup> Government of India; Ministry of Power; No.44/1/2007-RE; Guidelines for Village Electrification through DDG under RGGVY in the XI Plan – Scheme of Rural Electricity Infrastructure and Household Electrification; Annexure 3: Framework for ranking various renewable energy based DDG options;  
[www.powermin.nic.in%2Fwhats\\_new%2Fpdf%2FGuidelines\\_for\\_Village\\_Electrification\\_DDG\\_under\\_RGGVY.pdf](http://www.powermin.nic.in%2Fwhats_new%2Fpdf%2FGuidelines_for_Village_Electrification_DDG_under_RGGVY.pdf); Accessed December 2011

<sup>12</sup> *ibid.*

<sup>13</sup> NREL, REN21, gtz, IRADe, Bridge to India: Indian Renewable Energy Status Report – Background Report for DIREC 2010”; NREL/TP-6A20-48948; October 2010; page 19;  
<http://irade.org/Indian%20Renewable%20Energy%20Status%20Report.pdf> ; Accessed December 2011

## Evaluation of RGGVY programme in the state of Assam

Micro-hydel	~60000	0.25	
Small Hydro			3 to 4
Wind			3-4.5

## **Chapter 8**

### **Franchise Models in Operation**

Various types of Franchisee are in operation in Assam.

**Input Based Distribution Franchisee (IBDF):**

Input Based Distribution Franchisee (IBDF) is the scheme designed by the APDCL, in which LT consumers of the 11KV rural feeders are handed over to the suitable and competent franchisee. In the scheme, the franchisee is built on a predetermined rate known as Bulk Supply Tariff (BST) which is calculated on the basis of pre prevalent commercial parameters of the area. The factors which affect the BST are the T&D losses, collection efficiency, AT&C losses and the condition of the network of the feeder. In this scheme only LT consumers of the feeder will be handed over the franchisee. The HT consumers and the Government LT consumers will be billed by APDCL. The franchisee will buy electricity from the utility measured through the meters, installed at input points of 11KV feeder, at BST rate and shall sell to the LT consumers in its area at normal tariff rate of the utility.

**Implementation of IBDF scheme in APDCL:**

Due to the introduction of RGGVY scheme for rural electricity infrastructure and household electrification, approximately 10 lakh BPL consumers of Jeevan Dhara category will be connected to the APDCL grid. This will lead to a jump in the electricity consumption in the rural areas, and increase in the networks which may not be possible to manage due to the increased volume of billing, realization and maintenance activities and may be a cause of concern to the APDCL. Unless the recovery from the rural consumptions is improved, the financial position of the APDCL will rapidly deteriorate. To handle such a huge consumer base and to maintain efficient billing and collection system, it was proposed to hand over the DTRs installed under RGGVY scheme to the franchisee under present SPPS scheme. But the existing scheme will not be able to manage such huge consumer base and the increased electricity consumption in the rural areas. Under these circumstances, it was decided to hand over the 11KV rural feeders to franchisees for better and efficient electricity management in the rural areas and as such a new scheme in the name of IBDF scheme was designed.

**Objective of the Scheme**

The IBDF scheme was designed to achieve the following targets in the rural areas:

- Reduction in T&D losses and the AT&C losses.
- Improvement in consumers service quality
- Improvement in metering , billing and collection efficiency

**Scope of work of the franchisee**

The franchisee shall be responsible for:

1. Meter reading, bill generation, bill distribution, revenue collection of the consumers under their control.
2. Day to day minor repair and maintenance services.
3. Operationalising new service connections by interacting with block level executive engineer.
4. Carry out disconnections/reconnections as per situation.
5. Regularization of illegal consumers and mitigate theft.
6. Detailed survey of consumers, consumer indexing and alignment of consumers.
7. Collections of the principal amount of the total accumulated arrear of APDCL from the consumers who are covered under the IBDF scheme.
8. Service for minor LT and HT maintenance activities.
9. Security of the distribution assets in their area of operation.
10. Assisting the APDCL in finalization the Asset register updating the consumer related MIS in the franchisee handed over area.

**Contract Duration**

Project area shall be taken over by franchisee within two months of issuance of LOI and the date of commandment of the operation shall be the starting date. The agreement shall be valid for a period of 5 years, with effect from the starting date unless terminated earlier or as per the terms and conditions of the agreement. The duration of the agreement can be extended on mutually agreed terms and conditions. The extension process shall be initiated formally in writing one month prior to the expiry of the agreement. If any major discrepancy in the application documents furnished by the franchisee is found out during the contract period, then it may result to termination of the contract.

### **Security Deposit**

Franchisee shall have to deposit 2 times of the monthly assessed revenue as per average potential demand for last one year. APDCL shall ensure return of the security deposit to the franchisee within 60 days of termination of the contract after the settlement of APDCL accounts.

### **Incentive**

- In the scheme the franchisee is billed on a predetermined rate known as Bulk Supply Tariff (BST), which is calculated on the basis of pre prevalent commercial parameters of the area. The factors which affect this BST are the T&D losses, AT&C losses, condition of the network of the feeder. As franchisee puts in efforts towards reduction of losses prevention thefts, improvement of distribution networking system of the feeder. It results in an increase in per unit realization by the franchisee and the difference between this per unit realizations and per unit BST is the incentive of the franchisee.
- The franchisee has to deposit a security deposit- an amount which equals to 2 times of the monthly assessed revenue as per the average potential demand for the last 1 year before taking over the feeder.
- An amount of Rs 1, 45, 00,000 is to be invested by the franchisee for starting the business and other investments such as purchase of computers, office stationeries, office furniture etc.
- For both the cases, an interest of 25% is given to the franchisee as a return of the investment which is reflected in the collection of BST of the feeder

### **Benefits**

- The franchisee will earn 15% for collecting the arrear mounted during APDCL's operations.
- Any amount collected by the franchisee for the consumers on account of disconnections and reconnection charges shall be retained by the franchisee.



## Evaluation of RGGVY programme in the state of Assam

- Application for new servicer connection shall be received by the franchisee, which will also prepare a feasibility report and estimates for new service connections. Franchisee shall be paid Rs. 550 per connection for the same.

### **Selection of franchisee**

**First Stage:** At the first stage, franchisees were selected on the nomination basis.

**Second stage:** At the second stage franchisee agreement was revised and the franchisee was selected through the paper modification and subsequently performance evaluation and the management interaction by the selection committee.

The following two tables are showing the circle wise status of the IBDF and the SPPS scheme.

**Table 19: Circle wise status of 11 KV feeders of IBDF scheme**

Name of the circles	Numbers of feeder selected	Agreement signed with the franchisee	MOU signed/LOI issued to the franchisee	Under Processing
GEC –II	7		2	5
Rangia	7		3	4
Bongaigaon	24	4	12	8
Kokrajhar	2		2	
Mangaldoi	5	3		2
Cachar	9		3	6
Nagaon	5			5
Dibrugarh	3		3	
Jorhat	4			4
Sivsagar	5		3	2
Tezpur	3			3
Tinsukia	3	2	1	
N.Lakhimpur	1		1	
TOTAL	78	9	30	39

Further updated data is indicated in Annexure 9

**Table: 20 Up to date Circle wise Status of the SPPS Scheme as on 31.07.2011**

Sl. NO.	Name of the circle	No of DTR handed over	No. of agents	No. of Village covered	No. of manpower engaged by the agents	No of consumer handed over to the agents
	Cachar	454	245	444	565	20692
	KANCH	68	17	68	58	4824
	Nagaon	450	141	481	659	28207
	Tezpur	27	17	30	70	1868
<b>Central Assam Zone</b>		<b>999</b>	<b>420</b>	<b>1023</b>	<b>1352</b>	<b>55591</b>
	GEC- I	36	8	42	49	3347
	GEC- II	164	34	163	254	17031
	Rangia	158	46	144	234	16701
	Bongaigaon	280	46	280	309	14990
	Kokrajahar	354	57	211	197	16738
	Mangaldoi	135	49	145	145	4717
<b>Lower Assam Zone</b>		<b>1127</b>	<b>240</b>	<b>985</b>	<b>1188</b>	<b>73164</b>
	Dibrugarh	345	39	345	22	14282
	Jorhat	163	62	163	329	8927
	Sivsagar	161	27	166	146	7639
	Tinsukia	171	36	171	77	77583
	N.Lakhimpur	273	149	304	292	10878
<b>Upper Assam Zone</b>		<b>1113</b>	<b>313</b>	<b>1143</b>	<b>1071</b>	<b>49479</b>
<b>APDCL</b>		<b>3239</b>	<b>973</b>	<b>3157</b>	<b>3611</b>	<b>178234</b>

**Figure 9: Percentage of Bills issued in Assam**

## Percentage of Bills Issued in Assam

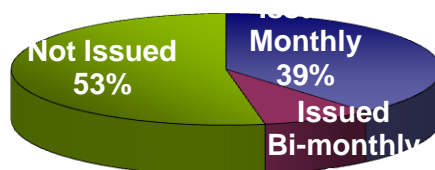


Figure 10, describes the percentage of houses that were billed for electricity consumption in surveyed villages in Assam and in accordance to what schedule. More than half of the households receiving electricity were not being billed. Of the 47% households that were receiving bills, a majority (39%) of them received them each month, while 8% had their bills dispatched bi-monthly. It was found that in a single district only one format of billing was adhered to, either monthly or bi-monthly. Also, there were 100% recoveries of the bill amounts as all the bills issued were paid. In the surveyed villages, the paying capacity of the people interacted with was estimated. Correlation between paying capacity and non payment of bills could not be established.

**Table 21: Indication of the average paying capacity of the consumers.**

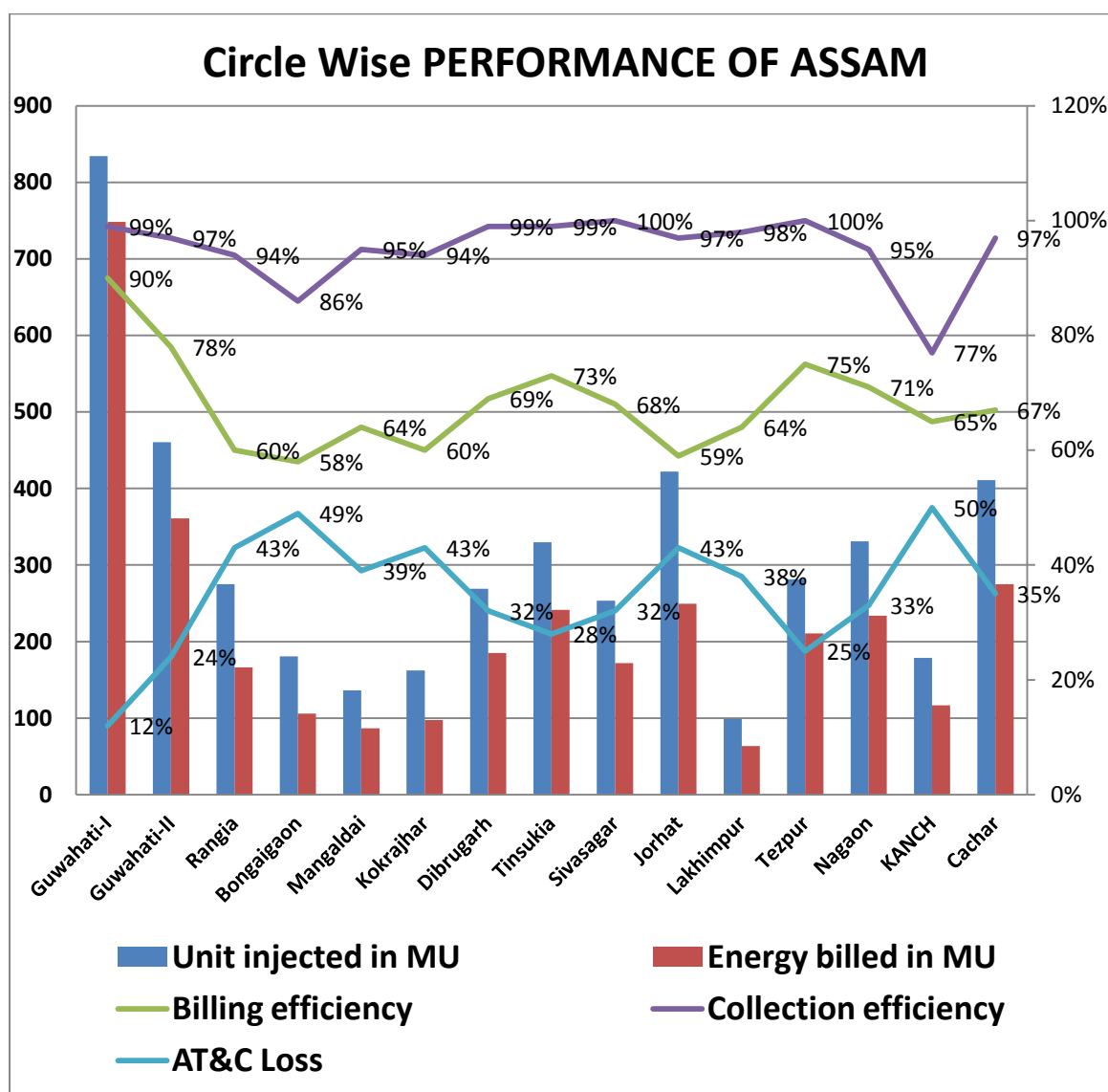
Household Monthly income in Rupees			
	Max	Min	Average
Lakhimpur	10000	1500	4560
Karbi Anglong	3500	1000	2594
Tinsukia	1800	1000	1315
Dhubri	3000	1000	1586
Dibrugarh	NA	NA	NA

## **Chapter 9**

### **Performance of Distribution Utilities and Rural Consumers**

Performance of the DISCOM is greatly impacts the success of RGGVY. In Assam performance is evaluated according to the circle of operation. The performance of DISCOM based on the newly electrified villages will not be correct picture of DISCOM efficiency. The Data available on the web is used to evaluate the performance in the circle level.

