STUDY ON DETERMINTION OF ELECTRICITY DISTRIBUTION COST OF RAJSHAHI PBS

A Thesis submitted in partial fulfillment of the requirements for the Award of Degree of
Bachelor of Science in Electrical and Electronic Engineering

By
Md. Rokonuzzaman
(ID: 131-33-1224)
And

Supervised by
Professor Dr. M. Shamsul Alam
Dean
Faculty of Engineering

Co-supervised By
Md. Israfil Raju
Research Associate
Department of EEE

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING
FACULTY OF ENGINEERING
DAFFODIL INTERNATIONAL UNIVERSITY

December - 2018

Certification

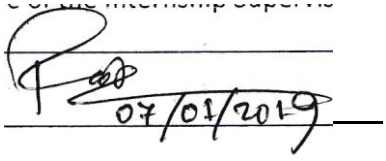
This is to certify that this thesis entitled "**Study on Determination of Electricity Distribution Cost of Rajshahi PBS"** is done by the following student under my direct supervision and this work has been carried out by him in the laboratories of the Department of Electrical and Electronic Engineering under the Faculty of Engineering of Daffodil International University in partial fulfillment of the requirements for the degree of Bachelor of Science in Electrical and Electronic Engineering. The presentation of the work was held on.

Signature of the candidate

Name: Md. Rokonuzzaman

ID: 131-33-1224

Countersigned



Dr. M. Shamsul Alam
Professor and Dean
Department of Electrical and Electronic Engineering
Faculty of Engineering
Daffodil International University

DECLARATION

The thesis entitled "**Study on Determination of Electricity Distribution Cost RPBS"** submitted by **Md.Rokonuzzaman**, ID: 131-33-1224 and Session: Spring 2013 has been accepted as satisfactory in partial fulfillment of the requirements for the degree of **Bachelor of Science in Electrical and Electronic Engineering**.

BOARD OF EXAMINERS

_____

Dr. Engr. … Chairman
Professor
Department of EEE, DIU

_____

Dr. Engr. --- Internal Member
Professor
Department of EEE, DIU

_____

Dr. Engr. --- Internal Member
Professor
Department of EEE, DIU

Dedicated to

Our Parents
And
Teachers

CONTENTS

LIST OF TABLES

List of Figure

List of Abbreviations

AGE	Administration & General Expenses
BERC	Bangladesh Electricity Regulatory Commission
BPDP	Bangladesh Power Development Board
BREB	Bangladesh Rural Electrification Board
CSE	Consumer Selling Expenses
DAE	Depreciation & Amortization Expenses
DC	Distribution Cost
DESCO	Dhaka Electricity Supply Company
EC	Energy Cost
EV	Electrified Village
GDP	Gross Domestic Product
GOB	Government of Bangladesh
EH	Electrified Houses
HP	Horse Power
IE	Import Energy
IE	Interest Expenses
IPPs	Independent Power Producers
KV	Kilovolt
KWh	Kilo Watt Hour (Unit)
MU	Million Units (Million KWh)
MW	Mega Watt
NEV	Non Electrified Village
OME	Operation & Maintenance Expenses
PBS	Palli Bidyut Samity
PDB	Power Development Board
PF	Power Factor
PGCB	Power Grid Company of Bangladesh
REP	Rural Electrification Program
SL	System Loss
TC	Total Supply Cost

TX	Tax Expenses
Tk	Taka (TK)
TR	Total Revenue
WC	Wheeling Charge

ACKNOWLEDGEMENT

Most importantly, we give thanks to Allah. At that point, we might want to accept this open door to express us thankfulness and appreciation to our proposal chief **Professor Dr. M. Shamsul Alam, Dean, Faculty of Engineering**, Daffodil International University, Dhaka. For being devoted to supporting, persuading and managing us through this theory. This Thesis isn't possible without his valuable exhortation and makes a difference. Also thank you very much for giving us opportunity to choose this thesis.

We also want to convey our thankfulness to my thesis co-supervisor **Md. Israfil Raju, Research Associate**, **Department of EEE,** for his help, support and constant encouragement.

Aside from that, we might want to thank our whole companions for sharing learning; data and helping us in making this Thesis a success. Additionally, a debt of gratitude is in order for lending us some tools and equipment.

To our adored family, we need to give them our most profound love and appreciation for being exceptionally steady and furthermore for their motivation and support during our studies in this University.

ABSTRACT

Bangladesh is an energy hunger as well as other developing country. After the freedom war to get together power emergency was a standout amongst the most imperative difficulties for the government. Step by step the test turns out to be truly harder to harder to get together power emergency, particularly to get together power emergency in the rustic region. So government shaped Rural Electrification Board (REB) from Bangladesh Power Development Board (BPDB) to satisfy the power interest for town individuals. Duty rate of electrical power relies on upon transmission and dispersion cost. On the off chance that power supply expenses are high then electrical tariff rate will high and submitted negative outcome. In this paper, it takes Rajshahi PBS as my standard PBS for calculation of the 2015-2018 fiscal year. Here it gathered some essential information, for example, Energy Import, Energy Consumption, and Monthly Consumer and so forth. What's more, this paper, it quickly talks about the about of Customer class particularly Domestic level, Customer expands Energy, Energy Import point, Social and monetary effect, Power factor Penalty and so on. This Paper additionally finds that Total Distribution cost, Distribution cost per unit, Supply cost, Supply cost per unit, Total Revenue, Total Revenue Per unit, Energy Purchase cost, System loss, Surplus and so on. This paper will likewise be useful to get learning a steady power dispersion structure to meet the future power crisis of Bangladesh. Power circulation cost is an essential issue in our nation. Since power tax rate and dissemination cost are connected with our monetary development. At last, it additionally demonstrates that Rajshahi PBS is productive Palli Bidyut Samity (PBS).

CHAPTER 1

INTRODUCTION

1.1 Introduction

In Bangladesh, age of rural electrification is enough mature now to face any challenges. This is a story of how a cost-effective electric energy supply has been developing lifestyle in about 90 percent areas of Bangladesh. After the liberation war,it's a journey from darkness to the light of the conflict between desire and hope. Our study is on how electric energy supply more cost-effectively and with less of losses, which can be more safe and affordable to the rural. There are many factors which may have been contributing towards such change. Our study is a modest attempt to find any missing linkage in energy supply that could be more developed the supply.

Rural electrification makes the process of rural development easier and faster since 1977 to 2016.

1.2 BREB

After the independence of Bangladesh in 1971, the first major initiative to extend grid electricity in rural areas was taken in 1975 under a scheme called 'Total Electrification Programme'. This program looked beyond grid connectivity towards the development of the basic distribution facilities for effective delivery of power to rural areas by 1978. At around the same time, establishing an institutional structure was considered, which would develop the technical, economic, financial and social analysis, and organizational requirements for a rural electrification project in Bangladesh. Then at the request of the Bangladesh Government Rural Electrification Project Committee, a decision was taken for the establishment of a new national agency under the Power Ministry to develop and administer a rural electrification program. Accordingly, Rural Electrification Board (REB) was established on 29 October 1977 and started functioning on 1 January 1978 with following basic objectives:

- Ensure consumer participation in policy-making.
- Provide reliable, sustainable and affordable electricity to rural people.
- Help improve the economic condition of rural people by providing electricity for Agriculture and small industries.
- Help improve the living condition of rural people.
- Expand electrification to entire rural Bangladesh.

The Rural Electrification Board of Bangladesh has been providing service to rural member consumers for over 39 years. Continued support from the Government of Bangladesh, the donor community, consulting partners, and member consumers will help this program continue to expand, providing the gift of electricity to millions more Bangladeshi households, businesses, and industries.

Table 1.1: Bangladesh Rural Electrification Board at a Glance

Website	www.reb.gov.bd
No of Board member	12
No of Approved Projects	83
Number of PBSs operating commercially	78
No PBSs electrified	78
Number of district Included in RE program	61
No of Upazillas Included in RE program	453
No of villagers energized	68,049
Distribution line constructed(Km)	3,19,708 Km
Total distribution line energized	3,03,464 Km
Number of 33/11 KV Sub-Station Constructed	765 (589 Constructed by BREB)
Average system Loss	11.99%
Installed Capacity of Sub-stations	8150

1.2.1Future plans

'Vision 2021' promises to preserve the fundamental principle of the Constitution following Article 16 where it is clearly demonstrated that "The State shall adopt effective measures to bring about a radical transformation in the rural areas through the promotion of an agricultural revolution, the provision of rural electrification, the development of cottage and other industries, and the improvement of education, communications and public heath, in those areas, so as

progressively to remove the disparity in the standards of living between the urban and the rural areas". Accordingly, rural electrification has been aimed as one of the principal components of the overall rural infrastructures for development of national economy. Without improving electricity coverage in the rural areas, Bangladesh would not have been able to realize the targeted annual GDP growth rate

It is the ultimate goal to bring all the villages of Bangladesh under electrification by the year 2020. Under the RE program, which started in 1980, about 45% villages have already been brought under electrification by 2005. The mid-term plan is to cover further 20% villages by 2005 and remaining villages to be covered by 2020 under the long term plan.

Table 1.2: Future Development Plan at a glance.

Description	2003	2007	2012	2020
Installed Capacity (MW)	4710	6716	9840	17500
Peak Demand (MW)	3622	5368	7887	14600
Distribution Line (km)	209932	266962	346173	519259
No. of Consumers (ml)	7.1	9.0	12.5	24.30
No. of Village Electrified	41814	51900	63400	84000
Access to Electricity	32%	47%	65%	100%
Investment Requirement (bl US$)	-	3.60	4.50	7.00

1.3 PalliBidyutSamity (PBS)

The REB program operates through locally organized rural electric associations called PalliBidyut Samity (PBS). The concept of PBS is based on the model of Rural Electric Cooperatives in the USA, which operates with cooperatives and ownership of consumers.REB doesn't generate any electricity. They purchase electricity from the national grid or from selected IPPs at the 33Kv voltage level. They are responsible for providing electricity to their 78 PBSs members and customer.

FUNCTIONS OF PBS

- Consumer connection
- Sub-station & line maintenance.
- Consumer complains handling.
- Decide on line extension.
- Motivate people.
- Purchase & sale of electricity.
- Tariff setting in consultation with BREB.

1.4 Rajshahi Palli Bidyut Samity

Since its inception in 1996, RajshahiPalliBidyutSamity is playing a vital role in Agricultural, Industrial and Socio-Economic Development of Rajshahi District. The Rural Electrification Program conducted by RajshahiPalliBidyutSamity has acted a leap forward in the development of socio-economic structure of rural areas in Rajshahi District as well as entire Bangladesh. It has a significant and sustained impact on agricultural growth, industrialization and business & commercial activities in the rural areas. It is a consumer-owned entity organized on the basic principles of Cooperative for distribution of electric power to its members and operates on No Loss - No Profit basis for the mutual benefits of its entire Member.

Table 1.3: RPBSat a Glance

WEBSITE	**www.rajshahipbs.org.bd**
DATE OF REGISTRATION	**15-04-1995**
DATE OF ENERGIZATION	**28-01-1996**
AREA	**1386 Sq. Km**
NO. OF UPAZILA	**05**
NO. OF UNION	**38**
NO. OF ZONAL OFFICE	**01**
NO. OF AREA OFFICE	**03**

NO. OF COMPLAIN CENTRE	**11**
NO. OF CONTROL ROOM	**01**
NO. OF VILLAGE	**914**
NO. OF VILLAGE ELECTRIFIED	**914**
VILLAGE ELECTRIFIED	**914**
LINE CONSTRUCTION REQUIRED FOR TOTAL ELECTRIFICATION	**4731.km.**
TOTAL LINE CONSTRUCTED	**4434. km Renewed**
TOTAL CONSUMER CONNECTED	**212007**
CATEGORY WISE CONNECTIONS **(i) DOMESTIC** **(ii) COMMERCIAL** **(iii) CHARITABLE INSTITUTION** **(iv) IRRIGATION** **(v) INDUSTRY** **(vi) STREET LIGHT**	 **194983** **9492** **3427** **3908** **51** **146**
NO. OF CONSUMERS PER Km.	**52***
% REVENUE PER (TK.) FY 16-17 **IMPROVEMENT OF POWER FACTOR**	**76%**
NO. OF SUB-STATION (33/11 KV) Active	**10**
MAXIMUM DEMAND	
AVERAGE REVENUE (PER UNIT)	**TK. 4.66***
AVERAGE COST (PER UNIT)	**Tk. 6.60***
OPERATING MARGIN (Jul,15 to Jun 16)	**- (TK. 23,597,809)**
NET MARGIN (Jul,15 to Jun, 16)	**-(TK. 28,011,324)**
% SYSTEM LOSS (2017-18) **THIS MONTH (JUN, 16)** **YEAR TO DATE (2015-16)**	**8.10%**
COLLECTION **THIS MONTH (JUN, 16)** **YEAR TO DATE(Up to JUN,16)**	

1.5 Objective

The scope of this study is the analysis of the costs that are associated with the power transfer as well as the realization of new methods and tools concerning the calculation and the allocation of these costs. The power distribution costs, which are charged to the market participants, are a central issue of the new cosmos of electricity markets. The increased requirement for fair and transparent pricing in the competitive environment as well as the complexity introduced by unbundling the services point out why this issue is of great importance. In general, the cost associated with the distributed power may be categorized as follows:

- Cost associated with the power losses.
- Cost caused by system congestion.
- Fixed cost of the power system.

The main objective of our study is a modest attempt to find any missing/ leakage in energy supply that could be more developed the supply for rural electrification board.

1.6 Methodology

We were aware during the course of our study and following discussions with representatives of the power division of the Department of Rural Electrification that there were no established techniques or methodology in this field of socio-economic research. Indeed, in view of the uniqueness of the areas studied and the scarcity of suitable data, it is doubtful if any but a most general methodology could be established. Accordingly, we describe in greater detail than might be normal, the concepts, definitions, and difficulties encountered in our approach to the study in the expectations that such descriptions will be of use in future studies. We highlight a number of reform options and recommendations for industry and household energy use policies. Losses are important as there is an environmental and economic cost associated with them.

In this research, a methodology or a model based on System dynamic approach has been developing to make more energy available at affordable prices to enable all people to use modern energy to meet their basic needs. To slow the overall growth of energy consumption through

conservation and energy efficiency improvement and to make energy sources more environmentally sustainable.

Today BREB have 78 operating rural electric cooperatives called PalliBidyutSamity (PBS).For research, I choose the Rajshahi PBS.I collected some primary data from Rajshahi PBS, BREB and BERC.

1.7 Outline of the Thesis

The outline of the thesis is as follows:

- Chapter 1: Introduction, BREB, PBS, RPBSthen the objective of the thesis, outline of the thesis.
- Chapter 2: Literaturereview.
- Chapter 3: Introduction, Broad and Specific, Impact on Education, Impact on Gender Dimensions, Impact on Irrigation and Agricultural Production, Impact on Mass Media, Summary.
- Chapter 4: Introduction, Important Terms Energy Import Analysis, Data Analysis, Substation of RPBS, System loss
- Chapter 5: Introduction, Description of consumer class, Domestic Consumers, Commercial Consumers, Charitable institute, Irrigation, General power, large power, In case of 33KV, Street Lights, Description of table and its analysis.
- Chapter 6: Introduction, Power Factor Calculation, adjustment, P.F correction multiplication factor, Power Factor Correction Example, The Benefits for high power factor and Power factor penalty table
- Chapter 7: Electricity Cost, Electricity Purchase Cost, Bulk rate, Wheeling Charge, Distribution Cost, Operation & maintenance expenses (OME), Consumer selling expenses (CSE), Administration and General Expenses (AGE), Depreciation & amortization expenses (DAE), Tax expenses (TE), Interest expenses (IE), System Loss (Tk), Total Revenue (TR), Revenue from Sales Energy, Revenue from others, Other operating revenue, Non-operating Margins- interest, Total supply cost (TC),Surplus, Per Unit Cost Calculation,

Distribution Cost (Tk/Unit), Revenue (Tk/Unit), System Loss Tk/Unit (SL), Tariff Rate, Bill Explanation.

- Chapter 8: Conclusions, Limitations of the Work, Future Outline
- Chapter 9: Appendix

CHAPTER 2

LITERATURE REVIEWS

2.1 Literature review

Social development, industrial progress, economies and human life style are heavily depend on energy in 21st century. Energy are traded globally and the effects of energy use have worldwide consequences. Due to population increase and industrial development in future huge energy will be needed. Bangladesh, as a developing country needs an efficient energy system to minimize the losses and maximum utilization of generated power. Rural energy system is a very exoteric affair to researchers and planners. This paper provides an acknowledgment to assist in understanding the different factors affecting energy distribution, energy consumption, energy losses and energy cost.

Helene Ahlborg and Linus Hammarreported thatMozambique and Tanzania are countries with very low rural electrification rates. There are significant barriers to effective rural electrification by grid-extension and off-grid installations. The main drivers are political ambitions based on expected growth of demand. The barriers are related to lack of access to human capital, to difficulties in planning and donor dependency, to low rural markets and little interest from private sector and to more technical matters [6].

Paul Cook stated that now rural electrification has underlined their development with productive uses of energy and poverty reduction. Despite this emphasis, progress in electrifying remote rural areas has been slow. He critically reviews the economic and social issues underlying the

development of rural electrification. To making rural electrification more feasible and affordable and for complementary services need appropriate institutions to support rural electrification. [5].

M. T. Carrillo Cobo and their team denoted that irrigation networks usually constrained by the high amounts of energy required for their operation. In this sector, farmers are organized in turns, is one of the most efficient measures to reduce their energy consumption. Irrigation system is designed according to the distance to the pumping station and their elevation. [9].

ToorajJamasb, Luis Orea and Michael Pollitt narrated that estimating marginal costs of quality can help energy regulators to design more effective incentive mechanisms for distribution network utilities to achieve optimal quality levels and reduce welfare losses .They implement this methodology to the case of the UK electricity distribution networks. They, find that the incentives to encourage utilities to reduce network energy losses have led to performance improvement [7].

B. Amanulla, Saikat Chakrabarti, S. N. Singh mentioned that a power distribution system reconfiguration methodology considering the reliability and the power loss. Probabilistic reliability models are used in order to evaluate the reliability at the load points. An algorithm for finding the minimal cut sets is utilized to find the minimal set of components appearing between the feeder and any particular load point. The optimal status of the switches in order to maximize the reliability and minimize the real power loss is found by a binary particle swarm optimization-based search algorithm [8]

We highlight a number of reform options and recommendations for industry and household energy use policies. Losses are important as there is an environmental and economic cost associated with them.

Thomas F.Sanquist, Heather Orr, Bin Shui and AlvahC.Bittner indicated that Residential Energy Consumption Survey (RECS) identified five lifestyle factors reflecting social and behavioural patterns associated with air-conditioning, laundryusage, personal computer usage, climate zone of residence, and TV use. Multiple regression analysis using the lifestyle factors yields solutions

accounting for approximately 40% of the variance in electricity consumption for both years. By adding the household and market characteristics of income, local electricity price variance accounted for is increased to approximately 50% [9].

Douglas F.Barnes, ShahidurR.Khandker and Hussain A.Samad pointed that Energy poverty is a well-established concept among energy and development specialists. They uses a demand-based approach to define the energy poverty line as the threshold point at which energy consumption begins to rise with increases in household income. The findings suggest that some 58 percent of rural households in Bangladesh are energy poor, versus 45 percent that are income poor. The findings also suggest that policies to support rural electrification and greater use of improved biomass stoves might play a significant role in reducing energy poverty. [13].

Md. Alam Hossain Mondal, Wulf Boie and Manfred Denichnoted that data on the future electricity demand is an essential requirement for planning the expansion of a power system. In the low to high GDP growth scenarios, the extent of industrial restructuring and technical advancement is gradually increased. The study also compares the projected per capita electricity consumption in Bangladesh with the historical growth in several other developing countries. Such an evaluation can create awareness among the planners of power system expansion in Bangladesh to meet the high future demand. [12].

Vladimir Terzija, Gustavo Valverde and their team narrated that Synchronized Measurement Technology (SMT) is an important element and enabler of Wide-area monitoring, protection, and control (WAMPAC).It is expected that WAMPAC systems will in the future reduce the number of catastrophic blackouts and generally improve the reliability and security of energy production, transmission, and distribution, particularly in power networks with a high level of operational uncertainties [11].

This paper presents most of the focus on households demand, but the few studies analysing commercial, industrial demand and irrigation demand are also reviewed.

CHAPTER-3

SOCIAL IMPACT OF BREB

3.1 Introduction

Extension of infrastructure in rural areas is essential for bringing down any meaningful change in the rural living patterns. Before our liberation in the year 1971, we had little facilities created for the rural people. Virtually, government had little opportunities for expansion of the distribution network in a massive scale. In 1972, Rural Electrification Directorate (under Power Development Board) was established to gear up efforts towards formation of a separate body responsible for electrifying rural areas. In 1976 NRECA conducted a feasibility study for reaching electricity to each and every rural home and other rural establishments. As a resultRural Electrification Board was formed to take up efforts at bringing down changes in rural livingpatterns.

Over the last 28 years, the program has reached about 433 thanes of the country, thus making it a core development program. The program has brought light to many families, hitherto remaining in complete darkness. It has given them the enlightenment towards modern lining, freedom from poverty, malnutrition and hunger. Electricity has brought many families close to the rural homes. Some of them are thinking of taking new initiatives in industrial and agricultural sectors. Rural Electric societies have provided jobs to rural families/youths. In addition, a total of 8000 persons are employed in the construction firms and consulting offices working for the program. Rural people now have much better work-habits and an improved sense of discipline and social security, which came as a result of the assurances of basic amenities in life.

Literacy rate in the rural areas has increased significantly due to the expansion of mass education program. Poor workers can attend the night schools at the end of the day's business. They can also sit beside the children to supervise their education. Living pattern in rural areas have changed due to introduction of new consumer items and like Refrigerator, Television, Radio, Cassette Players, Fans etc. Villages are experiencing a kind of urbanization in the shape of civic amenities, regular education, sanitation and health care and enhanced economic activities. By dint of TV, people are now keeping informed about the latest state of sports, culture and political developments. As the satellite has opened up the world before the eyes, people get acquainted with the world and this ensures their early socialization. The workload of women has reduced and they have sufficient time to watch TV, listen to radio and can assist children in their education. Access to resources, equality of men and women in terms of wage/employment, women trafficking, punishing criminal offences, child trafficking, acid throwing, choice of family planning use, right to participate in the election RE program have sped the other development activities in the rural areas. Many new infrastructure development NGOs (nongovernment organizations) and human development bodies have extended their activities in remote rural areas to help government efforts at poverty alleviation and human development. By dint of electricity, NGOs are encouraging varied human endeavors in the form of handicraft development and cross-cultural interchanges.

3.2 Broad and Specific

The broad objective of the study was to make an assessment of economic and social impacts of Rural Electrification Program in Bangladesh. In line with the Terms of Reference and the broad objective, the specific objectives of the study were

- To design the economic and social impact evaluation study of the Rural Electrification Program that includes reconfirmation of direct (intended) objectives and identification of broader (indirect) impacts of REP, defining impact indicators, identification of relevant testable hypotheses, and development of appropriate methodology.
- To determine impact of Rural Electrification Program on the various dimensions of human development focusing on standard of living, poverty reduction and gender development.

- To evaluate the impact of Rural Electrification Program on industrial development.
- To assess the impact of Rural Electrification Program on the develop commercialactivities.
- To evaluate the impact of Rural Electrification Program on the various dimensions of irrigation and agriculture.
- To put forward logically sound recommendations based on scientifically rigorous impact evaluation in line with the above objectives and the Government's Energy Policy, especially for accelerated development and poverty reduction in a sustainable way through rural electrification.

3.3 Impact on Education

Compared to the non-electrified households, the overall literacy rates for both male and female in the electrified were significantly higher, especially due to the household's access to electricity which has contributed much both in economic terms as well as in raising awareness about value of education. The rich-poor divide in literacy was also less pronounced in the electrified than that in the non-electrified households.

The quality of education measured in terms of household expenditure on education, marks (grades) obtained in the last final examinations, school drop-outs, school attendance rate, and time spent for study by students at night all found much improved in the electrified than in the no electrified household. Electricity matters in improving the quality of education. This quality improvement in the electrified households works through vary many channels more time available for study after the sunset, the quality of that time due to sufficient light and fan for comfort, strengthening the knowledge-based due to access to TV (which in turn increases the appetite for learning), parents (especially mothers/other elder female members) devote more time in assisting children's education compared to before electricity etc.

3.4Impact on Gender Dimensions

Electrification has contributed to the positive development on women's socio-economic status. Electricity has left a profound impact on women's mobility, decision-making, freedom in using income and savings, better utilization of credit, knowledge about gender inequality issues,

household work plan according to convenience, changes in attitude in terms of reducing healthcare disparities, increase in overall years of schooling for both boys and girls, preference to send girls to schools, awareness of legal issues (as for example, marriage for girls at 18 and boys at 21), and awareness about negative impact of dowry.

Although, women in the non-electrified villages are working inside and outside home, they have less control over utilization of their earnings, decision-making; and their level of awareness of fundamental rights is low. One of the significant facts that, emerged is that if electricity is provided to them these women can benefit substantially with more power or status.

Electricity enables all members in electrified households to avail more time after sunset, in comparison with those in EV and NEV. The daily average time from sunset to sleeping is higher for all categories of household members in HE. Socio-cultural development is the most prominent activity after sunset for household of their electrification status. Watching TV/listening radio is the major activity for senior members both male and female in HE followed by socialization. Business, emerging as the most prominent activity signifies increased economic activities in the region as has been reflected with higher time spent by EV in comparison with NEV.

Electricity plays the role of a catalyst in having a quality education both by extended time period and by creating comfortable environment through electrical appliances. For landless electrified household, longer study hours for students and more time spent for socio-cultural development by the female household heads, acted as a catalyst for reducing human poverty. Higher allocation of time by the male household heads, the principal earner of the family in most cases, can contribute in reducing income poverty in an indirect fashion. The interplay of all those, actually create the environment for new opportunities to overcome the hardship of poverty.

Providing electricity at the household level is crucial to ensure better standard of living as the effective use of time shapes up the life style for each individual concerned. Given the study results, the better use of additional time attributed to electricity, has facilitated the electrified household members to explore new range of activities as well as extended time period for the old ones. Comparing the pre and post electrification time allocation pattern for electrified household

members, the study results revealed increased time allocation for activities like income generating activities or watching TV, which address income as well as human poverty. In the electrified household, reduced household chore for female members and reduced gender gap in terms of daily average time for studying is clearly indicative of improved gender status.Thus, it can be recommended that to ensure better use of time after sunset by efficient allocation across different activities, it will be important to provide electricity at the household level.

Electricity available at the household level should be a priority from the perspective of poverty reduction and women empowerment too, as the study revealed improved gender status in HE in the post - electrification period. Dominant spillover effect reported by higher difference in terms of time allocation between HE and WE-NEV, also rationalize the provision of electricity at the community level to ensure environment conducive to economic growth and higher standard of living.

3.5 Impact on Irrigation and Agricultural Production:

In agriculture, REP has contributed significantly in attaining food self-sufficiency through use of productive and efficient irrigation equipment's, and generated stable employment opportunities. Electrified irrigation equipment in general are more dependable compared to diesel operated. Both operational cost and energy cost of electrified equipment, on average, three-fourths as compared to those of diesel operated ones. Electrified irrigation equipment creates employment for two persons for almost half of the year and with the electrification of irrigation equipment, more than one hundred thousand additional employments have been created throughout the year in rural areas of the country. As land use intensity and cropping intensity through electrified equipment is higher and cost of operation of the same is lower (including breakdown and associated problems) in comparison with diesel equipment, electrified irrigation has got distinct advantages over other types of irrigation.

As the contribution of electricity is evidentially clear in the agriculture sector of Bangladesh, therefore, more generation of electricity, on the one hand, and better distribution of the same, on the other, is recommended. The REB needs to entertain its initial mission of connecting all irrigation pumps and think its mission/goal about engaging itself into generation of electricity too.

3.6 Impact on Mass Media

With all the fluctuations in the movement of households, industrial and irrigational electrified area from one asset group to another, as compared to the non-electrified area, the electrified area have shown a much progressive trend in their economic strengths measured through upward movement of the people asset situation.

3.7 Summary

Finally we show that the Rural electrified industries have been playing a pivotal role in changing the living condition of the rural people whose fortune was tied -up with subsistence agriculture till the coming of rural electrification. More and more people have been shifting their traditional stereo type business to the more dynamic industrial venture.

CHAPTER-4

ENERGYIMPORTOF RAJSHAHI PBS

4.1 Introduction

Need of electricity is increasing day by day. The lack of power is one of the major problems in Bangladesh. For economic freedom and in order to meet the consumer demands, the electricity growth that is produce more electricity, building more transmission and distribution capacity, bringing more area population under electricity coverage and ensuring more effective and efficient management, of these are the essential issues. The Government of Bangladesh (GOB) has decided to build power plants in private sectors so that Independent Power Producers (IPPs) launched their business in Bangladesh. In this chapter brief the history of the RPBS and their energy import scenarios are discussed.

4.2 Important Terms Energy Import Analysis

Grid:

In electrical system, a grid is a network of synchronized power providers and consumers that are connected by transmission and distribution lines and operated by one or more control canters.

Substation:

A substation is a part of an electrical generation, transmission, and distribution system. Substations transform voltage from high to low, or the reverse, or perform any of several other important functions.

Kilowatt-Hour (KWh):

Kilowatt-Hour means measure of electricity define as a unit of worker energy, measured as 1 Kilowatt (1,000watts) of power expended for1 hour.

Peak Demand:

The peak demand of an installation or a system is simply the highest demand that has occurred over a specified time period. Peak demand is typically characterized as annual, daily or seasonal and has the unit of power. Peak demand, Peak load or On-peak are terms used in energy demand management describing a period in which electrical power is expected to be provided for a sustained period at a significantly higher than average supply level.

System Loss:

Power generated in power stations pass through large and complex networks like transformers, overhead lines, cables and other equipment and reaches the end users. It is fact that the unit of electric energy generated by Power Station does not match with the units distributed to the consumers. Some percentage of the units is lost in the distribution network. This difference in the generated and distributed units is known as Transmission and Distribution loss. Transmission and Distribution loss are the amounts that are not paid for by users.

System Loss(%) = [(Energy Input to feeder (Kwh) – Billed Energy to Consumer (Kwh))

÷ Energy Input (KWh)] x 100.