**Figure 10: the circle wise performance of Assam<sup>14</sup>**



<sup>14</sup> Website of Assam State Electricity Board

We observe from the figure 10; that in the districts of Guwahati- I and II the highest units of Electricity were injected. Moreover, the billing efficiency in these districts was also high at 90% and 78% respectively. In Kanch, the highest AT&C losses were reported i.e 50%, while the lowest were in Tezpur (25%). The lowest reported figures for Billing Efficiency were in Bongaigaon (58%) and Borhat (59%) circles. This figure also depicts the reported Collection efficiency, which is highest at 100% in both, Sivasagar and Tezpur circles.

The category wise consumers, their connected load and total defective meter are collected for the month of June, 11 which can be seen at Table-21A

**Table 21A: Category Wise Revenue Report for the Month of June'11**

Sl No.	Category	Connected Load (KW)	Total Numbers of consumer	Total Defective meters	% defective meters
	<b>LT CATEGORY</b>				
1	Jeevan Dhara	71200	280341	10540	3.8
2	Domestic A	1306818	1286953	114431	8.9
3	Domestic B	168593	24271	2011	8.3
4	Commercial	291528	165794	9868	6.0
5	General Purpose	59104	25973	4118	15.9
6	Public lighting	4372	866	114	13.2
7	Agriculture	10289	4868	615	12.6
8	Small Industries (Rural)	77159	7121	494	6.9
9	Small Industries (Urban)	37925	3669	136	3.7
10	Temporary supply (Dom)	148	62	0	0.0
11	Temporary Supply (Non-Dom)	618	263	0	0.0
12	Rural unmetered (Dom)	8110	9865	0	0.0
13	Rural Metered (Comm)	186	225	0	0.0
14	Deptt. Employees	7896	5625	644	11.4
15	Board Establishments	1771	540	68	12.6

## Evaluation of RGGVY programme in the state of Assam

	HT CATEGORY				
16	Domestic	43247	601	3	0.5
17	Commercial	143384	1881	15	0.8
18	Public water supply	29976	2414	539	22.3
19	Bulk Supply (Govt. Education)	28451	207	12	5.8
20	Bulk Supply (Others)	158273	829	38	4.6
21	HT- Small Industries	24189	767	17	2.2
22	HT-I Industries	53205	735	3	0.4
23	HT-II Industries	302046	200	1	0.5
24	Tea,Cofee and rubber	311639	982	21	2.1
25	Oil and Coal	36417	119	13	10.9
26	HT Irrigation	49441	959	210	21.9
27	Single Point Supply	145545	193111	6334	3.3
28	Boards Establishment	31	4	4	100.0
<b>TOTAL</b>		<b>3371561</b>	<b>2019545</b>	<b>150245</b>	<b>7.4</b>

The tariff order of ASEB does not indicate the cumulative subsidy component in the rural and agriculture sector. This may be due to non availability of meters at the rural consumers end. Tentatively variation in average tariff and average cost of supply may be taken as indicative subsidy.

**Table 21 B Tariffs in Rs. per KW in the state of Assam in Rural Sector<sup>15</sup>.**

Tariff in Rs. Per KW				
Sl No	Type of Consumers	Average Tariff	Average cost of Supply	Variation that can taken as subsidy
1	Jeevandhara up to specified units	3.25	4.98	(-)1.73
2	Domestic A above 0.5 Kw Load to 5 KW load			
	First 4kWh/day	3.75	4.98	(-)1.23
	Next 4kWh/day	4.8	4.98	(-)0.18
	Agriculture up to 7.5 HP Pump	3.26	4.98	(-)1.72
	Small industries rural upto 20 KW	3.33	4.98	(-)1.65

<sup>15</sup> Tariff Order of Assam State Electricity Regulatory Commission

**Table 21C Actual and Projected Information on Jeeban Dhara Connection vide Tariff order of ASEB**

Actual and Projected Information on Jeeban Dhara Connection vide Tariff order of ASEB					
ITEM	2008-09	2009-10	2010-11	2011-12	2012-13
of Connection	70688	112221	500423	1000844	1050888
Sales (MU)	34	39	230	460	483
Additional Connection to be Given		41533	388202	500421	50044
Additional Sales Projected (MU)		5	191	230	23
Average Sales per connection / month (KWh)	40	29	38.3	38.3	38.3

APDCL has projected the energy sales for the agricultural category of 7.5 HP for the control period is reflected in Tariff Order of ASEB. The information provided in Table 21 B, 21C, 21D reflects the subsidy burden on the DISCOMs

**Table 21D Agriculture Sector up to 7.5 HP consumers.**

Year	Energy Sale
2010-11	12 MU
2011-12	21 MU
2012-13	42 MU

The Performance APDCL can be seen at Table 22.

**Table –22: Performance Of APDCL for the month of August’11**

Sl No .	Name of Circle	Unit Injected in MU	Energy bill in MU	Billing efficiency %	Collection Efficiency %	Overall Efficiency %	AT&C %	Percentage of Billing %	Total No. of Consumers
1	Guwahati-I	89.11	78.23	88	97	85	15	96	169701
2	Guwahati II	47.46	35.18	74	93	69	31	91	112711
3	Rangia	34.90	22.17	64	93	59	41	94	259358
4	Bongaigaon	20.99	12.16	58	86	50	50	82	127878
5	Mangaldai	14.44	9.01	62	93	57	43	89	85924
6	Kokrajhar	17.45	9.92	57	85	48	52	94	91815



## Evaluation of RGGVY programme in the state of Assam

<b>Lower Assam Total</b>		<b>224.35</b>	<b>166.67</b>	<b>74</b>	<b>94</b>	<b>70</b>	<b>30</b>	<b>92</b>	<b>847387</b>
7	Dibrudagarh	27.61	20	72	99	72	28	97	71983
8	TINSUKIA	35.72	26.82	75	86	72	28	97	114676
9	Sibsagar	27.01	18.73	69	95	66	34	96	110580
10	Jorhat	42.79	27.65	65	91	59	41	85	196847
<b>Upper Assam Total</b>		<b>133.13</b>	<b>93.20</b>	<b>70</b>	<b>95</b>	<b>67</b>	<b>33</b>	<b>90</b>	<b>494086</b>
11	Tezpur	29.21	22.28	76	97	74	26	94	118429
12	Nagaon	38.44	26.95	70	102	72	28	92	263997
13	KANCH	17.55	10.99	63	72	45	55	88	60242
14	Cachar	45.91	30.45	65	97	63	37	90	195425
15	Lakhimpur	11.08	7.14	64	86	55	45	92	95517
<b>Central Assam Total</b>		<b>142.186</b>	<b>97.411</b>	<b>69</b>	<b>94</b>	<b>65</b>	<b>35</b>	<b>92</b>	<b>733610</b>
<b>DISCOM Total</b>		<b>499.66</b>	<b>357.27</b>	<b>72</b>	<b>94</b>	<b>67</b>	<b>33</b>	<b>91</b>	<b>2075083</b>

After study of Table 21 & 22 it is seen that,

Total Number of consumers: 2075083

Number of defective meter: 150245

Billing efficiency of APDCL: 72 %

Collection efficiency of APDCL: 94%

Overall Efficiency: 67%

Percentage of Billing: 91%

AT & C loss APDCL: 33%

If 4.8%, the declared T&T loss of 2010-11, is included in this loss, then the total AT & C loss will  $33+4.8= 37.8$  % which is still on the higher side.

APDCL has got a large number of defective meters, 150245 in number. If APDCL takes immediate action to replace these defective meters then AT& C loss will be substantially reduced. However it is gathered that the purchase procedure for procurement of meters is on hold, due to which replacement of meters is taking more time than required. It is also gathered that during 2007-2008, 2008-2009 and 2009-2010, the AT & C loss calculated

at the APDCL level are 29%, 30% and 31% respectively. It has now increased to 32%.

The reason may be summarized below:

1. During the period many villages have been electrified as per RGGVY.
2. These villages, though taken over by existing revenue sub-division, have been observed to have poor revenue collection.
3. Many of the villages are inaccessible due to improper road communication.
4. Shortage of manpower collection of meter reading and dispatch of bill.
5. Theft of energy in this rural feeder.
6. Reluctant attitude of the employee for collection of revenue and other related issues.
7. The rural consumer not pays the bill due to erratic power supply position.

After completion of RGGVY works of all the Districts of Assam the following infrastructure shall be added to the existing distribution networks.

1. 33/11 KV Sub-Station: 32 of them; Power Transformer capacity-121.3 MVA.
2. Total 33 KV line Length : 501 Km
3. Total 11 KV line Length : 24300 Km
4. Total LT line Length : 19974 Km
5. Total New DTR : 21284
6. Total BPL Consumer : 989411

**A. Additional Consumer likely to be added:**

1. BPL consumers : 989411
2. APL consumers : 109525

**Total number consumer likely to be increased – 10989936**

*(Assuming 5 APL consumers in each of 21905 villages covered under the scheme)*

**B. Demand of Power likely to be increased:**

New DTR Addition,

- $10\text{KVA} \times 1042 = 10420 \text{ KVA}$

- $16\text{KVA} \times 15371 = 245936 \text{ KVA}$
- $25\text{KVA} \times 4871 = 121775 \text{ KVA}$

***Total capacity addition = 378131KVA***

Assuming 80% capacity utilization (LF) and 60% demand factor at 0.85 power factor, =  
 $(78131 \times 0.8 \times 0.6 \times 0.85) \text{ KW} = 154.3 \text{ MW}$

After addition of 35% T&D loss,

**Total Power Requirement likely to be increased by 208.3 MW**

**(154.3 MW+ T&D loss 54.0 MW)**

**C. Impact on revenue: As per REC norms, 15-16 hrs in a day power supply must be ensured.**

- On an average, to provide power for 15 hours of daily consumption of energy will amount to 2314500 units.
- Monthly consumption of energy will be approximately 69435000 units, say 70 MU.
- Considering average revenue return of rural areas (ARR) as Rs. 2.5 /unit against the cost of purchase of 4.86/unit,
- Total financial support required Rupees 15.13 crores /month ( $69435000 \times \text{Rs. } 2.18$ )

**D. Manpower Requirement:**

- In case of handover of all the prospective consumer (BPL/APL) covered under the scheme to the franchisee, additional financial support of approximately Rs. 3.5 crore /month will be required as commission to the franchisee. Again one time expenditure of approx. Rs. 10 crore will be necessary for renovation of the HT and LT networks, DTR Repairing/Augmentation, DTR metering etc. at the time of handover of the consumers to the franchisee.
- If APDCL cannot handover the additional consumer to the franchisee, manpower requirement for revenue building is as under.
  - A. Meter Reader (Out Source) – 1100 (1000 con/MR)
  - B. Bill Clark – 550 (2000 con/BC)

## Evaluation of RGGVY programme in the state of Assam

- C. Financial Support required for payment to MR and BC = Rs. 88 Lakh/  
month. ( Rs. 3.00 /meter reading, Rs. 5.00/ Bill)
- D. Computer, Table and chairs with other office stationeries of Rs. 110  
lakh (One computer /5,000 consumer considered)

## **Chapter 10**

### **Comments, Observations and Recommendations**

The RGGVY has been able to Build a good quality infrastructure to sustain electricity supply for the rural Area, under multiple challenges faced by the state. The existing system of the scheme management can be augmented with higher participation of the state government; being perceived as central government scheme. Hence the implementation process may be designed according to the management structure current structure of electricity board (e.g. circle wise, subdivision).