LoadFactor:

Load Factor means the ratio of the average load to peak load served by a plant or power system during a specified time interval. A higher load factor indicates the higher use of the generating resources.

$$\textbf{Load Factor} = \frac{\textbf{Total Unit KWh(Purchase)}}{\textbf{Total Peak Demand} \times 1000 \times 24 \times 30} \times 10$$

4.3 Data Analysis

Table 4.1:-Energy Import RPBS (2015-2016)

Import point:Grid Wise	July			August		
	kWh(Purchase)	Total KWh(sold)	Substation SL %	kWh(Purchase)	Total KWh(sold)	Substation SL %
Katakhali	11314584			11455368		
Nawabganj	2116008			2026872		
Niamatpur	3140438	**13968746**	**15.70%**	3163138	**14639589**	**12.05%**
	0			0		
Total	**16571030**			**16645378**		

Import point:Grid Wise	September			October		
	kWh(Purchase)	Total KWh(sold)	Substation SL %	kWh(Purchase)	Total KWh(sold)	Substation SL %
Katakhali	11428704			11186377		
Nawabganj	2282052			4798272		
Niamatpur	3288340	**15250393**	**10.29%**	5731887	**19756290**	**9.03%**
	0			0		
Total	**16999096**			**21716536**		

Import point:Grid Wise	November			December		
	kWh(Purchase)	Total KWh(sold)	Substation SL %	kWh(Purchase)	Total KWh(sold)	Substation SL %
Katakhali	8161584			8201160		
Nawabganj	2695152			2491752		
Niamatpur	3177514	**12438383**	**11.37%**	3662670	**12783533**	**10.95%**
	0			0		
Total	**14034250**			**14355582**		

Import point:Grid Wise	January			Import point:Grid Wise	February		
	kWh(Purchase)	Total KWh(sold)	Substation SL %		kWh(Purchase)	Total KWh(sold)	Substation SL %
Katakhali	8568360			Rajshahi-Paba	3620880		
Nawabganj	3319248			Nawabganj(Ai-hai)	4120776		
Niamatpur	5526515	**15533285**	**10.80%**	Niamatpur-Naogano-1	6366006	**19017605**	**9.91%**
	0			Rajshahi(Durgapur)	7002816		
Total	**17414123**			**Total**	**21110478**		

Import point:Grid Wise	March			April		
	kWh(Purchase)	Total KWh(sold)	Substation SL %	kWh(Purchase)	Total KWh(sold)	Substation SL %
Katakhali	5649456			5395584		
Nawabganj	4335816			3170928		
Niamatpur	8322970	**24887601**	**11.40%**	5970468	**20354449**	**16.90%**
	9781944			9956376		
Total	**28090186**			**24493356**		

Import point:Grid Wise	May			June		
	kWh(Purchase)	Total KWh(sold)	Substation SL %	kWh(Purchase)	Total KWh(sold)	Substation SL %
Katakhali	4009669			4699834		
Nawabganj	2056296			2718744		
Niamatpur	3492691	**16310872**	**4.65%**	4138850	**17473894**	**14.31%**
	7547064			8833735		
Total	**17105720**			**20391163**		

Table 4.2: Energy Import RPBS (2016-2017)

Import point: Grid Wise	July			August		
	KWh (Purchase)	Total KWh(Sold)	Substation SL %	KWh (Purchase)	Total KWh(Sold)	Substation SL %
Rajshahi-paba	4,476,996			4,546,930		
Nawabganj(Ai-Hai)	2,481,215			2,458,536		
Niamatpur-Naogaon-1	3,929,290	**17,020,194**	**10.28%**	3,621,454	**17,052,312**	**9.58%**
Rajshahi-Durgapur	8,082,864			8,232,809		
Total	**18,970,365**			**18,859,729**		

Import point: Grid Wise	September			October		
	KWh (Purchase)	Total KWh(sold)	Substation SL %	KWh (Purchase)	Total KWh(Sold)	Substation SL %
Rajshahi-paba	4,516,471			4,340,798		
Nawabganj(Ai-Hai)	2,310,333			3,801,288		
Niamatpur-Naogaon-1	3,522,392	**16,604,772**	**8.64%**	4,226,334	**18,273,119**	**8.85%**
Rajshahi-Durgapur	7,795,032			7,678,728		
Total	**18,174,228**			**20,047,148**		

Import point: Grid Wise	November			December		
	KWh (Purchase)	Total KWh(Sold)	Substation SL %	KWh (Purchase)	Total KWh(Sold)	Substation SL %
Rajshahi-paba	3,416,534			3,413,563		
Nawabganj(Ai-Hai)	2,953,644			2,528,568		
Niamatpur-Naogaon-1	3,429,799	**14,246,711**	**8.67%**	4,211,427	**14,646,997**	**9.29%**
Rajshahi-Durgapur	5,798,719			5,992,650		
Total	**15,598,696**			**16,146,208**		

Import point: Grid Wise	January			February		
	KWh (Purchase)	Total KWh(Sold)	Substation SL %	KWh (Purchase)	Total KWh(Sold)	Substation SL %
Rajshahi-paba	4,057,040			4,051,248		
Nawabganj(Ai-Hai)	4,033,176			4,254,312		
Niamatpur-Naogaon-1	6,727,937	**18,473,164**	**11.68%**	6,588,724	**20,937,742**	**7.30%**
Rajshahi-Durgapur	6,096,883			7,693,008		
Total	**20,915,036**			**22,587,292**		

Import point: Grid Wise	March			April		
	KWh (Purchase)	Total KWh(Sold)	Substation SL %	KWh (Purchase)	Total KWh(Sold)	Substation SL %
Rajshahi-paba	4,859,136			5,447,232		
Nawabganj(Ai-Hai)	4,000,560			4,229,928		
Niamatpur-Naogaon-1	7,297,664	**23,225,367**	**10.65%**	6,602,220	**24,245,665**	**12.02%**
Rajshahi-Durgapur	9,836,568			11,277,696		
Total	**25,993,928**			**27,557,076**		

Import point: Grid Wise	May			June		
	KWh (Purchase)	Total KWh(Sold)	Substation SL %	KWh (Purchase)	Total KWh(Sold)	Substation SL %
Rajshahi-paba	4,246,344			4,799,736		
Nawabganj(Ai-Hai)	2,422,824			3,634,392		
Niamatpur-Naogaon-1	3,661,272	**16,986,257**	**12.36%**	4,147,683	**20,038,902**	**12.11%**
Rajshahi-Durgapur	9,051,670			10,218,288		
Total	**19,382,110**			**22,800,099**		

Table 4.3:Energy Import RPBS (2017-2018)

Import point:Grid Wise	July			August		
	KWh(Purchase)	Total KWh(sold)	Substation SL %	KWh(Purchase)	Total KWh(sold)	Substation SL %
Rajshahi-Paba	4521624			4096176		
Nawabganj-Ai-Hai	3886932			3884088		
Niamatpur-Rajshahi	4481916	**20720673**	**7.92%**	4280532	**18864648**	**11.94%**
Rajshahi-Durgapur	9608976			9160800		
Total	**22502148**			**21421596**		

Import point:Grid Wise	September			October		
	KWh(Purchase)	Total KWh(sold)	Substation SL %	KWh(Purchase)	Total KWh(sold)	Substation SL %
Rajshahi-Paba	4350024			4066632		
Nawabganj-Ai-Hai	3420072			2416152		
Niamatpur-Rajshahi	4137882	**19274892**	**10.81%**	3619699	**18336965**	**2.67%**
Rajshahi-Durgapur	9702102			8736912		
Total	**21610080**			**18839395**		

Import point:Grid Wise	November			December		
	KWh(Purchase)	Total KWh(sold)	Substation SL %	KWh(Purchase)	Total KWh(sold)	Substation SL %
Rajshahi-Paba	3291312			3186672		
Nawabganj-Ai-Hai	2323608			2766195		
Niamatpur-Rajshahi	3216480	**15133495**	**1.76%**	3807576	**14536666**	**11.97%**
Rajshahi-Durgapur	6572544			6752352		
Total	**15403944**			**16512795**		

Import point:Grid Wise	January			February		
	KWh(Purchase)	Total KWh(sold)	Substation SL %	KWh(Purchase)	Total KWh(sold)	Substation SL %
Rajshahi-Paba	3826200			**3822912**		
Nawabganj-Ai-Hai	4618568			4574968		
Niamatpur-Rajshahi	6605272	**19324632**	**12.42%**	6619332	**21430733**	**5.53%**
Rajshahi-Durgapur	7014500			7668504		
Total	**22064540**			**22685716**		

Import point:Grid Wise	March			April		
	KWh(Purchase)	Total KWh(sold)	Substation SL %	KWh(Purchase)	Total KWh(sold)	Substation SL %
Rajshahi-Paba	6024600			4896792		
Nawabganj-Ai-Hai	5842776			3707568		
Niamatpur-Rajshahi	9282546	**27745664**	**14.42%**	6613476	**23373291**	**8.24%**
Rajshahi-Durgapur	11269872			10254144		
Total	**32419794**			**25471980**		

Import point:Grid Wise	May			June		
	KWh(Purchase)	Total KWh(sold)	Substation SL %	KWh(Purchase)	Total KWh(sold)	Substation SL %
Rajshahi-Paba	4510368			5000112		
Nawabganj-Ai-Hai	2779896			3789646		
Niamatpur-Rajshahi	4559069	**18482639**	**14.45%**	5099521	**21837750**	**12.37%**
Rajshahi-Durgapur	9754963			11030472		
Total	**21604296**			**24919751**		

Rajshahi PBS import electricity from both government and private sector to meet their consumer demand, RPBS import electricity from five public sectors (2015-2018) i.e.; Paba (Rajshahi), Ai-Hai(Nawabganj),Niamatpur (Rajshahi), Durgapur (Rajshahi) and Katakhali (Rajshahi) to provide electricity to the different level of consumers. In this chapter we discuss about Energy Purchase and purchase cost from Public sector. For three years (2015-2018), also explain about different Grid and Substations, Supply, System Losses, KWh Sold to the consumers.

In July 2015 calculated total purchased KWh is 16,332,014 unit where Paba purchased3,8,000.00 Unit, Tanor purchased 2,066,826 Unit, Durgapur-1 purchased 3,326,101 Unit,Charghat purchased1,0.000 Unit, Ai-Hai purchased 2,103,000Unit,Kaligonj

purchased1,033,414Unit,Mohonpur purchased2,894,000Unit,Durgapur-2 purchased 1,108,700 Unit. Total Sold KWh is 13,968,746 Unit.Total System Loss is 14.47 %.
In August 2015 calculated total purchased KWh is 16,473,571 unit where Paba purchased3,940.000 Unit, Tanor purchased 2,084,606 Unit, Durgapur-1 purchased 3,421,998 Unit,Charghat purchased1,0.000 Unit, Ai-Hai purchased 2,019,000,Unit,Kaligonj purchased 1,042,302 Unit,Mohonpur purchased 2,825,000 Unit, Durgapur-2 purchased 1,140,665 Unit. Total Sold KWh is 14,639,589, Unit.Total System Loss is 11.13 %.

In September 2015 calculated total purchased KWh is 16,800,954 unit where Paba purchased3,950,000Unit, Tanor purchased 2,166,880 Unit, Durgapur-1 purchased 3,348,476 Unit,Charghat purchased 0.000 Unit, Ai-Hai purchased 2,270,000 Unit,Kaligonj purchased 1,083,440 Unit,Mohonpur purchased 2,866,000 Unit,Durgapur-2 purchased 1,116,158 Unit.
Total Sold KWh is 15,250,393, Unit.Total System Loss is 9.23 %.

In October 2015 calculated total purchased KWh is 21,446,100 unit where Paba purchased4,035,000,Unit, Tanor purchased 3,767,400, Unit, Durgapur-1 purchased 3,215,955 Unit,Charghat purchased ,0.000 Unit, Ai-Hai purchased 4,744,000 Unit, Kaligonj purchased1,883,720 Unit,Mohonpur purchased 2,728,000,Unit,Durgapur-2 purchased 1,071,985, Unit,Total Sold KWh is 19,756,290 Unit.Total System Loss is 7.88 %.

In November 2015 calculated total purchased KWh is 13,851,980 unit where, Pabapurchased 2,928,000 Unit, Tanor purchased 2,083,707 Unit, Durgapur-1 purchased 2,361,315 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,646,000 Unit, Kaligonj purchased 1,041,853 Unit, Mohonpur purchased 2,004,000 Unit,Durgapur-2 purchased 787,105, Unit,Total Sold KWh is 12,438,383 Unit.Total System Loss is 10.21 %.

In December 2015 calculated total purchased KWh is 14,195,842 unit where, Pabapurchased 2,834,000 Unit, Tanor purchased 2,402,963 Unit, Durgapur-1 purchased 2,419,798 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,474,000 Unit, Kaligonj purchased 1,201,482 Unit, Mohonpur purchased 2,057,000 Unit,Durgapur-2 purchased 806,599 Unit,Total Sold KWh is 12,783,533 Unit, Total System Loss is 9.95 %.

In January 2016 calculated total purchased KWh is 17,272,483 unit where, Pabapurchased 3,135,000 Unit, Tanor purchased 3,892,475 Unit, Durgapur-1 purchased 2,515,869 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,314,000 Unit, Kaligonj purchased 936,000 Unit, Mohonpur purchased 2,006,000 Unit,Durgapur-2 purchased 838,623 Unit, Mundumala purchased 634,516 Unit. Total Sold KWh is 15,533,285 Unit.Total System Loss is 10.07 %.

In February 2016 calculated total purchased KWh is 20,889,147 unit where, Pabapurchased 3,508,000 Unit, Tanor purchased 3,813,534 Unit, Durgapur-1 purchased 2,766,950 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 4,032,000 Unit, Kaligonj purchased 1,260,000 Unit, Mohonpur purchased 2,915,000 Unit,Durgapur-2 purchased 1,261,343 Unit, Mundumala purchased 1,244,401 Unit, Gulai purchased 87,919 Unit. Total Sold KWh is 19,017,605 Unit.Total System Loss is 8.96 %.

In March 2016 calculated total purchased KWh is 27,720,287 unit where, Pabapurchased 4,581,000 Unit, Tanor purchased 4,870,051 Unit, Durgapur-1 purchased 3,840,057 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 4,274,000 Unit, Kaligonj purchased 1,746,000 Unit, Mohonpur purchased 3,876,000 Unit,Durgapur-2 purchased 1,920,030 Unit, Mundumala purchased 1,609,041 Unit, Gulai purchased 1,004,108 Unit. Total Sold KWh is 27,720,287 Unit.Total System Loss is 10.22 %.

In April 2016 calculated total purchased KWh is 23,965,422 unit where, Pabapurchased 4,497,000 Unit, Tanor purchased 3,169,598 Unit, Durgapur-1 purchased 4,040,594 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,139,000 Unit, Kaligonj purchased 1,440,000 Unit, Mohonpur purchased 3,530,000 Unit,Durgapur-2 purchased 2,020,297 Unit, Mundumala purchased 1,290, 522 Unit, Gulai purchased 838,411 Unit. Total Sold KWh is 20,354,449 Unit.Total System Loss is 15.07 %.

In May 2016 calculated total purchased KWh is 16,879,129 unit where, Pabapurchased 3,547,000 Unit, Tanor purchased 2,062,798 Unit, Durgapur-1 purchased 3,492,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,044,000 Unit, Kaligonj purchased 684,000 Unit, Mohonpur purchased 2,765,000 Unit,Durgapur-2 purchased 1,173,059 Unit, Mundumala purchased 696,002 Unit, Gulai purchased 415,270 Unit. Total Sold KWh is 16,310,872 Unit.Total System Loss is 3.37 %.

In June 2016 calculated total purchased KWh is 20,126,267 unit where, Pabapurchased 4,068,000 Unit, Tanor purchased 2,182,661 Unit, Durgapur-1 purchased 4,000,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,697,000 Unit, Kaligonj purchased 936,000 Unit, Mohonpur purchased 3,387,000 Unit,Durgapur-2 purchased 1,325,015 Unit, Mundumala purchased 935,938 Unit, Gulai purchased 594,653 Unit. Total Sold KWh is 17,473,894 Unit.Total System Loss is 13.18 %.

In July 2016 calculated total purchased KWh is 18,802,585 unit where, Pabapurchased 3,859,000 Unit, Tanor purchased 2,108,000 Unit, Durgapur-1 purchased 3,680,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,465,000 Unit, Kaligonj purchased 882,000 Unit, Mohonpur purchased 3,035,000 Unit,Durgapur-2 purchased 1,332,064 Unit, Mundumala purchased 864,250 Unit, Gulai purchased 577,271 Unit. Total Sold KWh is 17,020,194 Unit.Total System Loss is 9.48 %.

In August 2016 calculated total purchased KWh is 18,672,637 unit where, Pabapurchased 3,837,000 Unit, Tanor purchased 1,937,000 Unit, Durgapur-1 purchased 3,837,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,443,000 Unit, Kaligonj purchased 900,000 Unit, Mohonpur purchased 2,942,000 Unit,Durgapur-2 purchased 1,374,000 Unit, Mundumala purchased 735,700 Unit, Gulai purchased 666,937 Unit. Total Sold KWh is 17,052,312 Unit.Total System Loss is 8.68 %.

In September 2016 calculated total purchased KWh is 17,994,621 unit where, Pabapurchased 3,826,000 Unit, Tanor purchased 1,915,000 Unit, Durgapur-1 purchased 3,671,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,295,000 Unit, Kaligonj purchased 864,000 Unit, Mohonpur purchased 2,849,000 Unit,Durgapur-2 purchased 1,321,000 Unit, Mundumala purchased 687,530 Unit, Gulai purchased 566,091 Unit. Total Sold KWh is 16,604,772 Unit.Total System Loss is 7.72 %.

In October 2016 calculated total purchased KWh is 19,908,260 unit where, Pabapurchased 3,572,000 Unit, Tanor purchased 2,246,000 Unit, Durgapur-1 purchased 3,491,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,753,000 Unit, Kaligonj purchased 918,000 Unit, Mohonpur purchased 2,953,000 Unit,Durgapur-2 purchased 1,227,000 Unit, Mundumala purchased 1,010,860 Unit, Gulai purchased 737,400 Unit. Total Sold KWh is 18,273,119 Unit.Total System Loss is 8.21 %.

In November 2016 calculated total purchased KWh is 15,521,700 unit where, Pabapurchased 2,661,000 Unit, Tanor purchased 1,842,000 Unit, Durgapur-1 purchased 2,588,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,925,000 Unit, Kaligonj purchased 702,000 Unit, Mohonpur purchased 2,280,000 Unit,Durgapur-2 purchased 930,000 Unit, Mundumala purchased 853,270 Unit, Gulai purchased 740,430 Unit. Total Sold KWh is 14,246,711 Unit.Total System Loss is 8.21 %.

In December 2016 calculated total purchased KWh is 16,054,301 unit where, Pabapurchased 2,623,000 Unit, Tanor purchased 2,677,000 Unit, Durgapur-1 purchased 2,677,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,512,000 Unit, Kaligonj purchased 810,000 Unit, Mohonpur purchased 2,311,000 Unit,Durgapur-2 purchased 980,000 Unit, Mundumala purchased 828,860 Unit, Gulai purchased 778,441 Unit. Total Sold KWh is 14,646,997 Unit.Total System Loss is 8.77 %.

In January 2017 calculated total purchased KWh is 20,789,929 unit where, Pabapurchased 2,747,000 Unit, Tanor purchased 4,191,000 Unit, Durgapur-1 purchased 2,825,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,985,000 Unit, Kaligonj purchased 1,170,000 Unit, Mohonpur purchased 2,268,000 Unit,Durgapur-2 purchased 987,000 Unit, Mundumala purchased 1,320,550 Unit, Gulai purchased 1,296,379 Unit. Total Sold KWh is 18,473,164 Unit.Total System Loss is 17.14 %.

In February 2017 calculated total purchased KWh is 22,343,280 unit where, Paba-1 purchased 2,712,000 Unit, Tanor purchased 3,871,000 Unit, Durgapur-1 purchased 2,843,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 4,196,000 Unit, Kaligonj purchased 1,296,000 Unit, Mohonpur purchased 2,994,000 Unit,Durgapur-2 purchased 1,171,000 Unit, Mundumala purchased 1,327,140 Unit, Gulai purchased 1,321,970 Unit,Paba-2 purchased 611,170 Unit. Total Sold KWh is 20,937,742 Unit.Total System Loss is 6.29 %.

In March 2017 calculated total purchased KWh is 25,775,512 unit where, Paba-1 purchased 3,622,000 Unit, Tanor purchased 4,412,000 Unit, Durgapur-1 purchased 3,428,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,954,000 Unit, Kaligonj purchased 1,470,000 Unit, Mohonpur purchased 3,784,000 Unit,Durgapur-2 purchased 1,536,000 Unit,

Mundumala purchased 1,286,425 Unit, Gulai purchased 1,203,087 Unit,Paba-2 purchased 1,074,000 Unit. Total Sold KWh is 23,225,367 Unit.Total System Loss is 9.89 %.

In April 2017 calculated total purchased KWh is 27,177,302 unit where, Paba-1 purchased 3,958,000 Unit, Tanor purchased 3,898,000 Unit, Durgapur-1 purchased 3,977,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 4,160,000 Unit, Kaligonj purchased 1,584,000 Unit, Mohonpur purchased 3,987,000 Unit,Durgapur-2 purchased 1,752,000 Unit, Mundumala purchased 1,235,044 Unit, Gulai purchased 1,434,258 Unit,Paba-2 purchased 1,192,000 Unit. Total Sold KWh is 24,245,665 Unit.Total System Loss is 10.79 %.

In May 2017 calculated total purchased KWh is 19,161,187 unit where, Paba-1 purchased 3,540,000 Unit, Tanor purchased 2,118,000 Unit, Durgapur-1 purchased 3,020,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,412,000 Unit, Kaligonj purchased 810,000 Unit, Mohonpur purchased 3,184,000 Unit,Durgapur-2 purchased 1,521,000 Unit, Mundumala purchased 579,796 Unit, Gulai purchased 674,391 Unit,Paba-2 purchased 1,302,000 Unit. Total Sold KWh is 16,986,257 Unit.Total System Loss is 11.35 %.

In June 2017 calculated total purchased KWh is 22,597,943 unit where, Paba-1 purchased 3,905,000 Unit, Tanor purchased 2,554,000 Unit, Durgapur-1 purchased 3,451,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,598,000 Unit, Kaligonj purchased 684,000 Unit, Mohonpur purchased 3,545,000 Unit,Durgapur-2 purchased 1,687,000 Unit, Mundumala purchased 813,284 Unit, Gulai purchased 855,659 Unit,Paba-2 purchased 1,505,000 Unit. Total Sold KWh is 20,038,902 Unit.Total System Loss is 11.32 %.

In July 2017 calculated total purchased KWh is 22222677 unit where, Paba-1 purchased 3,601,000 Unit, Tanor purchased 2,701,000 Unit, Durgapur-1 purchased 3,026,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,844,000 Unit, Kaligonj purchased 702,000 Unit, Mohonpur purchased 3,585,000 Unit,Durgapur-2 purchased 1,594,000 Unit, Mundumala purchased 954,398 Unit, Gulai purchased 889,279 Unit,Paba-2 purchased 1,326,000 Unit. Total Sold KWh is 20,720,673 Unit.Total System Loss is 6.76 %.

In August 2017 calculated total purchased KWh is 21167367 unit where, Paba-1 purchased 3,488,000 Unit, Tanor purchased 2,564,000 Unit, Durgapur-1 purchased 2,901,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,844,000 Unit, Kaligonj purchased

846,000 Unit, Mohonpur purchased 3,291,000 Unit,Durgapur-2 purchased 1,538,000 Unit, Mundumala purchased 780,629 Unit, Gulai purchased 581,738 Unit,Paba-2 purchased 1,333,000 Unit. Total Sold KWh is 18,864,648 Unit.Total System Loss is 10.88 %.

In September 2017 calculated total purchased KWh is 21,369,856 unit where, Paba-1 purchased 3,570,000 Unit, Tanor purchased 2,504,000 Unit, Durgapur-1 purchased 3,135,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,386,000 Unit, Kaligonj purchased 756,000 Unit, Mohonpur purchased 3,488,000 Unit,Durgapur-2 purchased 1,701,000 Unit, Mundumala purchased 787,448 Unit, Gulai purchased 746,408 Unit,Paba-2 purchased 1,296,000 Unit.Total Sold KWh is 19,274,892 Unit.Total System Loss is 9.80 %.

In October 2017 calculated total purchased KWh is 18,633,848 unit where, Paba-1 purchased 3,295,000 Unit, Tanor purchased 2,148,000 Unit, Durgapur-1 purchased 2,628,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,397,000 Unit, Kaligonj purchased 738,000 Unit, Mohonpur purchased 3,221,000 Unit,Durgapur-2 purchased 15,160,000 Unit, Mundumala purchased 691,983 Unit, Gulai purchased 738,865 Unit,Paba-2 purchased 1,260,000 Unit. Total Sold KWh is 18,336,965 Unit.Total System Loss is 1.59 %.

In November 2017 calculated total purchased KWh is 15,273,781 unit where, Paba-1 purchased 2,515,000 Unit, Tanor purchased 1,807,000 Unit, Durgapur-1 purchased 1,894,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,311,000 Unit, Kaligonj purchased 792,000 Unit, Mohonpur purchased 2,466,000 Unit,Durgapur-2 purchased 1,090,000 Unit, Mundumala purchased 569,686 Unit, Gulai purchased 766,095 Unit,Paba-2 purchased 1,063,000 Unit. Total Sold KWh is 15,133,495 Unit.Total System Loss is 0.92 %.

In December 2017 calculated total purchased KWh is 16,460,225 unit where, Paba-1 purchased 2,446,000 Unit, Tanor purchased 2,403,000 Unit, Durgapur-1 purchased 1,859,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,746,000 Unit, Kaligonj purchased 666,000 Unit, Mohonpur purchased 255,200 Unit,Durgapur-2 purchased 1,112,000 Unit, Mundumala purchased 719,915 Unit, Gulai purchased 729,310 Unit,Paba-2 purchased 1,227,000 Unit. Total Sold KWh is 14,536,666 Unit.Total System Loss is 11.69 %.

In January 2018 calculated total purchased KWh is 21,767,916 unit where, Paba-1 purchased 248,700 Unit, Tanor purchased 4,024,000 Unit, Durgapur-1 purchased 2,042,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 4,550,000 Unit, Kaligonj purchased 1,098,000 Unit, Mohonpur-1 purchased 2,523,000 Unit,Durgapur-2 purchased 1,207,000 Unit, Mundumala purchased 1,333,584 Unit, Gulai purchased 1,334,332 Unit,Paba-2 purchased 1,169,000 Unit. Total Sold KWh is 19,324,632 Unit.Total System Loss is 11.22 %.

In February 2018 calculated total purchased KWh is 22,460,512 unit where, Paba-1 purchased 2,461,000 Unit, Tanor purchased 4,043,000 Unit, Durgapur-1 purchased 2,184,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 4,518,000 Unit, Kaligonj purchased 1,188,000 Unit, Mohonpur purchased 1,792,000 Unit,Durgapur-2 purchased 1,345,000 Unit, Mundumala purchased 1,298,679 Unit, Gulai purchased 1,352,083 Unit,Paba-2 purchased 1,231,000 Unit,Mohonpur-2 purchased 1,047,750 Unit. Total Sold KWh is 19,324,632 Unit.Total System Loss is 11.22 %.

In March 2018 calculated total purchased KWh is 31,989,268 unit where, Paba-1 purchased 3,934,000 Unit, Tanor purchased 5,334,000 Unit, Durgapur-1 purchased 3,461,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 5,745,000 Unit, Kaligonj purchased 1,800,000 Unit, Mohonpur purchased 2,256,000Unit,Durgapur-2 purchased 1,903,000 Unit, Mundumala purchased 1,895,930 Unit, Gulai purchased 2,041,338 Unit,Paba-2 purchased 1,507,000 Unit,Mohonpur-2 purchased 2,112,000 Unit. Total Sold KWh is 27,745,664 Unit.Total System Loss is 13.27 %.

In April 2018 calculated total purchased KWh is 25,135,325 unit where, Paba-1 purchased 3,733,000 Unit, Tanor purchased 4,041,000 Unit, Durgapur-1 purchased 3,160,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 3,660,000 Unit, Kaligonj purchased 1,188,000 Unit, Mohonpur purchased 2,027,000 Unit,Durgapur-2 purchased 1,846,000 Unit, Mundumala purchased 1,211,058 Unit, Gulai purchased 1,125,017 Unit,Paba-2 purchased 1,420,000 Unit,Mohonpur-2 purchased 1,724,250 Unit. Total Sold KWh is 23,373,291 Unit.Total System Loss is 7.01 %.

In May 2018 calculated total purchased KWh is 21,426,750 unit where, Paba-1 purchased 3,718,000 Unit, Tanor purchased 2,718,000 Unit, Durgapur-1 purchased 2,943,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 2,762,000 Unit, Kaligonj purchased

1,026,000 Unit, Mohonpur purchased 1,889,000 Unit,Durgapur-2 purchased 1,729,000 Unit, Mundumala purchased 759,680 Unit, Gulai purchased 759,320 Unit,Paba-2 purchased 1,481,000 Unit,Mohonpur-2 purchased 1,641,750 Unit. Total Sold KWh is 18,482,639 Unit.Total System Loss is 13.74 %.

In June 2018 calculated total purchased KWh is 24,618,197 unit where, Paba-1 purchased 3,997,000 Unit, Tanor purchased 2,945,000 Unit, Durgapur-1 purchased 3,475,000 Unit, Charghat purchased ,0.000 Unit, Ai-Hai purchased 375,000 Unit, Kaligonj purchased 1,152,000 Unit, Mohonpur purchased 2,196,000 Unit,Durgapur-2 purchased 1,966,000 Unit, Mundumala purchased 930,240 Unit, Gulai purchased 961,957 Unit,Paba-2 purchased 1,529,000 Unit,Mohonpur-2 purchased 1,716,000 Unit. Total Sold KWh is 21,837,750 Unit.Total System Loss is 11.29 %.

All of the month energy import analysis showed in the Tables. The demand of the electricity varies with different season in Bangladesh, like as winter, summer, and rainy season. We try to show relevant analysis for winter and summer seasons, which is high import from previous month and system loss is also comparatively high and it's an effect of summer season because in summer the energy consumption of different consumers is high. On the other hand, the energy import for the month of November, December, January and February are low to compare as other months of the year. It is seasonal effect of winter, when the domestic consumer consume lower amount of electricity and same as some industries are consume lower amount of energy as per demand of production. The energy import demand is high for the month of March, April, May and June.

4.4 Graphical Analysis

From the graphical representation of above figure, the energy import is comparatively high in March, April, May, and June every year. On the other hand, energy import is comparatively low in November, December, January and February. Season to season the energy import and supply to the consumer may vary.According to graph, behavior of energy import of RPBS is approximately same. In January,2015 energy import is 1.41 MU and energy import in June is 2.81 MU and where 1.40 MU difference from January to June.

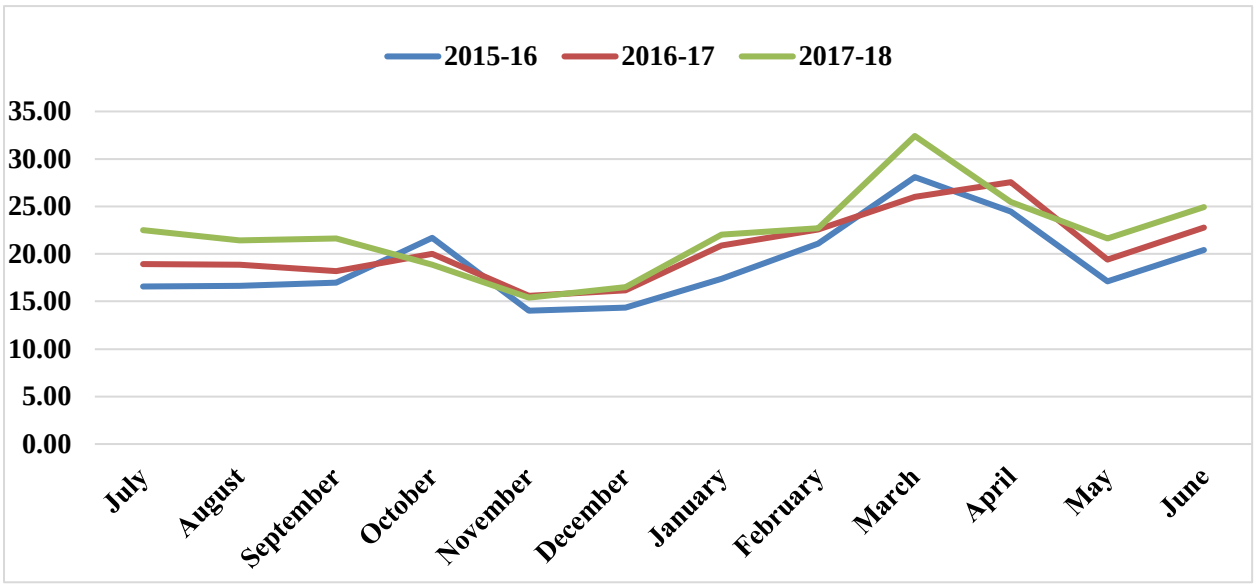


Fig 4.1: Monthly Import Energy (MU) of RPBS, 2015-18

It is possible to control load demand by proper load management, encouraging Independent Power Producers (IPP) and reducing transmission loss. Initiative should be taken to develop skilled manpower required for the power sector considering incorporating IPP and local Government (GOV), central GOV may take the responsibility to increase the power generation and ensure its proper use in Bangladesh

4.5Substation of RPBS

There are 10 substations under RPBS which are connected with different grids. The energy storage and consumption different form one substation to another substation based on the location, consumer demand, industrial zone, transmission distance and many factors. The imported energy may reduce during the transmission process due to system loss. RPBS all substation names listed below and the 33 KV consumers are indicated with star sign.

List: Sub-stations of RPBS

Paba-1	Paba-2
Durgapur-1	Durgapur-2
Mohonpur	Ai-Hai
Tanor	Mundumala
Kaligonj	Gulai

4.6 System Losses

Table 4.2: System Loss of RPBS in 2015-16

Month	Grid wise import (MU)	Substation Wise Import (MU)	KWh sold at Consumer end (MU)	Grid system loss (MU)	Sub-station system loss (MU)	Grid to 33 KV line loss (MU)
July	16.57	16.33	13.96	2.61	2.37	0.24
August	16.65	16.47	14.63	2.01	1.84	0.17
September	17.00	16.80	15.24	1.76	1.56	0.20
October	21.72	21.45	19.75	1.97	1.70	0.27
November	14.03	13.85	12.43	1.60	1.42	0.18
December	14.36	14.20	12.78	1.58	1.42	0.16
January	17.41	17.27	15.53	1.89	1.75	0.14
February	21.11	20.89	19.01	2.10	1.88	0.22
March	28.09	27.72	24.88	3.21	2.84	0.37
April	24.49	23.97	20.34	4.15	3.62	0.53
May	17.11	16.88	16.30	0.81	0.58	0.23
June	20.39	20.13	17.46	2.93	2.66	0.26

Table 4.3: System Loss of RPBS in 2016-17

Month	Grid wise import (MU)	Substation Wise Import (MU)	KWh sold at Consumer end (MU)	Grid system loss (MU)	Sub-station system loss (MU)	Grid to 33 KV line loss (MU)
July	18.97	18.80	17.01	1.96	1.79	0.17
August	18.86	18.67	17.04	1.82	1.63	0.19
September	18.17	17.99	16.60	1.58	1.40	0.18
October	20.05	19.91	18.26	1.78	1.64	0.14
November	15.60	15.52	14.24	1.36	1.29	0.08
December	16.15	16.05	14.64	1.51	1.41	0.09
January	20.92	20.79	18.47	2.45	2.32	0.13
February	22.59	22.34	20.93	1.66	1.41	0.24
March	25.99	25.78	23.22	2.77	2.56	0.22
April	27.56	27.18	24.24	3.32	2.94	0.38
May	19.38	19.16	16.98	2.40	2.18	0.22
June	22.80	22.60	20.03	2.77	2.57	0.20

Table 4.4: System Loss of RPBS in 2017-18

Month	Grid wise import (MU)	Substation Wise Import (MU)	KWh sold at Consumer end (MU)	Grid system loss (MU)	Sub-station system loss (MU)	Grid to 33 KV line loss (MU)
July	18.97	18.80	17.01	1.96	1.79	0.17
August	18.86	18.67	17.04	1.82	1.63	0.19
September	18.17	17.99	16.60	1.58	1.40	0.18
October	20.05	19.91	18.26	1.78	1.64	0.14
November	15.60	15.52	14.24	1.36	1.29	0.08
December	16.15	16.05	14.64	1.51	1.41	0.09
January	20.92	20.79	18.47	2.45	2.32	0.13
February	22.59	22.34	20.93	1.66	1.41	0.24
March	25.99	25.78	23.22	2.77	2.56	0.22
April	27.56	27.18	24.24	3.32	2.94	0.38
May	19.38	19.16	16.98	2.40	2.18	0.22
June	22.80	22.60	20.03	2.77	2.57	0.20

In Table 4.2: Grid system loss= Grid wise import energy to KWh sold energy at Consumer end

Sub-station system loss= Substation Wise Import energy to KWh sold energy at Consumer end

Grid to Sub - station loss= Grid wise import energy to Substation Wise Import energy

As we found from the table, Total loss of energy in Summer is much higher than winter. Heat increases the line resistance and resistance makes the amount of loss higher. 33 KV Line losses are quite similar but sub-station system losses differ hugely. Where form October, 2015 to January, 2016; during the winter season, system losses were below than 2 MU. In July, 2015 and June, 2016; both of these in summer, we found the total system loss about 3 times higher than winter. PBS says illegal use of electricity is also responsible. Illegal use of electricity rise in summer very badly. That's why; the loss is very much in summer. PBS try to stop the illegal use of electricity but public awareness can stop this "Thief Loss". PBS also has some loss for storms during Summer and Rainy season.

4.7 Graphical Representation

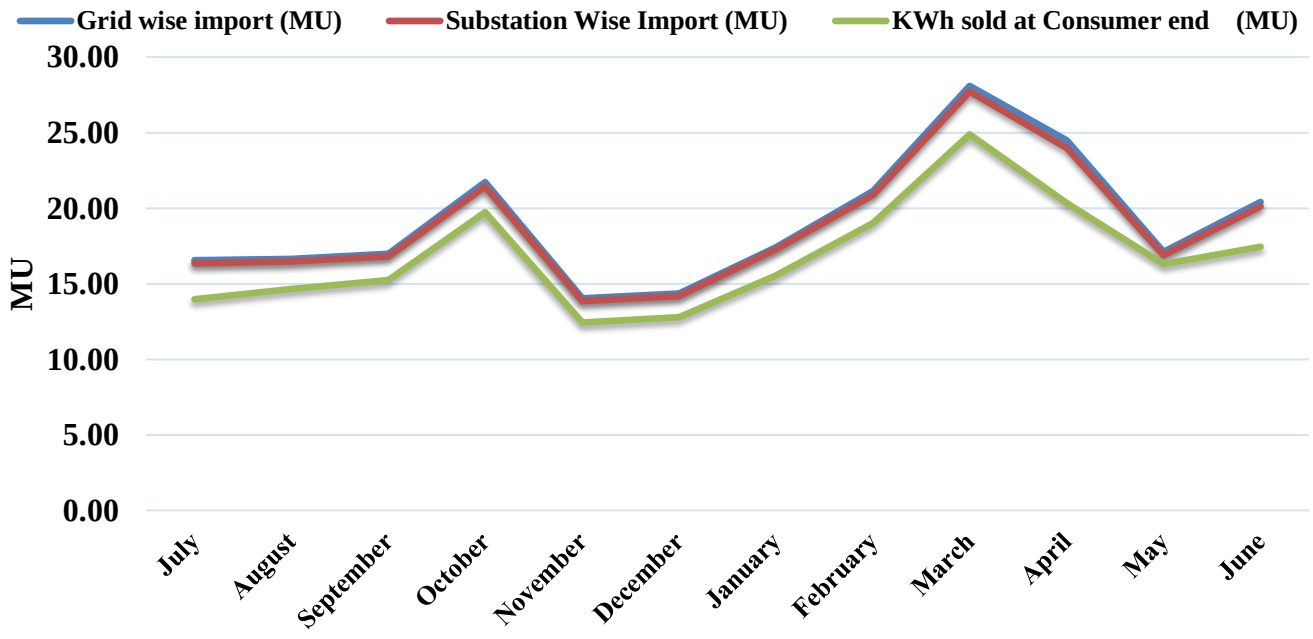


Fig 4.2: Grid and Sub-station wise import with Unit sold at consumer end 2015-16.

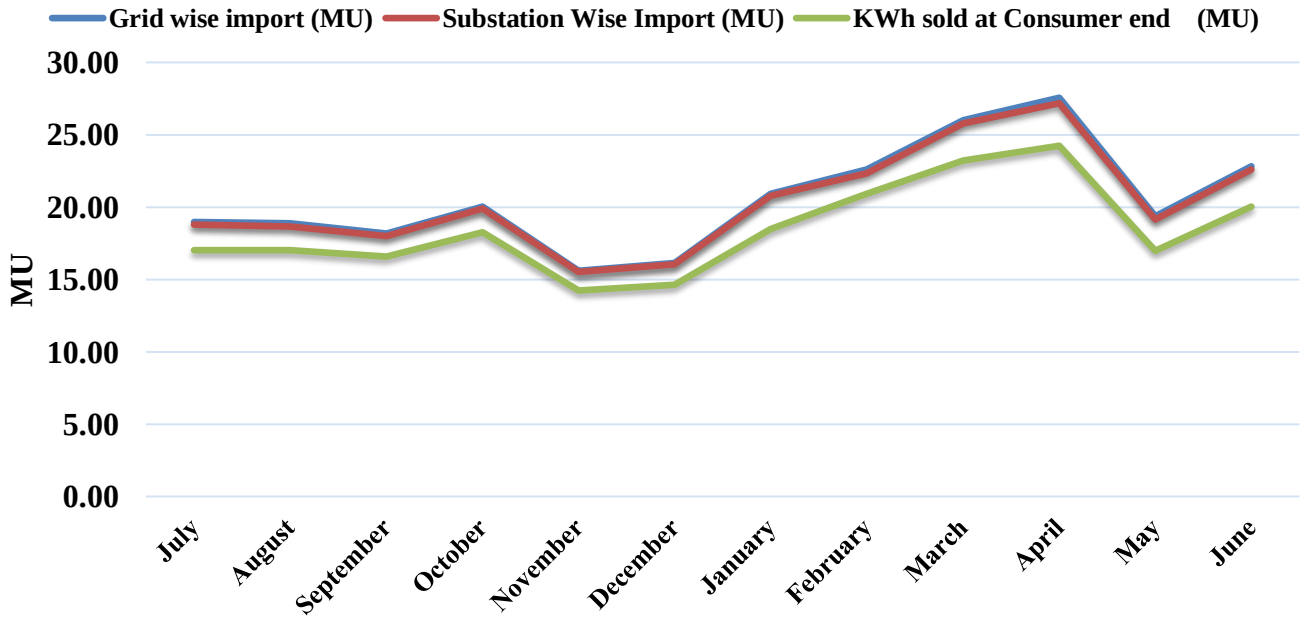


Fig 4.3: Grid and Sub-station wise import with Unit sold at consumer end 2016-17.

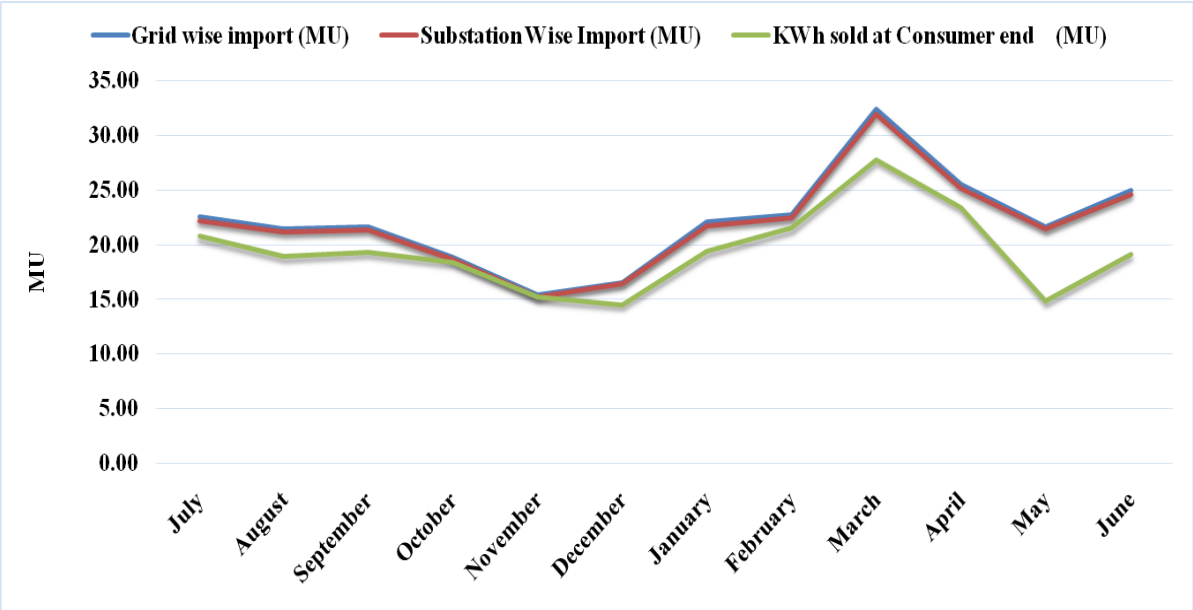


Fig 4.4: Grid and Sub-station wise import with Unit sold at consumer end 2017-18.

4.8 Load Factor

Load factor is defined as the ratio of the average load over a given period of time to the maximum demand (peak load) occurring in that period. In other words, the load factor is the ratio of energy consumed in a given period of the times in hours to the peak load which has occurred during that particular period.

A load factor is simply the energy load on a system compared to its maximum potential or peak load for a period of time.

Load Factor:2015-16

Month	Load Factor
July	41.69
August	52.84
September	55.82
October	55.54
November	60.12
December	54.28
January	52.29
February	63.58
March	60.28
April	42.60
May	47.33
June	85.15

Load Factor 2016-17

Month	Load Factor
July	54.76
August	52.92
September	53.36
October	51.06
November	50.50
December	54.48
January	55.33
February	55.79
March	54.9
April	55.37
May	47.46
June	59.79

Load Factor 2017-18

Month	Load Factor
July	52.97
August	52.66
September	55.22
October	87.49
November	51.01
December	55.21
January	56.93
February	58.05
March	63.7
April	53.25
May	53.36
June	61

Graphical Analysis:

Fig 4.5.: Load factor of RPBS in 2015-2018

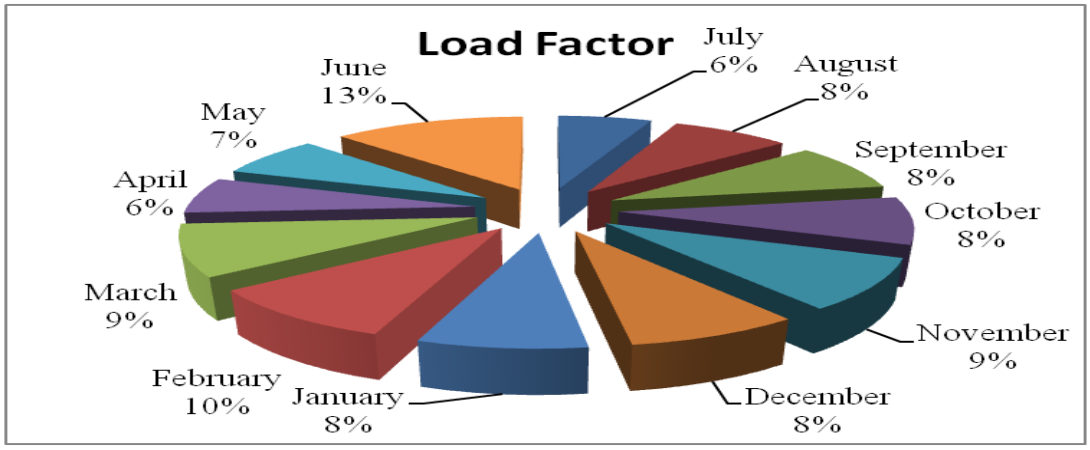


Fig 4.6: Load factor of RPBS in 2016-2017

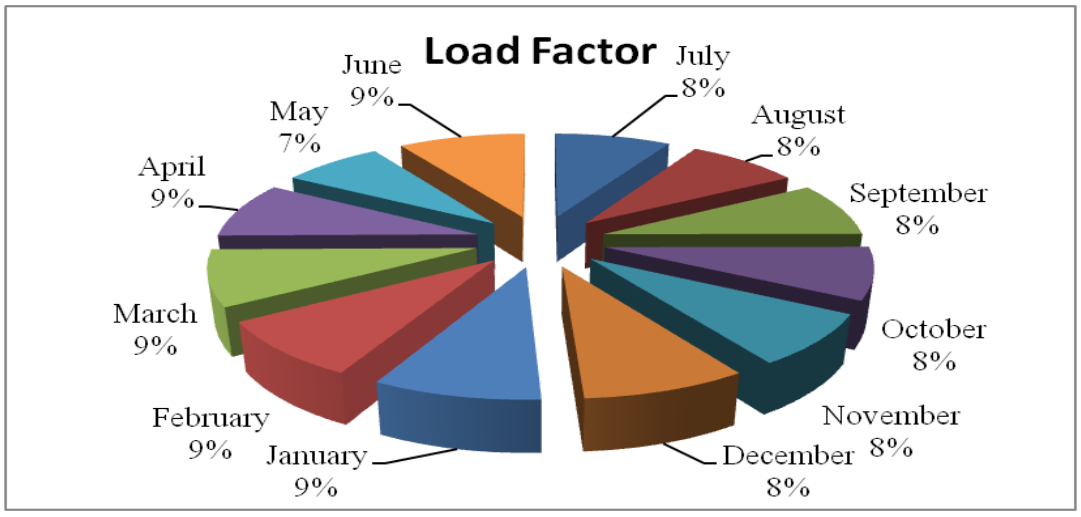
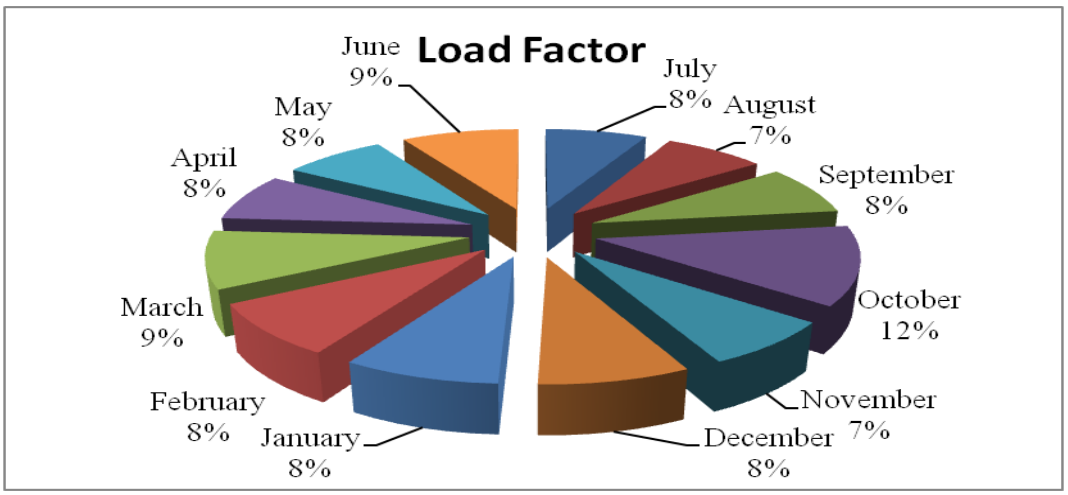


Fig 4.5: Load factor of RPBS in 2017-2018



Here, RPBS maintain a constant range of load factor of 7 to 9% from 2015 to 2018 in average. But some month has higher percentage value than the average. As figure shown, June 2016 and October 2017 have higher percentage only. RPBS need to maintain this percentage. It is highly recommended that, load factor should be high and assure proper distribution of electricity.

4.9Summary

It is possible to control load demand by proper load management, encouraging Independent Power Producers (IPP) and reducing transmission loss. The Initiative should be taken to develop skilled manpower required for the power sector considering incorporating IPP and local Government (GOV), central GOV, private sector may take the responsibility to increase the power generation and ensure its proper use in Bangladesh. The process of energy import and distribution of RPBSis better from other PBS.

CHAPTER 5

CONSUMERSAND REVENUE OF RAJSHAHI PBS

5.1 Introduction

The power industry is one of the key industries in each country because today the production of all goods and the consumption of many are impossible without electric power. Utilizing many services like lighting, conditioning, freezing and many other services depends on electricity.

5.2 Description of Consumer Class

There are eight types of consumer in every PBS under BREB based on their demand and category of energy use. Those classes are bellows,

5.2.1. Domestic Consumers

Domestic consumers are those who consumed electrical energy in their resident through household equipment. These consumers are classified based on an amount of their consumed unit (kWh) energy. These consumers use single phase line.

Domestic consumers are classified into eight slabs. These are

- MinimumKWh
- 0-50 KWh
- 0-75 KWh
- 76-200 KWh
- 201-300 KWh
- 301-400 KWh
- 401-600 KWh
- Above 600 KWh

5.2.2. Commercial Consumers

Commercial consumers are actually related to business or commercial activities. Commercial consumers have higher electric demand than Domestic consumers. But they use single phase line as Domestic consumers.

Types of consumer under this category will be as follows,
Hat- bazaar, Shop (including tailoring shop),Commercial Enterprise, Government and Semi-Government Office, Private Clinic, Practicing chamber, Community Center or Hall, Rest House, Cinema Hall, Mobile Tower, Petrol/CNG Pump Station.

5.2.3. Charitable Institute

Charitable institutes are depend on the charity of the Government or any private sector. Charitable institutes may any educational, religious or social development institutions.

Types of consumer under this category will be as follows,
Mashed, Temple, Church, Pagoda, School, College, Madrasha, Club, Orphanage, Charitable institution (Not complex), Charitable dispensary, Crippled rehabilitation center etc.

5.2.4 Irrigation

Basically, all kinds of water pumps are used to irrigate in agriculture fields in this class. They may be single or three phase in connection.

5.2.5 General power

GenerallyPalliBidyutSamity will implement secondary metering (L.T. metering) for such types of consumer where supply voltage will be 230/400 V and power will be 50KW.
All consumers like industries and industrial complex, Government office complex, Government and charitable hospital complex, Charitable, religious and education complex, Small Industries related to production or fabrication, Union Paribar Kalian Kendra, Cantonment, air or naval base/installation, Police station, Camp, Outpost etc. and BDR Camp, BOP Installation etc.

5.2.6 Large power

Generally,PalliBidyutSamity will implement primary metering (H.T metering) connection for such type of the consumer where Supply voltage will be 6350/11000 voltage. And power may be the same as general power but in these case connections will three phases.

All types of industries and industrial complex, Government office complex, Government and charitable hospital complex, Charitable, religious and education complex, Small Industries related to production or fabrication, Union Paribar Kalian Kendra, Cantonment, air or naval base/installation etc. Police station, Camp, Outpost etc. and BDR Camp, BOP Installation etc.

5.2.7 33KV

33KV consumers are mostly industries. They have an individual sub-station for consuming energy. RPBS have no consumer in category.

5.2.8 Street Lights

Consumed electric power by street lights is in this category. Street light is a raised source of light on the edge of a road inthe rural area. These helps todevelop the transport facilities of a village.

5.3 Description of Table and its Analysis

The making of revenue sheet, we use Electricity rate, used electricity in KWh, Consumer class, and revenue in monthly and finally we calculate it in yearly. In analysis part, we want to show that rate changing of electricity, Number of consumers and its increment or decrement in monthly, used electricity in KWh and its monthly status and revenue increment or decrement in monthly.

From this analysis we will see that the present condition of the revenue ofBREB.

Table 5.1: Monthly Revenue Data of RPBS, 2015-16.

Customer Class	July				August					
	Tariff Rate	Unit	Consumers	Revenue	Unit	Inc. %	Consumers	Inc. %	Revenue	Inc. %
Domestic										
Minimum		123898	8453	760770	104555	-15.61	7286	-13.81	655740	-13.81
0-50	3.82	2602421	53556	11280148	2658214	2.14	54378	1.53	11513852	2.07
0-75	3.87	2726047	36999	11474777	3091800	13.42	42809	15.70	13035491	13.60
76-200	5.01	2996501	24660	15628970	3139498	4.77	22120	-10.30	16281885	4.18
201-300	5.19	588671	2205	3110327	587361	-0.22	2120	-3.85	3101404	-0.29
301-400	5.42	135627	374	744448	146307	7.87	432	15.51	803784	7.97
401-600	8.51	25909	59	221961	43747	68.85	99	67.80	374852	68.88
600++	9.93	8242	13	82168	27446	233.00	44	238.46	273954	233.41
Total	**41.75**	**9207316**	**126319**	**43303569**	**9798928**	**6.43**	**129288**	**2.35**	**46040962**	**6.32**
Commercial	9.58	540127	5080	5417562	555670	2.88	5182	2.01	5564993	2.72
Charitable	4.98	200494	2698	1109404	203046	1.27	2738	1.48	1111121	0.15
Irrgation	3.85	1057323	2537	4147770	1050981	-0.60	2513	-0.95	4137717	-0.24
General Power	7.42	627796	810	4955784	534264	-14.90	815	0.62	4299307	-13.25
Large Power	7.32	2315115	35	17717937	2480020	7.12	35	0.00	18808638	6.16
33KV	0	0	0	0	0	0.00	0	0.00	0	0.00
Street Light	6.93	11500	109	104543	8050	-30.00	109	0.00	83753	-19.89
Grand Total	**40.08**	**13959671**	**137588**	**76756569**	**14630959**	**4.809**	**140680**	**2.25**	**80046491**	**4.29**

Customer Class	September						October					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	87915	-15.92	6171	-15.30	555390	-15.30	111273	26.57	7250	17.49	652500	17.49
0-50	2847255	7.11	58379	7.36	12335989	7.14	2984948	4.84	60573	3.76	12916826	4.71
0-75	3364660	8.83	45583	6.48	14160809	8.63	3200733	-4.87	44286	-2.85	13269935	-6.29
76-200	3294805	4.95	20031	-9.44	17007748	4.46	3265960	-0.88	21289	6.28	17319259	1.83
201-300	675036	14.93	2586	21.98	3568087	15.05	615734	-8.79	2769	7.08	3369559	-5.56
301-400	174009	18.93	510	18.06	955879	18.92	138967	-20.14	435	-14.71	793259	-17.01
401-600	76881	75.74	166	67.68	658407	75.64	76227	-0.85	169	1.81	667400	1.37
600++	27626	0.66	42	-4.55	275376	0.52	24898	-9.87	40	-4.76	249482	-9.40
Total	**10548187**	**7.65**	**133468**	**3.23**	**49517685**	**7.55**	**10418740**	**-1.23**	**136811**	**2.50**	**49238220**	**-0.56**
Commercial	584888	5.26	5338	3.01	5849815	5.12	570711	-2.42	5486	2.77	5973597	2.12
Charitable	232356	14.44	2780	1.53	1257154	13.14	204789	-11.86	2817	1.33	1225715	-2.50
Irrgation	1067107	1.53	2505	-0.32	4186441	1.18	6010871	463.29	2541	1.44	23042502	450.41
General Power	530849	-0.64	823	0.98	4233507	-1.53	510477	-3.84	830	0.85	4409193	4.15
Large Power	2267258	-8.58	36	2.86	17340139	-7.81	2021443	-10.84	36	0.00	16598315	-4.28
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	10160	26.21	113	3.67	93110	11.17	9949	-2.08	120	6.19	102740	10.34
Grand Total	**15240805**	**4.17**	**145063**	**3.12**	**82477851**	**3.04**	**19746980**	**29.57**	**148641**	**2.47**	**100590282**	**21.96**

Customer Class	Novomber						December					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	225953	103.06	16339	125.37	1470510	125.37	324725	43.71	24489	49.88	2204010	49.88
0-50	2689287	-9.91	63556	4.92	11861976	-8.17	2318243	-13.80	74623	17.41	10721263	-9.62
0-75	20322332	534.93	37239	-15.91	8653457	-34.79	1695364	-91.66	25584	-31.30	7081983	-18.16
76-200	2097148	-35.79	19556	-8.14	11268241	-34.94	1623843	-22.57	15060	-22.99	8723053	-22.59
201-300	255007	-58.58	1152	-58.40	1395638	-58.58	163038	-36.07	727	-36.89	892059	-36.08
301-400	195387	40.60	605	39.08	1115154	40.58	125726	-35.65	384	-36.53	717437	-35.66
401-600	135537	77.81	321	89.94	1187197	77.88	92692	-31.61	210	-34.58	814019	-31.43
600++	23930	-3.89	38	-5.00	239801	-3.88	49784	108.04	81	113.16	498869	108.03
Total	**7654481**	**-26.53**	**138806**	**1.46**	**37191974**	**-24.47**	**6393685**	**-16.47**	**141158**	**1.69**	**31652693**	**-14.89**
Commercial	488834	-14.35	5579	1.70	5053848	-15.40	420953	-13.89	5695	2.08	4402731	-12.88
Charitable	143656	-29.85	2837	0.71	870513	-28.98	99272	-30.90	2859	0.78	667867	-23.28
Irrgation	2281399	-62.05	2552	0.43	8792209	-61.84	3472735	52.22	2578	1.02	13343493	51.76
General Power	489346	-4.14	833	0.36	4140939	-6.08	719796	47.09	833	0.00	5852844	41.34
Large Power	1363536	-32.55	37	2.78	11045879	-33.45	1659032	21.67	37	0.00	13288835	20.31
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	10670	7.25	112	-6.67	98656	-3.98	11735	9.98	120	7.14	103999	5.42
Grand Total	**12430922**	**-37.05**	**150764**	**1.43**	**67194018**	**-33.20**	**12777208**	**2.79**	**153280**	**1.67**	**69312462**	**3.15**

Customer Class	January						February					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	269592	-16.98	19285	-21.25	1735650	-21.25	312228	15.82	22849	18.48	2056410	18.48
0-50	2490474	7.43	66328	-11.12	11171811	4.20	2617188	5.09	74313	12.04	11855483	6.12
0-75	2116979	24.87	39075	52.73	9021395	27.39	1736518	-17.97	31896	-18.37	7396183	-18.02
76-200	1767897	8.87	17058	13.27	9513441	9.06	1692378	-4.27	15084	-11.57	9075923	-4.60
201-300	212276	30.20	955	31.36	1161674	30.22	222158	4.66	1012	5.97	1216067	4.68
301-400	180753	43.77	566	47.40	1031789	43.82	173682	-3.91	545	-3.71	991455	-3.91
401-600	158692	71.20	360	71.43	1389620	70.71	136583	-13.93	312	-13.33	1196072	-13.93
600++	50567	1.57	81	0.00	506744	1.58	44769	-11.47	75	-7.41	448970	-11.40
Total	**7247230**	**13.35**	**143708**	**1.81**	**35532124**	**12.26**	**6935504**	**-4.30**	**146086**	**1.65**	**34236563**	**-3.65**
Commercial	481724	14.44	5830	2.37	5006486	13.71	467693	-2.91	5959	2.21	4866532	-2.80
Charitable	108016	8.81	2896	1.29	715138	7.08	109376	1.26	2924	0.97	723643	1.19
Irrgation	5703212	64.23	2658	3.10	21912939	64.22	9281066	62.73	2704	1.73	35544883	62.21
General Power	789103	9.63	844	1.32	6408785	9.50	649984	-17.63	845	0.12	5321101	-16.97
Large Power	1183155	-28.68	36	-2.70	9766547	-26.51	1552002	31.17	37	2.78	12528891	28.28
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	14055	19.77	120	0.00	116599	12.12	15525	10.46	120	0.00	126204	8.24
Grand Total	**15526495**	**21.52**	**156092**	**1.83**	**79458618**	**14.64**	**19011150**	**22.44**	**158675**	**1.65**	**93347817**	**17.48**

Customer Class	March						April					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	365149	16.95	26320	15.19	2368800	15.19	237243	-35.03	17157	-34.81	1544130	-34.81
0-50	2622977	0.22	70870	-4.63	11791522	-0.54	2560916	-2.37	63562	-10.31	11371749	-3.56
0-75	1758843	1.29	30883	-3.18	7455678	0.80	2805065	59.48	41900	35.67	11706747	57.02
76-200	1775373	4.90	17753	17.69	9569258	5.44	2670939	50.44	24109	35.80	14331351	49.76
201-300	267655	20.48	1222	20.75	1465181	20.49	417317	55.92	1908	56.14	2284519	55.92
301-400	195601	12.62	599	9.91	1116209	12.58	206043	5.34	590	-1.50	1174772	5.25
401-600	101479	-25.70	226	-27.56	888517	-25.71	98803	-2.64	225	-0.44	865211	-2.62
600++	53124	18.66	87	16.00	532473	18.60	39868	-24.95	65	-25.29	399568	-24.96
Total	**7140204**	**2.95**	**147960**	**1.28**	**35187638**	**2.78**	**9036194**	**26.55**	**149516**	**1.05**	**43678047**	**24.13**
Commercial	508371	8.70	6062	1.73	5270331	8.30	571784	12.47	6140	1.29	5889817	11.75
Charitable	137519	25.73	2943	0.65	853587	17.96	196084	42.59	2969	0.88	1144515	34.08
Irrgation	12656079	36.36	2714	0.37	48434146	36.26	7122908	-43.72	2711	-0.11	27309110	-43.62
General Power	645972	-0.62	843	-0.24	5264519	-1.06	580620	-10.12	849	0.71	4754338	-9.69
Large Power	3780471	143.59	37	0.00	29612800	136.36	2825730	-25.25	38	2.70	21936742	-25.92
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	12515	-19.39	120	0.00	105445	-16.45	11570	-7.55	120	0.00	98379	-6.70
Grand Total	**24881131**	**30.88**	**160679**	**1.26**	**124728466**	**33.62**	**20344888**	**-18.23**	**162343**	**1.04**	**104810948**	**-15.97**

Customer Class	May						June					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	221743	-6.53	16082	-6.27	1447380	-6.27	192126	-13.36	12829	-20.23	1154610	-20.23
0-50	2663167	3.99	60290	-5.15	11680773	2.72	2965401	11.35	62610	3.85	12893082	10.38
0-75	3008732	7.26	46629	11.29	12598907	7.62	3124969	3.86	44243	-5.12	12980957	3.03
76-200	2862592	7.18	25324	5.04	15346823	7.09	3237337	13.09	30539	20.59	17403387	13.40
201-300	506175	21.29	2259	18.40	2769573	21.23	468730	-7.40	2046	-9.43	2563543	-7.44
301-400	188463	-8.53	560	-5.08	1075047	-8.49	194772	3.35	606	8.21	1111716	3.41
401-600	61616	-37.64	143	-36.44	539634	-37.63	61704	0.14	140	-2.10	540325	0.13
600++	37068	-7.02	61	-6.15	371509	-7.02	27855	-24.85	45	-26.23	279163	-24.86
Total	**9549556**	**5.68**	**151348**	**1.23**	**45829646**	**4.93**	**10272894**	**7.57**	**153058**	**1.13**	**48926783**	**6.76**
Commercial	590707	3.31	6237	1.58	6074933	3.14	613237	3.81	6330	1.49	6307745	3.83
Charitable	197454	0.70	3005	1.21	1152433	0.69	219996	11.42	3031	0.87	1264461	9.72
Irrgation	2498009	-64.93	2682	-1.07	9674478	-64.57	2710548	8.51	2582	-3.73	10431916	7.83
General Power	751955	29.51	857	0.94	6079637	27.88	757715	0.77	860	0.35	6130324	0.83
Large Power	2702176	-4.37	38	0.00	21323607	-2.80	2879016	6.54	37	-2.63	22505228	5.54
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	10455	-9.64	120	0.00	92131	-6.35	10638	1.75	120	0.00	92175	0.05
Grand Total	**16300312**	**-19.88**	**164287**	**1.20**	**90226865**	**-13.91**	**17464044**	**7.14**	**166018**	**1.05**	**95658632**	**6.02**

Table 5.2: Monthly Revenue Data of RPBS, 2016-17.

Customer Class	July				August					
	Tariff Rate	Unit	Consumers	Revenue	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic										
Minimum	0	122424	9196	827640	148434	21.25	8750	-4.85	787500	-4.85
0-50	3.82	2990818	60125	12928050	2938234	-1.76	60520	0.66	12737054	-1.48
0-75	3.8	3960125	52850	16369725	3422544	-13.57	47693	-9.76	14197992	-13.27
76-200	5.14	3624485	28083	19331928	4049272	11.72	34941	24.42	21686783	12.18
201-300	5.36	779437	3095	4255157	772705	-0.86	3090	-0.16	4218949	-0.85
301-400	5.63	290828	850	1658612	204593	-29.65	612	-28.00	1167159	-29.63
401-600	8.7	158770	345	1389924	78291	-50.69	167	-51.59	685307	-50.69
600++	9.98	65230	95	653415	17676	-72.90	29	-69.47	177122	-72.89
Total	**42.43**	**11992117**	**154639**	**57414451**	**11631748**	-3.01	**155802**	0.75	**55657866**	-3.06
Commercial	9.8	629848	6411	6479010	681682	8.23	6488	1.20	6985431	7.82
Charitable	5.22	242331	3053	1382994	238101	-1.75	3062	0.29	1359481	-1.70
Irrgation	3.82	1478358	2535	5742508	1386626	-6.20	2522	-0.51	5383240	-6.26
General Power	7.66	368481	862	3140180	552731	50.00	865	0.35	4549494	44.88
Large Power	7.57	2290439	37	18254806	2540189	10.90	37	0.00	20089634	10.05
33KV	0	0	0	0	0	0.00	0	0.00	0	0.00
Street Light	7.17	9870	120	91518	11640	17.93	120	0.00	101847	11.29
Grand Total	**41.24**	**17011444**	**167657**	**92505467**	**17042717**	0.18	**168896**	0.74	**94126993**	1.75

Customer Class	September						October					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	109224	-26.42	7607	-13.06	684630	-13.06	159255	45.81	9746	28.12	877140	28.12
0-50	2998026	2.03	61764	2.06	12996559	2.04	2761972	-7.87	60764	-1.62	12069833	-7.13
0-75	3620789	5.79	49002	2.74	14984048	5.54	3352042	-7.42	48902	-0.20	13960310	-6.83
76-200	4320036	6.69	34585	-1.02	23069610	6.38	3929229	-9.05	34951	1.06	21070012	-8.67
201-300	859344	11.21	3465	12.14	4692709	11.23	739494	-13.95	3465	0.00	4050313	-13.69
301-400	204934	0.17	606	-0.98	1168928	0.15	226045	10.30	652	7.59	1288933	10.27
401-600	75234	-3.90	166	-0.60	658686	-3.88	53166	-29.33	120	-27.71	465544	-29.32
600++	27257	54.20	44	51.72	273125	54.20	27357	0.37	44	0.00	274123	0.37
Total	**12214844**	5.01	**157239**	0.92	**58528295**	5.16	**11248560**	-7.91	**158644**	0.89	**54056208**	-7.64
Commercial	660002	-3.18	6639	2.33	6778838	-2.96	642074	-2.72	6713	1.11	6606323	-2.54
Charitable	232579	-2.32	3082	0.65	1330877	-2.10	215327	-7.42	3110	0.91	1243526	-6.56
Irrgation	900188	-35.08	2514	-0.32	3517297	-34.66	3140163	248.83	2541	1.07	12071836	243.21
General Power	472788	-14.46	874	1.04	3945715	-13.27	516357	9.22	878	0.46	4292852	8.80
Large Power	2104406	-17.16	37	0.00	16636325	-17.19	249007	-88.17	37	0.00	19571382	17.64
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	10665	-8.38	120	0.00	94360	-7.35	11311	6.06	120	0.00	96369	2.13
Grand Total	**16595472**	-2.62	**170505**	0.95	**90831707**	-3.50	**18263799**	10.05	**172043**	0.90	**97938496**	7.82

Customer Class	Novomber						December					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	237999	49.45	20212	107.39	1819080	107.39	256402	7.73	27107	34.11	2439630	34.11
0-50	2091808	-24.26	65712	8.14	9633507	-20.19	2572155	22.96	83012	26.33	11900932	23.54
0-75	2595431	-22.57	48985	0.17	11087263	-20.58	1788031	-31.11	29280	-40.23	7526518	-32.12
76-200	2966699	-24.50	22112	-36.73	15801633	-25.00	2390586	-19.42	21112	-4.52	12815412	-18.90
201-300	547230	-26.00	2269	-34.52	2989878	-26.18	459176	-16.09	1569	-30.85	2500408	-16.37
301-400	136045	-39.82	425	-34.82	776558	-39.75	86043	-36.75	225	-47.06	490047	-36.89
401-600	33146	-37.66	82	-31.67	290420	-37.62	30947	-6.63	62	-24.39	270789	-6.76
600++	15418	-43.64	25	-43.18	154497	-43.64	15500	0.53	25	0.00	155315	0.53
Total	**8623776**	-23.33	**159822**	0.74	**42552836**	-21.28	**7598840**	-11.89	**162392**	1.61	**38099051**	-10.47
Commercial	544745	-15.16	6790	1.15	5696537	-13.77	531172	-2.49	7005	3.17	5548377	-2.60
Charitable	161602	-24.95	3119	0.29	980648	-21.14	1101087	581.36	3137	0.58	745009	-24.03
Irrgation	2625794	-16.38	2569	1.10	10107692	-16.27	3836985	46.13	2608	1.52	14736457	45.79
General Power	590121	14.29	882	0.46	4895836	14.05	1049618	77.86	894	1.36	8380114	71.17
Large Power	1675803	572.99	37	0.00	13411791	-31.47	1498290	-10.59	39	5.41	12131894	-9.54
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	13700	21.12	120	0.00	111925	16.14	15835	15.58	120	0.00	125205	11.87
Grand Total	**14235541**	-22.06	**173339**	0.75	**77757265**	-20.61	**14640927**	2.85	**176195**	1.65	**79766107**	2.58