Following are the observation based recommendations of the RGGVY programme and its implementation in Assam. These recommendations are of general nature and are obvious, but have utility value

I. Though the total progress is quite satisfactory consider the natural challenges and political turmoil and insurgency, the following shortcomings are hampering the progress of the work. During the delays analysed, it was observed main delay occurred during erection and commissioning and phased transportation of materials

- Clearance from the forest authority for drawing HT and LT lines should be streamlined. Within and in the proximity of the villages underground cabling may be thought of though it will incur higher cost.
- Delay is due to land acquisition for the S/S, and right of way for installation of LT pole in the villages. Proactive action of Panchayat is desired
- Limited number of good agencies/ contractors and skilled manpower are available locally. The subcontractors rely on the local workmen for work execution. The skilled manpower tends to migrate to better opportunities.
- Delay in materials receipt at site due to poor condition of road and bridge, and coupled with bad weather. Damage is also caused to village infrastructure such as road/bridges due to natural calamities like flood, erosion. Difficult terrain of hills, small, big rivers without proper communication and road and bridge (load carrying capacity) transport network
- Delays in material transport are also caused due to fulfillment of formalities with the tax authority to get the road permit and other tax. Material is received from manufacturers located at distant cities.
- Refund of service tax deducted from Contractors is also an issue.

- Delays in receipt of state government BPL list from the competent authority. This list gets updated frequently. Public grievances are also there
- Inclusion of some villages in RGGVY programme with zero population (may be due to migration because of floods and other calamities)
- In some area, there are grievances among the villages regarding development of quality and quantity of infrastructure.
- Due to insurgency there are the Roads blocks, Bandh calls etc. by the different organization for work stoppage
- Poor population density in villages requires extra length of cable for service connection. There is a reluctance to give connection to distance households as they have to install additional poles
- Labour problem at the site. Uncomfortable, and insecure working atmosphere in the insurgent area where loots/arson/kidnapping takes place frequently
- Political interference during the process of electrification for various reasons.
- Less working months in a year due to frequent rain which may be around six months for the year. This is apart from insurgency issues
- Lack of co-ordination and cooperation of different departments involved in the process. This includes internal department of ASEB, and external institutions such as District administration, Panchayati Raj Institutions. In APDCL, a assistant general manger (RE monitoring) has been instructed to co-ordinate and look after the RE works for RGGVY programme under a particular DISCOM circle, however in certain cases, AGM has to look after more than one district. Due to multipurpose work load it become difficult sometimes for the AGM to coordinate the project smoothly.
- As AGM monitoring has given the authority for approval of charging the line and substations, without adequate support staff. In many cases he has to approve the testing parameters as well as total construction for charging. Sometimes the executives, who are in charge of that particular subdivision, which is responsible to connect the existing infrastructure to the new infrastructure, show

unability due to backward linkage provisions and the total programme is delayed or postponed.

- Shortage of manpower on the DISCOM site, for monitoring as well as charging, is less and due to this progress definitely hampered.

- II. During the village survey, it has been noticed that the schools, health centres and community centres are mostly not electrified. The concerned authorities of the government and panchayati raj institution have to allot funds for infrastructure development in these community institutes for electrification. Even if this facility exist it may not be possible to provide services connections due to the overload of the transformer. So, it is suggested that government should provide funds to these institute for service connections and accordingly provision has to be made in the infrastructure to cater to this load.
- III. Almost all the villages have poor inhabitants. Starting any SSI found to be difficult. Again, the infrastructure already available may not be sufficient to cater to the load. Therefore sufficient KVA should be ensured during survey, taking in to consideration the level of the village industry.
- IV. Many APL consumers are insisting in almost all villages, but the Department couldn't release connections due to the limitations of transformer capacity and VEI.
- V. Consumer load growth in rural area will occur rapidly over time, hence overall T&D system needs to be strengthened and improved to cater to the demand. Since the state funds are limited and financial health of Discom is poor, the central government may provide loan to these states government at concessional rates for strengthening the system.
- VI. DISCOM should be provided with more manpower for smooth and speedy implementation of the RGGVY work along with the AGM monitoring.
- VII. DPRs for further investments need not be District based as in case of Karbi Anglong and Dhubri. Centralised Investments can be made, Distribution Circle wise and these should be made cost and profit centres to improve the accountability and efficiency of investments.



VIII. Rural electrification plans are difficult to become financially sustainable unless these become part of the commercial operations of Distribution Circles combining with urban and rural distribution network.

IX. The theft of electrical energy is in vogue due to the following reasons :

- The APL consumers who are willing to take electricity connection could not be serviced by APDCL, because of the limitation of DTR capacity, inadequate infrastructure installed in the village, scarcity of meter & hardware / conductor etc.
- The left out BPL are those whose names are not listed in the beneficiary list or are not provided connections as per priority list.
- Unscrupulous persons who always indulge in this type of immoral activity.
- Non-vigilant attitude of the department.
- Lack of public awareness on consequence of theft.

APDCL should strictly deal with the issue and try to release service connection where technical parameter exists.

It is understood that many consumers have already paid the required money for a connection. In many cases it is due to shortage of meters, though the consumers have paid for the meter, that the APDCL could not give the connection. So it is suggested that the APDCL should select the brand of meter, so that the consumer can purchase the meter and deposit it with the department which can be connected after testing by the APDCL. Many connections have been given by the APDCL without a meter and that way unmetered connection will enhance the AT&C loss.

APDCL should make awareness programme for the appraisal of the consumers and make a 'Consumer Protection Cell' with Gaon Panchayat & other NGOs to stop the menace of theft of energy.

In order to fulfil the vision of providing “electricity for all” and to ensure revenue sustainability of rural electrification the APL connection to remaining APL consumers may be provided at a discounted rate. This is being practiced in the state of West Bengal. Central government can give certain financial support for release of APL connection, and cost of connection may be shared between state and centre.

Law & order authority should also assist APDCL officers in providing security. Their assistance will enable DISCOM executives to perform O & M of DTR and VEI.

During the 1<sup>st</sup> phase of RGGVY, the total DTR of different capacities will be 21284. The APDCL normal DTR will be around 30,000 in number. All together there may around 50,000 DTR. As per the record the failure rate of DTR is around 8-10% per year i.e. after the defect liability period is over around 5,000 DTR have to be replaced by APDCL, for which a huge investment has to be incurred by the APDCL from its own O & M fund. The failure of these transformers, which are located in a distant place from the main working headquarters of APDCL, will mean that routine maintenance will not be carried out in an efficient manner. Due to the theft etc. the failure rate will also increase. APDCLs own resources for this will be very low. For a certain period some funds have to be allocated from the central fund for continuity of service. Otherwise the VEI will be damaged.

### **Manpower**

Shortage of manpower will pose a huge challenge. Around 200 MW will be injected to the APDCL network after the completion of RGGVY (1st Phase). There are 32 33/11 KV sub-stations, 500 Km.-33 KV lines, 24,300 Km.-11 KV lines and around 20,000 Km. LT lines will soon be completed. For all this work, the requirement of manpower is huge. How APDCL will look after these infrastructures, is a matter of great concern. This will have an unusual impact on APDCL revenue earning. That is one of the basic reasons for delay in taking over; even after the taking over by the department the involvement of APDCL manpower in the newly electrified village/sub-station will be found to be not up to the mark. The present staff number is also not sufficient to cater to the work demand. The village people/panchayat/NGO have to be involved to this process and they should be encouraged to take part in O & M of the VEI or REDB which some guidance.

Many of the APDCL employees who have got experience in those works can be encouraged to be further involved in the process with some honorariums or contractual amount so that burden of APDCL employee can be reduced.

### **Other Small Scale Industries etc.**

With the small electrical infrastructure in a village, the development of small scale industries will be a problem. There are sufficient gaps in the DTR capacity for the industrial growth. At the time of preparation of DPR, some margin should be kept in the DTR for industrial & commercial growth. Local population and opponents should be encouraged to become entrepreneurs and provided landholdings and mentorship apart from facilitating access to credit, market and technology etc.

**For Electrification of Community Centre, Health Centre etc:**

For electrification of community centre, health centre, public places, school, market etc. the concerned authority should come forward to take electricity connection and formalities have to be done as per rule. However the Government Department should also come forward to get the electricity connection with some infrastructure development.

**Conclusion**

People are generally happy as soon as their villages are electrified. The normal life standard has also increased to some extent definitely. But in the long run when their demand of electricity will increase, it will be a difficult task for the APDCL to meet their demand and heavy load shedding will definitely jeopardize public interest. Implementation of RGGVY Programme in Assam has been constrained by a variety of reasons: both natural and manmade. Rapid strides in rural electrification are possible through mainstreaming and effective involvement of local population so that their own welfare is genuinely perceived to be embedded in the development oriented RGGVY/DDG Projects. Innovative business models are possible for this to be achieved, so as to provide wage employment and self-employment for the people of Assam. Capacity building for this purpose requires involvement of sector specific non-profit organisations, having multidisciplinary teams. Equally important is the need to be technically agnostic. The objective of rural electrification can be achieved more cost-effectively through decentralized generation from RE Systems. This calls for effective coordination between MOR and MNRE and State Governments. Private Sector can play a transformational role. Unfortunately RGGVY's rigidity excludes the private sector's involvement. MNRE's off grid scheme offers useful lessons for reconstructing RGGVY and DDG. The results of Phase II of JNNNSM also provide serious food for thought. An in-depth, rigorous study in the nature of cost-benefit/cost-effectiveness analysis of

## Evaluation of RGGVY programme in the state of Assam

available technological options is called for urgently to ensure optimal resource allocation in the rural electrification sector.

## Annexure 1: Progress Report Of Implementation of RVE programme

Physical Progress Report Of Implementation of RVE programme through Solar Photo Voltaic Home Lighting (HLS) & Solar Photo Street lighting (SLS) in the State of Assam  
State Electricity Board as on 31.08.2011

Sl No.	Sanction phases	Nos of Sanction Villages	Nos, of Villeges, installation	Physical Prograss				Remarks
				HLS		SLS		
				As per Sanction (Numbers)	System Installed (Numbers)	As per Sanction (Numbers)	System Installed (Numbers)	
1	1 <sup>st</sup> Phase (2005-06)	16	16	1963	1963	Nil	Nil	Project has already been closed
2	2nd Phase (2006-07)	141	141	8682	8682	366	366	Completion report for 104villages submitted to MNRE, remaining villages as per DC, certificate some systems are missing & a high court case is pending.
3	3rd Phase (2007-08)	203	203	8753	8753	146	146	Project completed & completion report submitted to MNRE.
4	4 <sup>th</sup> Phase (2007-08)	55	55	2762	2762	20	20	Project completed & completion report for 54 villages submitted to MNRE.
5	5 <sup>th</sup> Phase (2007-08)	105	102	5960	5327	Nil	Nil	102 villages completed, completion report for 100villages submitted to MNRE

## Evaluation of RGGVY programme in the state of Assam

6	6 <sup>th</sup> Phase (2007-08)	287	279	9676	9392	Nil	Nil	279 villages completed, completion report for 273 villages submitted to MNRE.
7	7 <sup>th</sup> Phase (2007-08)	134	111	6073	4957	Nil	Nil	Work in Progress
8	8 <sup>th</sup> Phase (2008-09)	110	33	3978	1180	252	83	Work in Progress
9	9 <sup>th</sup> Phase (2009-10)	61	45	13050	6467	Nil	Nil	Work in Progress
	<b>Total</b>	<b>1112</b>	<b>985</b>	<b>60897</b>	<b>49483</b>	<b>784</b>	<b>608</b>	

In a statement in parliament the Honourable Minister of MNRE mentioned that in 2157 cases of RVE will be taken up as and when proposals are received.

## Annexure 2 Implementation Schedule Related Information

Sl. No No.		1		2		3
Name of District		Karbi Anglong		Dhubri		Lakhimpur
Implementing Agency		ASEB		ASEB		ASEB
Name of 33/11 KV Sub Station		Umpana i	Bokoli a	Mahamaya	Jowadanga (Mancachar)	Raidengia
Capacity of Sub Stations (MVA)		1x2.5	1x2.5	1x2.5	1x2.5	1x2.5
Date of Award		30-01-09		12-Feb-09		02-Mar-09
Scheduled completion date (24 months from the date of award)		30-01-2011		12-02-2011		02-03-2011
Land Acquisition	Identific ation of Land	Due Date (1st quarter from date of award)		30/04/09		12-May-09
		Status	Identif	Identi	Identifie	Identified

# Evaluation of RGGVY programme in the state of Assam

			ied	fied	d		
	Handig Over of Land to Contrac tor	Due Date (2nd quarter from date of award)	30/07/09		12-Aug-09		02-Sep- 09
		Status	Handed over		Handed over	Handed over	Handed Over
Supply of Major Equipment and Material	Placeme nt of orders	Due Date (2nd quarter from date of award)	30/07/2009		12-Aug-09		02-Sep- 09
		Status	100%	100%	95%	95%	100%
	Comme ncement of Supply	Due Date (3rd quarter from date of award)	30-10-09		12-11-09		02-12-09
		Status	100%	100%	90%	90%	100%
	Comple tion of supply	Due Date (5th quarter from date of award)	30-04-10		12-05-10		02-06-10
		Status	98%	98%	65%	65%	100%
Erection and commission ing	comme ncement of Civil works	Due Date (3rd quarter from date of award)	30-10-09		12-11-09		02-12-09
		Status	100% compl eted	100% compl eted	80% complete d	80% completed	100% complete d

## Evaluation of RGGVY programme in the state of Assam

	Erection and commissioning	Due Date (5th quarter from date of award)	30-04-10		12-05-10		02-06-10
		Status	In progress	In progress	In progress	In progress	Charged on 30.03.11
Remarks							Handed over.



### Annexure 3: Fortnightly Progress of installation of Sign Boards under RGGVY; as on 15-10-2011

Sl. No.	Name of the project	Name of Implementing agency	No. of Un-electrified villages covered for electrification	No. of villages where sign boards have been erected	Balance villages where sign boards are yet to be erected
1	3	5	6	7	8
1	RGGVY-(Tinsukia)	ASEB	350	350	0
2	RGGVY-(Jorhat)	ASEB	243	243	0
3	RGGVY-Goalpara	ASEB	323	323	0
4	RGGVY-Nalbari	ASEB	145	131	14
5	RGGVY-Morigaon	ASEB	257	255	2
6	RGGVY-Golaghat	ASEB	483	421	62
7	RGGVY-Darrang	ASEB	204	200	4
8	RGGVY-Barpeta	ASEB	226	82	144
9	RGGVY-Kamrup	ASEB	379	82	297
10	RGGVY-Bongaigaon	ASEB	351	323	28
11	RGGVY-Dhuburi	ASEB	393	9	384
12	RGGVY-Nagaon	ASEB	358	125	233
13	RGGVY-N.C.Hills	ASEB	242	76	166
14	RGGVY-Karbi Anglong	ASEB	1380	866	514
15	RGGVY-Lakhimpur	ASEB	544	466	78
16	RGGVY-Dhemaji	ASEB	631	322	309
17	RGGVY-Kokrajhar	ASEB	308	0	308
Total: -			6817	4274	2543

#### Annexure -4: Power Sourcing in the state of Assam

The table indicates supply status of power in the state of Assam, the average generation (between January to September) was 143 MU and the rest of the demand is met by import of energy. The management of shortfall by open access is a costly option.

Table A 4 - 1: Power Planning of ASEB

	ASEB's net	Import of Energy in MU from					Power			Max
Period	Generation in MU	Central sector	NTP C	Open Access/	DL F	Champa awati	Availability	Demand	Shortfall	Demand
		agencies		Others		mini hydel PP	in MU	in MU	in MU	in MW
Average January to September year 2010	136	164	95	9	6		405	491	86	955
Average January to September year 2011	143	208	85	25	5	1	464	534	70	1034
% Growth	5	27	-11	184	-10		15	9	-19	8

Power Position in Assam as on 21st June'05 onwards is highlighted in Table A 4 – 2. The table A 4-2 indicates the state can manage off peak load, and is in deficit during peak load.

Table A 4 - 2: Power Position in Assam as on 21st June'05 onwards

<b>Power Position in Assam as on 21st June'05 onwards</b>								
					Availability of Power in MW			
					Off Peak		Peak	
Sl No	Generating Station	Installed capacity (MW)	Share of Assam in %	Share of Assam in MW	Central Sector	Share of Assam	Central Sector	Share of Assam
<b>1</b>	<b><u>NEEPCO</u></b>							
I	Kopili - I	200.0	49.83%	99.66	170.0	84.71	175.0	87.20
II	Kopili - II	25.0	44%	11.00	21.5	9.46	21.5	9.46
III	Khandong	50.0	52.67%	26.34	44.0	23.17	44.5	23.44
IV	RHEP (Ranganadi)	405.0	39.75%	161.00	220.0	87.45	400.0	159.00
V	Doyang	75.0	40.22%	30.17	0.0	0.00	30.0	12.07
VI	AGBPP (Kathalguri)	291.0	52.85%	153.79	257.0	135.82	240.0	126.84
VI	AGTPP (Ramchandra Nagar)	84.0	41.80%	35.11	78.0	32.60	84.0	35.11
VI	NEEPCO Bilateral					5.70		10.50
<b>2</b>	<b><u>NHPC</u></b>							
I	Logtok	105.0	25.97%	27.27	20.0	5.19	70.0	18.18
<b>3</b>	<b><u>Own Generation</u></b>							
I	NTPS	133.5	100%			48.00		47.00
II	LTPS	120.0	100%			43.20		50.80
<b>4</b>	<b><u>IPP ( DLF)</u></b>	24.5	100%			16.00		16.00
5	Total Power available in MW					491.32		595.60
6	Less Transmission Loss (4.5%)					22.11		26.80
7	Net Power Available in MW					469.21		568.80
8	Demand in Assam in MW					377.00		646.00
9	Shortfall in Assam in MW					Nil		77.20
No te:-	1. Out of surplus power available during off peak hours a quantum of 60 MW power exported to							
	UPPCL through open access.							
	2. Average 50 MW load shedding done during peak hours due to transformation constraint .							

A snap-shot of Power allotment by ASEB during off-peak load and Peak load is shown in Table A 4-3. However demand is expected to grow significantly due to potential economic development.

Table A 4 - 3 Example of ANTICIPATED AVERAGE power ALLOTMENT for 14.12.2011

ANTICIPATED AVERAGE power ALLOTMENT for 14.12.2011					
GENERATION					
Source	Total Offpeak (MW)	Total Peak MW			
CENTRAL sector + Bilateral	261	620			
IPP (DLF)	7	7			
Chapmamati Mini Hyd.	1	1			
Own Generation	125	215			
TOTAL	394	843			
(-) Trans Loss & Operation constraint	28	59			
NET availability	366	784			
AVERAGE DEMAND	650	970			
AVERAGE SHORTFALL	284	186			
DISTRIBUTION					
Sub Station	OFF-PEAK	PEAK	Sub Station	OFF-PEAK	PEAK
Kahilipara	47	70	Dullavcherra	2	4
Sarusajai	41	67	Pailapool	5	12
Chandrapur	6	9	Panchgram	12	23
Narengi	18	24	Srikona	11	18
Sisugram	20	32	HPC(P)	2	5
Baghjap	4	14	Mariani	4	14
HPC(J)	3	5	Golaghat	5	16
BTPS(Dist. S/S)	0.5	0.5	Jorhat	11	28

## Evaluation of RGGVY programme in the state of Assam

Dhaligaon	6	11	Bokajan	3	9
Ashok Paper Mill	1	6	Bokakhat	2	7
Gossaigaon	2	6	LTPS(Dist.S/S)	4	7
Gauripur	5	12	Nazira	20	28
AGIA	3	14	NTPS(Dist.S/S)	7	17
BOKO	1	5	BFCL	0	0
Barnagar	7	18	Dibrugarh	9	25
Nalbari	3	11	Moran	4	13
Rangia	8	24	Tinsukia	15	32
Sipajhar+Baihata	2	8	Rupai	4	9
Rowta	6	16	Ledo	2	8
Depota	12	25	Halflong	2	4
Gohpur	2	6	Umrangshu	2	4
B.Chariali	4	10	PBSL	0.1	0.1
Nalkata	3	10	Dispur	0.6	1.8
Majuli	0	1	Sibsagar	0.1	0.1
Dhemaji	2	8			
Samaguri	11	31			
Diphu+Lumding	4	6			
Sankardev Nagar	6	14			

## Annexure 5 Details of Gram Panchayat Certificate

Details of Gram Panchayat Certificate										
Sl. No.	Name of District	Name of Block	Sanctioned Coverage			Name of Package & Contractors	Collected GP Certificate			
			UE	DE	AE		UE	DE	AE	Total
X <sup>th</sup> Plan										-
1(i)	RGGVY Tinsukia (310001)	Sadia	2x2.5 MVA S/S at Chapakhowa alongwith associated 33KV line(30.0 km.) & 11KV line(8.4 km) in Sadia Circle			<u>Pkg. TSK-1</u> (JV) of M/s North Eastern Cables & Conductors (P) Ltd., Jorhat, Assam.				
1(ii)	RGGVY Tinsukia (310001)	Tinsukia, Doomdooma, Sadiya & Margherita	251	99	725	<u>Pkg. TSK-2</u> M/s ECI Engg. & Const. Co. Ltd., Hyderabad.	251	99	725	1075
Total : Tinsukia			251	99	725	-	251	99	725	1075
XIth Plan										
11(i)	RGGVY Dhuburi (310018)	Agamoni, Rupsi, Debitola, Gauripur, Mahamaya, Bilasipara & Chapar Salkocha	67	171	549	<u>DHB-1</u> ,M/s East India Udyog Ltd.,Gaziabad, U.P. 201005.	0	0	0	0
			1x2.5 MVA S/S at Mahamaya Block							
11(ii)	RGGVY Dhuburi (310018)	Nayer Alga, Birsing Jarua, Jamdarhat, South Salmara, Fekamari & Mankachar	70	62	208	<u>DHB-2</u> ,M/s Indo Power Projects Ltd.,Rajadanga Main Road,Kolkata-700107	0	0	0	0
			1x2.5 MVA S/s at Jowadanga,Mancachar							
11(iii)	RGGVY Dhuburi (310018)	Golokganj	1	22	25	<u>DHB-3</u> ,M/s R. Enterprise,Gossaigaon,Kokrajhar	0	0	0	0
Total : Dhuburi			138	255	782		0	0	0	0
14(i)	RGGVY Karbi Anglong (310023)	Amri, Chithong, Socheng & Rongkhag	300	36	116	<u>KANCH-1</u> , M/s North Eastern Cables & Conductors (P) Ltd.,A.T.Road , Jorhat-1	173	30	85	288
			1x2.5 MVA S/S at Umpani alongwith associated 33 kv & 11 kv lines.							
14(ii)	RGGVY Karbi Anglong (310023)	Howraghat & Rongmongway	227	24	154	<u>KANCH-2</u> , M/s North Eastern Cables & Conductors (P) Ltd.,A.T.Road , Jorhat-1	90	10	60	160

## Evaluation of RGGVY programme in the state of Assam

14(iii)	RGGVY Karbi Anglong (310023)	Lumbajanj & Longsomepi	321	29	98	KANCH-3, M/s North Eastern Cables & Conductors (P) Ltd.,A.T.Road , Jorhat-1	105	15	90	210
			1x2.5 MVA S/S at Bokolia alongwith associated 33 kv & 11 kv lines.							
14(iv)	RGGVY Karbi Anglong (310023)	Bokajan & Nilip	341	26	50	KANCH-4, M/s Lumino Industries Ltd.,Pollock Street,Kolkata-700001	270	25	46	341
14(v)	RGGVY Karbi Anglong (310023)	Somelengso	65	11	18	KANCH-5, M/s Lumino Industries Ltd.,Pollock Street,Kolkata-700001	65	11	18	94
Total : Karbi Anglong			1254	126	436		703	91	299	1093
14(i)	RGGVY Lakhimpur (310020)	Bihpuria	23	7	36	LKP-1: M/s Jayanta Khaund,K.B.Road, North Lakhimpur	23	7	36	66
15(ii)	RGGVY Lakhimpur (310020)	Naoboicha	25	8	99	LKP-2: M/s North Eastern Cables (P) Ltd., A.T.Road,Jorhat-1	18	6	30	54
15(iii)	RGGVY Lakhimpur (310020)	Lakhimpur	27	4	70	LKP-3: M/s Jayanta Khaund,K.B.Road, North Lakhimpur	27	4	70	101
15(iv)	RGGVY Lakhimpur (310020)	Narayanpur, Karunabari & Telahi	83	109	172	LKP-4: M/s Chadalavada Constructions (P) Ltd., Hyderabad.	45	35	46	126
15(v)	RGGVY Lakhimpur (310020)	Boginadi, Dhokuakhana & Ghilamora	212	46	126	LKP-5: M/s Win Power Marketing (P) Ltd., Jorhat.	198	36	120	354
			1x2.5 MVA S/S at "Raidengia" alongwith associated 33 KV & 11 KV Lines.							
Total:Lakhimpur			370	174	503	-	311	88	302	701

## Annexure 6: The Handover Statistics of Un-electrified and electrified Villages

Sl. No.	Name of the project	Un-electrified villages				Already electrified village			
		No. of villages sanctioned	No. of villages completed	No. of villages energised and handed over	% achievement	No. of villages sanctioned	No. of villages completed	No. of villages energised and handed over	% achievement
<b>1</b>	<b>3</b>	<b>6</b>	<b>7</b>	<b>8</b>		<b>9</b>	<b>10</b>	<b>11</b>	
<b><i>X<sup>th</sup> Plan</i></b>									
1	RGGVY-(Tinsukia)	350	350	350	100	725	725	725	100
<b>Total</b>		<b>350</b>	<b>350</b>	<b>350</b>		<b>725</b>	<b>725</b>	<b>725</b>	
<b><i>XI<sup>th</sup> Plan</i></b>									
11	RGGVY-Dhuburi	393	326	265	67	782	432	357	46
14	RGGVY-Karbi Anglong	1380	1205	935	68	436	406	283	65
15	RGGVY-Lakhimpur	544	511	477	88	503	478	467	93
<b>Total: -</b>		<b>2317</b>	<b>2042</b>	<b>1677</b>	72	<b>1721</b>	<b>1316</b>	<b>1107</b>	64
<b>Grand Total (X+XI)th Plan</b>		<b>2667</b>	<b>2392</b>	<b>2027</b>	76	<b>2446</b>	<b>2041</b>	<b>1832</b>	75



## **Annexure 7 Infrastructure to Sustain RGGVY infrastructure**

### **Transmission**

Assam Electricity grid Corporation (AEGCL) is a successor company of Assam State Electricity Board. It has been consisted as per company of act of 1956 and it has been declared as a State Transmission Authority (STU). It started functioning with effect from 10<sup>th</sup> December 2004. The main responsibility of AEGCL is to transmit power reliably efficient & low-cost through its Extra High voltage substation & extra high voltage substation line.