Customer Class	January						February					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	inc.%	Revenue	Inc.%
Domestic												
Minimum	356905	39.20	25433	-6.18	2288970	-6.18	481638	34.95	29037	14.17	2613330	14.17
0-50	2793936	8.62	83522	0.61	12760886	7.23	2646192	-5.29	91384	9.41	12393053	-2.88
0-75	1951545	9.14	32993	12.68	8240696	9.49	1781167	-8.73	24918	-24.47	7391385	-10.31
76-200	2161124	-9.60	21216	0.49	11638577	-9.18	2119275	-1.94	20088	-5.32	11395274	-2.09
201-300	249713	-45.62	1034	-34.10	1364312	-45.44	258952	3.70	1036	0.19	1413883	3.63
301-400	228036	165.03	678	201.33	1300793	165.44	271764	19.18	762	12.39	1549081	19.09
401-600	176765	471.19	390	529.03	1547606	471.52	229785	29.99	671	72.05	2015905	30.26
600++	67882	337.95	90	260.00	6797742	4276.75	140856	107.50	140	55.56	1409243	-79.27
Total	**7985906**	5.09	**165356**	1.83	**45939582**	20.58	**7929629**	-0.70	**168036**	1.62	**40181154**	-12.53
Commercial	555255	4.53	7254	3.55	5809263	4.70	514849	-7.28	7469	2.96	5496002	-5.39
Charitable	107324	-90.25	3171	1.08	736755	-1.11	108754	1.33	3198	0.85	743112	0.86
Irrgation	7628279	98.81	2693	3.26	29251653	98.50	10063845	31.93	2722	1.08	38536142	31.74
General Power	784117	-25.30	895	0.11	6349804	-24.23	654251	-16.56	904	1.01	5337165	-15.95
Large Power	1382365	-7.74	39	0.00	11197203	-7.70	1630993	17.99	40	2.56	13107910	17.06
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	19600	23.78	120	0.00	152511	21.81	22365	14.11	120	0.00	171335	12.34
Grand Total	**18466023**	26.13	**179528**	1.89	**99436771**	24.66	**20930967**	13.35	**182489**	1.65	**103572820**	4.16

Customer Class	March						April					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	560784	16.43	35824	23.37	3224160	23.37	326544	-41.77	24069	-32.81	2166210	-32.81
0-50	2696855	1.91	75062	-17.86	12178536	-1.73	2750311	1.98	83754	11.58	12595038	3.42
0-75	1387703	-22.09	26902	7.96	5945821	-19.56	2725008	96.37	41468	54.14	11391730	91.59
76-200	1972452	-6.93	19095	-4.94	10614278	-6.85	2636034	33.64	19095	0.00	14026590	32.15
201-300	378544	46.18	1317	27.12	2061921	45.83	447272	18.16	1717	30.37	2440303	18.35
301-400	212704	-21.73	662	-13.12	1214074	-21.63	269659	26.78	802	21.15	1538230	26.70
401-600	130826	-43.07	280	-58.27	1145186	-43.19	121156	-7.39	258	-7.86	1063507	-7.13
600++	45849	-67.45	75	-46.43	459448	-67.40	41863	-8.69	65	-13.33	419418	-8.71
Total	**7385717**	-6.86	**169882**	1.10	**36843424**	-8.31	**9317847**	26.16	**171228**	0.79	**45641026**	23.88
Commercial	558136	8.41	7622	2.05	5848976	6.42	638724	14.44	7706	1.10	6629097	13.34
Charitable	116826	7.42	3225	0.84	782166	5.26	185350	58.65	3242	0.53	1111579	42.12
Irrgation	10655076	5.87	2723	0.04	40781525	5.83	9844605	-7.61	2727	0.15	37695078	-7.57
General Power	584339	-10.69	911	0.77	4787180	-10.30	596135	2.02	919	0.88	4878358	1.90
Large Power	3902058	139.24	41	2.50	30308895	131.23	3641129	-6.69	41	0.00	28349500	-6.46
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	17560	-21.48	120	0.00	136660	-20.24	14630	-16.69	120	0.00	116862	-14.49
Grand Total	**23219712**	10.93	**184524**	1.12	**119488826**	15.37	**24238420**	4.39	**185983**	0.79	**124421500**	4.13

Customer Class	May						June					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	370447	13.44	23586	-2.01	2122740	-2.01	168524	-0.55	10882	-53.86	979380	-53.86
0-50	3358064	22.10	77553	-7.40	14766979	17.24	4009350	0.19	82836	6.81	17386617	17.74
0-75	2261547	-17.01	45586	9.93	9733529	-14.56	4310326	0.91	57900	27.01	17826739	83.15
76-200	2497691	-5.25	23705	24.14	13430757	-4.25	3332800	0.33	18137	-23.49	17584017	30.92
201-300	320548	-28.33	1449	-15.61	1754362	-28.11	919970	1.87	3497	141.34	5018464	186.06
301-400	196851	-27.00	565	-29.55	1122396	-27.03	225791	0.15	615	8.85	1286578	14.63
401-600	98555	-18.65	218	-15.50	862879	-18.86	214266	1.17	488	123.85	1876314	117.45
600++	43666	4.31	60	-7.69	437287	4.26	187552	3.30	250	316.67	1878019	329.47
Total	**9147369**	-1.83	**172722**	0.87	**44230929**	-3.09	**13368579**	0.46	**174605**	1.09	**63836128**	44.32
Commercial	638720	0.00	7809	1.34	6626273	-0.04	770965	0.21	7933	1.59	7919604	19.52
Charitable	183688	-0.90	3254	0.37	1098433	-1.18	270613	0.47	3271	0.52	1542797	40.45
Irrgation	2055014	-79.13	2693	-1.25	8015011	-78.74	2080096	0.01	2613	-2.97	8025551	0.13
General Power	813031	36.38	934	1.63	6580788	34.90	644657	-0.21	936	0.21	5273052	-19.87
Large Power	4130254	13.43	41	0.00	32034084	13.00	2881627	-0.30	42	2.44	22602719	-29.44
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	9841	-32.73	120	0.00	87883	-24.80	11830	0.20	120	0.00	97849	11.34
Grand Total	**16977917**	-29.95	**187573**	0.85	**98673401**	-20.69	**20028367**	0.18	**189520**	1.04	**109297700**	10.77

Table 5.3: Monthly Revenue Data of RPBS, 2017-18

Customer Class	July				August					
	Tariff Rate	Unit	Consumers	Revenue	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic										
Minimum	0	165525	9737	876330	150257	-9.22	12439	27.75	1119510	27.75
0-50	3.82	4133214	87906	17986527	4004180	-3.12	86703	-1.37	17463543	-2.91
0-75	3.8	3775496	51070	15623635	3622058	-4.06	49617	-2.85	15004245	-3.96
76-200	5.14	4324583	22835	22799232	2879970	-33.40	25623	12.21	15443621	-32.26
201-300	5.36	1118086	3894	6090291	594686	-46.81	2341	-39.88	3246042	-46.70
301-400	5.63	187413	565	1069260	260602	39.05	794	40.53	1487039	39.07
401-600	8.7	132181	257	1156400	109013	-17.53	197	-23.35	953338	-17.56
600++	9.98	62002	81	620805	51411	-17.08	79	-2.47	515057	-17.03
Total	**42.43**	**13898500**	**176345**	**66222480**	**11672177**	-16.02	**177793**	0.82	**55232395**	-16.60
Commercial	9.8	726599	8051	7505259	671319	-7.61	8173	1.52	6967213	-7.17
Charitable	5.22	254646	3286	1457257	232409	-8.73	3314	0.85	1349218	-7.41
Irrgation	3.82	2863284	2596	11015699	1850555	-35.37	2590	-0.23	7147150	-35.12
General Power	7.66	488064	938	4061328	599001	22.73	943	0.53	4911530	20.93
Large Power	7.57	2470455	43	19509526	3818248	54.56	43	0.00	29725445	52.36
33KV	0	0	0	0	0	0.00	0	0.00	0	0.00
Street Light	7.17	10680	120	95212	11917	11.58	120	0.00	102183	7.32
Grand Total	**83.67**	**20712228**	**191379**	**109866761**	**18855626**	-8.96	**192976**	0.83	**105435134**	-4.03

Customer Class	September						October					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	89229	-40.62	8523	-31.48	767070	-31.48	110985	24.38	9251	8.542	832590	8.54
0-50	3742378	-6.54	79625	-8.16	16286509	-6.74	3869487	3.40	84927	6.659	16904615	3.80
0-75	4735910	30.75	64306	29.60	19604108	30.66	4317061	-8.84	60096	-6.547	17907232	-8.66
76-200	3830720	33.01	22938	-10.48	20263351	31.21	3727343	-2.70	22319	-2.699	19716518	-2.70
201-300	722032	21.41	2908	24.22	3942792	21.46	659673	-8.64	2556	-12.105	3599747	-8.70
301-400	280396	7.60	869	9.45	1600354	7.62	349359	24.59	1066	22.670	1993541	24.57
401-600	125558	15.18	229	16.24	1098080	15.18	152342	21.33	278	21.397	1332325	21.33
600++	66632	29.61	104	31.65	667587	29.61	45659	-31.48	67	-35.577	457352	-31.49
Total	**13592855**	16.46	**179502**	0.96	**64229851**	16.29	**13231909**	-2.66	**180560**	0.589	**62743920**	-2.31
Commercial	755013	12.47	8298	1.53	7797371	11.92	7394456	879.38	8413	1.386	7640135	-2.02
Charitable	229114	-1.42	3339	0.75	1336232	-0.96	231219	0.92	3354	0.449	1343909	0.57
Irrgation	1326275	-28.33	2583	-0.27	5147540	-27.98	675559	-49.06	2570	-0.503	2657944	-48.36
General Power	449240	-25.00	947	0.42	3788035	-22.87	476433	6.05	955	0.845	4038853	6.62
Large Power	2900943	-24.02	44	2.33	22838867	-23.17	2960254	2.04	44	0.000	23276804	1.92
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.000	0	0.00
Street Light	11490	-3.58	120	0.00	95664	-6.38	13460	17.15	120	0.000	107191	12.05
Grand Total	**19264930**	2.17	**194833**	0.96	**105233560**	-0.19	**18328290**	-4.86	**196016**	0.607	**101808756**	-3.25

Customer Class	Novomber						December					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	301651	171.79	23669	155.85	2130210	155.85	0	-100.00	0	-100.00	0	-100.00
0-50	3141450	-18.81	95544	12.50	14388939	-14.88	5048351	60.70	134124	40.38	22637801	57.33
0-75	2665057	-38.27	41580	-30.81	11166717	-37.64	1935947	-27.36	33267	-19.99	8575463	-23.21
76-200	2780029	-25.42	18657	-16.41	14755774	-25.16	916043	-67.05	13310	-28.66	5325184	-63.91
201-300	297549	-54.89	1114	-56.42	1622713	-54.92	186236	-37.41	1094	-1.80	1088895	-32.90
301-400	220765	-36.81	614	-42.40	1258257	-36.88	127176	-42.39	574	-6.51	779950	-38.01
401-600	148952	-2.23	267	-3.96	1302557	-2.23	60823	-59.17	454	70.04	577004	-55.70
600++	42893	-6.06	62	-7.46	429622	-6.06	39690	-7.47	84	35.48	426783	-0.66
Total	**9598346**	-27.46	**181507**	0.52	**47054789**	-25.01	**8314266**	-13.38	**182907**	0.77	**39411080**	-16.24
Commercial	666199	-90.99	8516	1.22	6933890	-9.24	569660	-14.49	8623	1.26	6215770	-10.36
Charitable	157330	-31.96	3376	0.66	981637	-26.96	107034	-31.97	3392	0.47	704578	-28.22
Irrgation	1694930	150.89	2578	0.31	6548148	146.36	2150941	26.90	2629	1.98	9186140	40.29
General Power	623052	30.77	964	0.94	5201084	28.78	952395	52.86	937	-2.80	7936986	52.60
Large Power	2371018	-19.90	44	0.00	18895465	-18.82	2353384	-0.74	45	2.27	20434325	8.14
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	15430	14.64	120	0.00	120035	11.98	46620	202.14	126	5.00	413988	244.89
Grand Total	**15126305**	-17.47	**1971105**	905.58	**85735048**	-15.79	**14494300**	-4.18	**198659**	-89.92	**84302867**	-1.67

Customer Class	January						February					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	0	0	0	0	0	0		0	0	0	0	0
0-50	664917	-86.83	19276	-85.63	3021883	-86.65	906072	36.26844	28686	48.82	4178345	38.27
0-75	557582	-71.20	10198	-69.34	2485278	-71.02	338606	-39.2724	5018	-50.79	1479874	-40.45
76-200	292293	-68.09	2195	-83.51	1647872	-69.06	267060	-8.63278	2102	-4.24	1508027	-8.49
201-300	34267	-81.60	141	-87.11	198847	-81.74	48450	41.38968	190	34.75	280915	41.27
301-400	22952	-81.95	65	-88.68	139796	-82.08	35510	54.71419	100	53.85	216270	54.70
401-600	32950	-45.83	69	-84.80	308160	-46.59	18025	-45.2959	35	-49.28	168508	-45.32
600++	7800	-80.35	12	-85.71	83760	-80.37	6000	-23.0769	9	-25.00	64425	-23.08
Total	**1612761**	-80.60	**31956**	-82.53	**7885596**	-79.99	**1619723**	0.431682	**36140**	13.09	**7896364**	0.14
Commercial	155651	-72.68	2178	-74.74	1681051	-72.96	122621	-21.2206	1567	-28.05	1326056	-21.12
Charitable	23906	-77.67	637	-81.22	154531	-78.07	22251	-6.92295	752	18.05	147434	-4.59
Irrgation	285419	-86.73	366	-86.08	1228846	-86.62	3839377	1245.172	854	133.33	15559963	1166.23
General Power	107528	-88.71	137	-85.38	913541	-88.49	194439	80.82639	238	73.72	1645750	80.15
Large Power	247659.3	-89.48	6	-86.67	2192080	-89.27	293605	18.55198	9	50.00	2694163	22.90
33KV	0	0.00	0	0.00	0	0.00	0	0	0	0.00	0	0.00
Street Light	3140	-93.26	13	-89.68	25740	-93.78	10780	243.3121	52	300.00	85170	230.89
Grand Total	**2436064.3**	-83.19	**35293**	-82.23	**14081385**	-83.30	**6102769**	150.518	**39612**	12.24	**29354900**	108.47

Customer Class	March						April					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	0	0	0	0	0		0	0	0	0	0	0
0-50	4393793	384.93	127698	345.16	19976739	378.10	5089516	15.83	116031	-9.14	22342726	11.84
0-75	2849443	741.52	46612	828.90	12563072	748.93	3130855	9.88	56898	22.07	13945870	11.01
76-200	1120264	319.48	8979	327.16	6329914	319.75	1756303	56.78	10516	17.12	9834751	55.37
201-300	288526	495.51	1084	470.53	1671698	495.09	370535	28.42	1556	43.54	2150950	28.67
301-400	203603	473.37	562	462.00	1239740	473.24	253938	24.72	701	24.73	1546232	24.72
401-600	95589	430.31	168	380.00	893178	430.05	114037	19.30	213	26.79	1065869	19.33
600++	42901	615.02	65	622.22	460666	615.04	47086	9.76	73	12.31	505645	9.76
Total	**8994119**	455.29	**185168**	412.36	**43135007**	446.26	**10762270**	19.66	**185988**	0.44	**51392043**	19.14
Commercial	616895	403.09	8882	466.82	6685936	404.20	672261	8.97	8949	0.75	7264668	8.66
Charitable	150928	578.30	3421	354.92	958511	550.13	210604	39.54	3432	0.32	1302223	35.86
Irrgation	13582291	253.76	2744	221.31	54965445	253.25	7188322	-47.08	2741	-0.11	29381034	-46.55
General Power	674528	246.91	974	309.24	5730073	248.17	620269	-8.04	980	0.62	5439160	-5.08
Large Power	3693781	1158.08	49	444.44	31273342	1060.78	3879849	5.04	49	0.00	32674133	4.48
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	27252	152.80	131	151.92	219084	157.23	24224	-11.11	130	-0.76	194579	-11.19
Grand Total	**18745675**	207.17	**201369**	408.35	**142967398**	387.03	**23357799**	24.60	**202269**	0.45	**127647840**	-10.72

Customer Class	May						June					
	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%	Unit	Inc.%	Consumers	Inc.%	Revenue	Inc.%
Domestic												
Minimum	0	0	0	0	0	0	0	0	0	0	0	
0-50	5479433	7.66	113913	-1.83	23779259	6.43	8952899	63.39	143822	26.26	37795624	58.94
0-75	3713617	18.61	58946	3.60	16328118	17.08	1120831	-69.82	15146	-74.31	4861974	-70.22
76-200	1886087	7.39	11293	7.39	10561499	7.39	5237986	177.72	26454	134.25	29208374	176.56
201-300	393164	6.11	1687	8.42	2283210	6.15	471166	19.84	1581	-6.28	2725171	19.36
301-400	248033	-2.33	656	-6.42	1509559	-2.37	106944	-56.88	320	-51.22	651803	-56.82
401-600	141040	23.68	239	12.21	1317647	23.62	104395	-25.98	250	4.60	977124	-25.84
600++	34793	-26.11	53	-27.40	373610	-26.11	29153	-16.21	40	-24.53	312937	-16.24
Total	**11896167**	10.54	**186787**	0.43	**56152902**	9.26	**16023374**	34.69	**187613**	0.44	**76533007**	36.29
Commercial	711833	5.89	9004	0.61	7695280	5.93	835809	17.42	9069	0.72	8941275	16.19
Charitable	225476	7.06	3432	0.00	1376259	5.69	313777	39.16	3445	0.38	1885654	37.01
Irrgation	1222733	-82.99	2706	-1.28	5498873	-81.28	1258247	2.90	2613	-3.44	5620901	2.22
General Power	710383	14.53	974	-0.61	6274315	15.35	583165	-17.91	968	-0.62	5177118	-17.49
Large Power	9566	-99.75	49	0.00	30714962	-6.00	3128	-67.30	49	0.00	23321211	-24.07
33KV	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Street Light	22596	-6.72	131	0.77	181926	-6.50	24697	9.30	131	0.00	197161	8.37
Grand Total	**14798754**	-36.64	**203083**	0.40	**107894517**	-15.47	**19042197**	28.67	**203888**	0.40	**121676327**	12.77

If we look at july-2015-16, Domestic consumer consumed total 9207316units, Number of total consumer 126319and total revenue 43303569TK where minimum slab was 123898 units, Number of consumer 8453 and revenue 760770In 1-50 was 2602421 units, Number of consumer 53556 and revenue 11280148TK.

In 1-75 was2726047 units, Number of consumer 36999. and revenue 114747777. In 76-200 was 2996501 units, Number of consumer 24660 and revenue 15628970TK. In 201-300 was 588671units, Number of consumer 2205 and revenue 3110327TK. In 301-400 was 135627 units, Number of consumer374, and revenue 744448TK. In 401-600 was 25909units, Number of consumer59, and revenue 221961TK and Above 600 was 8242 units, Number of consumer 13 and revenue 82168TK.

In Commercial consumer consumed total 540127 units, Number of consumer 5080 and revenue 5417562TK. In Charitable institute consumer consumed total 200494,units, Number of consumer 2698 and revenue 1109404TK. In Irrigation, consumer consumed total 1057323units, Number of consumer 2537 and revenue 4147770TK. In General power, consumer consumed total 627796units, Number of consumer 810 and revenue 4955784 TK. In Large power, consumer consumed total 2315115units, Number of consumer 35and revenue 17717937 TK. In 33KVconsumer consumed total 0 units, Number of consumer 0 and revenue 0 TK. In street light, totally consumed energy is 11500units, Number of consumer 109 and revenue 104543TK.

At August-2015, Domestic consumer consumed total 9798928 units, Number of total consumer 129288 and total revenue 46040962 Tk. Where, minimum slab was 104555units, Number of consumer 7286 and revenue 655740 Tk. In 1-50 was 2658214 units, Number of consumer 54378 and revenue 11513852 Tk. In 1-75was 3091800 units, Number of consumer 42809 and revenue 13035491. In76-200 was 3139498 units, Number of consumer 22120 and revenue 16281885 TK. In 201-300 was 587361 units, Number of consumer 2120 and revenue 3101404TK. In 301-400 was146307 units, Number of consumer 432 and revenue 803784 TK.In 401-600 was 43747 units, Number of consumer 99 and revenue 374852 TK and Above 600 was 27446units, Number of consumer 44 and revenue 273954TK.

In July-August, 2015 Domestic consumers total increment by 4.73%where in minimum kWh consumers increase by 18.73%. In 1-50 kWh consumers was decreased by 0.34%. In 1-75 kWh consumers was increased11.18%. In 76-200 was decrease 14.25 %. In 201-300 was

decrease26.49%, 301-400 was decreased15.86%. In 401-600 slab was increase6.45%, and above 600 was decrease 64.71 %.

In Commercial consumer consumed total 555670units, Number of consumer 5182 and revenue 5564993 TK. In this month, total consumed energy increases 1.85% and a number of consumer increase 2.56%. In Charitable institute, consumer consumed total 203046 units,

Number of consumer 2738 and revenue 1006234 TK. In this month consumed energy increase 2.07% and a number of consumer increase 2.52 %.

In Irrigation, consumer consumed total 1050981 units, Number of consumer 2513 and revenue 4137717TK. In this month consumed energy increase1.48% and a number of consumer decrease1.62%.

In General power, consumer consumed total 534264 units, Number of consumer815and revenue 4299307TK. In this month consumed energy increases 5.54% and number of consumerincreases 1.15%

In Large power consumer consumed total 2480020units, a Number of consumer 35and revenue 18808638TK. In this month consumed energy increases 6.28% and a number ofthe consumers are not changed.

In street light, totally consumed energy 8050 units, Number of consumer 109 and revenue 83753Tk. In this month consumed energy decrease2.96% and a number of the consumers are not changed.

If we look at july-2016-17, Domestic consumer consumed total 11992117 units, Number of total consumer 154639 and total revenue 57414451 TK where minimum slab was 122424units, Number of consumer 9196 and revenue 827640In 1-50 was 2990818 units, Number of consumer 60125 and revenue 12928050 TK.

In 1-75 was3960125 units, Number of consumer 52850. and revenue 16369725. In 76-200 was 3624485 units, Number of consumer 28083and revenue 19331928TK. In 201-300 was 779437units, Number of consumer3095and revenue 4255157TK. In 301-400 was 290828 units, Number of consumer850, and revenue 1658612TK. In 401-600 was 158770units, Number of consumer345, and revenue 1389924TK and Above 600 was 65230units, Number of consumer 95 and revenue 653415TK.

In Commercial consumer consumed total 629848 units, Number of consumer 6411 and revenue 6479010TK. In Charitable institute consumer consumed total 242331, units, Number of consumer 3053 and revenue 1382994TK. In Irrigation, consumer consumed total 1478358units, Number of consumer 2535 and revenue 5742508TK. In General

power,consumer consumed total 368481units, Number of consumer 862 and revenue 3140180TK. In Large power, consumer consumed total 2290439units, Number of consumer 37and revenue 18254806TK. In 33KVconsumer consumed total 0 units, Number of consumer 0 and revenue 0 TK. In street light, totally consumed energy is 9870units, Number of consumer 120 and revenue 91518TK.

At August-2016-17, Domestic consumer consumed total 11631748 units, Number of total consumer 155802 and total revenue 55657865Tk. Where, minimum slab was 148434units, Number of consumer 8750 and revenue 787500Tk. In 1-50 was 2938234 units, Number of consumer 60520 and revenue 12737054Tk. In 1-75was 3422544 units, Number of consumer 47693 and revenue 14197992. In76-200 was 4049272 units, Number of consumer 34941 and revenue 21686783TK. In 201-300 was 772705 units, Number of consumer 3090 and revenue 4218949TK. In 301-400 was204593 units, Number of consumer 612 and revenue 1167159TK.In 401-600 was 78291 units, Number of consumer 167 and revenue 685307TK and Above 600 was 17676units, Number of consumer 29 and revenue 177122TK.

In July-August, 2016 Domestic consumers total increment by 4.73%where in minimum kWh consumers increase by 18.73%. In 1-50 kWh consumers was decreased by 0.34%. In 1-75 kWh consumers was increased11.18%. In 76-200 was decrease 14.25 %. In 201-300 was decrease26.49%, 301-400 was decreased15.86%. In 401-600 slab was increase6.45%, and above 600 was decrease 64.71 %.

In Commercial consumer consumed total 681682units, Number of consumer 6488 and revenue 6985431TK. In this month, total consumed energy increases 1.85% and a number of consumer increase 2.56%. In Charitable institute, consumer consumed total 238101units,

Number of consumer 3062 and revenue 1359481TK. In this month consumed energy increase 2.07% and a number of consumer increase 2.52 %.

In Irrigation, consumer consumed total 1386626units, Number of consumer 2522 and revenue 5383240TK. In this month consumed energy increase1.48% and a number of consumer decrease1.62%.

In General power, consumer consumed total 552731units, Number of consumer865and revenue 4549494TK. In this month consumed energy increases 5.54% and number of consumerincreases 1.15%

In Large power consumer consumed total 2540189units, a Number of consumer 37and revenue 20089634TK. In this month consumed energy increases 6.28% and a number ofthe consumers are not changed.

In street light, totally consumed energy 11640 units, Number of consumer 120 and revenue 101847Tk. In this month consumed energy decrease2.96% and a number of the consumers are not changed.

If we look at july-2017-18, Domestic consumer consumed total 13898500 units, Number of total consumer 176345and total revenue 66222480TK where minimum slab was 165525units, Number of consumer 9737 and revenue 876330In 1-50 was 4133214 units, Number of consumer 87906 and revenue 17986527 TK.

In 1-75 was3775496 units, Number of consumer 51070. and revenue 15623635. In 76-200 was 4324583 units, Number of consumer 22835and revenue 22799232TK. In 201-300 was 1118086units, Number of consumer3894and revenue 6090291TK. In 301-400 was 187413units, Number of consumer565, and revenue 1069260TK. In 401-600 was 132181units, Number of consumer257, and revenue 1156400TK and Above 600 was 62002units, Number of consumer 81 and revenue 620805TK.

In Commercial consumer consumed total 726599 units, Number of consumer 8051 and revenue 7505259TK. In Charitable institute consumer consumed total 254646, units, Number of consumer 3286 and revenue 1457257TK. In Irrigation, consumer consumed total 2863284units, Number of consumer 2596 and revenue 11015699TK. In General power, consumer consumed total 488064units, Number of consumer 938 and revenue 4061328TK. In Large power, consumer consumed total 2470455units, Number of consumer 43and revenue 19509526TK. In 33KVconsumer consumed total 0 units, Number of consumer 0 and revenue 0 TK. In street light, totally consumed energy is 10680units, Number of consumer 120 and revenue 95212TK.

At August-2017-18, Domestic consumer consumed total 1167277 units, Number of total consumer 177793 and total revenue 55232395Tk. Where, minimum slab was 150257units, Number of consumer 12439 and revenue 1119510Tk. In 1-50 was 4004180 units, Number of consumer 86703 and revenue 17463543Tk. In 1-75was 3622058 units, Number of consumer 49617 and revenue 15004245. In76-200 was 2879970 units, Number of consumer 25623 and revenue 15443621TK. In 201-300 was 594686 units, Number of consumer 2341 and revenue 3246042TK. In 301-400 was109013 units, Number of consumer 197 and revenue 953338TK.In 401-600 was 51411 units, Number of consumer 79 and revenue 515057TK and Above 600 was 51411units, Number of consumer 79 and revenue 515057TK.

In July-August, 2016 Domestic consumers total increment by 4.73%where in minimum kWh consumers increase by 18.73%. In 1-50 kWh consumers was decreased by 0.34%. In 1-75 kWh consumers was increased11.18%. In 76-200 was decrease 14.25 %. In 201-300 was decrease26.49%, 301-400 was decreased15.86%. In 401-600 slab was increase6.45%, and above 600 was decrease 64.71 %.

In Commercial consumer consumed total 671319units, Number of consumer 8173 and revenue 6967213TK. In this month, total consumed energy increases 1.85% and a number of consumer increase 2.56%. In Charitable institute, consumer consumed total 232409units,

Number of consumer 3314 and revenue 1349218TK. In this month consumed energy increase 2.07% and a number of consumer increase 2.52 %.

In Irrigation, consumer consumed total 11850555units, Number of consumer 2590 and revenue 7147150TK. In this month consumed energy increase1.48% and a number of consumer decrease1.62%.

In General power, consumer consumed total 599001units, Number of consumer943and revenue 4911530TK. In this month consumed energy increases 5.54% and number of consumerincreases 1.15%

In Large power consumer consumed total 3818248units, a Number of consumer 43and revenue 29725445TK. In this month consumed energy increases 6.28% and a number of the consumers are not changed.

In street light, totally consumed energy 11917 units, Number of consumer 120 and revenue 102183Tk. In this month consumed energy decrease2.96% and a number of the consumers are not changed.