As the time of starting in 2003 its total length of EHV line about 66 KV was about 3862 CKT Km & that time its Transmitting capacity was 1636.5 MVA.

Hence during the period 523 CKT Km EHV line and 14 Nos of EHV substation has been constructed by AEGCL as per the additional capacity addition 1645 MVA.

The availability of the transmission line during last year is 99.42% to 98.54% respectively, Which is compatible to the any other developed company. Transmission utility during 2009-2010 to 2010-2011 the AEGCL has transmitted 4590 MU (million Unit) to 5045 MU through the grid respectively. The transmission loss during the period is 6.1% and 4.5% respectively.

Present Development activities of AEGCL :

1. 1×16 MV 132/33KV Balipara substation for industrialization as per the deposit scheme of Assam Industrial Development Corporation.
2. 2×16 MVA 132/33KV Dispur Capital substation.
3. Installation of 40 MVA, 80 MVA to 40 MVA transformers at Sisugram, Baku & Agia under “Annual Plan” & “Assam Infrastructure Development”.
4. Installation of 2×25 MVA transformer at Pachgram , Hailakandi under NEC scheme.
5. Installation of 16 MVA & 5 MVA transformers at Tinsukia & Durlavsera (Barak Valley) from their own O&M fund of AEGCL.
6. Under ADB Loan (Tranch-1) : a) 220/132 KV substation at Rangia, b) 220 KV EHV line 1801 Kms, c) 132 KV line : 99 Kms (will be complete by 2013)
7. Under ADB Loan (Tranch-2) : a) Sonapur (Kamrup) 220/132 KV,  
b) Balipara (Sonitpur) 220/132 KV,  
c) Kamakhya , Jorhat, Bordubi, Bordubi , Matia, Bilasipara, Bilasipara & Hailakandi total 6 numbers 132/33 KV.  
d) 220 KV line: 163.5 Kms, 132 KV line: 63 Kms (Target to be in 2013).
8. Installation of 110 MVAR capacitor Bank: In 7 different location (Target to be in 2013).

9. Jawahar Nagar (Ghy) 220/33KV generation substation (Target to be in 2012).
10. Funded by DONER & NEC : Mirza - 2×50 MVA 220/33 KV  
Azra - 2×16 MVA 132/33 KV  
Kokrajhar – 16+25 MVA
11. Installation of 400/220 KV - 2× 315 MVA substation for receiving Power from Patana (Tripura) & Salakachi Power Substation.
12. Renovation/ Upgradation of 220/132 KV substation at Salakati for receiving power for 3×250 Salakati Power Station (NTPC).
13. Installation of Optical Fiber Network under ADB funding.
14. Improvement & maintenance of State Load Dispatch Centre, Guwahati under ADB funding.

**TRANSMISSION TERIFF:**

As per “Multiyear Tariff Petition” the transmission tariff for 2009-2010:- 0.7 % , 2010-2011:- 0.71 % , where the transmission of PGCIL is also included.

## **Annexure 8: Trench Two Component Details of ADB Funded Assam Power Sector Enhancement Investment Program (Loan No 2677 - Ind)**

The Information are also included in Annexure 7.

### **PACKAGE A**

Construction of 220/132/33 KV grid substations.

2X100 MVA 220/132 KV Sonabil grid substation.

2X100 MVA 220/132 KV & 2X40 MVA 132/33 KV Sonapur grid substation

### **PACKAGE B.**

Construction of 132/33 KV grid substations.

2x40 MVA 132/33 KV Kamakhya grid substation (gis).

2x25 MVA 132/33 KV Jorhat (west) grid substation.

2x25 MVA 132/33 KV Bordubi grid substation.

2x16 MVA 132/33 KV Matia grid substation.

2x25 MVA 132/33 KV Bilasipara grid substation.

2x16 MVA 132/33 KV Hailakandi grid substation.

### **PACKAGE C**

Construction of 220 KV double transmission line.

220 KV double circuit lilo at Sonapur from 220 KV double circuit Samaguri – sarusajai line

– length 20 km approx.

220 KV double circuit lilo at Sonabil from 220 KV double circuit Samaguri – Balipara line at Sonabil.

– length 1.5 km approx.

220 KV double circuit marani – Namrup transmission line

– length 142 km approx.

### **PACKAGE D**

Construction of 132 KV double transmission line.

a. 132 KV double circuit lilo at Sonabil from 132 KV double circuit depota – Gohpur line

– length 1.5 km approx.

b. 132 KV double circuit lilo at Sonapur from 132 KV double circuit Chandrapur –

Narangi – Dispur - Kahilipara line at Sonabil.

– length 25 km approx.

c. 132 KV single circuit lilo at Jorhat (west) from 132 KV single circuit Garmur -

Bokakhat transmission line.

– length 5 km approx.

d. 132 KV single circuit lilo at Bordubi from 132 KV single circuit Namrup – Tinsukia

transmission line.

- length 6 km approx.

e. 132 KV single circuit lilo at Hailakandi from 132 KV Panchgram – Dullavcherra transmission line.

- length 1.5 km approx.

f. 132 KV single circuit on double circuit tower Agia – Matia transmission line.

- length 24 km approx

g. stringing of 2nd circuit of existing 132 KV Samaguri – Lanka transmission line.

- length 61 km approx.

#### PACKAGE E

##### PART A

a. replacement of 2x10 MVA transformers by 2x40 MVA transformers at 132/33 Kahilipara grid substation.

b. replacement of 2x16 MVA transformers by 2x25 MVA transformers at 132/33 KV Jagiroad grid substation.

c. replacement of 2x10 MVA transformers by 2x25 MVA transformers at 132/33 KV Gohpur grid substation.

d. replacement of 2x10 MVA transformers by 2x25 MVA transformers at 132/33 KV north Lakhimpur grid substation.

e. replacement of 2x16 MVA transformers by 2x25 MVA transformers at 132/33 KV Lanka grid substation.

f. replacement of 2x10 MVA transformers by 2x25 MVA transformers at 132/33 KV Margherita grid substation.

g. addition of 2x100 MVA 220/132 KV auto transformers and 2x40 MVA 132/33 KV transformers at 220/132/33 KV Tinsukia grid substation.

h. addition of 1x100 MVA 220/132 KV auto transformers at 220/132/33 KV Boko grid substation.

i. addition of 2x25 MVA 132/33 KV transformers at 220/132/33 KV Tinsukia grid substation.

##### part b

a. extension of 2 (two) of 220 KV line bays at 220/132/33 KV Namrup substation.

b. extension of 2 (two) of 220 KV line bays at 220/132/33 KV Mariani grid substation.

c. extension of 1 (one) number of 132 KV line bay at 132/33 KV Lanka grid substation.

d. extension of 1 (one) of 132 KV line bay at 220/132/33 KV Agia grid substation.

##### part c

a. installation of 2x5 MVA 33 KV bus capacitor at 132/33 KV pailapool grid substation.

b. installation of 2x5 MVA 33 KV bus capacitor at 132/33 KV Gohpur grid substation.

c. installation of 2x10 MVA 33 KV bus capacitor at 132/33 KV Garmur grid substation.

d. installation of 2x10 MVA 33 KV bus capacitor at 132/33 KV Sishugram grid substation.

e. installation of 2x5 MVA 33 KV bus capacitor at 132/33 KV Nazira grid substation.

f. installation of 2x5 MVar 33 KV bus capacitor at 132/33 KV Panchgram grid substation.

g. installation of 2x5 MVar 33 KV bus capacitor at 132/33 KV Chandrapur grid substation.

part d

a. replacement of old and obsolete circuit breakers

i. 220 KV sf6 circuit breakers – 12 .

ii. 132 KV sf6 circuit breakers – 61 .

iii. 33 KV sf6 circuit breakers – 61 .

b. replacement of old and obsolete current transformers.

i. 220 KV current transformers – 6 .

ii. 132 KV current transformers – 69 .

iii. 33 KV current transformers – 42 .

c. replacement of old and Obsolete potential transformers.

i. 132 KV potential transformers – 9 .

ii. 33 KV current transformers – 9 .

d. replacement of old and obsolete isolators.

i. 220 KV isolators – 6 .

ii. 132 KV isolators – 26 .

e. replacement of old and obsolete relay & control panels.

i. 220 KV line panels – 2 .

ii. 132 KV line panels – 15 .

iii. 132 KV transformers panels – 2

iv. 132 KV bus coupler panels – 8

f. replacement of old and Obsolete relays by numerical relays.

i. distance relays – 3 .

ii. Transformer differential relays – 4 .

g. replacement of old battery bank by new battery banks.

i. 220 volts battery bank – 1 set.

ii. 110 volts battery bank – 5 sets.

## Annexure 9 Circle wise Status of SPPS & IBDF (DTF) Scheme updated

Circle wise status of SPPS/IBDF (DTR) scheme

Sl No	Name of the Circles	No of DTRs handed over to the agents	No of Agents	Total consumers handed over to the agents	No of RGGVY DTRs approved for handing over
1	Cachar	454	245	21410	48
2	KANCH	68	17	4624	25
3	Nagaon	450	141	41267	419
4	Tezpur	28	14	1992	
5	N. Lakhimpur	250	157	12727	
CAZ		1250	574	82020	492
6	GEC-I	40	7	2209	3
7	GEC-II	164	34	17723	180
8	Rangia	158	46	17728	
9	Bongaigaon	286	46	15971	344
10	Kokrajhar	354	57	12685	49
11	Mangoldoi	135	49	11178	95
LAZ		1137	239	77494	671
12	Dibrugarh	345	39	14609	31
13	Jorhat	181	70	10519	
14	Sivasagar	158	26	9486	
15	Tinsukia	171	36	6410	146
UAZ		855	171	41024	177
APDCL		3242	984	200538	1340

Note - Approvals are being accorded for handing over RGGVY DTRs as per proposal submitted by the respective DGMs

## Evaluation of RGGVY programme in the state of Assam

Circle wise status of 11 KV feeders of IBDF scheme						
Sl No	Name of the Circles	No of 11 KV feeders selected	No. of feeders for which agreements executed	No of feeders for which MOU signed/LOI issued	No of feeders under processing	No of feeders teminated/ surrendered
1	Cachar	3	1	2		
2	KANCH	1			1	
3	Nagaon	5		2	3	
4	Tezpur	4		3	1	
5	N. Lakhimpur	1	1			
	<b>CAZ</b>	<b>14</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>0</b>
6	GEC-I					
7	GEC-II	9	1	2	6	
8	Rangia	7	1	5	1	
9	Bongaigaon	25	10	15		2
10	Kokrajhar	4	1	2	1	1
11	Mangoldoi	11	4	2	5	
	<b>LAZ</b>	<b>56</b>	<b>17</b>	<b>26</b>	<b>13</b>	<b>3</b>
12	Dibrugarh	3	2	1		
13	Jorhat	2		1	1	
14	Sivasagar	5	4	1		
15	Tinsukia	5	5			4
	<b>UAZ</b>	<b>15</b>	<b>11</b>	<b>3</b>	<b>1</b>	<b>4</b>
	<b>APDCL</b>	<b>85</b>	<b>30</b>	<b>36</b>	<b>19</b>	<b>7</b>

Out of 20 nos of under processing feeders following 5 nos are advertised in the newspapers:-

1. 11 KV Dakhinpat feeder of Nagaon Electrical Circle.
2. 11 KV Doomdumia feeder of Nagaon Electrical Circle.
3. 11 KV Bechamari feeder of Nagaon Electrical Circle.
4. 11 KV Bhergaon (Khoirabari) feeder of Mangaldoi Electrical Circle.
5. 11 KV Sangbar feeder of KANCH Electrical Circle.



**Comments on Uncovered & partially covered comments by IRADE received from REC**

While preparing the DPR the position of the revenue village & its connectivity to the nearby transport facilities & other facilities to be given to the contacting agencies had not been taken care of during the preparation of DPR. Assam is a state with a typical terrain having rivers, revaluate, Hills, hillock, dense forest, reserved forests. So while fixing the completion schedule all this things has to be consider properly , so that a adequate completion schedule can be prepared. These are the main reasons the completion schedule as marked in the DPR has slipped.

Because Delays has been occurred may be due to the following reasons:

- a) Carriage of Materials due to transport bottleneck.
- b) Delayed Receipt of material at site.
- c) Improper selection of sub contractor by the main contractor
- d) Rejection of materials, like poles, hardware's etc. & replacement in proper time.
- e) Uneducated supervisory stuffs & skill workers from the contractor's side.
- f) Revision of the REDB at the time of actual work.
- g) Minor variation of co ordination between the contractor's stuff & APDCL stuffs.
- h) Law & order situation throughout the state & less assistance by the law & order authority.
- i) Severe flood situation in low land area...
- j) Late receipt of BPL list from the competent authority.
- k) Public grievances regarding the BPL list.
- l) Whelping attitude from the local statuary authority like Panchyat, Sarpanch & revenue officers.
- m) Problem in finalization of ROW for drawing distribution line & Land Acquisition problem for the substation.
- n) Theft of materials during construction.

In many cases after release of APL connection by APDCL without augmentation of DT capacity, overloading of feeder as well as DT have been observed. In many cases because of the limitation of DT capacity APL connection cannot be given to the aspirant. Therefore there is a grievance among the consumer. The BPL consumer also not restricted their load as per norms. Therefore, in many villages the infrastructure & DT has been overloaded due to which there are instances of burning out the DTs.

The single point supply has not been so much successful so far & there is many have default in paying the deuce to APDCL. As it is understood already legal action is going to be started against the defaulting franchisees. Under such condition APDCL has made a new model which it is already indicated (feeder wise) in the main write-up. For further reference information

From the Experience of some stakeholders we have noted that as soon as some DTR's are generally handed over to Franchisee APDCL staff's or officers generally gives less attention to the consumer as well as franchisee. Due to lack of coordination at a point of time whatever good may be module fails.

At this stage, APDCL had not divulge any such documents regarding the REDB & VEI in meeting the future demands.

Billing & payment has been done regularly by the concerning Sub division of the APDCL after village is taken over by them.

As I understand the present RGGVY works is prepared considering only the present need only. The second phase of DPR is under preparation considering the future consumer district wise with inclusion of upstream network.

Referring to the views on the stakeholders & their responsibilities, the subject has been covered in the main write-up. However Assam is a state with diverse opinion of various

people. The local Panchyat also not taking proper interest for implementing the different scheme by the government. Majority of the people found illiterate where RGGVY program is implemented, and most of the BPL consumers may not be able to pay their electricity dues. Again, the major energy requirements at those areas are in the evening. But most of power cut happens at that time, so the villagers are not keen to pay their payment of billing. Some of unscrupulous people who indulge theft of energy by Hooking.

In many cases,

- 1) The evaluation of Population to be covered under RGGVY programmes is not done properly, for which sometimes after giving the connection to APL/BPL the DT become overloaded. This is one of the main reasons of failure of DT's.
- 2) Rampant theft of generally occurred in the remote areas where supervision of APDCL is very less hence overloading of DT's occurs.
- 3) Quality DT's not properly assessed during testing & commissioning.
- 4) Failure of Protection circuits Particularly LA.
- 5) Proper load management of DTR.

(Note: As recently (June 2012) gathered from APDCL Headquarter the average failure of transformers is around 6-7% in the rural areas.

**Addendum:** The present consumer of APDCL is around 22 Lakhs., Which was around 16 lakhs in the previous year, as per assessment there is a increase of 22 to 23% approx. After completion of present RGGVY work it may go to around 32 lakhs , after two years.

The present yearly energy consumption in Assam State is around 5000MU, which was around 4200 MU in previous year.

As per assessment (2012) almost 5-10% APL connection is pending to be connected by the APDCL all over the state, because of infrastructure facility like VEI, REDB and

## Evaluation of RGGVY programme in the state of Assam

DTR. To maintain this infrastructure of RGGVY there will be huge requirement of manpower as well as power demand. APDCL has to take this challenge suitably to maintain the power supply as well as infrastructure

## The Data / Information collected During Survey and Stakeholders interaction

Projection of Power Demand in the state of Assam

Availability of extra power with the State for RGGVY villages						
Electricity Demand Projection[1]						
	Electrical Energy Requirement (GWh)			Peak Electrical Load (MW)		
States	2011-12	2016-17	2021-22	2011-12	2016-17	2021-22
Assam	7585	13053	24433	1443	2292	3985
Total all India	968659	1392066	1914508	152746	218209	298253
[1] <a href="http://www.scribd.com/doc/57505120/17th-Electric-Power-Survey-Report">http://www.scribd.com/doc/57505120/17th-Electric-Power-Survey-Report</a> (Central Electricity Authority Report)						

Actual Power Supply Position of States								(MU)
States	Apr 10-Jan. 11				April 09-March 10			
	Requirement	Availability	Deficit	( )	Requirement	Availability	Deficit	( )
Assam	5,403	5,063	-340	6.3	5122	4688	-434	8.5

Electrification of Public Places

Electrification of Public Places										
S.N o.	Name of State/District	Name of Block	Name of Village	Category (UE/PE)	No. of Public places in Village at the time of present survey				No. public places having electric ity after RGGVY	No. public places having electric ity before RGGVY
					Scho ol	Heal th Cent er	Commun ity Center	Tot al		

## Evaluation of RGGVY programme in the state of Assam

1	Assam	KARBI ANGLON G	Bokajan	Christan Gaon (022964 00)	0				0
2	Assam		Howragh at	Dighliati Gaon (022009 00)	0				0
3	Assam		Lumbaja ng	Pattar Gaon (021243 00)	1				0
4	Assam		Nilip	Lekthe Gaon (023215 00)	1				1
5	Assam		Somelan gso	Maghar Bosti (022477 00)	1				1
6	Assam	DHUBRI 26-01/89- 59	Bilasipar a 26-14/90- 14	Shaktola (001782 00)	1		1		0
7	Assam		Birshingjar ua	Fulkatari (001604 00)	1		1		0
8	Assam		Chapar- Salkocha 26-16/90- 28	Segunjh ari (001962 00)	1		1		0
9	Assam		Fekamari 25-41/89- 53	Kaliralga Pt.I (002225 00)	1		1		0
10	Assam		Rupsi Pt. 26-09/89- 54	Rupshi Pt.II (001136 00)	1		1		0
11	Assam	DIBRUGA RH 27- 28/94.54	Barbarua	Deori Gaon (016416 00)	0		0		0
12	Assam		Khowang (Moran) 27- 16/94.53	Kashi Pather (017062 00)					

## Evaluation of RGGVY programme in the state of Assam

13	Assam		Lahowal 27- 28/94.59	Gohain Gaon (016495 00)						
14	Assam		Tengakhat 27-22/95- 05	Fekelaja n (016878 00)						
15	Assam		Tingkhong 27-22/95- 16	Kuli No.1 (017213 00)						
16	Assam	LAKHIMP UR	Boginodi	Goriama ri (013259 00)	1		1	2	0	
17	Assam		Dhakuakh ana	Lahibari (013577 00)	1			1	0	
18	Assam		Ghilamora	Barkalia N.C. (013732 00)	1			1	0	
19	Assam		Karunabar i	Nizlaluk (012873 00)	1			2	1	
20	Assam		Narayanp ur	Maigaon (012772 00)	1			1	0	
21	Assam	TINSUKIA	Hapjan	Lesenka Gaon (015522 00)	1	0		1	0	
22	Assam		Kakapatha r	Boka Pathar (015988 00)	1	0		1	0	
23	Assam		Margherit a	Lama Gaon (016135 00)	1	1		2	1	
24	Assam		Sadiya ***	Ghahpur (015117 00)	1	0		1	0	
25	Assam		Saikhowa	Chengeli Gaon (015374 00)	1	0		1	0	

[illegible]

Adequacy of completion schedule, causes of delays										
S.No.	State	Name of District / DPR Sanction date	Name of Block	Name of Village	Award Based on Substation	Date of Award / DPR Sanction Date	Scheduled Completion time (in mths)	Actual Completion Time (in mths)	Delay (in Mths)	Reasons for Delay
		KARBI ANGLO NG 25-03-2008			31-01-2009				Work in Progress	
1	Assam		Bokajan	Christan Gaon (02296400)	25-03-2008	25-03-2008		Aug-11	40	
2	Assam		Howraghat	Dighliti Gaon (02200900)	25-03-2008	25-03-2008		Jul-11	39	
3	Assam		Lumbajang	Pattar Gaon (02124300)	25-03-2008	25-03-2008		Apr-11	36	
4	Assam		Nilip	Lekthe Gaon (02321500)	25-03-2008	25-03-2008		Sep-11	41	
5	Assam		Somelan gso	Maghar Bosti (02247700)	25-03-2008	25-03-2008		Apr-11	36	
6	Assam	DHUBRI 26-01/89-59 05-03-2008	Bilasipara 26-14/90-14	Shaktola (00178200)	12-02-2009	05-03-2008		Feb-11	35	



## Evaluation of RGGVY programme in the state of Assam

7	Assam		Birshingj arua	Fulkata ri (00160 400)		05-03-2008		Feb-11	35	
8	Assam		Chapar-Salkocha 26-16/90-28	Segunj hari (00196 200)		05-03-2008		Feb-11	35	
9	Assam		Fekamari 25-41/89-53	Kaliral ga Pt.I (00222 500)		05-03-2008		Feb-11	35	
10	Assam		Rupsi Pt. 26-09/89-54	Rupshi Pt.II (00113 600)		05-03-2008		Dec-10	33	
11	Assam	DIBRUG ARH 27-28/94.54	Barbarua	Deori Gaon (01641 600)		05-03-2008				
12	Assam		Khowan g 27-16/94.53	Kashi Pather (01706 200)		05-03-2008				Not Energized
13	Assam		Lahowal 27-28/94.59	Gohain Gaon (01649 500)		05-03-2008				Not Energized
14	Assam		Tengakh at 27-22/95-05	Fekelaj an (01687 800)		05-03-2008				
15	Assam		Tingkho ng 27-22/95-16	Kuli No.1 (01721 300)		05-03-2008				Not Energized
16	Assam		Boginodi	Goriam ari (01325 900)		05-03-2008		Feb-11	35	
17	Assam	LAKHIM PUR	Dhakuak hana	Lahibar i (01357 700)	02-03-2009	05-03-2008		Feb-10	23	
18	Assam		Ghilamo ra	Barkali a N.C. (01373 200)		05-03-2008		Dec-10	33	
19	Assam		Karunab ari	Nizlalu k (01287 300)		05-03-2008		Apr-10	25	
20	Assam		Narayan pur	Majgao n (01277 200)		05-03-2008		Jul-10	28	

## Evaluation of RGGVY programme in the state of Assam

21	Assam	TINSUKI A	Hapjan	Lesenka Gaon (01552200)	10th five year plan project	23-11-2005	07-07-2009	43	Substation Commissioned on 30.11.09 & handed over
22	Assam		Kakapat har	Boka Pathar (01598800)		23-11-2005	27-07-2009	44	
23	Assam		Margherita	Lama Gaon (01613500)		23-11-2005	18-02-2009	39	
24	Assam		Sadiya ***	Ghahpur (01511700)		23-11-2005			
25	Assam		Saikhowa	Chengeli Gaon (01537400)		23-11-2005	26-02-2010	51	
<b>ASSAM</b>	<b>Total</b>								