5.4 Graphical Analysis (Domestic)

In these process we calculate all the month of the year of 2015-2018

Here we divided every year in three season for our capitalize which are,

- Summer season(March-June)
- Rainy season (July-October)
- Winter season(November-February)

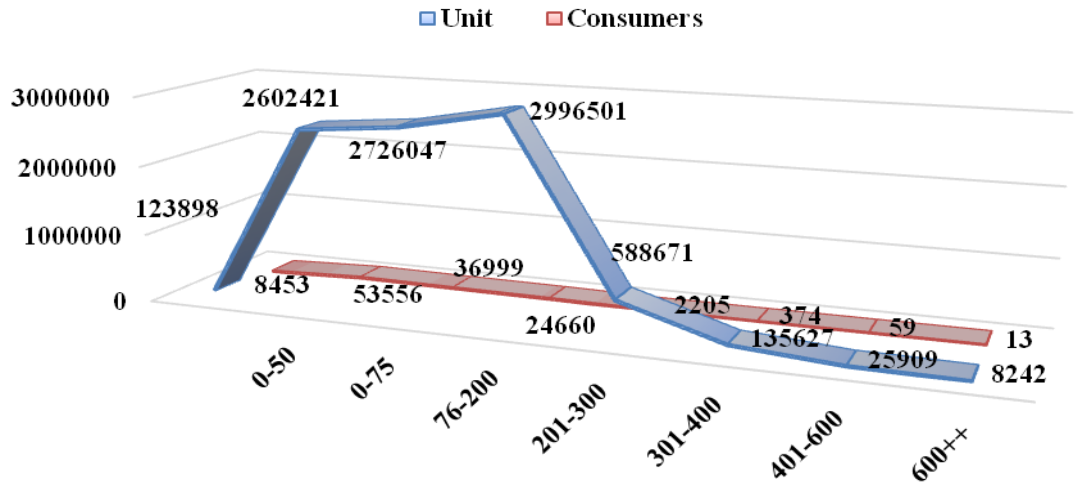


Fig 5.1: Unit Consumption and Consumer (Domestic) in July, 2015

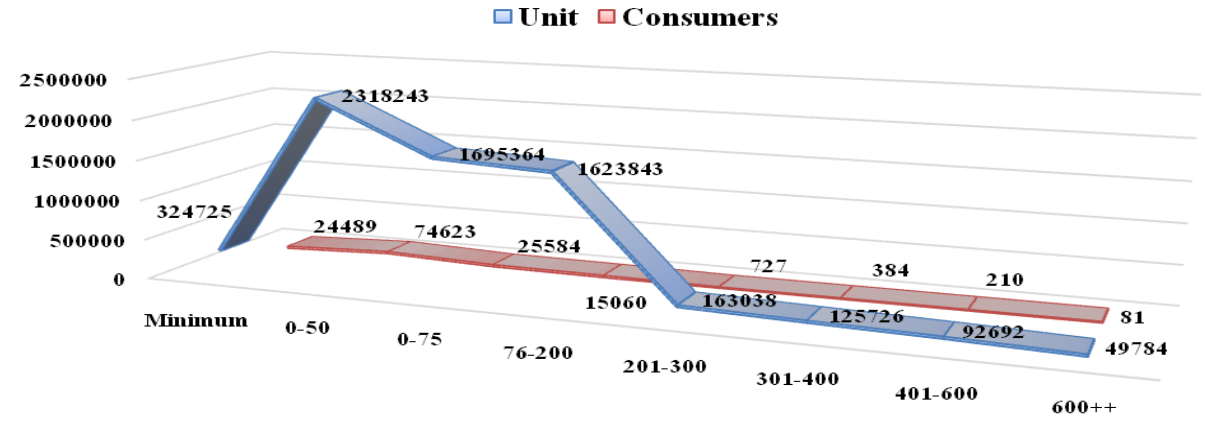


Fig 5.2: Unit Consumption and Consumer (Domestic) in December, 2015

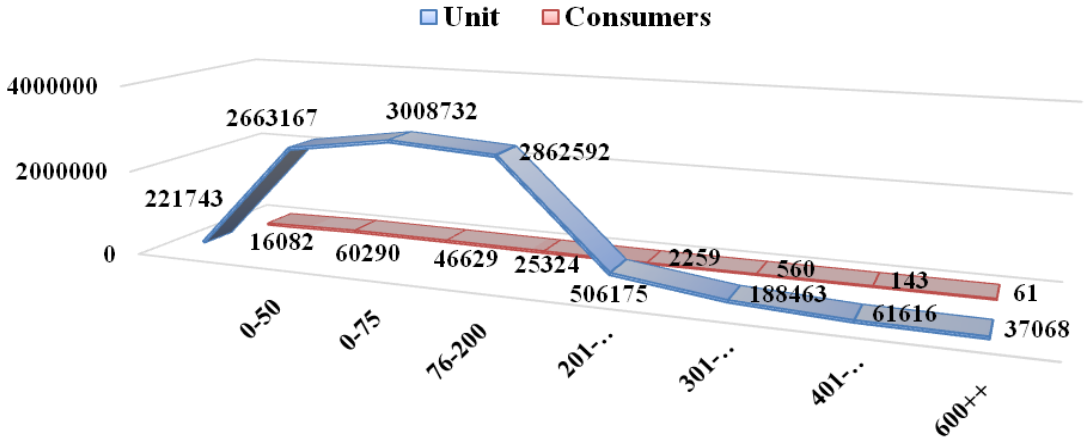


Fig 5.3: Unit Consumption and Consumer (Domestic) in May, 2016

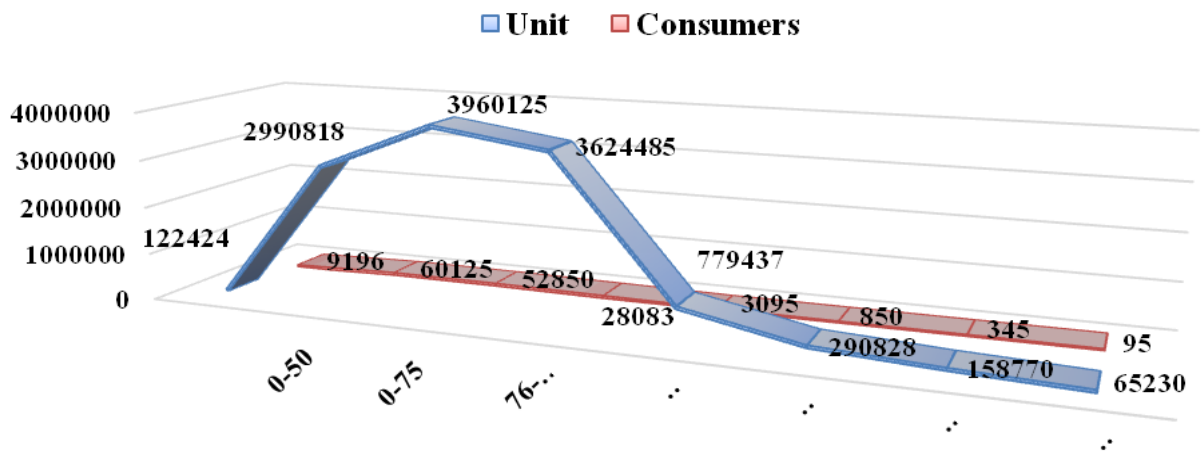


Fig 5.4: Unit Consumption and Consumer (Domestic) in July, 2016

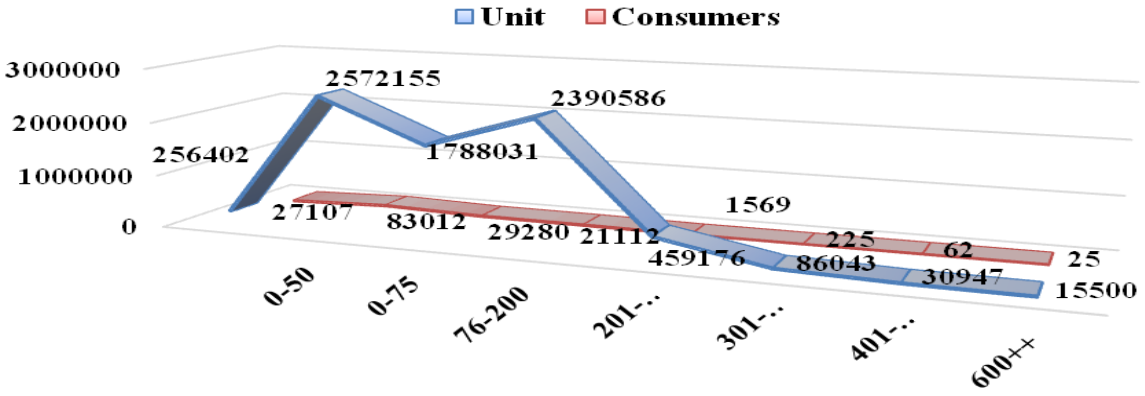


Fig 5.5: Unit Consumption and Consumer (Domestic) in December, 2016

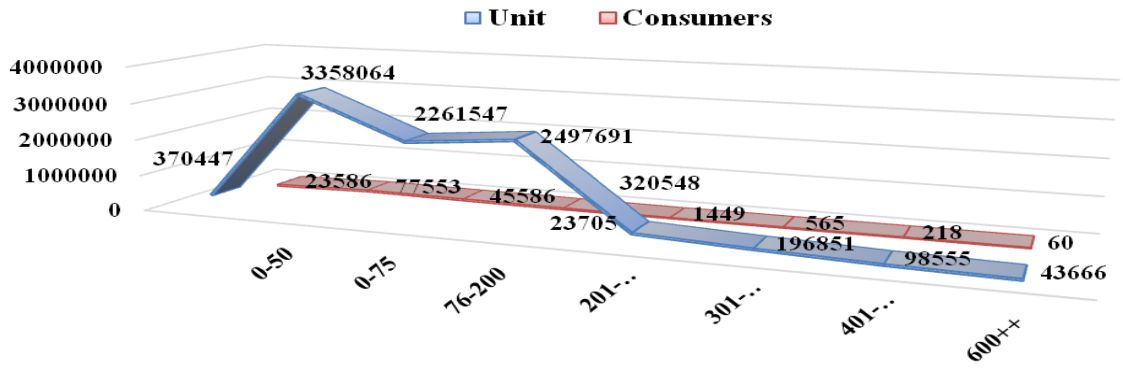


Fig 5.6: Unit Consumption and Consumer (Domestic) in May, 2016

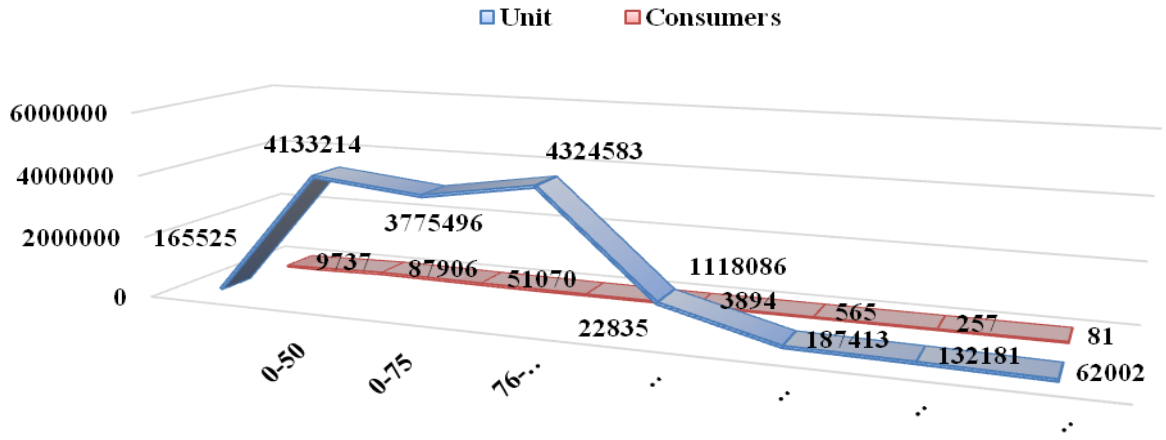


Fig 5.7: Unit Consumption and Consumer (Domestic) in July, 2017

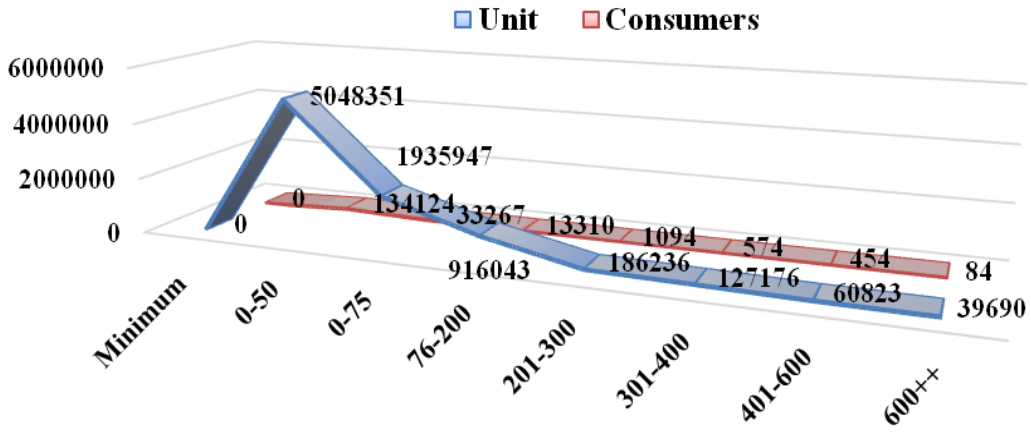


Fig 5.8: Unit Consumption and Consumer (Domestic) in December, 2017

In July 2015, the number of the consumer is 29% for 1-75KWh and the number of units is 30% for 1-75 KWh is highest percentage of the graph, 1-50 KWh the number of consumers is 42%and the number of units is 28%, 76-200 KWh the number of consumers is 20% and the number of units is 33%, the minimum consumer is 7%the minimum unit is 1% and 301- 400 KWh the consumer is 1 % and the unit is 2% and 600++ consumer and unit is about to 0 %. In summer season number of consumer increase in 76-200 KWh slab due to more use of the electrical appliance.

In December 2015, the number of the consumer is 33 % and the number of units is 35% for 1-75 KWh which is the highest percentage of the consumer of the graph, 1-50 KWh consumer is 24% and the unit is 14%, the minimum consumer is 23% and the unit is 6% and 600++ consumer and unit about to 0 %. In winter season number of consumer increase in 1-75 slab due to less use of electrical appliance like AC, fan, refrigerator etc.

In May 2016, the number of the consumer is 46 % and the number of units is 46% for 1-75 KWh which is the highest percentage of the consumer of the graph, 1-50 KWh consumer is 30%and the unit is 20%, the minimum consumer is 10 % and unit is 2% and 600++ consumer and unit is about 0 %.

5.5 Comparison of Total, Domestic, Lifeline and Minimum Consumer

In the above table analysis shown that the comparison between a Total slab of the consumer to the Domestic slab and we know Total slab of consumer consist ofthe Domestic slab, Commercial slab:

5.2: Compare Domestic with Total Domestic and Lifeline (0-50), Minimum and 1-75 (2015)

Month	Total			Domestic compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	137588	13959671	76756569	126319	91.81	9207316	65.96	43303569	56.42
August	140680	14630959	80046491	129288	91.90	9798928	66.97	46040962	57.52
September	145063	15240805	82477851	133468	92.01	10548187	69.21	49517685	60.04
October	148641	19746980	100590282	136811	92.04	10418740	52.76	49238220	48.95
November	150764	12430922	67194018	138806	92.07	7654481	61.58	37191974	55.35
December	153280	12777208	63312462	141158	92.09	6393685	50.04	31652693	49.99
January	156092	15526496	79458618	143708	92.07	7247230	46.68	35532124	44.72
February	158675	19011150	93347817	146086	92.07	6935504	36.48	34236563	36.68
March	160679	24881131	124728466	147960	92.08	7140204	28.70	35187638	28.21
April	162343	20344888	104810948	149516	92.10	9036194	44.42	43678047	41.67
May	164287	16300312	90226865	151348	92.12	9549556	58.59	45829646	50.79
June	166018	17464044	95658633	153058	92.19	10272894	58.82	48826783	51.04
					92.05		53.35		48.45

Slabs with Domestic

Month	Domestic compare with Total				Lifeline compare with Domestic					
	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	9207316	65.96	43303569	56.42	53556	42.40	2,602,421	28.26	11,280,148	26.05
August	9798928	66.97	46040962	57.52	54378	42.06	2,658,214	27.13	11,513,852	25.01
September	10548187	69.21	49517685	60.04	58379	43.74	2,847,255	26.99	12,335,989	24.91
October	10418740	52.76	49238220	48.95	60,573	44.27	2,984,948	28.65	12,916,826	26.23
November	7654481	61.58	37191974	55.35	63556	45.79	2,689,287	35.13	11,861,976	31.89
December	6393685	50.04	31652693	49.99	74623	52.86	2,318,243	36.26	10,721,263	33.87
January	7247230	46.68	35532124	44.72	66328	46.15	2,490,479	34.36	11,171,811	31.44
February	6935504	36.48	34236563	36.68	74313	50.87	2,617,188	37.74	11,855,483	34.63
March	7140204	28.70	35187638	28.21	70870	47.90	2,622,977	36.74	11,791,522	33.51
April	9036194	44.42	43678047	41.67	63562	42.51	2,560,916	28.34	11,371,749	26.04
May	9549556	58.59	45829646	50.79	60290	39.84	2,663,167	27.89	11,680,773	25.49
June	10272894	58.82	48826783	51.04	62610	40.91	2,965,401	28.87	12,893,082	26.41
		53.35		48.45						

Slab 1-75 compare with domestic					
No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
36,999	29.29	2,726,047	29.61	11,474,777	26.50
42,809	33.11	3,091,800	31.55	13,035,491	28.31
45,583	34.15	3,364,660	31.90	14,160,809	28.60
44,286	32.37	3,200,733	30.72	13,269,935	26.95
37,239	26.83	2,032,232	26.55	8,653,457	23.27
25,584	18.12	1,695,364	26.52	7,081,983	22.37
39,075	27.19	2,116,979	29.21	9,021,395	25.39
31,896	21.83	1,736,518	25.04	7,396,183	21.60
30,883	20.87	1,758,843	24.63	7,455,678	21.19
41,900	28.02	2,085,065	23.07	11,706,747	26.80
46,629	30.81	3,008,732	31.51	12,598,907	27.49
44,243	28.91	3,124,969	30.42	12,980,957	26.59

First, we compare the number of Consumer, energy consumption and revenue with Total and Domestic according to Total. The percentage of energy consumption shown in Domestic, as usually low during the winter season. It's also clear that domestics consume above 53.35% of total energy in RPBS. Where Revenue shows 60.69% and Numberof consumer above 87.32% in average of their total.

5.6 Graphical Representation

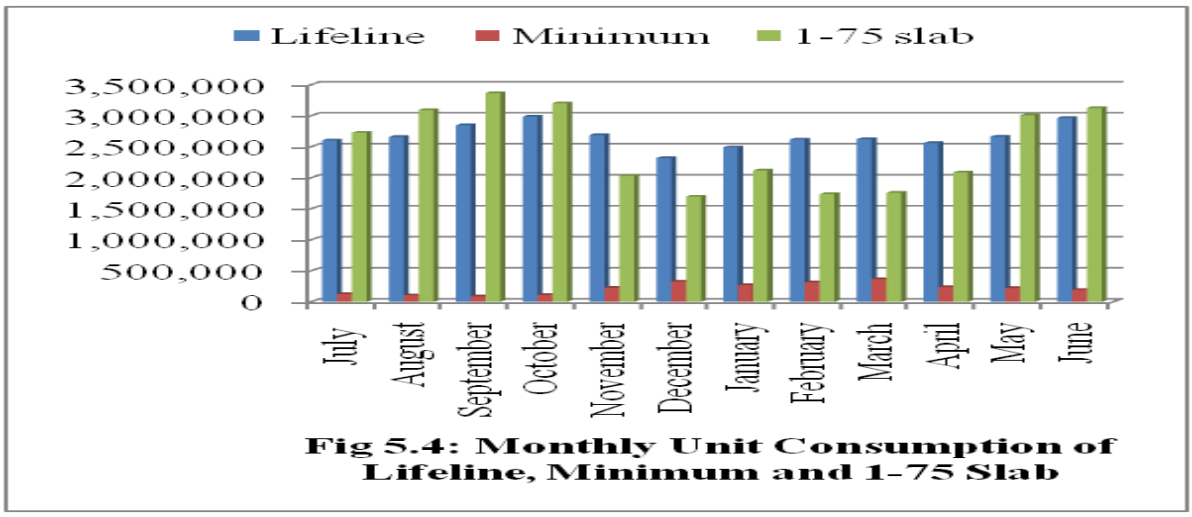


Fig 5.4: Monthly Unit Consumption of Lifeline, Minimum and 1-75 Slab

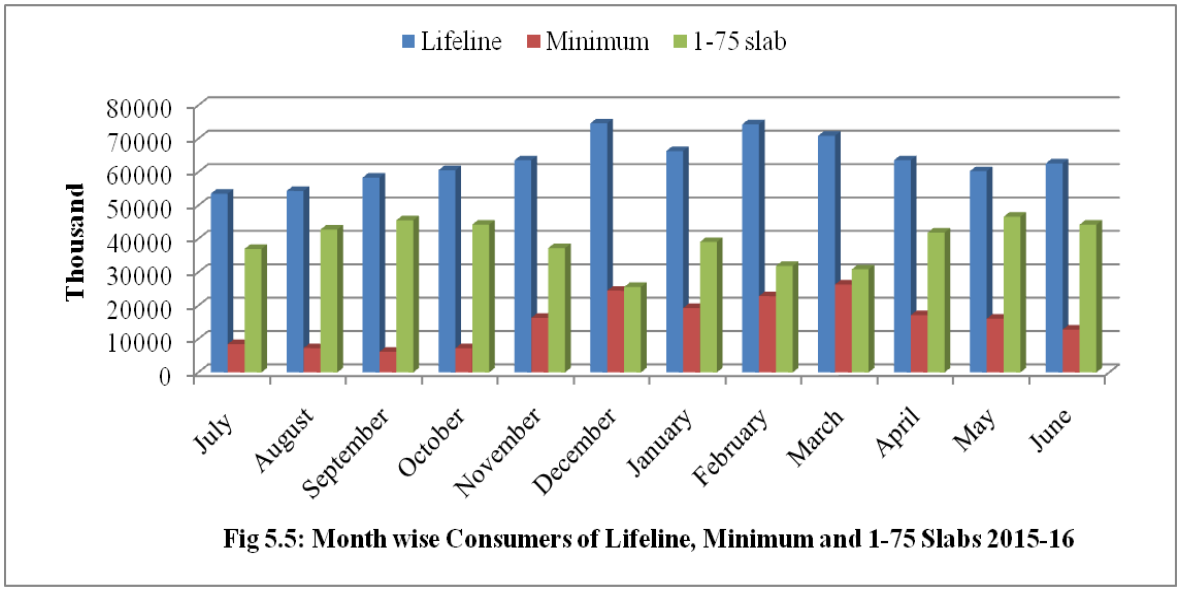


Fig 5.5: Month wise Consumers of Lifeline, Minimum and 1-75 Slabs 2015-16

Compare with Fig 5.4 and 5.5 Minimum consumer consume very little amount of energy but sometime their number was highest

5.7 Comparison of Total, Commercial, Charitable Institutionand Irrigation, General Power, Large Power,33 KV, Street Light Consumer

First we compare between the number of consumer, energy consumption and revenue with Total and Commercial according to Total. The percentage of energy consumption show in Commercial, are high during winter season. It's also clear that Commercial consume above 3.64% of total energy in RPBS.

Table 5.2: Compare Domestic with Total Domestic and Commercial (2015-2016)

Month	Total			Commercial compare with Total					
	No. of Consumer (10^3)	Energy(KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	**137588**	13959671	76756569	5080	3.69	540127	3.87	5417562	7.06
August	**140680**	14630959	80046491	5182	3.68	555670	3.80	5564993	6.95
September	**145063**	15240805	82477851	5338	3.68	584888	3.84	5849815	7.09
October	148641	19746980	100590282	5486	3.69	570711	2.89	5973597	5.94
November	150764	12430922	67194018	5579	3.70	488834	3.93	5053848	7.52
December	153280	12777208	63312462	5695	3.72	420953	3.29	4402731	6.95
January	156092	15526496	79458618	5830	3.73	481724	3.10	5006486	6.30
February	158675	19011150	93347817	5959	3.76	467693	2.46	4865532	5.21
March	160679	24881131	124728466	6062	3.77	508371	2.04	5270331	4.23
April	162343	20344888	104810948	6140	3.78	571784	2.81	5889817	5.62
May	164287	16300312	90226865	6237	3.80	590707	3.62	6074933	6.73
June	166018	17464044	95658633	6330	3.81	613237	3.51	6307745	6.59

Month	Charitable Institution compare with Total						Irrigation compare with Total					
	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy(KWh) Consumption	%	Revenue (Tk.)	%
July	2,698	1.96	200494	1.44	1,109,404	1.45	2,537	1.84	1,057,323	7.57	4,147,770	5.40
August	2,738	1.95	203046	1.39	1,111,121	1.39	2,513	1.79	1,050,981	7.18	4,137,717	5.17
September	2,780	1.92	232356	1.52	1,257,154	1.52	2,505	1.73	1,067,107	7.00	4,186,441	5.08
October	2,817	1.90	204,789	1.04	1,225,715	1.22	2,541	1.71	6,010,871	30.44	23,042,502	22.91
November	2,837	1.88	143656	1.16	870,513	1.30	2,552	1.69	2,281,399	18.35	8,792,209	13.08
December	2,859	1.87	99272	0.78	667,867	1.05	2,578	1.68	3,472,735	27.18	13,343,493	21.08
January	2,896	1.86	108016	0.70	715,138	0.90	2,658	1.70	5,703,212	36.73	21,912,939	27.58
February	2,924	1.84	109376	0.58	723,643	0.78	2,704	1.70	9,281,066	48.82	35,544,883	38.08
March	2,943	1.83	137519	0.55	8,535,587	6.84	2,714	1.69	12,656,079	50.87	48,434,146	38.83
April	2,969	1.83	196084	0.96	1,144,515	1.09	2,711	1.67	7,122,908	35.01	27,309,110	26.06
May	3,005	1.83	197454	1.21	1,152,433	1.28	2,682	1.63	2,498,009	15.32	96,744,778	107.22
June	3,031	1.83	219996	1.26	1,264,461	1.32	2,582	1.56	2,710,548	15.52	10,431,916	10.91

General Power compare with Total						Large Power compare with Total					
No. of Consumer (10^3)	%	Energy(KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
810	0.59	627,796	4.50	4,955,784	6.46	35.00	0.03	2315115.00	16.58	17717937.00	23.08
815	0.58	534,264	3.65	4,299,307	5.37	35.00	0.02	2480020.00	16.95	18808638.00	23.50
823	0.57	530,849	3.48	4,235,507	5.14	36.00	0.02	2267258.00	14.88	17340139.00	21.02
830	0.56	510,477	2.59	4,409,193	4.38	36.00	0.02	2021443.00	10.24	16598315.00	16.50
833	0.55	489,346	3.94	4,140,939	6.16	37.00	0.02	1363536.00	10.97	11045879.00	16.44
833	0.54	719,796	5.63	5,852,844	9.24	37.00	0.02	1659032.00	12.98	13288835.00	20.99
844	0.54	789,103	5.08	6,408,785	8.07	36.00	0.02	1183155.00	7.62	9766547.00	12.29
845	0.53	649,984	3.42	5,321,101	5.70	37.00	0.02	1552002.00	8.16	12528891.00	13.42
843	0.52	645,972	2.60	5,264,519	4.22	37.00	0.02	3780471.00	15.19	29612800.00	23.74
849	0.52	580,620	2.85	4,754,338	4.54	38.00	0.02	2825730.00	13.89	21936742.00	20.93
857	0.52	751,955	4.61	6,079,637	6.74	38.00	0.02	2702176.00	16.58	2132607.00	2.36
860	0.52	757,715	4.34	6,130,324	6.41	37.00	0.02	2879016.00	16.49	22505228.00	23.53

Month	Total			Street Lights compare with Total					
	No. of Consumer (10^3)	Energy(KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	**137588**	13959671	76756569	109	0.079222	11500	0.08238	104543	0.136
August	**140680**	14630959	80046491	109	0.077481	8050	0.05502	83753	0.105
September	**145063**	15240805	82477851	113	0.077897	10160	0.066663	93110	0.113
October	148641	19746980	100590282	120	0.080731	9949	0.050382	102740	0.102
November	150764	12430922	67194018	112	0.074288	10670	0.085834	98656	0.147
December	153280	12777208	63312462	120	0.078288	11735	0.091843	103999	0.164
January	156092	15526496	79458618	120	0.076878	14055	0.090523	116599	0.147
February	158675	19011150	93347817	120	0.075626	15525	0.081663	126204	0.135
March	160679	24881131	124728466	120	0.074683	12515	0.050299	105445	0.085
April	162343	20344888	104810948	120	0.073918	11570	0.056869	98379	0.094
May	164287	16300312	90226865	120	0.073043	10455	0.06414	92131	0.102
June	166018	17464044	95658633	120	0.072281	10638	0.060914	92175	0.0964

Comparison of Total, Domestic, Lifeline and Minimum Consumer

Table 5.3: Compare Domestic with Total Domestic and Commercial (2016-2017)

Month	Total			Domestic compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	167657	17011444	92505467	154639	92.24	11992117	70.49	57414451	62.07
August	168896	1704217	94126993	155802	92.25	11631748	682.53	55657865	59.13
September	170505	16595472	90831707	157239	92.22	12214844	73.60	58528295	64.44
October	172043	18263799	97938496	158644	92.21	11248560	61.59	54056208	55.19
November	173339	14235541	77757265	159822	92.20	8623776	60.58	42552836	54.73
December	176195	14640927	79767107	162392	92.17	7598840	51.90	38099051	47.76
January	179528	18466023	99436771	165356	92.11	7985906	43.25	45939582	46.20
February	182489	20930967	103572820	168036	92.08	7929629	37.88	40181154	38.80
March	184524	23219712	119488826	169882	92.06	7385717	31.81	36843424	30.83
April	185983	24238420	124421500	171228	92.07	9317847	38.44	45641026	36.68
May	187573	16977917	98673401	172722	92.08	9147369	53.88	44230929	44.83
June	189520	20028367	109297700	174605	92.13	13368579	66.75	63836128	58.41
					92.15		106.06		49.92

Month	Lifeline compare with Domestic						Minimum compare with Domestic					
	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy(KWh) Consumption	%	Revenue (Tk.)	%
July	60125	38.88	2,990,818	24.94	12,928,050	22.52	9,196	5.95	122,424	1.02	827,640	1.44
August	60520	38.84	2,938,234	25.26	12,737,054	22.88	8,750	5.62	148,434	1.28	787,500	1.41
September	61764	39.28	2,998,026	24.54	12,996,559	22.21	7,870	5.01	109,224	0.89	684,630	1.17
October	60,764	38.30	2,761,972	24.55	12,069,833	22.33	9,746	6.14	159,255	1.42	877,140	1.62
November	65712	41.12	2,091,808	24.26	9,633,507	22.64	20,212	12.65	237,999	2.76	1,819,080	4.27
December	83012	51.12	2,572,155	33.85	11,900,932	31.24	27,107	16.69	256,402	3.37	2,439,630	6.40
January	83522	50.51	2,793,936	34.99	12,760,886	27.78	25,433	15.38	356,905	4.47	2,288,970	4.98
February	91384	54.38	2,646,192	33.37	12,393,053	30.84	29,037	17.28	481,638	6.07	2,613,330	6.50
March	75062	44.18	2,696,855	36.51	12,178,536	33.05	35,824	21.09	560,784	7.59	3,224,160	8.75
April	83754	48.91	2,750,311	29.52	12,595,038	27.60	24,069	14.06	326,544	3.50	2,166,210	4.75
May	77553	44.90	3,358,064	36.71	14,766,979	33.39	23,586	13.66	370,447	4.05	2,122,740	4.80
June	82836	47.44	4,009,350	29.99	17,386,617	27.24	10,882	6.23	168,524	1.26	979,380	1.53

Month	Domestic compare with Total						Slab 1-75 compare with domestic					
	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (TK.)	%
July	154639	92.24	11992117	70.49	57414451	62.07	52,850	34.18	3,960,125	33.02	16,369,725	28.51
August	155802	92.25	11631748	682.53	55657865	59.13	47,693	30.61	3,422,544	29.42	14,197,992	25.51
September	157239	92.22	12214844	73.60	58528295	64.44	49,002	31.16	3,620,789	29.64	14,984,048	25.60
October	158644	92.21	11248560	61.59	54056208	55.19	48,902	30.82	3,352,042	29.80	13,960,310	25.83
November	159822	92.20	8623776	60.58	42552836	54.73	48,985	30.65	2,595,431	30.10	11,087,263	26.06
December	162392	92.17	7598840	51.90	38099051	47.76	29,280	18.03	1,788,031	23.53	7,526,518	19.76
January	165356	92.11	7985906	43.25	45939582	46.20	32,993	19.95	1,951,545	24.44	8,240,696	17.94
February	168036	92.08	7929629	37.88	40181154	38.80	24,918	14.83	1,781,167	22.46	7,391,385	18.40
March	169882	92.06	7385717	31.81	36843424	30.83	26,902	15.84	1,387,703	18.79	5,945,821	16.14
April	171228	92.07	9317847	38.44	45641026	36.68	41,468	24.22	2,725,008	29.25	11,391,730	24.96
May	172722	92.08	9147369	53.88	44230929	44.83	45,586	26.39	2,261,547	24.72	9,733,529	22.01
June	174605	92.13	13368579	66.75	63836128	58.41	57,900	33.16	4,310,326	32.24	17,826,739	27.93
		92.15		106.06		49.92						

Comparison of Total, Commercial, Charitable Institution and Irrigation, General Power, Large Power,33 KV, Street Light Consumer

Table 5.3: Compare TotalCommercial, Charitable, Irrigation, General power, Large power, (2016-2017)

Month	Total			Domestic compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	167657	17011444	92505467	154639	92.24	11992117	70.49	57414451	62.07
August	168896	1704217	94126993	155802	92.25	11631748	682.53	55657865	59.13
September	170505	16595472	90831707	157239	92.22	12214844	73.60	58528295	64.44
October	172043	18263799	97938496	158644	92.21	11248560	61.59	54056208	55.19
November	173339	14235541	77757265	159822	92.20	8623776	60.58	42552836	54.73
December	176195	14640927	79767107	162392	92.17	7598840	51.90	38099051	47.76
January	179528	18466023	99436771	165356	92.11	7985906	43.25	45939582	46.20
February	182489	20930967	103572820	168036	92.08	7929629	37.88	40181154	38.80
March	184524	23219712	119488826	169882	92.06	7385717	31.81	36843424	30.83
April	185983	24238420	124421500	171228	92.07	9317847	38.44	45641026	36.68
May	187573	16977917	98673401	172722	92.08	9147369	53.88	44230929	44.83
June	189520	20028367	109297700	174605	92.13	13368579	66.75	63836128	58.41
					92.15		106.06		49.92

Month	Total			Commercial compare with Total					
	No. of Consumer (10^3)	Energy(KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	167657	17011444	92505467	6411	3.82	629848	3.70	6479010	7.00
August	168896	17042717	94126993	6488	3.84	681682	4.00	6985431	7.42
September	170505	16595472	90831707	6639	3.89	660002	3.98	6778838	7.46
October	172043	18263799	97938496	6713	3.90	642074	3.52	6606323	6.75
November	173339	14235541	77757265	6790	3.92	544745	3.83	5696537	7.33
December	176195	14640927	79767107	7005	3.98	531172	3.63	5548377	6.96
January	179528	18466023	99436771	7254	4.04	555255	3.01	5809263	5.84
February	182489	20930967	103572820	7469	4.09	514849	2.46	5496002	5.31
March	184524	23219712	119488826	3225	1.75	558136	2.40	5848976	4.89
April	185983	24238420	124421500	7706	4.14	638724	2.64	6629097	5.33
May	187573	16977917	98673401	7809	4.16	638720	3.76	6626273	6.72
June	189520	20028367	109297700	7933	4.19	770965	3.85	7919604	7.25

Month	Total			Charitable Institution compare with Total					
	No. of Consumer (10^3)	Energy(KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	167657	17011444	92505467	3,053	1.82	242331	1.42	1,382,994	1.50
August	168896	17042717	94126993	3,062	1.81	238101	1.40	1,359,481	1.44
September	170505	16595472	90831707	3,082	1.81	232579	1.40	1,330,877	1.47
October	172043	18263799	97938496	3,110	1.81	215,327	1.18	1,243,526	1.27
November	173339	14235541	77757265	3,119	1.80	161602	1.14	980,648	1.26
December	176195	14640927	79767107	3,137	1.78	110187	0.75	745,009	0.93
January	179528	18466023	99436771	3,171	1.77	107324	0.58	736,755	0.74
February	182489	20930967	103572820	3,198	1.75	108754	0.52	743,112	0.72
March	184524	23219712	119488826	3,225	1.75	116826	0.50	782,166	0.65
April	185983	24238420	124421500	7,706	4.14	185350	0.76	1,111,579	0.89
May	187573	16977917	98673401	3,254	1.73	183688	1.08	1,098,433	1.11
June	189520	20028367	109297700	3,271	1.73	270613	1.35	1,542,797	1.41

Month	Total			Irrigation compare with Total					
	No. of Consumer (10^3)	Energy(KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	167657	17011444	92505467	2,535	1.51	1,478,358	8.69	5,742,508	6.21
August	168896	17042717	94126993	2,522	1.49	1,386,626	8.14	5,383,240	5.72
September	170505	16595472	90831707	2,514	1.47	900,188	5.42	3,517,297	3.87
October	172043	18263799	97938496	2,541	1.48	3,140,163	17.19	12,071,836	12.33
November	173339	14235541	77757265	2,569	1.48	2,625,794	18.45	10,107,692	13.00
December	176195	14640927	79767107	2,608	1.48	3,836,985	26.21	14,736,457	18.47
January	179528	18466023	99436771	2,693	1.50	7,628,279	41.31	29,251,653	29.42
February	182489	20930967	103572820	2,722	1.49	10,063,845	48.08	38,536,142	37.21
March	184524	23219712	119488826	2,723	1.48	10,655,076	45.89	40,781,525	34.13
April	185983	24238420	124421500	2,727	1.47	9,844,605	40.62	37,695,078	30.30
May	187573	16977917	98673401	2,693	1.44	2,055,014	12.10	8,015,011	8.12
June	189520	20028367	109297700	2,613	1.38	2,080,096	10.39	8,025,551	7.34

General Power compare with Total						Large Power compare with Total					
No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
862	0.51	368,481	2.17	3,140,180	3.39	37.00	0.02	2290439.00	13.46	18254806.00	19.73
865	0.51	552,731	3.24	4,549,494	4.83	37.00	0.02	2540189.00	14.90	20089634.00	21.34
874	0.51	472,788	2.85	3,945,715	4.34	37.00	0.02	2104406.00	12.68	16636325.00	18.32
878	0.51	516,357	2.83	4,292,852	4.38	37.00	0.02	249007.00	1.36	19571382.00	19.98
882	0.51	590,121	4.15	4,895,836	6.30	37.00	0.02	1675803.00	11.77	13411791.00	17.25
894	0.51	1,049,618	7.17	8,380,114	10.51	39.00	0.02	1498290.00	10.23	12131894.00	15.21
895	0.50	784,117	4.25	6,349,804	6.39	39.00	0.02	1382365.00	7.49	11197203.00	11.26
904	0.50	654,251	3.13	5,337,165	5.15	40.00	0.02	1630993.00	7.79	13107910.00	12.66
911	0.49	584,339	2.52	4,787,180	4.01	41.00	0.02	3902058.00	16.80	30308895.00	25.37
919	0.49	596,135	2.46	4,878,358	3.92	41.00	0.02	3641129.00	15.02	28349500.00	22.79
934	0.50	813,031	4.79	6,580,788	6.67	41.00	0.02	4130254.00	24.33	32034084.00	32.46
936	0.49	644,657	3.22	5,273,052	4.82	42.00	0.02	2881627.00	14.39	22602719.00	20.68

Month	Total			Street Lights compare with Total					
	No. of Consumer (10^3)	Energy(KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	167657	17011444	92505467	120	0.071575	9870	0.05802	91518	0.0989
August	168896	17042717	94126993	120	0.07105	11640	0.068299	101847	0.1082
September	170505	16595472	90831707	120	0.070379	10665	0.064265	94360	0.1039
October	172043	18263799	97938496	120	0.06975	11311	0.061931	96369	0.0984
November	173339	14235541	77757265	120	0.069229	13700	0.096238	111925	0.1439
December	176195	14640927	79767107	120	0.068106	15835	0.108156	125205	0.157
January	179528	18466023	99436771	120	0.066842	19600	0.106141	152211	0.1531
February	182489	20930967	103572820	120	0.065757	22365	0.106851	171335	0.1654
March	184524	23219712	119488826	120	0.065032	17560	0.075625	136660	0.1144
April	185983	24238420	124421500	120	0.064522	14630	0.060359	116862	0.0939
May	187573	16977917	98673401	120	0.063975	9841	0.057964	87883	0.0891
June	189520	20028367	109297700	120	0.063318	11830	0.059066	97849	0.0895

Comparison of Total, Domestic, Lifeline and Minimum Consumer

Table 5.4: Compare Domestic with Total Domestic, Lifeline, Minimum (2017-2018)

Month	Total			Domestic compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	191379	20712228	109866761	176345	92.14	13898500	67.10	66222480	60.28
August	192976	18855626	105435134	177793	92.13	11672177	61.90	55232395	52.39
September	194833	19264930	105233561	179502	92.13	13592855	70.56	64229851	61.04
October	196016	18328290	101808757	180560	92.11	13231909	72.19	62743921	61.63
November	197105	15126305	85735049	181507	92.09	9598346	63.45	47054789	54.88
December	198688	14531495	84302867	182907	92.06	8314266	57.22	39411080	46.75
January	35293	2436064.3	14081385	31956	90.54	1612761	66.20	7885596	56.00
February	39610	4482744	29350312	36140	91.24	1619723	36.13	7896364	26.90
March	201363	18745180	142958558	185168	91.96	8994119	47.98	43135007	30.17
April	202263	23357429	127640440	185988	91.95	10762270	46.08	51392043	40.26
May	203077	14798354	107888277	186787	91.98	11896167	80.39	56152902	52.05
June	203882	19041868	121663303	187613	92.02	16023374	84.15	76533007	62.91
					91.86		62.78		50.44

Month	Domestic compare with Total				Lifeline compare with Domestic					
	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	13898500	67.10	66222480	60.28	87906	49.85	4,133,214	29.74	17,986,527	27.16
August	11672177	61.90	55232395	52.39	86703	48.77	4,004,180	34.31	17,463,543	31.62
September	13592855	70.56	64229851	61.04	79625	44.36	3,742,378	27.53	16,286,509	25.36
October	13231909	72.19	62743921	61.63	84,927	47.04	3,869,487	29.24	16,904,615	26.94
November	9598346	63.45	47054789	54.88	95544	52.64	3,141,450	32.73	14,388,939	30.58
December	8314266	57.22	39411080	46.75	134124	73.33	5,048,351	60.72	22,637,801	57.44
January	1612761	66.20	7885596	56.00	19276	60.32	664,917	41.23	3,021,883	38.32
February	1619723	36.13	7896364	26.90	28686	79.37	906,072	55.94	4,178,345	52.91
March	8994119	47.98	43135007	30.17	127698	68.96	4,393,793	48.85	19,976,739	46.31
April	10762270	46.08	51392043	40.26	116031	62.39	5,089,516	47.29	22,342,726	43.48
May	11896167	80.39	56152902	52.05	113913	60.99	5,479,433	46.06	23,779,259	42.35
June	16023374	84.15	76533007	62.91	143822	76.66	8,952,899	55.87	37,795,624	49.38
		62.78		50.44						

Month	Domestic compare with Total				Minimum compare with Domestic					
	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	13898500	67.10	66222480	60.28	9,737	5.52	165,525	1.19	876,330	1.32
August	11672177	61.90	55232395	52.39	12,439	7.00	150,257	1.29	1,119,510	2.03
September	13592855	70.56	64229851	61.04	8,523	4.75	89,229	0.66	767,070	1.19
October	13231909	72.19	62743921	61.63	9,251	5.12	110,985	0.84	832,590	1.33
November	9598346	63.45	47054789	54.88	23,669	13.04	301,651	3.14	2,130,210	4.53
December	8314266	57.22	39411080	46.75	0	0.00	0	0.00	0	0.00
January	1612761	66.20	7885596	56.00	0	0.00	0	0.00	0	0.00
February	1619723	36.13	7896364	26.90	0	0.00	0	0.00	0	0.00
March	8994119	47.98	43135007	30.17	0	0.00	0	0.00	0	0.00
April	10762270	46.08	51392043	40.26	0	0.00	0	0.00	0	0.00
May	11896167	80.39	56152902	52.05	0	0.00	0	0.00	0	0.00
June	16023374	84.15	76533007	62.91	0	0.00	0	0.00	0	0.00
		62.78		50.44						

Slab 1-75 compare with domestic					
No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
51,070	28.96	3,775,496	27.16	15,623,635	23.59
49,617	27.91	3,622,058	31.03	15,004,245	27.17
64,306	35.82	4,735,910	34.84	19,604,108	30.52
60,096	33.28	4,317,061	32.63	17,907,232	28.54
41,580	22.91	2,665,057	27.77	11,166,717	23.73
33,267	18.19	1,935,947	23.28	8,575,463	21.76
10,198	31.91	557,582	34.57	2,485,278	31.52
5,018	13.88	338,606	20.91	1,479,874	18.74
46,612	25.17	2,849,443	31.68	12,563,072	29.13
56,898	30.59	3,130,855	29.09	13,945,870	27.14
58,946	31.56	3,713,617	31.22	16,328,118	29.08
15,146	8.07	1,120,831	6.99	4,861,974	6.35

Comparison of Total, Commercial, Charitable Institution and Irrigation, General Power, Large Power,33 KV, Street Light Consumer

Table 5.4: Compare TotalCommercial, Charitable, Irrigation, General power, Large power

Month	Total			Commercial compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	191379	20712228	109866761	8051	4.21	726599	3.51	7505259	6.83
August	192976	18855626	105435134	8173	4.24	671319	3.56	6967213	6.61
September	194833	19264930	105233561	8298	4.26	755013	3.92	7797371	7.41
October	196016	18328290	101808757	8413	4.29	739456	4.03	7640135	7.50
November	197105	15126305	85735049	8516	4.32	666199	4.40	6933890	8.09
December	198688	14531495	84302867	8623	4.34	569660	3.92	6215770	7.37
January	35293	2436064.3	14081385	2178	6.17	155651	6.39	1681051	11.94
February	39610	4482744	29350312	1565	3.95	122292	2.73	1321468	4.50
March	201363	18745180	142958558	8876	4.41	616400	3.29	6677096	4.67
April	202263	23357429	127640440	8943	4.42	671891	2.88	7257268	5.69
May	203077	14798354	107888277	8998	4.43	711433	4.81	7689040	7.13
June	203882	19041868	121663303	9063	4.45	835480	4.39	8928251	7.34

Month	Total			Charitable Institution compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	191379	20712228	109866761	3,286	1.72	254646	1.23	1,457,257	1.33
August	192976	18855626	105435134	3,314	1.72	232409	1.23	1,349,218	1.28
September	194833	19264930	105233561	3,339	1.71	229114	1.19	1,336,232	1.27
October	196016	18328290	101808757	3,354	1.71	231,219	1.26	1,343,909	1.32
November	197105	15126305	85735049	3,376	1.71	157330	1.04	981,637	1.14
December	198688	14531495	84302867	3,392	1.71	107034	0.74	704,578	0.84
January	35293	2436064.3	14081385	637	1.80	23906	0.98	154,531	1.10
February	39610	4482744	29350312	752	1.90	22251	0.50	147,434	0.50
March	201363	18745180	142958558	3,421	1.70	150928	0.81	958,511	0.67
April	202263	23357429	127640440	3,432	1.70	210604	0.90	1,302,223	1.02
May	203077	14798354	107888277	3,432	1.69	225476	1.52	1,376,259	1.28
June	203882	19041868	121663303	3,445	1.69	313777	1.65	1,885,654	1.55

Month	Total			Irrigation compare with Total						General Power compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	191379	20712228	109866761	2,596	1.36	2,863,284	13.82	11,015,699	10.03	938	0.49	488,064	2.36	4,061,328	3.70
August	192976	18855626	105435134	2,590	1.34	1,850,555	9.81	7,147,150	6.78	943	0.49	599,001	3.18	4,911,530	4.66
September	194833	19264930	105233561	2,583	1.33	1,326,275	6.88	5,147,540	4.89	947	0.49	4,489,240	23.30	3,788,035	3.60
October	196016	18328290	101808757	2,570	1.31	675,559	3.69	2,657,944	2.61	955	0.49	476,433	2.60	4,038,853	3.97
November	197105	15126305	85735049	2,578	1.31	1,694,930	11.21	6,548,148	7.64	964	0.49	623,052	4.12	5,201,084	6.07
December	198688	14531495	84302867	2,629	1.32	2,150,941	14.80	9,186,140	10.90	937	0.47	952,395	6.55	7,936,986	9.41
January	35293	2436064.3	14081385	366	1.04	285,419	11.72	1,228,846	8.73	137	0.39	107,528	4.41	913,541	6.49
February	39610	4482744	29350312	854	2.16	3,839,377	85.65	15,559,963	53.01	238	0.60	194,439	4.34	1,645,750	5.61
March	201363	18745180	142958558	2,744	1.36	13,582,291	72.46	54,965,445	38.45	974	0.48	674,528	3.60	5,730,073	4.01
April	202263	23357429	127640440	2,741	1.36	7,188,322	30.78	29,381,034	23.02	980	0.48	620,269	2.66	5,439,160	4.26
May	203077	14798354	107888277	2,706	1.33	1,222,733	8.26	5,498,873	5.10	974	0.48	710,383	4.80	6,274,315	5.82
June	203882	19041868	121663303	2,613	1.28	1,258,247	6.61	5,620,901	4.62	968	0.47	583,165	3.06	5,177,118	4.26

Month	Total			Street Lights compare with Total					
	No. of Consumer (10^3)	Energy (KWh) Consumption	Revenue (Tk.)	No. of Consumer (10^3)	%	Energy (KWh) Consumption	%	Revenue (Tk.)	%
July	191379	20712228	109866761	120	0.062703	10680	0.051564	95212	0.0867
August	192976	18855626	105435134	120	0.062184	11917	0.063201	102183	0.0969
September	194833	19264930	105233561	120	0.061591	11490	0.059642	95664	0.0909
October	196016	18328290	101808757	120	0.061219	13460	0.073438	107191	0.1053
November	197105	15126305	85735049	120	0.060881	15430	0.102008	120035	0.14
December	198688	14531495	84302867	126	0.063416	46620	0.32082	413988	0.4911
January	35293	2436064.3	14081385	13	0.036834	3140	0.128896	25740	0.1828
February	39610	4482744	29350312	52	0.13128	10780	0.240478	85170	0.2902
March	201363	18745180	142958558	131	0.065057	27252	0.145381	219084	0.1533
April	202263	23357429	127640440	130	0.064273	24224	0.10371	194579	0.1524
May	203077	14798354	107888277	131	0.064508	22596	0.152693	181926	0.1686
June	203882	19041868	121663303	131	0.064253	24697	0.129698	197161	0.1621

5.8 Graphical Representation

In Fig 5.6, monthly energy consumption of the slabs except Domestic are described. Nothing is abnormal in there. Irrigation slab consume more energy February to April than the other months. Consumption of Charitable Institutions and General Power are regular. Consumption of Commercial and Large Power are increased. RPBS has no 33KV consumer so that it shown in the Figure.

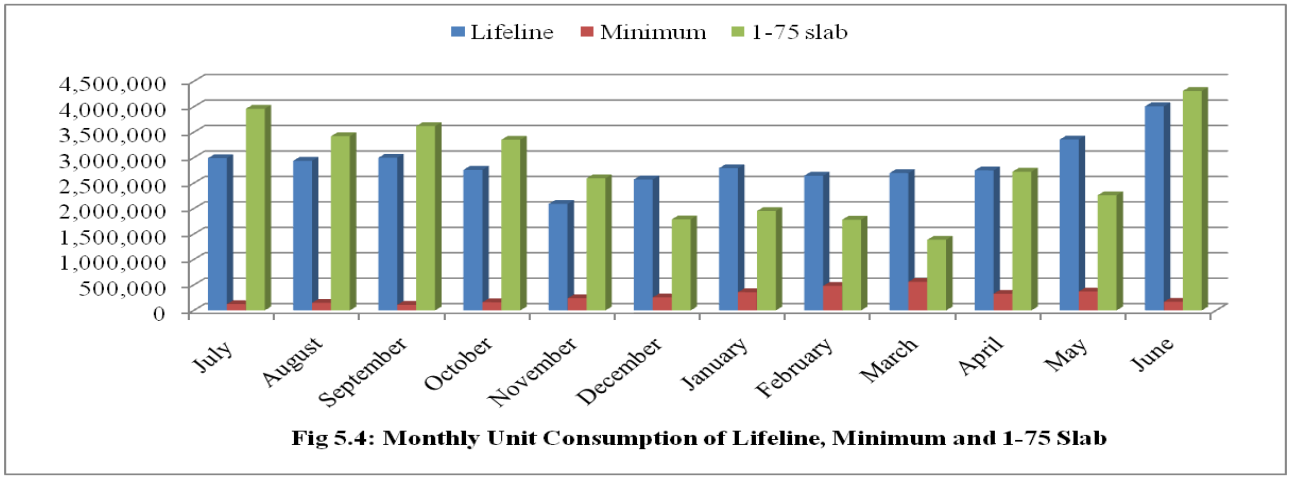


Fig 5.4: Monthly Unit Consumption of Lifeline, Minimum and 1-75 Slab

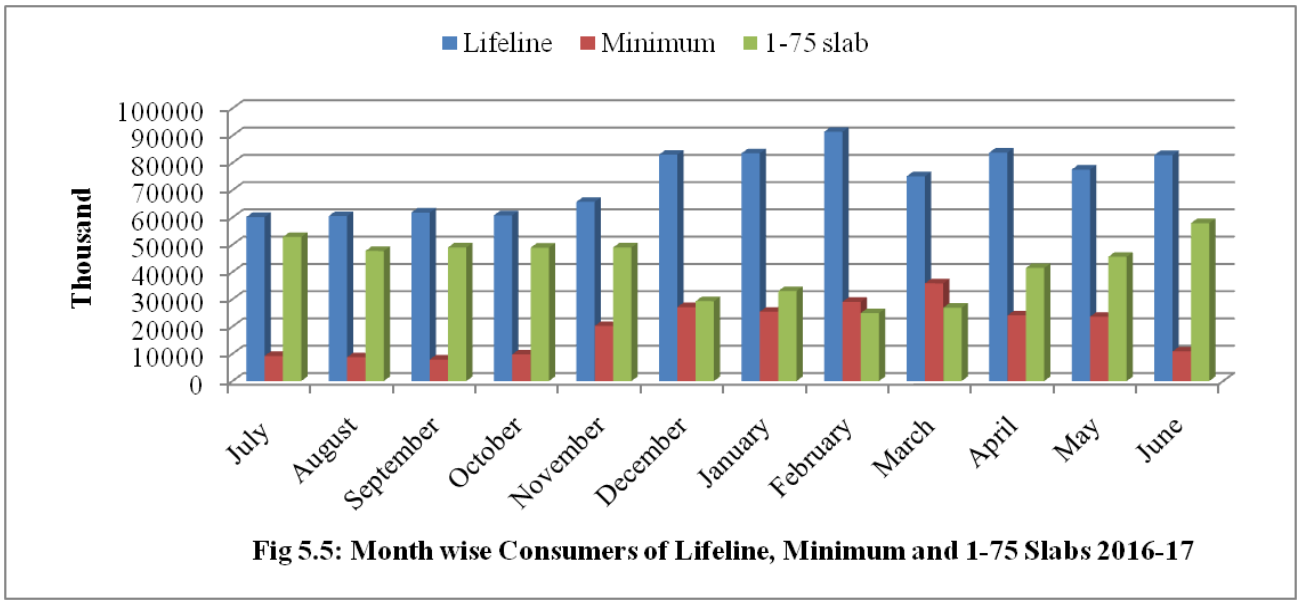


Fig 5.5: Month wise Consumers of Lifeline, Minimum and 1-75 Slabs 2016-17

Fig 5.6 Monthly unit consumption of Lifeline, Minimum, slabs 1-75RPBS (2016-2017)

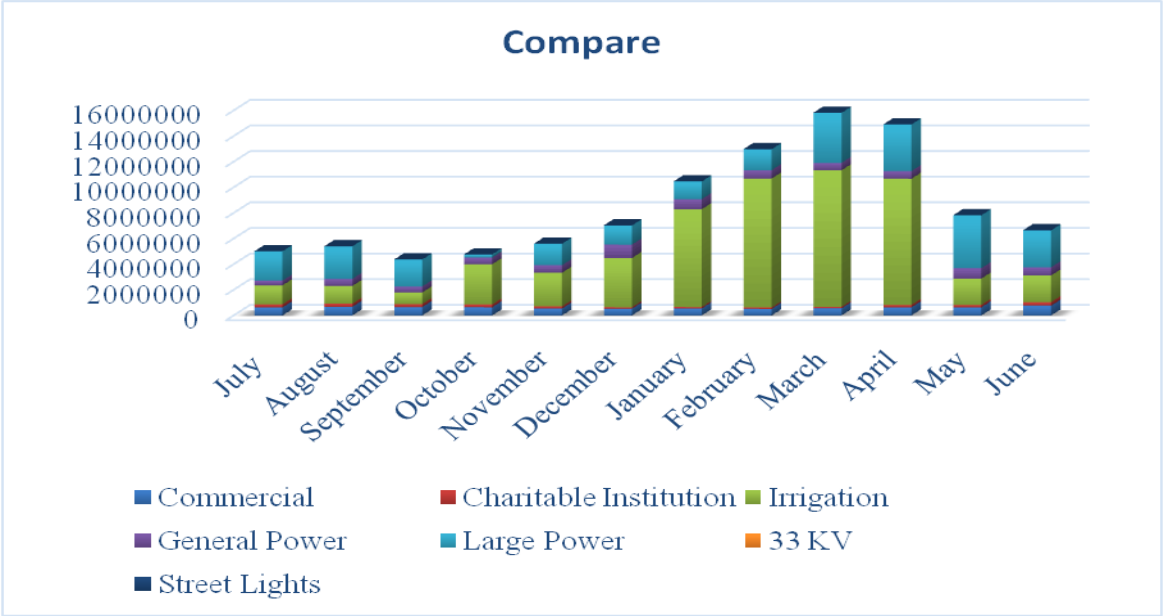


Fig 5.7 Monthly unit consumption of Commercial, Charitable, Irrigation, Large power RPBS (2016-2017)

Graphical Representation

In Fig 5.7,68 monthly energy consumption of the slabs except Domestic are described. Nothing is abnormal in there. Irrigation slab consume more energy February to April than the other months. Consumption of Charitable Institutions and General Power are regular. Consumption of Commercial and Large Power are increased. RPBS has no 33KV consumer so that it shown in the Figure.

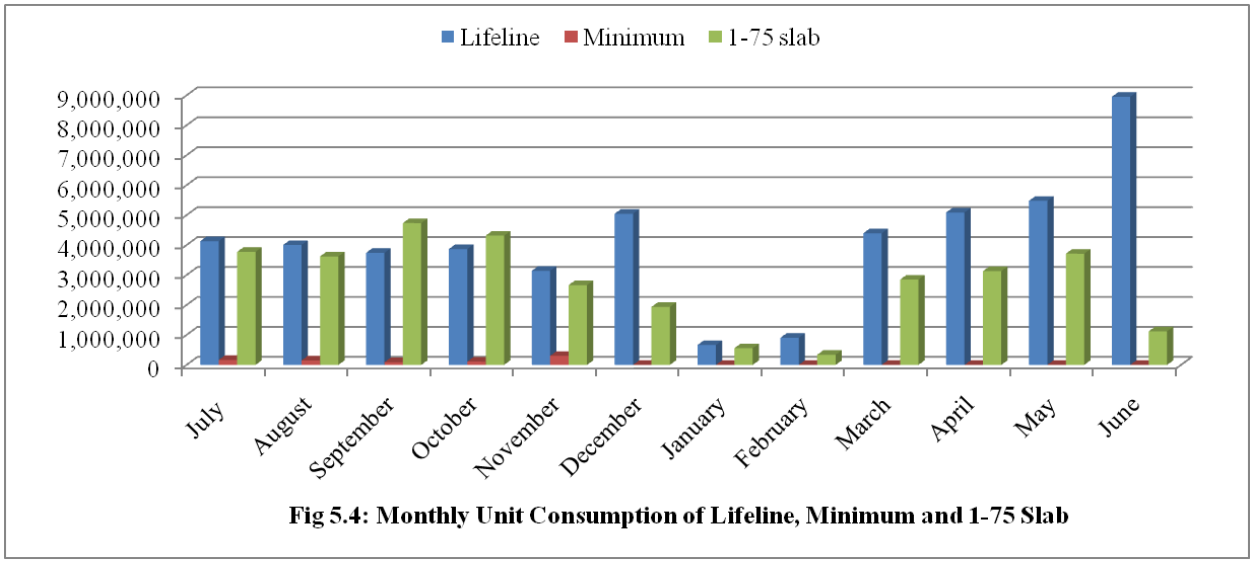


Fig 5.4: Monthly Unit Consumption of Lifeline, Minimum and 1-75 Slab

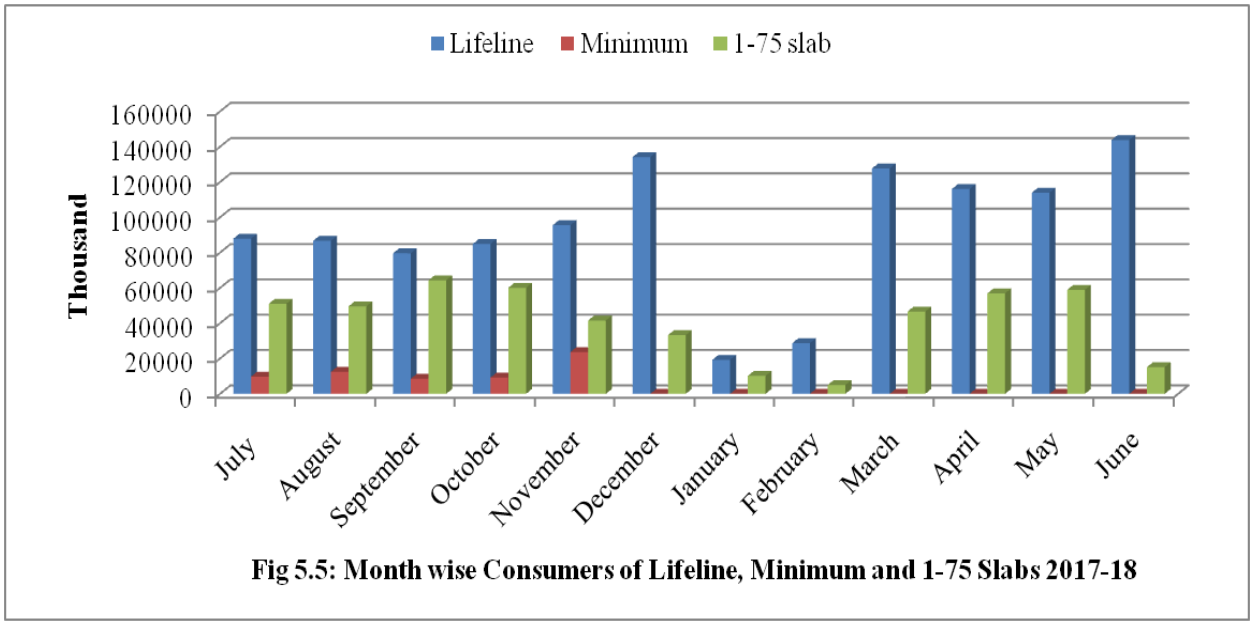


Fig 5.5: Month wise Consumers of Lifeline, Minimum and 1-75 Slabs 2017-18

Fig 5.8 Monthly unit consumption of Lifeline, Minimum, slabs 1-75 RPBS (2017-2018)

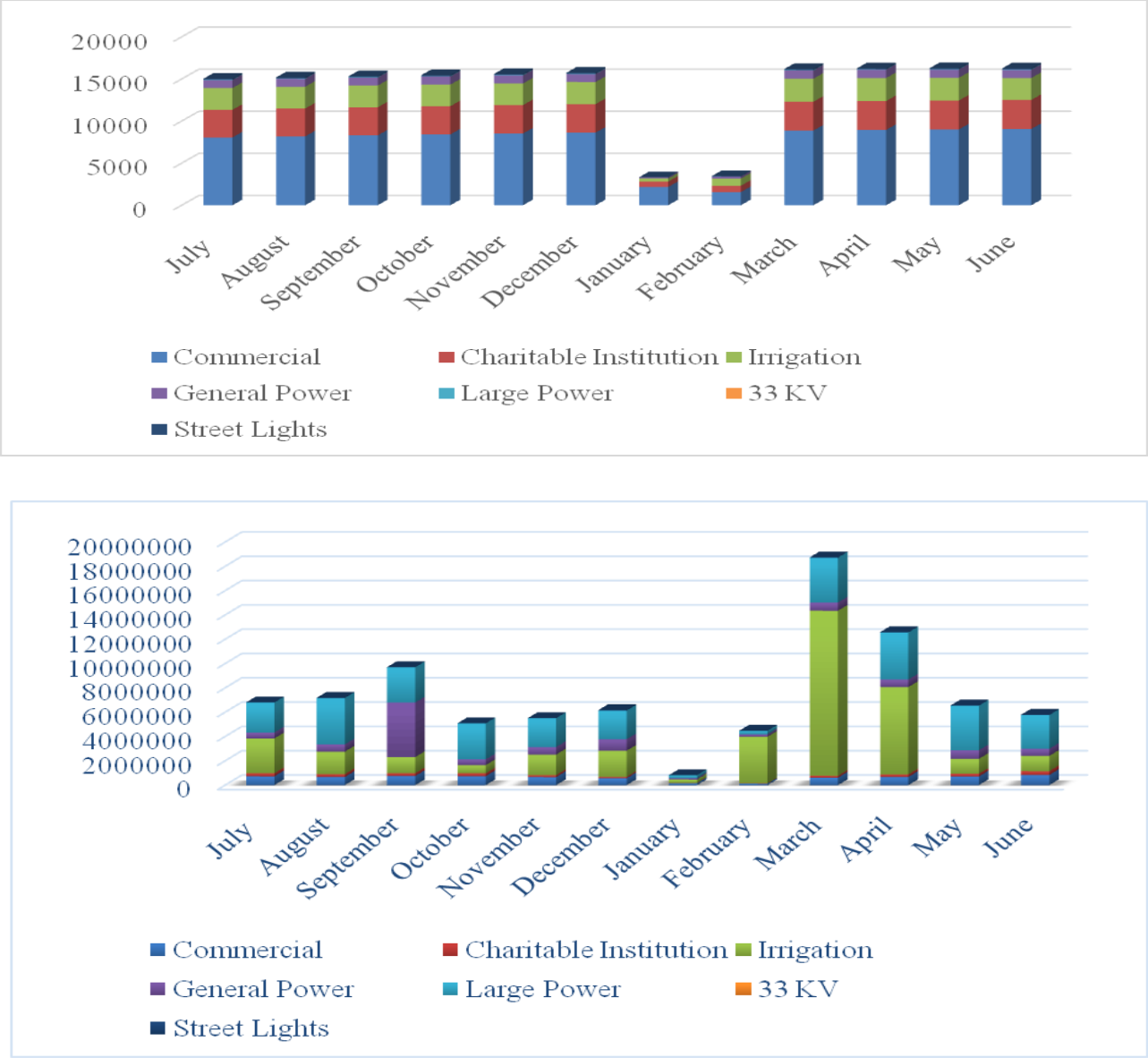


Fig 5.9 Monthly unit consumption of Commercial, Charitable, Irrigation, Large power RPBS (2017-2018)

5.9 Summary

Revenue of RPBS is not sufficient to meet the profit. Wrongly included data in Domestic slabs are increasing the financial loss. Demand of all Domestic slabs is same. If demands vary in higher consuming slabs then revenue would have been increased a little and demand charge would be more effectible for PBSs. Overall energy consumption, consumer and revenue are increasing.

CHAPTER 6

POWER FACTOR CALCULATION ACCORDING TO BREB

6.1 Introduction

The ratio between active power and reactive power is called power factor. The standard value of power factor is 0.95 which is fixed by BREB. The value of Power factor increased by capacitor or auto PFI plant.

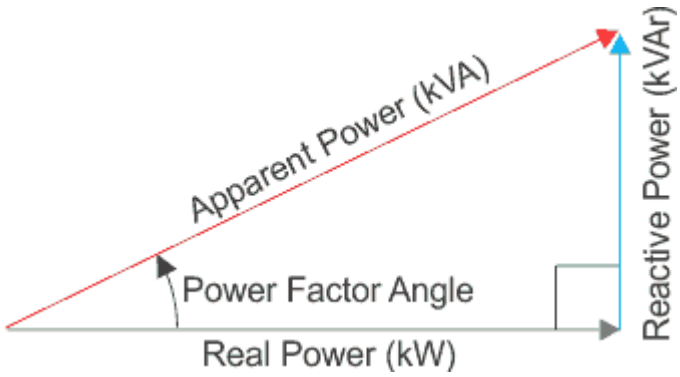


Fig 6.1: Relation between KW, KVA and KVAR

To help understand this better all these power are represented in the form of the triangle. Mathematically, $S^2 = P^2 + Q^2$ and electrical power factor are expressed with active power or apparent power.

6.2 Power Factor Calculation

In power factor calculation, we measure the source voltage and current drawn using a voltmeter and ammeter respectively. A wattmeter is used to get the active power. Now, we know $P = VxIxCos\theta$ watt.

For this $Cos\theta = P/VI$

Hence, we can get the electrical power factor. Now we can calculate the reactive power Q = VxIx Sinθ VAR This reactive power can now be supplied from the capacitor installed in parallel with the load in local.

6.3 Power factor adjustment

6.3.1 Domestic (House-hold) Applicability

Subject to established rules and regulations of the PalliBidyutSamity, applicable for single phase and three phase 50 cycles, electricity connection of the following category of consumers:

Domestic, Water pumps for household use up to 1.5 H.P.

6.3.2 Commercial Applicability

Subject to established rules and regulations of the PalliBidyutSamity, applicable for single phase and three phase 50 cycles, electricity connection of the following category of consumers:

Hat- bazaar, shop (including tailoring shop),Commercial enterprise, Government and semi-government office, Private clinic, Practicing chamber, Community centre and community hall, Rest house, Cinema hall, Mobile Tower, Petrol/CNG pump Station.

6.3.3 Charitable Institution Applicability

Subject to established rules and regulations of the PalliBidyutSamity, applicable for single phase and three phase 50 cycles, electricity connection of the following category of consumers:

Masjid, Temple, Church, Pagoda, School, College, Madrasah, Club, Orphanage, Charitable institution (Not complex), Charitable dispensary, Crippled rehabilitation centre etc.

6.3.4 Power factor adjustment for Domestic (Bari or house), Commercial, Charitable institution

Power factor adjustment will be applicable as per BERC order issued from time to time. (PFC Formula stated in SCHEDULE-GP & SCHEDULE-LP of this rate schedule).

6.3.5 Irrigation Applicability

Subject to established rules and regulations of the PalliBidyutSamity, applicable for single phase and three phase 50 cycles ‘connections of all kinds of irrigation pump consumers.

6.3.6 General Power

Subject to the established rules and regulations of the PalliBidyutSamity, applicable for contracted load up to 50KW with single phase or three phases, 50 cycle connection of all types of usage. Generally,PalliBidyutSamity will implement secondary metering (L.T. metering) for such types of consumer. Supply voltage will be 230/400 voltage. Types of the consumer under this category will be as follows:

- All types of industries and industrial complex.
- Government office complex.
- Government and charitable hospital complex.
- Charitable, religious and education complex.
- Small Industries related to production or fabrication.
- Union Paribar Kalian Kendra.
- Cantonment, air, naval base/installation etc.
- Police station, Camp, Outpost etc. and BDR Camp, BOP Installation etc.

6.3.7 Large Power

Subject to the established rules and regulations of the PalliBidyutSamity, applicable for contracted load up to 50KW with three phases, 50 cycles connection of all types of usage. Generally,PalliBidyutSamity will implement primary metering (H.T metering) connection for such type of consumer. Supply voltage will be 6350/11000 voltage. If primary metering is not possible, then 2.5% additional unit (for transformer loss) will be added with secondary metering (L.T. metering) unit, but the tariff and other charges will be applicable as per LP consumer. Type of consumers under this category will be as follows:

- All types of industries and industrial complex.
- Government office complex.
- Government and charitable hospital complex.
- Charitable, religious and education complex.
- Small Industries related to production or fabrication.

- Union Paribar Kalian Kendra.
- Cantonment, Air, Naval base/installation etc.
- Police station, Camp, Outpost etc. And BDR Camp, BOP Installation etc.

6.3.8 Power factor adjustment for Irrigation, General power, large power

The member-consumers for above 15 horsepower load shall have to be agreed to maintain unity power factor as nearly as practicable. The measured power factor(as per PBS instruction 300-5) will be corrected or adjusted for consumers having power factor less than 95% (Ninety-five percent).

6.4 P.F correction multiplication factor

Correction or adjustment of the power factor will be made by increasing the actual KWh consumption that is by multiplying actual KWh consumption in meter with above power factor correction (PFC) Multiplication factor. If the P.F is greater than or equal to 0.95 at the consumer end, the consumer will be charged for the actual consumption (KWh) as per meter reading. It will be changed from time to time by order of BERC.