## Quality and Hours of Supply in the villages

Quality and hours of supply						
S.No.	State	Name of State/District	Name of Block	Name of Village	Hours of Supply	Quality of Supply
1	Assam	KARBI ANGLONG	Bokajan	Christan Gaon (02296400)	8	Satisfactor y
2	Assam		Howraghat	Dighliati Gaon (02200900)	8	Satisfactor y
3	Assam		Lumbajang	Pattar Gaon (02124300)	12	Satisfactor y
4	Assam		Nilip	Lekthe Gaon (02321500)	12	Satisfactor y
5	Assam		Somelangso	Maghar Bosti (02247700)	8	Satisfactor y
6	Assam	DHUBRI 26-01/89-59	Bilasipara	Shaktola (00178200)	18	Satisfactor y
7	Assam		Birshingjarua	Fulkatari (00160400)	18	Satisfactor y

## Evaluation of RGGVY programme in the state of Assam

8	Assam		Chapar-Salkocha 26-16/90-28	Segunjhari (00196200)	18	Satisfactor y
9	Assam		Fekamari 25-41/89-53	Kaliralga Pt.I (00222500)	16	Satisfactor y
10	Assam		Rupsi Pt. 26-09/89-54	Rupshi Pt.II (00113600)	16	Satisfactor y
11	Assam	DIBRUGAR H 27-28/94.54	Barbarua	Deori Gaon (01641600)		
12	Assam		Khowang 27-16/94.53	Kashi Pather (01706200)		
13	Assam		Lahowal 27-28/94.59	Gohain Gaon (01649500)		
14	Assam		Tengakhat 27-22/95-05	Fekelajan (01687800)		
15	Assam		Tingkhong 27-22/95-16	Kuli No.1 (01721300)		
16	Assam	LAKHIMPUR	Boginodi	Goriamari (01325900)	13	Satisfactor y
17	Assam		Dhakuakhan a	Lahibari (01357700)	12	Satisfactor y
18	Assam		Ghilamora	Barkalia N.C. (01373200)	13	Satisfactor y
19	Assam		Karunabari	Nizlaluk (01287300)	12	Satisfactor y
20	Assam		Narayanpur	Majgaon (01277200)	13	Satisfactor y
21	Assam	TINSUKIA	Hapjan	Lesenka Gaon (01552200)	18	Satisfactor y
22	Assam		Kakapathar	Boka Pathar (01598800)	12	Satisfactor y
23	Assam		Margherita	Lama Gaon (01613500)	18	Satisfactor y
24	Assam		Sadiya ***	Ghahpur (01511700)	18	Satisfactor y
25	Assam		Saikhowa	Chengeli Gaon (01537400)	18	Satisfactor y
<b>ASSAM</b>	<b>Total</b>					

Billing to and payment by BPL and APL consumer

## Evaluation of RGGVY programme in the state of Assam

S.No.	State	Name of State/District	Name of Block	Name of Village	Time taken in release of first Bill in Month	Average Amt. of first Bill	Periodicity of Subsequent Bills	Energy Billed in Units	Average Amount spent on electricity
1	Assam	KARBI ANGLONG	Bokajan	Christan Gaon (02296400)			2		43
2	Assam		Howraghat	Dighliati Gaon (02200900)			2		43
3	Assam		Lumbajang	Pattar Gaon (02124300)			2		40
4	Assam		Nilip	Lekthe Gaon (02321500)			2		38
5	Assam		Somelangso	Maghar Bosti (02247700)			2		35
6	Assam	DHUBRI 26-01/89-59	Bilasipara 26-14/90-14	Shaktola (00178200)			2		215
7	Assam		Birshingjarua	Fulkatari (00160400)			2		
8	Assam		Chapar-Salkocha 26-16/90-28	Segunjhari (00196200)			2		90
9	Assam		Fekamari 25-41/89-53	Kaliralga Pt.I (00222500)			2		
10	Assam		Rupsi Pt. 26-09/89-54	Rupshi Pt.II (00113600)					
11	Assam	DIBRUGARH 27-28/94.54	Barbarua	Deori Gaon (01641600)					

## Evaluation of RGGVY programme in the state of Assam

12	Assam		Khowang 27-16/94.53	Kashi Pather (01706200)					
13	Assam		Lahowal 27-28/94.59	Gohain Gaon (01649500)					
14	Assam		Tengakhat 27-22/95-05	Fekelajan (01687800)					
15	Assam		Tingkhong 27-22/95-16	Kuli No.1 (01721300)					
16	Assam	LAKHIMPUR	Boginodi	Goriamari (01325900)			2		51
17	Assam		Dhakuakhana	Lahibari (01357700)			2		44
18	Assam		Ghilamora	Barkalia N.C. (01373200)			2		40
19	Assam		Karunabari	Nizlaluk (01287300)			2		60
20	Assam		Narayanpur	Majgaon (01277200)			2		43
21	Assam	TINSUKIA	Hapjan	Lesenka Gaon (01552200)			2		113
22	Assam		Kakapathar	Boka Pathar (01598800)			2		105
23	Assam		Margherita	Lama Gaon (01613500)			2		152
24	Assam		Sadiya ***	Ghahpur (01511700)			2		113
25	Assam		Saikhowa	Chengeli Gaon (01537400)			2		152
<b>ASSAM</b>	<b>Total</b>								

# Evaluation of RGGVY programme in the state of Assam

Status of Electrification as on June 2012 is

sl. no	block	village name	vill .sl. no	status	Census Code	BPL HH electrified	total BPL HH	DTR capacity installed			date of energization	date of handing over to disc om	date of taking over by disc om
								10k va	16 k v a	25 k v a			
1	Barbarua	Deorigaon	12	DE	1641600	0	0	1	0	0	28-03-2012	09-04-2012	01-06-2012
2	Moran	Kashipothar	45	DE	1706200	0	0	0	1	0	07-03-2012	28-05-2012	
3	Lahoa l	Gohaingaon	2	DE	1649500	0	27	0	0	1	06-12-2011	13-01-2011	22-12-2011
4	Tengakhat	Fekelajan	32	UE	1687800	7	7	0	1	0	11-01-2012	19-01-2012	16-02-2012
5	Tingkhong	Kulino:i	3	DE	1721300	2	29	0	1	1	15.11.2011	15-12-2011	

Whether Electrification done as per DPR															
S.No.	State	Name of State/District	Name of Block	Name of Village	Category (UE/PE)	Quantity as per DPR				Quantity as per present survey				33/11 KVA Substation in the Block	
						DTs (In Nos.)	DT capacity	HT (in Ckt. Km.)	LT (in Ckt. Km.)	DTs (In Nos.)	DT capacity KVA (each)	HT (in Ckt. Km.)	LT (in Ckt. Km.)		
1	Assam	KARBI ANGLONG	Bokajan	Christan Gaon (02296400)	UE	1	25	3.2	2	1	25 KVA	3.2	2	1x2.5 MVA S/S at Bokolia alongwith associated 33 kv & 11 kv lines.	Work in Progress ; DISCOM have arranged alternate route
2	Assam		Howraghat	Dighliati Gaon (02200900)	DE	2	16+25	2.5	2.5	1	25 KVA	2.5	2.5	1x2.5 MVA S/S at Umpanai alongwith associated 33 kv & 11 kv lines.	Work in Progress
3	Assam		Lumbajang	Pattar Gaon (02124300)	UE	1	16	4	1	1	16 KVA	4	1	1x2.5 MVA S/S at Bokolia alongwith associated 33 kv & 11 kv lines.	Work in Progress
4	Assam		Nilip	Lekthe Gaon (02321500)	UE	1	16	2	1	1	16 KVA	2	1	1x2.5 MVA S/S at Bokolia alongwith associated 33 kv & 11 kv lines.	Work in Progress
5	Assam		Somelangs	Maghar Bosti (02247700)	UE	2	16+41	2	3.1	1	41 KVA	2	3.1		
6	Assam	DHUBRI 26-01/89-59	Bilasipara 26-14/90-14	Shaktola (00178200)	UE	1	16	1.5	1	1	11.936 (16 KVA)	1.5	1	1x2.5 MVA S/S at Mahamaya Block	Work in Progress

## Evaluation of RGGVY programme in the state of Assam

7	Assam		Birshingjarua	Fulkatari (00160400)	UE (Special) / DE	2	16 (32)	1	1.5	1	11.936 (16 KVA)	1	1	1x2.5 MVA S/s at Jowadanga, Mancachar	Work in Progress
8	Assam		Chapar-Salkocha 26-16/90-28	Segunjhari (00196200)	UE	1	16	0.6	0.8	1	11.936 (16 KVA)	1.221	1.591	1x2.5 MVA S/S at Mahamaya Block	Work in Progress
9	Assam		Fekamari 25-41/89-53	Kaliranga Pt.I (00222500)	UE	3	16 (48)	0.7	2.4	1	11.936 (16 KVA)	2.08	2.5	1x2.5 MVA S/s at Jowadanga, Mancachar	Work in Progress
10	Assam		Rupsi Pt. 26-09/89-54	Rupshi Pt.II (00113600)	UE	1	16	1.2	0.8	1	11.936 (16 KVA)	1.8	0.052	1x2.5 MVA S/S at Mahamaya Block	Work in Progress
11	Assam	DIBRUGARH 27-28/94.54	Barbarua	Deori Gaon (01641600)	DE	1		1.5	0.3	1	10	0.41	0.35		
12	Assam		Khowang (Moran) 27-16/94.53	Kashi Pather (01706200)	DE	1		1.5	0.3	1	10	0.84	0.68	Not Energized	
13	Assam		Lahowal 27-28/94.59	Gohain Gaon (01649500)	DE	1	25	1.5	0.3	1	25	0.77	0.33	Not Energized	
14	Assam		Tengakhat 27-22/95-05	Fekelajan (01687800)	UE	1	0	2.5	0.3	1	16	0.7	0.4		
15	Assam		Tingkhong 27-22/95-16	Kuli No.1 (01721300)	DE	1	16	1.5	0.3	1	16	0.8	0.35	Not Energized	
16	Assam	LAKHIMPUR	Boginodi	Goriamari (01325900)	UE	1	25	2	1.5	1	25 KVA	2.2	0.4		
17	Assam		Dhakuakhana	Lahibari (01357700)	UE (Special) / DE	1	16	2	0.7	1	16	1.4	2.8		



## Evaluation of RGGVY programme in the state of Assam

18	Assam	TINSUKIA	Ghilamora	Barkalia N.C. (01373200)	IE	1	16	1.5	0.8	1	16	0.69	0.8	1 no of 1X2.5 MVA Sub-Station at Raidengia in Ghilamora Block	Handed over on 31-03-2011
19	Assam		Karunabari	Nizlaluk (01287300)	UE	2	16+25	1.6	1.5	2	16+25	1.6	0		
20	Assam		Narayanpur	Majgaon (01277200)	UE	1	25	1.5	1.3	1	16	0.5	0.469		
21	Assam		Hapjan	Lesenka Gaon (01552200)	UE	2	16+25	3	3	1	18.65 (25KVA)	1.221	1.591		
22	Assam		Kakapathar	Boka Pathar (01598800)	IE	1	16	1.75	1.5	1	11.936 (16 KVA)	2.6	1.4		
23	Assam		Margherita	Lama Gaon (01613500)	UE/DE	3	98	2.5	4.4	1	18.65 (25KVA)	0.8	0.7		
24	Assam		Sadiya ***	Ghahpur (01511700)	UE	2	25 (50)	2	3	1	18.65 (25KVA)	0.4	0.6	2x2.5 MVA S/S at Chapakhowa alongwith associated 33KV line(30.0 km.) & 11KV line(8.4 km) in Sadiya Circle	Charged on 30-11-2009 & handed over.
25	Assam		Saikhowa	Chengeli Gaon (01537400)	UE	1	16	2	1.5	1	25	2.6	1		
<b>ASSAM</b>	<b>Total</b>					35				26					

Whether Electrification done as per DPR	
---	--

# Evaluation of RGGVY programme in the state of Assam

S.No.	State	Name of State/District	Name of Block	Name of Village	Category (UE/PE)	Nos. of HHs in a Village at the time of present survey			Nos. of HHs covered under RGGVY (as per DPR)		Nos. of HHs actually electrified at the time of present survey			Reasons for difference/gap	Nos. of HHs energised			Reasons for delay in Energization
						No. of BPLs	No. of APLs	Total	No. of BPLs	Total	No. of BPLs	No. of APLs	Total		No. of BPLs	No. of APLs	Total	
1	Assam	KARBI ANGLONG	Bokajan	Christan Gaon (02296400)	UE	62	0	62	21		21	0	21		21	0	21	
2	Assam		Howraghat	Dighliati Gaon (02200900)	DE	52	9	61	29		29	0	29		29	0	29	
3	Assam		Lumbajang	Pattar Gaon (02124300)	UE	26	34	60	7	14	23	0	23		23	0	23	
4	Assam		Nilip	Lekthe Gaon (02321500)	UE	22	0	22	5	10	6	0	6		6	0	6	
5	Assam		Somelangs	Maghar Bosti (02247700)	UE	82	20	102	39	75	39	0	39		39	0	39	