6.4.1 P.F. Penalty Formula:

Consider,

$X/Y = z$

$R \times z = R_n$

$R_n \times E$ = Energy Billed for P.F. penalty

Where,

$X = 0.95$

Y = consumer P.F.

z = Multiplying factor

R = Energy Rate

R_n= Energy Rate for P.F. Penalty

E = Energy consumed (KWh)

6.5 Power Factor Correction Example

Let an industrial allowable power factor value is 0.95 but Average power factor is 0.81 which is lower than 0.95 so in that case Power factor correction

$$= \frac{Allowable\ power\ factor}{Average\ power\ factor} = \frac{0.95}{0.81} = 1.17$$

As we know that if the value of power factor correction is greater than 1 then we have to pay an extra bill.

Let The industry consumption unit is 1000KWh.

So, Billing Unit=Consumption Unit × Power factor correction

=(1000×1.17)

=1170 KWh

So extra power factor correction billing unit = (1170-1000)KWh

= 170KWh

If per unit rate is 5 Taka, then theamountof extra bill = (170× 5) Taka = 850 Taka

In this process, power factor penalty is calculated.

6.6The Benefits for high power factor

- Power loss and voltage drops of motor's wire are decreased.
- Motor work's without interval when voltage dropare less and motor's lifetime are increased because of less temperature of the motor.
- If voltage drops are less then system loss also less.
- Kilowatt-hour consumption is less due to less motor wiring system loss.
- The instruments efficiency is increased with feeder capacity.

All types of irrigation and industrial motor connecting Committee recommends identified size Capacitor/auto PFI to be established. According to the PBS rule if power factor is less than 95% then a penalty added to the monthly bill. So if we use fixed size capacitor or auto PFI for increasing the power factor then all the consumer and also PBS are benefited.

6.8 Summary

Power factor is an important part in electrical energy. Improvement of power factor is reducing the losses and increase life of the machine. Power Factor Penalty is a way to save the unwanted losses of energy. It helps to bind the consumers to maintain standard Power Factor. P.F. Penalty can recover the financial losses not the mechanical losses. So consumers, using large amounts of inductive load, have to improve and maintain their P.F. at the standard level.

CHAPTER 7

ELECTRICITY COST AND RATE

7.1 Electricity Cost

Cost is an important term in any business, where profit or loss is a concern. Supplying electricity is a business also. The cost of electricity is how much one spent or pays to generate, distribute or consume electricity. Electricity is the major power source in all over the world. That's why the cost of electricity is important to improve economic and social benefits.

7.2 Electricity Purchase Cost

Electricity purchase cost is purchasing cost of electricity and consist with bulk price and wheeling charge. Bulk price is paid to the Generation Company and wheeling charge is paid to the Transmission Company by the Distribution Company. As a distribution wing, RPBS-1 pays BPDB or their IPPs bulk price to buying electric energy and wheeling charge to PGCB for wheeling.

7.2.1 Bulk rate

BPDB sales their generating electricity to distribution companies with the bulk rate. BERC fixed this rate as per the situation. Distribution companies also purchase electricity from some private generation companies. But the rate is much lower than bulk rate.

7.2.2 Wheeling Charge

PGCB is paid wheeling charges by the distribution companies. The company has taken infrastructure development projects for the further development of its operation. In order to finance new investment, ensure proper maintenance of its existing assets, PGCB requires being paid at better rates than what it is now getting from the distribution companies. At the

bulk supply level, it is evident that the cost of purchase from rental power plants is the major contributor to losses. The exact quantification of losses will require a more detailed study of supply and losses at different voltage level and to the different bulk purchasers. A more immediate requirement is to address the generation plan in the short term so that lower cost of power is available in the grid. In the medium to long term, given the role of private and public sector in the generation, to enhance competitiveness, it is recommended that a concerted effort to establish a competitive dispatch regime for electricity generation through a cooperative pool. At the retail level, cross – subsidies arise between the different categories of customers

7.3 Distribution Cost

The Expense for distributing the electric energy to consumers is said to be distribution cost. Operation and maintenance cost, Consumer selling expenses, Administration and general expenses, Depreciation and amortization expenses, Tax expenses and interest expenses are included in distribution cost.

Distribution cost = Operation & maintenance + Consumer selling expenses + Administration & general Expenses + Depreciation & amortization + Tax Expenses + Interest Expenses

7.3.1 Operation & maintenance expenses (OME)

All types of expenses for operational and maintenance is included as OME. Operation supervision and Engineering, substation expenses, overhead line expenses, meter expenses, consumer installation expenses are in operation and maintenance expense.

7.3.2 Consumer selling expenses (CSE)

Consumer selling expenses are consumer related expenses. Field supervision, meter reading expenses, consumer records/collection expenses, consumer assist/demonstration/selling expenses and sales to freedom fighter are including in CSE

Table 7.1: Distribution and Total Supply Cost (2015-2016)

Month	EC	Distribution Cost						Total Distribution	SL(10^7Tk)	Total Supply
		OME	CSE	AGE	DAE	TE	IE			
July	8.3352	0.004	0.006	0.004	0.007	0.000	0.003	0.025	0.082	8.443
August	8.9060	0.003	0.005	0.003	0.008	0.001	0.003	0.024	0.219	9.148
September	9.2869	0.004	0.008	0.004	0.008	0.000	0.003	0.027	0.162	9.477
October	9.1479	0.004	0.006	0.003	0.008	0.000	0.003	0.025	0.076	9.249
November	6.6379	0.003	0.006	0.004	0.008	0.001	0.012	0.033	0.018	6.689
December	6.7650	0.005	0.006	0.003	0.008	0.000	0.007	0.029	0.048	6.842
January	7.4574	0.012	0.008	0.007	0.008	0.001	0.007	0.042	0.075	7.574
February	7.4719	0.003	0.005	0.004	0.008	0.000	0.007	0.027	0.081	7.580
March	10.2348	0.003	0.006	0.004	0.008	0.001	0.007	0.028	0.353	10.617
April	11.1467	0.004	0.006	0.003	0.008	0.001	0.007	0.028	0.277	11.452
May	10.8282	0.004	0.006	0.003	0.009	0.000	0.008	0.031	0.164	11.023
June	11.7440	0.008	0.012	0.027	0.010	0.000	0.000	0.056	0.555	12.355
Grand total	107.962	0.057	0.080	0.069	0.098	1.249	3.523	0.376	2.110	110.448

Table 7.2: Distribution and Total Supply Cost (2016-2017)

Month	EPC	Distribution Cost						Total Distribution cost	SL (10^7Tk)	Total Supply Cost
		OME	CSE	AGE	DAE	TE	IE			
July	8.553	0.415	0.787	0.742	1.026	0.030	0.540	3.541	0.102	12.196
August	8.504	0.710	1.196	0.781	1.040	0.030	0.460	4.216	0.087	12.807
September	8.194	0.611	0.795	0.651	1.123	0.030	0.460	3.670	0.068	11.931
October	9.039	0.777	0.788	0.683	1.101	0.064	0.530	3.944	0.079	13.061
November	7.033	0.574	0.699	0.652	1.107	0.030	0.460	3.522	0.059	10.613
December	7.281	0.650	0.896	0.740	1.116	0.060	1.033	4.495	0.070	11.846
January	9.431	0.548	0.805	0.789	1.124	0.030	0.710	4.006	0.103	13.540
February	10.184	0.573	0.762	0.726	1.144	0.017	0.500	3.722	0.059	13.965
March	11.721	1.018	1.534	0.907	1.158	0.031	0.570	5.216	0.101	17.039
April	12.425	0.581	0.792	0.754	1.162	0.012	0.570	3.871	0.167	16.463
May	8.739	0.744	0.760	0.677	1.166	0.052	0.570	3.969	0.090	12.798
June	10.281	0.766	1.214	1.237	1.143	0.059	0.663	5.081	0.013	15.376
Grand Total	111.385	7.966	11.029	9.338	13.409	0.444	7.066	49.253	0.997	161.635

Table 7.2: Distribution and Total Supply Cost (2017-2018)

Month	EPC	Distribution Cost						Total Distribution Cost	SL (10^7Tk)	Total Supply Cost
		OME	CSE	AGE	DAE	TE	IE			
July	10.146	0.663	0.721	0.638	1.245	0.000	0.650	3.917	0.322	14.385
August	9.659	0.976	1.092	0.875	1.252	0.030	0.650	4.875	0.322	14.856
September	9.744	0.641	0.746	0.644	1.261	0.030	0.650	3.971	0.451	14.166
October	8.495	0.813	0.723	0.724	1.288	0.041	0.650	4.240	0.207	12.942
November	5.676	0.680	0.757	0.689	1.321	0.060	0.650	4.157	0.344	10.176
December	7.160	0.810	0.828	0.844	1.333	0.000	0.650	4.465	0.173	11.798
January	8.058	1.160	1.484	0.979	1.362	0.043	0.650	5.678	0.269	14.005
February	9.837	0.638	0.733	0.788	1.385	0.014	0.706	4.263	0.015	14.115
March	12.015	0.826	0.803	0.774	1.390	0.008	0.650	4.450	0.063	16.528
April	8.820	0.707	0.831	0.770	1.422	0.016	0.650	4.396	0.338	13.554
May	8.621	0.832	0.709	0.779	1.467	0.164	0.650	4.601	0.481	13.703
June	7.621	0.919	1.153	1.170	1.083	0.083	0.653	5.061	0.676	13.358
Grand Total	105.853	9.664	10.579	9.674	15.808	0.489	7.859	54.073	3.660	163.586

7.1 Graphically Representation:

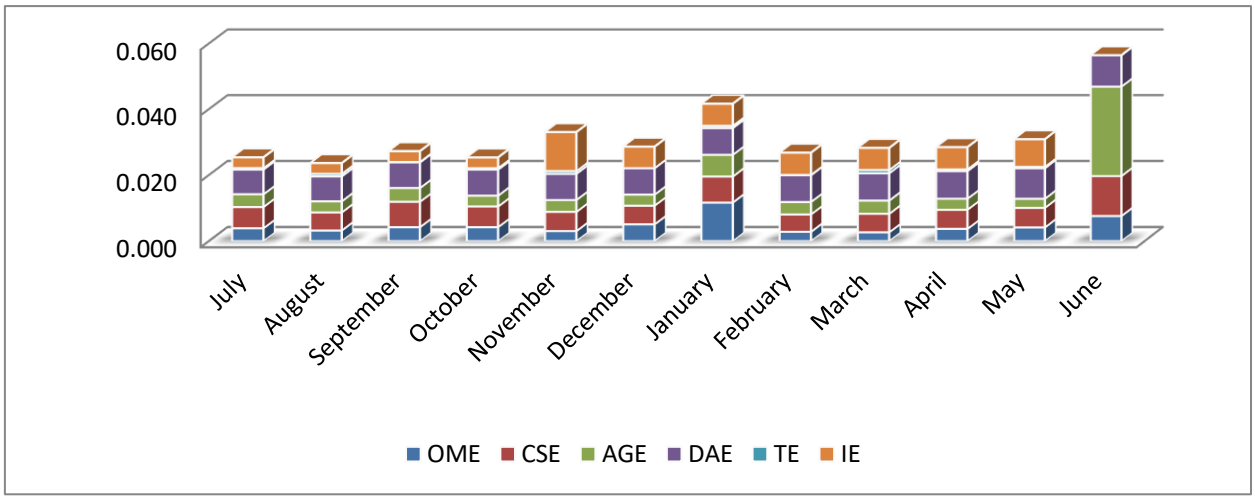


Fig7.1:Distribution Cost of RPBS in 2015-16

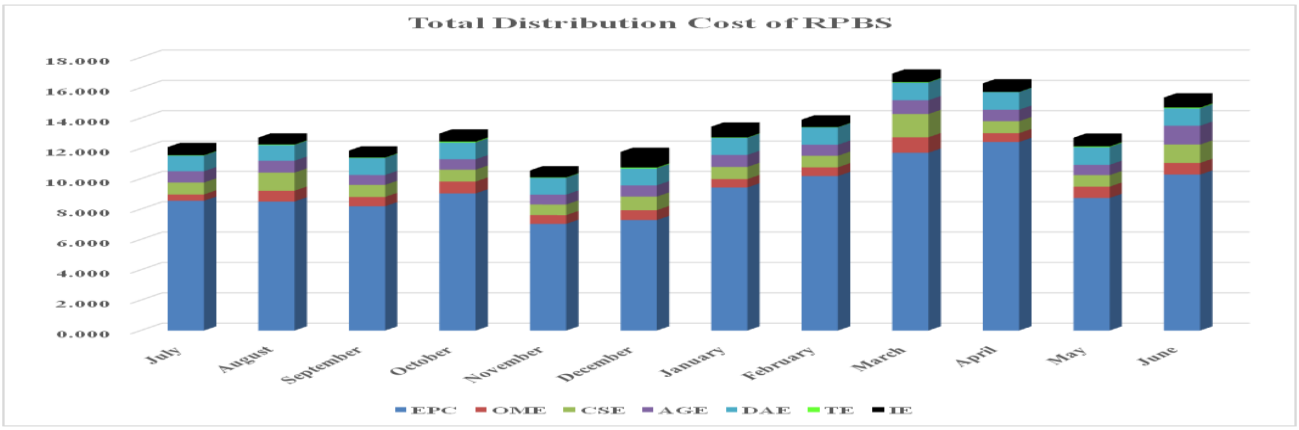


Fig7.2:Distribution Cost of RPBS in 2016-17

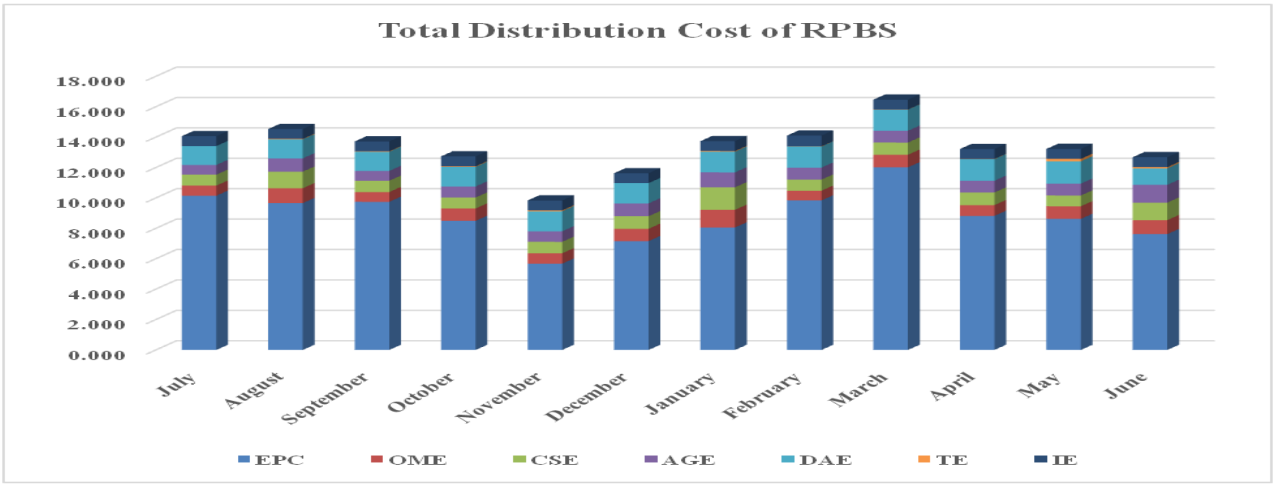


Fig7.3:Distribution Cost of RPBS in 2017-18

his table shown that in July, 2015-16 the Energy Cost is 8.3352 core, total distribution cost is 0.029 Core, system loss cost is 0.082 core, so total supply cost is 8.443 core.
These table shown that in December, 2015 the Energy Cost is 6.7650 core, total distribution cost is 0.025 core, system loss cost is 0.048 core, so total supply cost is 6.842 core.
These table shown that in June, 2016 the Energy Cost is 11.7440 core, total distribution cost is 0.056 core, system loss cost is 0.555 core, so total supply cost is 12.355 core.
The rest of the month distribution and total supply cost analysis showed in the Table no 7.1.InMarch-16, April-16, May-16, June-16 the energy cost is high, system loss is high so total supply cost also high than previous months.

his table shown that in July, 2016-17 the Energy Cost is 8.553core, total distribution cost is 3.541Core, system loss cost is 0.102core, so total supply cost is 12.196core.
These table shown that in December, 2016 the Energy Cost is 7.281core, total distribution cost is 4.495core, system loss cost is 0.070core, so total supply cost is 11.846core.
These table shown that in June, 2017 the Energy Cost is 10.281core, total distribution cost is 5.081core, system loss cost is 0.013core, so total supply cost is 15.376core.
The rest of the month distribution and total supply cost analysis showed in the Table no 7.2.InMarch-16, April-16, May-16, June-16 the energy cost is high, system loss is high so total supply cost also high than previous months.

his table shown that in July, 2017-18 the Energy Cost is 10.146 core, total distribution cost is 3.917 Core, system loss cost is 0.322 core, so total supply cost is 14.385 core.
These table shown that in December, 2017 the Energy Cost is 7.160 core, total distribution cost is 4.465 core, system loss cost is 0.173 core, so total supply cost is 11.798 core.
These table shown that in June, 2018 the Energy Cost is 7.621 core, total distribution cost is 5.061 core, system loss cost is 0.676core, so total supply cost is 13.358core.
The rest of the month distribution and total supply cost analysis showed in the Table no 7.3.InMarch-16, April-16, May-16, June-16 the energy cost is high, system loss is high so total supply cost also high than previous months.

7.3.3 Administration and General Expenses (AGE)

Administrative and General Expenses are broken into operation and maintenance expenses, with the bulk of the expenses being operation based. Operation expenses include administrative and general salaries, office supplies and expenses, administrative expenses transferred, outside services, property insurance, injuries and damages, hired service and rents. Maintenance expenses include only maintenance of general plant.

7.3.4 Depreciation & Amortization Expenses (DAE)

The depreciation expenses included as a cost is the monthly depreciation for all used and useful assets. RPBS calculates 3 % depreciation of its assets.

7.3.5 Tax expenses (TE)

All type of tax is included in tax expenses such as expense for revenue stamp, municipal tax, land and development tax etc.

7.3.6 Interest expenses (IE)

Expenses of payable interest on loans from bank, BREB or from any other loans are included as IE. RPBS

7.3.7 System Loss (Tk)

Calculate system loss KWh in taka. System loss in taka is the help to calculate the distribution cost more correctly and showed an economical figure of system loss. RPBS had a system loss in taka 2.11 in (2015-16), 0.997 (2016-17), 3.660 (2017-18)

System Loss (Tk) = Import Energy x System loss (Tk/Unit)

7.4 Revenue

The revenue is the amount of income that a PBS should have opportunity to earn in order to maintain operations and attract capital for investment, but still maintains least cost for consumers.

Table7.2: Import energy, Purchase cost, Expenditure, Sell energy, Revenue, Distribution cost of energy according to the Thesis Calculation (2015-2016)

Month	Energy Import (MU)	Energy Purchase Cost (10^7Tk)	Energy Sell (MU)	Distribution Cost (10^7Tk)	Total Supply Cost (10^7Tk)	Revenue from Sell Energy (10^7Tk)	Revenue from other sources (10^7Tk)	Total Revenue (10^7Tk)	System Loss%	Surplus (+/-) (10^7Tk)	System Loss (10^7Tk)	System Loss (Tk/Unit)	Distribution Cost (Tk/Unit)	Total Revenue (Tk/Unit)
July	16.57	7.062	13.960	11.496	10.590	7.680	0.076	7.755	15.759	-2.835	0.208	0.797	2.527	0.046
August	16.65	7.094	14.631	12.317	10.598	8.008	0.108	8.116	12.102	-2.482	0.118	0.587	2.395	0.065
September	17.00	7.665	15.250	16.595	11.610	8.252	0.099	8.351	10.287	-3.259	0.090	0.517	2.587	0.059
October	21.72	9.792	19.747	14.593	10.180	10.060	0.138	10.199	9.069	0.019	0.089	0.450	0.196	0.064
November	14.03	6.328	12.431	4.382	9.021	6.723	0.198	6.921	11.424	-2.100	0.093	0.582	2.166	0.141
December	17.41	6.473	12.777	9.982	9.551	6.934	0.246	7.180	26.627	-2.371	0.626	1.349	2.409	0.141
January	21.11	7.852	15.526	10.690	14.482	7.949	0.165	8.114	26.451	-6.368	0.747	1.338	4.270	0.078
February	28.09	9.519	19.011	9.966	13.852	9.338	0.160	9.498	32.321	-4.354	1.469	1.618	2.279	0.057
March	24.49	12.666	24.881	11.659	14.603	12.476	0.189	12.665	-1.583	-1.938	0.003	-0.081	0.778	0.077
April	17.11	11.044	20.345	12.798	12.087	10.486	0.180	10.665	-18.936	-1.422	0.333	-1.028	0.512	0.105
May	20.39	9.235	16.300	8.470	5.551	9.028	0.207	9.235	20.062	3.684	0.465	1.137	-2.260	0.102
June	20.39	9.780	17.464	13.183	9.610	9.570	0.209	9.780	14.355	0.170	0.235	0.804	-0.097	0.103
total	234.962	104.510	202.324	136.132	131.735	106.503	1.975	108.478	157.938	-23.257	4.477	8.069	17.764	1.036

Table7.3: Import energy, Purchase cost, Expenditure, Sell energy, Revenue, Distribution cost of energy according to the Thesis Calculation (2016-2017)

Month	Energy Import (MU)	Energy Purchase Cost (10^7Tk)	Energy Sell (MU)	Distribution cost (10^7Tk)	Total Supply Cost (10^7Tk)	Revenue from Sell Energy (10^7Tk)	Revenue from other sources (10^7Tk)	Total Revenue (10^7Tk)	System Loss%	Surplus (+/-) (10^7Tk)	System Loss (10^7Tk)	System Loss (Tk/Unit)	Distribution Cost (Tk/Unit)	Total Revenue (Tk/Unit)
July	18.97	8.55	17.02	3.54	22.51	9.25	0.08	9.34	10.28	-13.17	0.10	0.52	8.20	
August	18.86	8.50	17.05	4.22	23.08	9.42	0.15	9.57	9.58	-13.50	0.09	0.48	8.55	0.08
September	18.17	8.19	16.60	3.67	21.84	9.09	0.16	9.25	8.64	-12.59	0.07	0.43	8.22	0.09
October	20.05	9.04	18.27	3.94	23.99	9.80	0.23	10.03	8.85	-13.96	0.08	0.44	8.18	0.12
November	15.60	7.03	14.25	3.52	19.12	7.78	0.23	8.01	8.67	-11.11	0.06	0.43	8.48	0.15
December	16.15	7.28	14.65	4.50	20.64	7.98	0.22	8.20	9.29	-12.44	0.07	0.46	9.12	0.14
January	20.92	9.43	18.47	4.01	24.92	9.34	0.16	9.50	11.68	-15.42	0.15	0.60	8.39	0.08
February	22.59	10.18	20.94	3.72	26.31	10.36	0.13	10.49	7.30	-15.81	0.06	0.36	7.70	0.06
March	25.99	11.72	23.23	5.22	31.21	11.95	0.21	12.16	10.65	-19.05	0.15	0.54	8.39	0.08
April	27.56	12.43	24.25	3.87	31.43	12.45	0.19	12.63	12.02	-18.80	0.20	0.62	7.84	0.07
May	19.38	8.74	16.99	3.97	23.35	9.87	0.21	10.08	12.36	-13.27	0.15	0.64	8.60	0.11
June	22.80	10.28	20.04	5.08	27.88	10.93	0.19	11.13	12.11	-16.76	0.17	0.62	8.78	0.08
Grand Total	247.032	111.39	221.75	49.25	296.28	118.22	2.18	120.39	121.42	-175.89	1.34	6.11	100.45	1.05

Table7.4: Import energy, Purchase cost, Expenditure, Sell energy, Revenue, Distribution cost of energy according to the Thesis Calculation (2017-2018)

Month	Energy Import (MU)	Energy Purchase Cost (10^7Tk)	Energy Sell (MU)	Distribution Cost (10^7Tk)	Total Supply Cost (10^7Tk)	Revenue from Sell Energy (10^7Tk)	Revenue from other sources (10^7Tk)	Total Revenue (10^7Tk)	System Loss%	Surplus (+/-) (10^7Tk)	System Loss (10^7Tk)	System Loss (Tk/Unit)	Distribution Cost (Tk/Unit)	Total Revenue (Tk/Unit)
July	22.50	10.15	20.72	3.92	26.42	10.99	0.11	11.10	7.92	-15.32	0.07	0.39	7.85	0.05
August	21.42	9.66	18.86	4.87	26.30	10.55	0.14	10.69	11.94	-15.61	0.16	0.61	8.82	0.06
September	21.61	9.74	19.27	3.97	25.58	10.53	0.15	10.68	10.81	-14.90	0.13	0.55	8.22	0.07
October	18.84	8.28	18.34	4.24	23.08	10.18	0.17	10.36	2.67	-12.72	0.01	0.12	8.07	0.09
November	15.40	6.95	15.13	4.16	19.56	8.58	0.24	8.82	1.76	-10.75	0.00	0.08	8.34	0.15
December	16.51	7.16	14.54	4.46	20.98	8.47	0.26	8.73	11.97	-12.24	0.12	0.59	9.51	0.16
January	22.06	9.57	19.32	5.68	27.74	10.13	0.18	10.32	12.42	-17.42	0.17	0.61	9.40	0.08
February	22.69	9.84	21.43	4.26	26.95	10.93	0.13	11.06	5.53	-15.89	0.03	0.25	7.98	0.06
March	32.42	14.06	27.80	4.45	36.87	14.30	0.17	14.47	14.25	-22.40	0.33	0.72	8.21	0.05
April	25.47	11.04	23.37	4.40	29.87	12.78	0.18	12.96	8.24	-16.91	0.08	0.39	8.05	0.07
May	21.60	9.37	18.48	4.60	26.21	10.82	0.59	11.40	14.45	-14.80	0.23	0.73	9.11	0.27
June	24.92	10.81	21.84	5.06	29.98	12.19	0.22	12.40	12.37	-17.58	0.19	0.61	8.78	0.09
Grand Total	265.456	116.61	239.12	54.07	319.53	130.45	2.54	132.99	114.30	-186.54	1.51	5.66	102.34	1.21

Here this table shown that only in June-2016 the Rajshahi PBS is in 0.170 surplus that means in profit position due to increased system loss heavily (14.355). But the other months of the year is in negatives surplus that means in profit position. In Octobor-15 and May-15 the PBS is in mostly profit position.

Here this table shown that only in June-2017 the Rajshahi PBS is in – 16.76 surplus that means in loss position due to increased system loss heavily (12.11). But the other months of the year is in negative surplus that means in profit position. In Octobor-15 and December-15 the PBS is in mostly loss position.

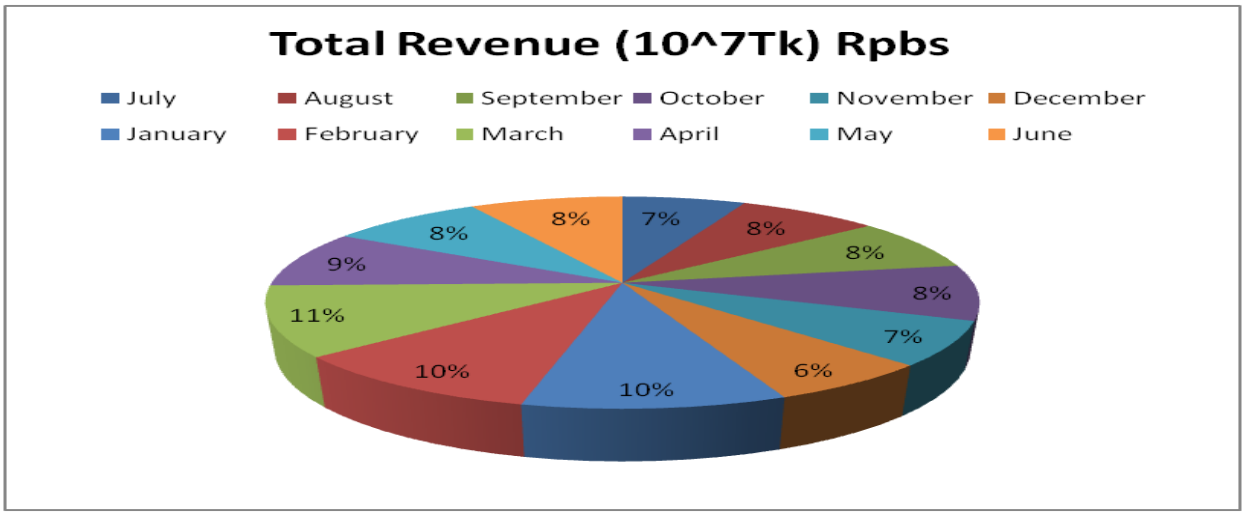
Here this table shown that only in June-2018 the Rajshahi PBS is in – 17.58 surplus that means in loss position due to increased system loss heavily (12.37). But the other months of the year is in negative surplus that means in profit position. In Octobor-15 and December-15 the PBS is in mostly loss position.

7.4.1 Total Revenue (TR)

Total revenue is the total earning money of a PBS. A PBS earns its revenue from two sources. One isfrom sales of energy to the consumers and the other is revenue from other operating sources.

Total revenue = Revenue from sales of energy + Revenue from others.

Fig 7.4: Monthly Revenue of 2015-16(in% of Total)



\

Fig 7.5: Monthly Revenue& Revenue from Other of 2016-17(Total)

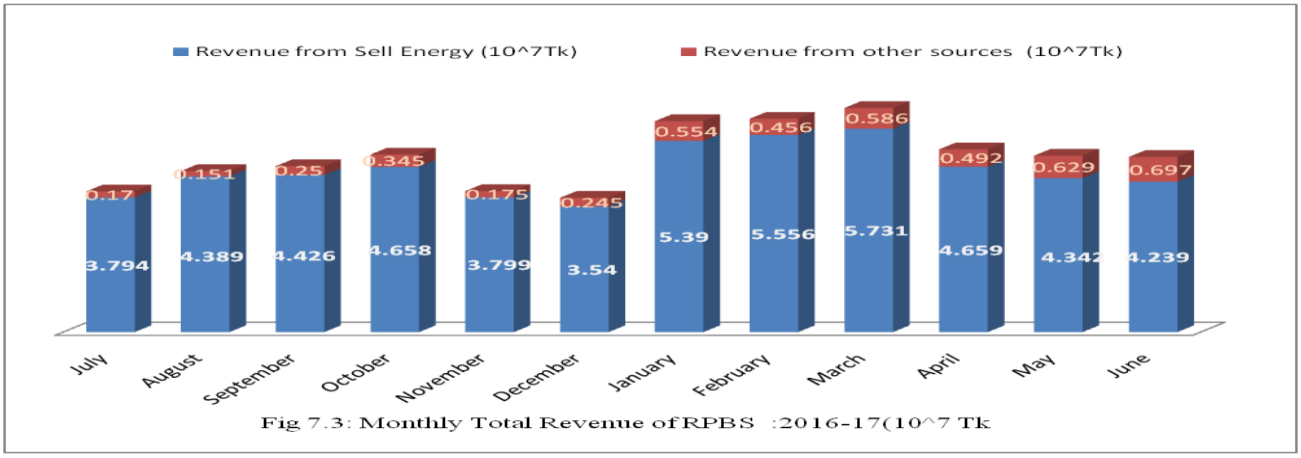
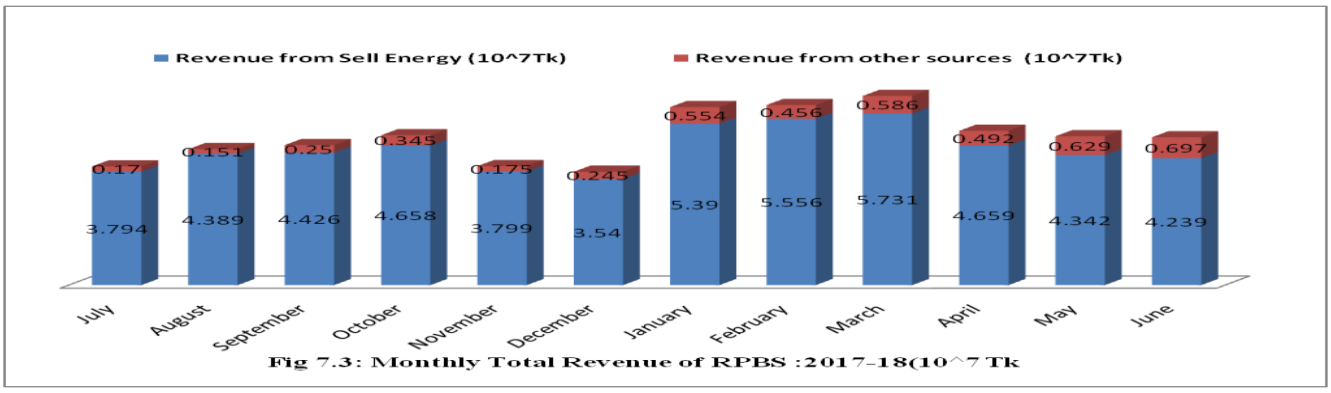


Fig 7.6: Monthly Revenue& Revenue from other of 2017-18(Total)



In this Graph the revenue is 11% (high) in March-16 and May-16, also revenue is 9% in and October-15, revenue is 8% in August-15 and September-15 and revenue is 8% in other months of 2015-2016 years.

7.4.1.1 Revenue from Sales Energy

Revenue from only selling energy to the consumers are in this category. These amounts are collecting through the electricity bills from the consumers. Demand charge, corresponding energy rate and some other charges are included in this revenue.

7.4.1.2 Revenue from others

Revenue from others is actually the summation of operating revenue from other sources, non-operating margins- interest and non-operating margins-Others.

Revenue from others = other operating revenue + Non-operating Margins- Interest + Non-operating Margins-Others

7.4.1.3 Other operating revenue

Late payment charge, miscellaneous service revenue, rent for electric property and other electric revenue are calculated as other operating revenue.

7.4.1.4 Non-operating Margins- interest

Interest from bank deposit, interest from employee loans (Home loan) related with this part. PBS calculates this as revenue and employee have to pay about 10% interest on their home loan.