## Evaluation of RGGVY programme in the state of Assam

6	Assam	DHUBRI 26-01/89-59	Bilasipara 26-14/90-14	Shaktola (00178200)	UE	22	23	45	6	9	22	5	27				At Panbari in Mahamaya Block, At Jhowdanga in Mankachar Block under APDRP
7	Assam		Birshingjara	Fulkatari (00160400)	UE (Special) / DE	202	50	252	32	47	47	0	47	47	0	47	
8	Assam		Chapar-Salkocha 26-16/90-28	Segunjhari (00196200)	UE	108	20	128	6	9	96	0	96	96	0	96	
9	Assam		Fekamari 25-41/89-53	Kaliralga Pt.I (00222500)	UE	136	20	156	106	156	67	0	67	67	0	67	
10	Assam		Rupsi Pt. 26-09/89-54	Rupshi Pt.II (00113600)	UE	16	60	76	73	93	16	0	16	16	0	16	
11	Assam	DIBRUGARH 27-28/94.54	Barbarua	Deori Gaon (01641600)	DE	9	28	37	7	7	9		9	9		9	To be energized
12	Assam		Khowang 27-16/94.53	Kashi Pather (01706200)	DE	10	22	32	4	4	10		10	Not Energized	10	10	To be energized

## Evaluation of RGGVY programme in the state of Assam

13	Assam		Lahowal 27-28/94-59	Gohain Gaon (01649500 )	DE	27	67	94	17	17	22		22	Not Energized	22		22	Electrified
14	Assam		Tengakhat 27-22/95-05	Fekelajan (01687800 )	UE	4	20	24	4	4			0				0	Electrified, Substation at Rajgarh and Moran in Moran Block
15	Assam		Tingkhong 27-22/95-16	Kuli No.1 (01721300 )	DE	20	40	60	0	0	16		16	Not Energized	16		16	To be energized
16	Assam	LAKHIMPUR	Boginodi	Goriamari (01325900 )	UE	54	22	76	54	79	10	7	17		10	7	17	
17	Assam		Dhakuakhana	Lahibari (01357700 )	UE (Special) / DE	18	8	26	13	21	7	7	14		7	7	14	
18	Assam		Ghilamora	Barkalia N.C. (01373200 )	IE	8	3	11	160	176	1	1	2		1	1	2	Raidengia in Ghilamora Block
19	Assam		Karunabari	Nizlaluk (01287300 )	UE	22	6	28	128	232	16	0	16		16	0	16	
20	Assam		Narayanpur	Majgaon (01277200 )	UE	35	25	60	15	27	8	0	8		8	0	8	
21	Assam	TINSUKIA	Hapjan	Lesenka Gaon (01552200 )	UE	108	20	128	64	105	90	0	90		96	0	96	

## Evaluation of RGGVY programme in the state of Assam

22	Assam	Kakapathar	Boka Pathar (01598800)	IE	90	35	125	26	38	55	0	55		55	0	55	
23	Assam	Margherita	Lama Gaon (01613500)	UE/DE	220	30	250			44	2	46		44	0	44	
24	Assam	Sadiya ***	Ghahpur (01511700)	UE	70	40	110	51	77	10	0	10	Release of BPL connection is linked with Electrification. The BPL connections are released in batches.	10	0	10	Proposed At Chapakhua in Sadiya Civil Block
25	Assam	Saikhowa	Chengeli Gaon (01537400)	UE	90	40	130	14	22	59	0	59		59	0	59	

S.No.	State	Name of State/District	Name of Block	Name of Village	Category (UE/PE)	RH H	No. of APL HHs at the time of Survey	APL connections before RGGVY	APL connections after RGGVY	APL HHs not applied for connection	APL HHs applied for connection but not released
1	Assam	KARBI ANGLONG	Bokajan	Christan Gaon (02296400)	UE	62	0	0	0	NA	NA
2	Assam		Howraghat	Dighliati Gaon (02200900)	DE	61	9	0	0	NA	NA

## Evaluation of RGGVY programme in the state of Assam

3	Assam		Lumbajang	Pattar Gaon (02124300)	UE	60	34	0	0	NA	NA
4	Assam		Nilip	Lekthe Gaon (02321500)	UE	22	0	0	0	NA	NA
5	Assam		Somelangs o	Maghar Bosti (02247700)	UE	110	28	0	0	NA	NA
6	Assam	DHUBRI 26-01/89-59	Bilasipara 26-14/90-14	Shaktola (00178200)	UE	45	23	0	5	NA	NA
7	Assam		Birshingjarua	Fulkatari (00160400)	UE (Special)/ DE	250	30	0	0	NA	NA
8	Assam		Chapar-Salkocha 26-16/90-28	Segunjhari (00196200)	UE	128	20	0	0	NA	NA
9	Assam		Fekamari 25-41/89-53	Kaliralsa Pt.I (00222500)	UE	156	20	0	0	NA	NA
10	Assam		Rupsi Pt. 26-09/89-54	Rupshi Pt.II (00113600)	UE	76	60	0	0	NA	NA
11	Assam	DIBRUGARH 27-28/94.54	Barbarua	Deori Gaon (01641600)	DE		28	0		NA	NA
12	Assam		Khowang 27-16/94.53	Kashi Pather (01706200)	DE		22	0		NA	NA

## Evaluation of RGGVY programme in the state of Assam

				)							
13	Assam		Lahowal 27-28/94-59	Gohain Gaon (01649500 )	DE		67	0		NA	NA
14	Assam		Tengakhata 27-22/95-05	Fekelajan (01687800 )	UE		20	0		NA	NA
15	Assam		Tingkhong 27-22/95-16	Kuli No.1 (01721300 )	DE		40	0		NA	NA
16	Assam	LAKHIMPUR	Boginodi	Goriamari (01325900 )	UE	79	22		7	NA	NA
17	Assam		Dhakuakhana	Lahibari (01357700 )	UE (Special)/ DE	26	8	0	7	NA	NA
18	Assam		Ghilamora	Barkalia N.C. (01373200 )	IE	11	3	0	1	NA	NA
19	Assam		Karunabari	Nizlaluk (01287300 )	UE	28	6	0	0	NA	NA
20	Assam		Narayanpur	Majgaon (01277200 )	UE	60	25	0	0	NA	NA
21	Assam	TINSUKIA	Hapjan	Lesenka Gaon (01552200 )	UE	128	20	0	0	NA	NA
22	Assam		Kakapathar	Boka Pathar (01598800 )	IE	125	35	0	0	NA	NA

## Evaluation of RGGVY programme in the state of Assam

23	Assam	Margherita	Lama Gaon (01613500)	UE/DE	250	30	0	2	NA	NA
24	Assam	Sadiya ***	Ghahpur (01511700)	UE		40	0	0	NA	NA
25	Assam	Saikhowa	Chengeli Gaon (01537400)	UE	130	40	0	0	NA	NA
<b>ASSAM</b>	<b>Total</b>						0	22	NA	NA

		Commercial loss w/o subsidy		Subsidy		cost of Supply		Average Tariff		AT & C Losses		Agriculture consumption		Agri. Tariff	
		2008-09 (Prov)	2009-10 RE	2008-09 (Prov)	2009-10 RE	2008-09 (Prov)	2009-10 RE	2008-09 (Prov)	2009-10 RE	2008-09 (Prov)	2009-10 RE	2008-09 (Prov)	2009-10 RE	2008-09 (Prov)	2009-10 RE
1	Assam	43.98	107.81	0	0	526.47	505.15	491.56	450.76	37.03	33.55	0.72	0.91	4.89	4.98
Sl. No.	State/Discom	2007-08		2008-09		2009-10									
		Agricultural		Agricultural		Agricultural									
		Revenue		Revenue		Revenue									
		Rs. Crores	Rs./Kwh	Rs. Crores	Rs./Kwh	Rs. Crores	Rs./Kwh								
1	Assam														
	CAEDCL	5	-	5	4.16	-	-								
	LAEDCL	2	6.57	2	4.13	-	-								
	UAEDCL	2	5.92	1	5.81	-	-								
	APDCL	-	-	-	-	10	3.57								



## ABBREVIATION

ACA	Additional Central Assistance
ADB	Asian Development Bank
AEDA	Assam Energy Development Agency
AEGCL	Assam Electricity Grid Corporation Limited
AGM	Assistant General Manager
AID	Assam Infrastructure Development
APDCL	Assam Power Distribution Corporation Limited
APDRP	Accelerated Power Development and Reform Programme
APL	Above Poverty Line
ARR	Average Revenue Return
ASEB	Assam State Electricity Board
AT&C	Aggregate Technical and Commercial
BDO	Block Development Officer
BIDC	Bodoland Infrastructure Development Company
BOQ	Bill of Quantity
BPL	Below Poverty Line
BST	Bulk Supply Tariff
BTPS	Barauni Thermal Power Station
CAEDCL	Central Assam Electricity Distribution Corporation Limited
CPSUs	Central Public Sector Undertakings
DC	District Collector
DDG	Decentralised Distributed Generation
DGM	Deputy General Manager
DIB	Director Intelligence Bureau
DISCOM	Distribution Company
DM	District Magistrate
DPR	Detailed project Report
DT	Distribution Transformer
DTR	Distribution Transformer
DVC	Damodar Valley Corporation
EE	Executive Engineer
EHV	Extra High Voltage (132 KV, 220 KV)
EPC	Engineering Procurement and Construction
FIR	First Information Report
FRP	Feeder Renovation Programme
FY	Financial Year
GENCO	Generation Company
GM	General Manager

## Evaluation of RGGVY programme in the state of Assam

GoA	Government of Assam
GOI	Government of India
HLS	Home Lighting System
HT	High tension (For the project 33 & 11 KV)
HVDS	High Voltage Distribution System
IA	Implementing Agencies
IBDF	Input Based Distribution Franchisee
IL & FS	Infrastructure Leasing and Financial Services
IPP	Independent Power Plant
IPPL	Ino Power Project Limited
JE	Junior Engineer
JNNSM	Jawaharlal Nehru National Solar Mission
JS	Joint Secretary, Government of India
KV	Kilo Volt
KVA	Kilo Volt Ampere
KW	Kilo Watt
KwH	Kilo-watt Hour
LAEDCL	Lower Assam Electricity Distribution Corporation Limited
LOA	Letter of Award
LT	Low tension (440 V & 220 V Supply)
LTDB	Low Tension Distribution Board
LTPS	Lakwa Thermal Power Station
MNP	Minimum Needs Programme
MNRE	Ministry of New and Renewable Energy
MoP	Ministry of Power
MU	Million Units
MVA	Mega Volt Ampere
MW	Mega Watt
NEEPCO	North Eastern Electric Power Corporation Limited
NGOs	Non-Governmental Organizations
NHPC	National Hydro Electric Power Corporation
NHPC	National Hydroelectric Power Corporation
NREGA	The Mahatma Gandhi National Rural Employment Guarantee Act - 2005
NTPC	National Thermal Power Corporation Limited
NTPS	Namrup Thermal Power Station
O&M	Operation and Maintenance
PEO	Programme Evaluation Organization
PGCIL	Power Grid Corporation of India Limited
PIA	Project Implementation Agency
PMGY	Pradhan Mantri Gram Yojana
PPP	Public Private Partnership

## Evaluation of RGGVY programme in the state of Assam

PWD	Public Works Department
R-APDPR	Restructured Accelerated Power Development and Reform Programme
RE	Rural Electrification
RE	Renewable Energy (Context specific)
REC	Rural Electrification Corporation
REDB	Rural Electrification Distribution Backbone
REM	Rural Electrification Monitoring)
REP	Rural Electrification Plan/ Policy
REW	Rural Electrification Wing
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana
RHEP	Ranganadi Hydro Electric Project
RVE	Remote Village Electrification
S/S	Sub Station
SCADA	Supervisory Control and Data Acquisition
SCCP	Scheduled Caste Component Plan
SE	Superintending Engineer
SEB	State Electricity Board
SERC	State Electricity Regulation Commission
SHP	Small Hydro Project
SLDC	State Load Despatch Centres
SLS	Street Lighting System
Solar (CSP)	Solar (Concentrated Solar Power)
SPPS	Single Point Power Supply
SPV	Solar Photo Voltaic
SS	Sub Station
SSE	Small Scale Enterprises
T&D	Transmission and Distribution
TDF	Tribal Development Front
ToR	Terms of Reference
TRANSCO	Transmission Company
TSP	Tribal Sub-Plan
UAEDCL	Upper Assam Electricity Distribution Corporation Limited
UE/DE	Un-Electrified/De-Electrified
VEI	Village Electrification Infrastructure
XEN	Executive Engineer
HVDS	High Voltage Direct Current
REC	Renewable Energy certificates (special case ; where-ever applicable)