7.5 Total supply cost (TC)

From purchase to supply electric energy to the consumers, the total cost is said to be the Total Supply Cost. This is the total operational expenses of a PBS. In 2015-18 fiscal year RPBS showed about 131.735, 296.28,319.53 core taka as their total supply cost, where energy purchase cost was

Total supply cost (TC) = Energy Purchase Cost+ System Loss (inTk.) + Distribution cost (DC)

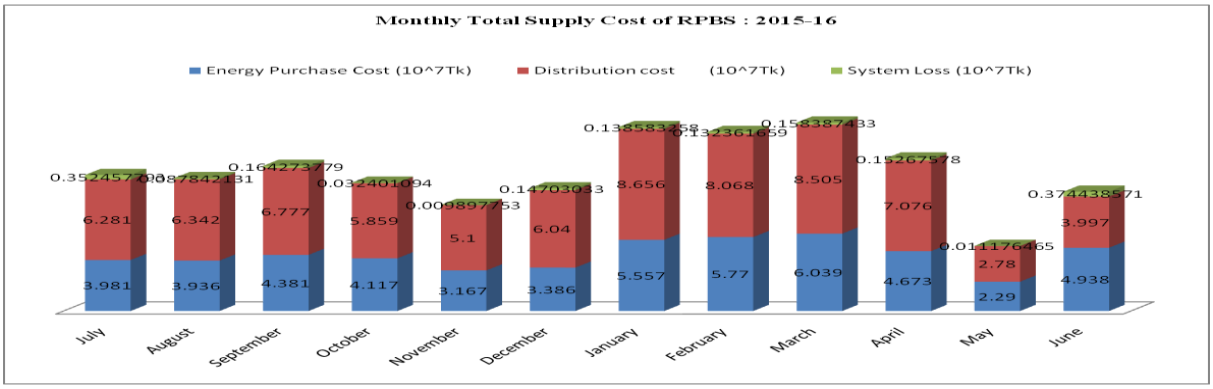


Fig 7.7: Monthly Total Supply Cost of RPBS-2015-2016(10^7 Tk.)

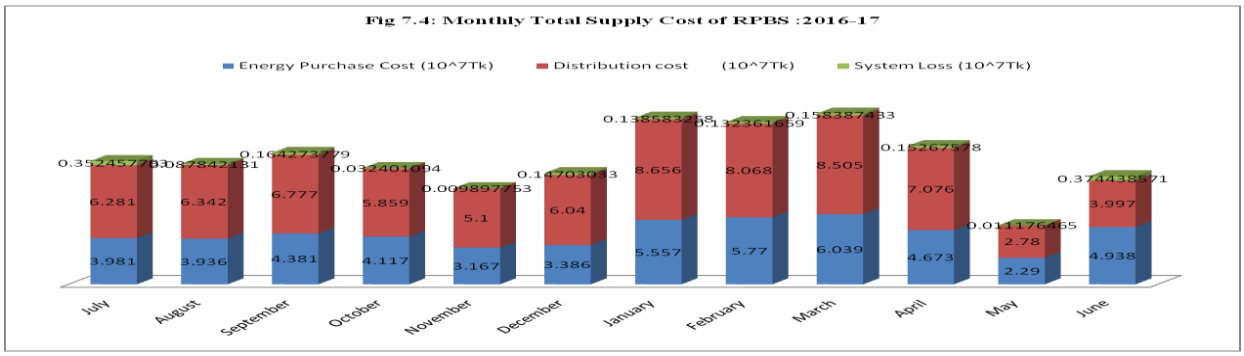


Fig 7.8: Monthly Total Supply Cost of RPBS-2016-2017 (10^7 Tk.)

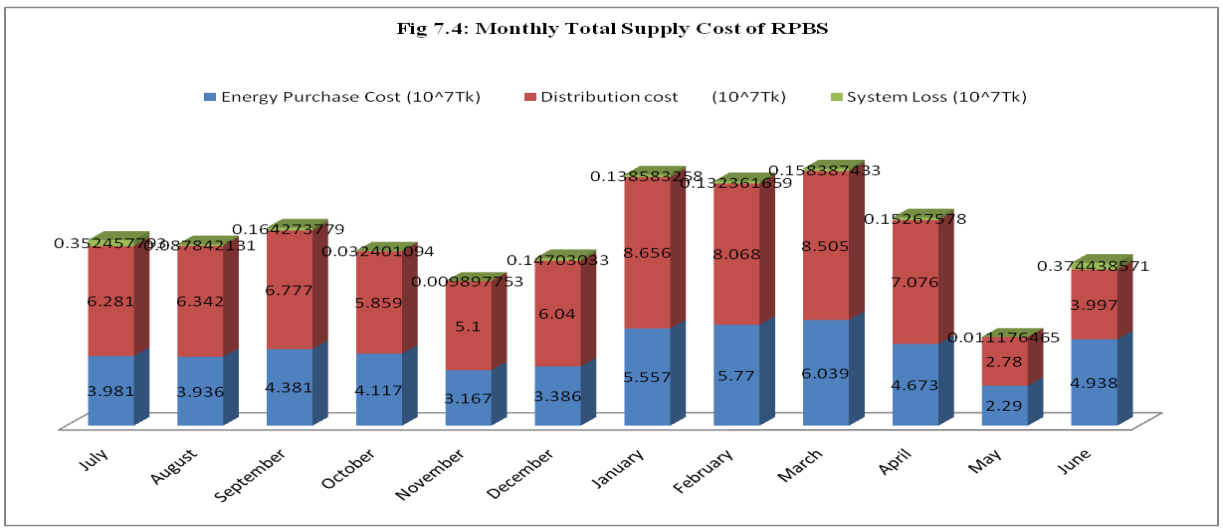


Fig 7.9: Monthly Total Supply Cost of RPBS-2017-2018 (10^7 Tk.)

In this Graph the total supply cost is 14.603 Cores (highest) in Mach-16, Monthly total supply cost is high in- to May-16 except these months total supply cost is low in other months of 2015-2016 year.

In this Graph the total revenue is 131.43 Cores (highest) in April-17. Monthly total revenue is low in Nov-15 to February-16 except these months total revenue is higher in other months of 2016-2017 year.

In this Graph the total revenue is 36.87 Cores (highest) in Mach-17. Monthly total revenue is low in Nov-15 to February-16 except these months total revenue is higher in other months of 2017-2018 year.

7.6 Surplus

Surplus defines the profit or loss of a PBS. It's also known as operating margin.

Surplus = Total Revenue - Total Supply Cost

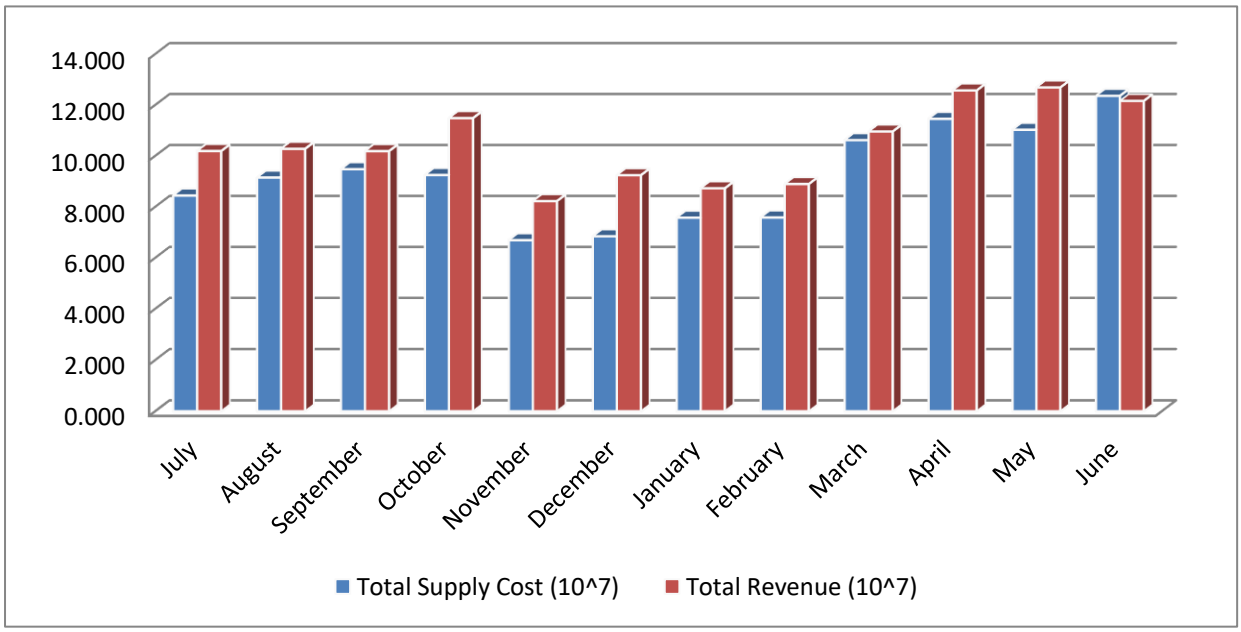


Fig 7.10: Revenue with Supply cost of RPBS

7.7 Per Unit Cost Calculation

Per unit cost calculated to find cost or revenue on each unit energy that's why we assume profit and loss in short. Here we listed some per unit calculation for RPBS,

7.7.1 Distribution Cost (Tk/Unit)

In July, 2015 RPBS had 10.590, core taka Total Supply Cost, 7.062,core taka Energy Purchase Cost and Energy sell is 13.960MU. So the Distribution cost (Tk/Unit) of July, 2015 is

Distribution Cost (Tk/Unit**)** = ((Total Supply Cost - Energy Purchase Cost) / Energy Sell)*10

= ((10.590– 7.062) / 13.960) * 10

= 25.272Tk / Unit

In July, 2016 RPBS had 22.512, core taka Total Supply Cost, 8.554, core taka Energy Purchase Cost and Energy sell is 17.011MU. So the Distribution cost (Tk/Unit) of July, 2017 is

Distribution Cost (Tk/Unit**)** = ((Total Supply Cost - Energy Purchase Cost) / Energy Sell)*10

= ((22.512– 8.554) / 17.011) * 10

= 82.052Tk / Unit

7.7.2 Revenue (Tk/Unit)

In July 2015, RPBS had 7.755, core taka Total Revenue and import energy 16.57 MU.So Revenue on July 2015 was,

Revenue (Tk/Unit) =(Total Revenue / Energy Import)*10

= (7.755/ 16.57) * 10

= 46.801Tk / Unit

In July 2016, RPBS had 9.339, core taka Total Revenue and import energy 18.97 MU.So Revenue on July 2016 was,

Revenue (Tk/Unit) =(Total Revenue / Energy Import)*10

= (9.339/ 18.97) * 10

= 49.230 Tk / Unit

7.7.3 System Loss (Tk/Unit) (SL)

System loss (Tk/Unit) is calculated the price of each unit in system loss.

In July 2015 RPBS had purchased 7.062 MU with 13.960core taka and Energy sell is 7.062MU. So the system loss (Tk/Unit) of July 2015 is

System loss (Tk/Unit)= ((Purchase cost/Sell Energy)-(Purchase cost/Import Energy))*10

$$= \left(\frac{7.062 \text{ core}}{13.960 \text{ MKwh}} - \frac{7.062 \text{ core}}{16.57 \text{ MKwh}}\right) * 10$$

= 0.445Tk / Unit

7.8 Tariff Rate

This is for information of all concerned that in accordance with the BERC Order Dated: 27 August 2015, the new tariff rates with respect to retail sales of electricity of Bangladesh Rural Electrification (BREB) has been made effective from bill month September 2015 as the following.

Table 7.3: Tariff Rates Since 2009 to 2016

Consumer Class	Slab	Before Dec,2009	Dec-09	Slab	1-Dec-11	1-Feb-12	1-Mar-12	Slab	1-Sep-12	Slab	Mar-14	Sep-15
Domestic	0-25	0	0	Minimum	0.00	0.00	0	Minimum	0.00	Minimum	0.00	0.00
	0-100	2.53-2.90	2.64-3.03	00-100	2.77-3.18	2.90-3.34	3.08-3.55	00-75	3.36-3.87	1-50	3.74	3.36-3.87
	101-300	2.57-2.95	2.81-3.23	101-300	3.25-3.73	3.45-3.95	3.67-4.20	76-200	4.05-4.63	1-75	3.87	3.80
	301-500	3.89-4.15	4.28-4.56	301-500	5.21-5.54	5.63-5.98	5.98-6.35	201-300	4.18-4.79	76-200	5.01	5.14
	500++	4.99-5.95	5.64-6.72	500++	6.87-8.18	7.42-8.83	7.88-9.38	301-400	6.88-7.30	201-300	5.19	5.36
								401-600	7.18-7.62	301-400	5.42	5.63
								600++	9.38	401-600	8.51	8.70
										600++	9.93	9.98
Commercial		5.11-5.15	5.62-5.66	Flat	6.80	7.33	7.79	Flat	9.00	Flat	9.58	9.80
				Off-peak	5.23	5.88	6.25	Off-peak	7.22	Off-peak	8.16	8.45
				Peak	9.31	9.66	10.26	Peak	11.85	Peak	11.85	11.98
Charitable		3.28-3.35	3.28-3.35		3.45-3.52	3.62-3.70	3.85-3.93		4.45-4.54		4.98	5.22
Irrgation		2.60-3.05	2.60-3.05		2.73-3.20	2.87-3.36	3.05-3.57		3.39-3.96		3.39-3.96	3.82
General Power		3.91-4.10	4.30-4.51	Flat	5.27	5.67	6.02	Flat	6.95	Flat	7.42	7.66
				Off-peak	4.41	4.86	5.16	Off-peak	5.96	Off-peak	6.64	6.90
				Peak	6.75	6.90	7.33	Peak	8.47	Peak	9.00	9.24
Large Power		3.80-3.95	4.18-4.34	Flat	5.14	5.55	5.90	Flat	6.81	Flat	7.32	7.57
				Off-peak	4.40	4.86	5.16	Off-peak	5.96	Off-peak	6.62	6.88
				Peak	7.55	7.60	8.08	Peak	9.33	Peak	9.33	9.57
33KV				Flat	4.88	5.28	5.61	Flat	6.48	Flat	7.20	7.49
				Off-peak	4.30	4.78	5.08	Off-peak	5.87	Off-peak	6.55	6.82
				Peak	7.34	7.44	7.91	Peak	9.14	Peak	9.28	9.52
Street Light		3.75-3.85	4.12-4.23		4.90	5.28	5.61		6.48		6.93	7.17

7.9 Bill Explanation

- **What all utility bills should contain?**

Bills–for electricity–should always be dated and contain the following information (Usually on the first page of the bill) –

- Your Name and Address.
- Your customer account or reference number (Always quote this when you contact your supplier).
- The name of your supplier and its contact details.
- How much you need to pay (Including any money owed from previous bills) and when you need to pay by.

- **More Detailed Information -**

The following more detailed information about the amount of energy you've used is often found on a separate page of the bill–

- Billing Period – The period in which you used the energy you're being charged for.
- Meter Readings–Difference between the previous and latest reading is the amount of energy (Measured in Kilo watt Hours orKwh) you've used.
- The amount your supplier is charging you for each KWhof electricity. If you pay a standing charge (Which covers things like meter readings and the cost of keeping you connected to the network) you'll pay a single rate; if not then you will pay a higher price for a given number of units and then a lower rate thereafter.
- Meter Number– If your supplier has changed your meter during the billing periodyou'll see readings for two different meter numbers. [18]

7.10 Summary

In this chapter, electricity rate, revenue and expenses or cost of RPBS are calculated according to the thesis formula. System loss calculated in taka. System loss, Distribution cost and Total Revenue calculated month wise in per unit. RPBS find in massive loss.

CHAPTER 8

CONCLUSIONS

8.1 Conclusions

Electricity distribution cost is important issue in our country. Because electricity tariff rate and distribution cost are related with our economic growth. When electricity tariff rate becomes high then poor people of our country suffers a lot. By thinking about them, electricity tariff rate of our country should be low.

Government has given highest priority to power development in Bangladesh and is committed to generating electricity will sufficient for all citizens by 2021. Our government should take step for improvement our power station. In our power station, generators efficiency rate is low. It should be increased to a high value by taking necessary steps.

8.2 Limitations of the Work

There are few limitations I have faced are mentioned below-

- In this study the data of SPBS. I have used are collected from BERC (Bangladesh Energy Regulatory Commission) but some of these data are assumption.
- The distribution cost of SPBS I have calculated are almost the same as that given by BERC. The slight difference of cost caused by the data that are assumption.
- In this thesis, I have discussed about electricity distribution structure and calculated the distribution cost of several power plants. But the tariff rate of electric power depends on generating, transmission, distribution cost. To calculate the tariff rate of electric power, transmission and distribution cost needs to be calculated along with the generation cost.

8.3 Future Outline

Usually, Tariff rate of electrical power depends on transmission and distribution cost. If electricity supply costs are high then electrical tariff rate will high and committed negative result. In this paper, we discussed about Distribution cost of a PBS, how to calculate, with example. We also discussed about important terms. Interested people can study to calculate the Distribution cost and electricity tariff. This paper will also be helpful to get knowledge a stable electricity distribution structure to meet the future electricity crisis of Bangladesh.

REFERENCES

[1] https://en.wikipedia.org/wiki/Rural_electrification, retrieved on 15 January, 2017.

[2] http://www.powerdivision.gov.bd, retrieved on 15 January, 2017.

[3] http://www.reb.gov.bd, retrieved on 20 December, 2016.

[4] http://www.berc.org.bd, retrieved on 20 December, 2016

[5] Infrastructure, rural electrification and development. Paul Cook,University of Manchester, UK.

[6] Drivers and barriers to rural electrification in Tanzania and Mozambique - Grid-extension, off-grid, and renewable energy technologies. Helene Ahlborg, Linus Hammar.

[7] Estimating the marginal cost of quality improvements: The case of the UK electricitydistribution companies .ToorajJamasb, Luis Orea, Michael Pollitt,Heriot-Watt University, University of Oviedo, University of Cambridge.

[8] Reconfiguration of Power Distribution Systems Considering Reliability and Power Loss. B. Amanulla, Saikat Chakrabarti, S. N. Singh, IEEE.

[9] Lifestyle factors in U.S. residential electricity consumption. ThomasF.Sanquist, Heather Orr, Bin Shui,AlvahC.Bittner.

[10]Low energy consumption seasonal calendar for sectoring operation in pressurized irrigation networks. M. T. Carrillo Cobo, J. A. Rodriguez Diaz, P. Montesinos, R. Lopez Luque, E. Camacho Poyato.

[11] Wide-AreaMonitoring,Protection, and Control ofFuture Electric Power Networks. Vladimir Terzija, Gustavo Valverde,Deyu Cai, Pawel Regulski, Vahid Madani,John Fitch,SrdjanSkok,Miroslav M. Begovic,Arun Phadke, IEEE

[12] Future demand scenarios of Bangladesh power sector. Md. AlamHossain Mondal, WulfBoie, ManfredDenich, University of Bonn,University of Flensburg, Germany.

[13] Energy poverty in rural Bangladesh. Douglas F.Barnes, ShahidurR.Khandker,HussainA.Samad,WorldBank,Washington, DC 20433, USA.

APPENDIX- A

1. Organization and function of BREB

After starting functioning REB has gone to a lot of changes. But to ensure a proper function a board was crated. It consists of a Chairman, four full time members and four part time members. Also to ensure direct participation of the beneficiaries, each project area should form an electric cooperative, called a PalliBidyutSamity (PBS).These PBS consists of several members. But PBS is directed by a member of REB.A organization chart of REB is given below:

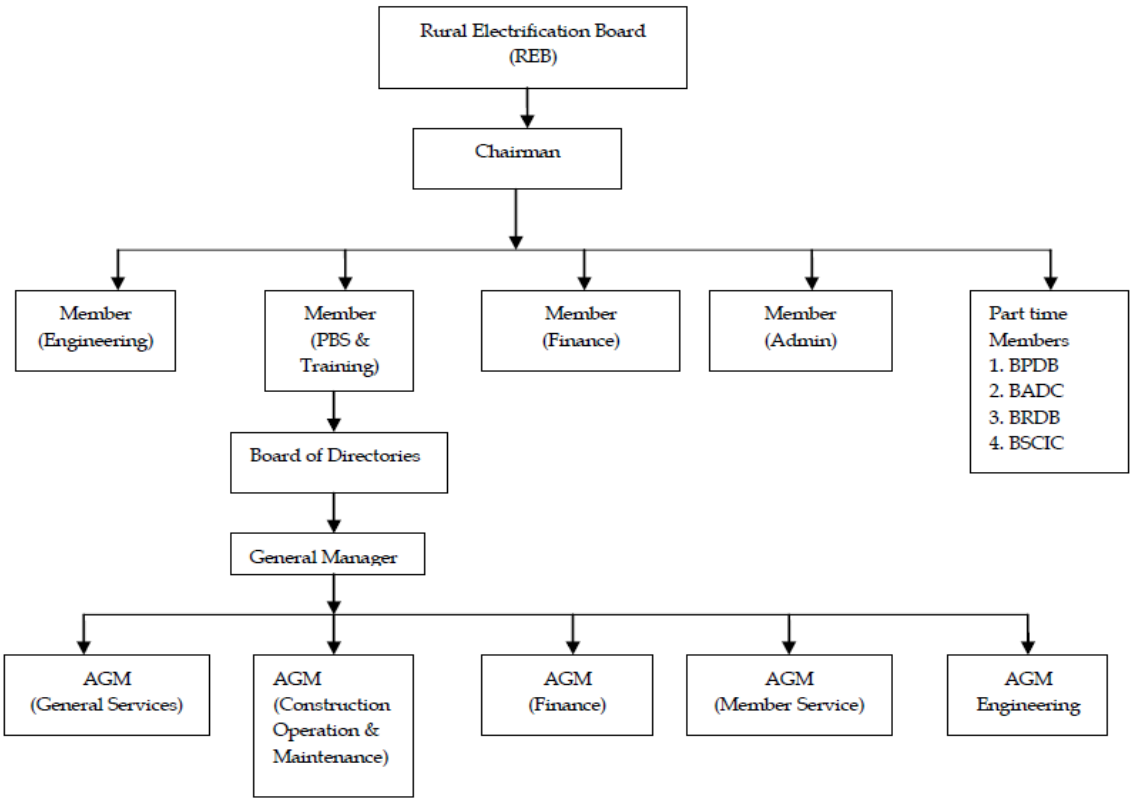


Fig9.1.Organogram of REB

APPENDIX- B

Formula According to Thesis

Total revenue = Revenue from sales of energy + revenue from others

Revenue from others = other operating revenue + Non-operating Margins- interest+ Non-operating Margins-Others

Distribution cost = Operation & maintenance+ Consumer selling expenses + Administration & general Expenses + Depreciation & amortization +Tax Expenses+ interest Expenses

Total supply cost = Energy Purchase Cost+ System Loss + Distribution cost

System Loss (Tk) = Import Energy×System loss (Tk/Unit)

Surplus (Tk) =Total Revenue − Total supply cost

Energy Purchase Cost=Energy×Rate

$$\text{System loss (Tk/Unit)} = \left(\frac{\text{Purchase cost}}{\text{Sell Energy}} - \frac{\text{Purchase cost}}{\text{Import Energy}}\right) \times 10$$

$$\text{System Loss \%} = \frac{\text{Energy Import} - \text{Energy Sell}}{\text{Energy Import}} \times 100$$

$$\text{Distribution Cost (Tk/Unit)} = \frac{\text{Total Supply Cost} - \text{Energy Purchase Cost}}{\text{Energy Sell}} \times 10$$

$$\text{Total Revenue (Tk/Unit)} = \frac{\text{Revenue from other sources}}{\text{Energy Import}} \times 10$$

$$\text{Load Factor} = \frac{\text{Total Unit kWh(Purchase)}}{(\text{Total Peak demand} \times 1000) \times 24 \times 30)} \times 100$$

$$\text{Unit KWh (Purchase) \%} = \frac{\text{Reference grid unit KWh}}{\text{Total Unit KWh purchase}} \times 100$$

$$\text{Increment \%} = \frac{\text{Present value} - \text{Past value}}{\text{Past value}} \times 100$$

Grand Total = Sum of all values

APPENDIX- C

1. As per Sub-station Meter Data (2015-16)

Sub-Station	July					August				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	8.60	3,8,00000				9.00	3,940,000			
Tanor	7.00	2,066,826				7.00	2,084,606			
Durgapur-1	8.00	3,326,101				8.50	3,421,998			
Chargat	-	0				0.00	0			
Ai-Hai	6.50	2,103,000				6.50	2,019,000			
Kaligonj	1.50	1,033,414	**13,968,746**	**(11.46)**	**41.69**	1.70	1,042,302	**14,639,589**	**11.13**	**52.84**
Mohonpur	6.00	2,894,000				6.50	2,825,000			
Durgapur-2	2.80	1,108,700				2.70	1,140,665			
Mundumala	-	0				0.00	0			
Gulai	-	0				0.00	0			
Total	**40.40**	**12,532,041**				**41.90**	**16,473,571**			

Sub-Station	September					October				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	9.00	3,950,000				9.00	4,035,000			
Tanor	7.00	2,166,880				11.40	3,767,440			
Durgapur-1	9.00	3,348,476				9.00	3,215,955			
Chargat	0.00	0				0.00	0			
Ai-Hai	6.00	2,270,000				11.00	4,744,000			
Kaligonj	1.50	1,083,440	**15,250,393**	**9.23**	**55.82**	2.50	1,883,720	**19,756,290**	**7.88**	**55.54**
Mohonpur	6.50	2,866,000				6.50	2,728,000			
Durgapur-2	2.80	1,116,158				2.50	1,071,985			
Mundumala	0.00	0				0.00	0			
Gulai	0.00	0				0.00	0			
Total	**41.80**	**16,800,954**				**51.90**	**21,446,100**			

Sub-Station	November					December				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	6.50	2,928,000				6.45	2,834,000			
Tanor	8.00	2,083,707				7.00	2,402,963			
Durgapur-1	7.50	2,361,315				6.00	2,419,798			
Chargat	0.00	0				0.00	0			
Ai-Hai	5.50	2,646,000				5.50	2,474,000			
Kaligonj	2.00	1,041,853	**12,438,383**	**10.21**	**60.12**	1.70	1,201,482	**12,783,533**	**9.95**	**54.28**
Mohonpur	0.00	2,004,000				5.50	2,057,000			
Durgapur-2	2.50	787,105				3.00	806,599			
Mundumala	0.00	0				0.00	0			
Gulai	0.00	0				0.00	0			
Total	**32.00**	13,851,980				**35.15**	**14,195,842**			

Sub-Station	January					February				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	7.50	3,135,000				8.50	3,508,000			
Tanor	9.30	3,892,475				8.60	3,813,534			
Durgapur-1	6.00	2,515,869				7.00	2,766,950			
Chargat	0.00	0				0.00	0			
Ai-Hai	8.60	3,314,000				8.50	4,032,000			
Kaligonj	2.50	936,000	**15,533,285**	**10.07**	**52.29**	2.50	1,260,000	**19,017,605**	**8.96**	**63.58**
Mohonpur	5.00	2,006,000				6.74	2,915,000			
Durgapur-2	3.00	838,623				2.20	1,262,343			
Mundumala	2.50	634,516				2.65	1,244,401			
Gulai	0.00	0				0.52	87,919			
Total	**44.40**	**17,272,483**				**47.21**	**20,890,147**			

Sub-Station	March					April				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	9.70	4,581,000				10.10	4,497,000			
Tanor	11.40	4,870,051				9.90	3,169,598			
Durgapur-1	9.97	3,840,057				10.90	4,040,594			
Chargat	0.00	0				0.00	0			
Ai-Hai	9.00	4,274,000				8.50	3,139,000			
Kaligonj	4.14	1,746,000	**24,887,601**	**10.22**	**60.28**	3.96	1,440,000	**20,354,449**	**15.07**	**53.74**
Mohonpur	8.28	3,876,000				8.88	3,530,000			
Durgapur-2	3.22	1,920,030				3.29	2,020,297			
Mundumala	3.70	1,609,041				3.65	1,290,522			
Gulai	2.40	1,004,108				2.76	838,411			
Total	**61.81**	**27,720,287**				**61.94**	**23,965,422**			

Sub-Station	May					June				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	9.60	3,547,000				7.50	4,068,000			
Tanor	6.10	2,062,798				5.50	2,182,661			
Durgapur-1	10.08	3,492,000				12.50	4,000,000			
Chargat	0.00	0				0.00	0			
Ai-Hai	5.50	2,044,000				5.50	2,697,000			
Kaligonj	2.34	684,000	**16,310,872**	**3.37**	**47.33**	2.40	936,000	**17,473,894**	**13.18**	**58.15**
Mohonpur	7.58	2,765,000				7.75	3,387,000			
Durgapur-2	3.25	1,173,059				3.50	1,325,015			
Mundumala	1.50	415,270				1.46	594,653			
Gulai	1.98	696,002				1.96	935,938			
Total	**47.93**	**16,879,129**				**48.07**	**20,126,267**			

2.As per Sub-station Meter Data (2016-2017)

Sub-Station	July					August				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	8.66	3,859,000				9.14	3,837,000			
Tanor	5.90	2,108,000				5.62	1,937,000			
Durgapur-1	8.85	3,680,000				9.50	3,837,000			
Charghat	0.00	0				0.00	0			
Ai-Hai	5.50	2,465,000				6.00	2,443,000			
Kaligonj	2.20	882,000	**17,020,194**	**9.48**	**54.76**	3.24	900,000	**17,052,312**	**8.68**	**52.95**
Mohonpur	7.75	3,035,000				7.19	2,942,000			
Durgapur-2	3.35	1,332,064				3.20	1,374,000			
Mundumala	2.56	864,250				1.75	735,700			
Gulai	1.38	577,271				1.76	666,937			
Paba-2										
Total	**46.15**	**18,802,585**				**47.40**	**18,672,637**			

Sub-Station	September					October				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	8.88	3,826,000				8.85	3,572,000			
Tanor	5.50	1,915,000				6.40	2,246,000			
Durgapur-1	10.25	3,671,000				9.04	3,491,000			
Charghat	0.00	0				0.00	0			
Ai-Hai	6.10	2,295,000				10.10	3,753,000			
Kaligonj	2.30	864,000	**16,604,772**	**7.72**	**53.36**	2.50	918,000	**18,273,119**	**8.21**	**51.06**
Mohonpur	7.23	2,849,000				6.93	2,953,000			
Durgapur-2	3.49	1,321,000				3.00	1,227,000			
Mundumala	1.70	687,530				2.69	1,010,860			
Gulai	1.39	566,091				2.90	737,400			
Paba-2										
Total	**46.84**	**17,994,621**				**52.41**	**19,908,260**			

Sub-Station	November					December				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	6.80	2,661,000				6.50	2,623,000			
Tanor	5.40	1,842,000				6.40	2,534,000			
Durgapur-1	6.84	2,588,000				6.88	2,677,000			
Charghat	0.00	0				0.00	0			
Ai-Hai	8.50	2,925,000				6.00	2,512,000			
Kaligonj	1.90	702,000				1.90	810,000			
Mohonpur	6.36	2,280,000	**14,246,711**	**8.21**	**50.50**	5.66	2,311,000	**14,646,997**	**8.77**	**54.48**
Durgapur-2	2.89	930,000				2.65	980,000			
Mundumala	2.30	853,270				2.12	828,860			
Gulai	1.70	740,430				1.50	778,441			
Paba-2										
Total	**42.69**	15,521,700				**39.61**	**16,054,301**			

Sub-Station	January					February				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	6.20	2,747,000				6.80	2,712,000			
Tanor	9.60	4,191,000				9.00	3,871,000			
Durgapur-1	7.40	2,825,000				9.70	2,843,000			
Charghat	0.00	0				0.00	0			
Ai-Hai	9.60	3,985,000				9.50	4,196,000			
Kaligonj	2.88	1,170,000				2.80	1,296,000			
Mohonpur	6.15	2,268,000	**18,473,164**	**11.14**	**55.33**	7.84	2,994,000	**20,937,742**	**6.29**	**55.79**
Durgapur-2	2.54	987,000				3.50	1,171,000			
Mundumala	2.98	1,320,550				3.00	1,327,140			
Gulai	3.15	1,296,379				2.90	1,321,970			
Paba-2						2.50	611,170			
Total	**50.50**	**20,789,929**				**57.54**	**22,343,280**			

Sub-Station	March					April				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	7.89	3,622,000				8.50	3,958,000			
Tanor	10.50	4,412,000				10.01	3,898,000			
Durgapur-1	9.03	3,428,000				10.05	3,977,000			
Charghat	0.00	0				0.00	0			
Ai-Hai	10.30	3,954,000				11.40	4,160,000			
Kaligonj	3.78	1,476,000				4.32	1,584,000			
Mohonpur	9.01	3,784,000	**23,225,367**	**9.89**	**54.90**	9.02	3,987,000	**24,245,665**	**10.79**	**55.37**
Durgapur-2	3.74	1,536,000				3.90	1,752,000			
Mundumala	3.05	1,286,425				3.97	1,235,044			
Gulai	3.20	1,203,087				4.00	1,434,258			
Paba-2	2.60	1,074,000				3.00	1,192,000			
Total	**63.10**	**25,775,512**				**68.17**	**27,177,302**			

Sub-Station	May					June				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit kWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba	9.20	3,540,000				8.16	3,598,000			
Tanor	6.69	2,118,000				6.33	2,554,000			
Durgapur-1	10.02	3,020,000				8.40	3,451,000			
Charghat	0.00	0				0.00	0			
Ai-Hai	6.50	2,412,000				7.50	3,598,000			
Kaligonj	2.70	810,000				2.19	684,000			
Mohonpur	8.10	3,184,000	**16,986,257**	**11.35**	**47.46**	8.40	3,545,000	**20,038,902**	**10.10**	**59.79**
Durgapur-2	3.93	1,521,000				3.90	1,687,000			
Mundumala	1.73	579,796				1.74	813,284			
Gulai	2.10	674,391				1.96	855,659			
Paba-2	3.30	1,302,000				3.20	1,505,000			
Total	**54.27**	**19,161,187**				**51.78**	**22,290,943**			

3.As per Sub-station Meter Data (2017-2018)

Sub-Station	July					August				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba-1	8.90	3601000				9.11	3488000			
Tanor	5.81	2701000				5.80	2564000			
Durgapur-1	7.91	3026000				7.83	2901000			
Chargat	0.00	0				0.00	0			
Ai-Hai	10.01	3844000				9.70	3844000			
Kaligonj	1.62	702000				1.98	846000			
Mohonpur	9.50	3585000	**20720673**	**6.76**	**52.97**	8.52	3291000	**18864648**	**10.88**	**52.66**
Durgapur-2	3.69	1594000				4.26	1538000			
Mundumala	2.43	954398				1.74	780629			
Gulai	3.30	889279				2.10	581738			
Paba-2	3.22	1326000				2.99	1333000			
Mohonpur-2	0.00	0				0.00	0			
Total	**56.39**	**22,222,677**				**54.03**	**21,167,367**			

Sub-Station	September					October				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba-1	8.90	3570000				7.90	3295000			
Tanor	6.30	2504000				6.19	2148000			
Durgapur-1	7.87	3135000				6.97	2628000			
Chargat	0.00	0				0.00	0			
Ai-Hai	8.60	3386000				7.50	2397000			
Kaligonj	1.80	756000				1.98	738000			
Mohonpur	9.00	3488000	**19274892**	**9.80**	**55.22**	8.00	3221000	**18336965**	**1.59**	**50.51**
Durgapur-2	4.02	1701000				3.93	1516000			
Mundumala	2.02	787448				1.92	691983			
Gulai	1.90	746408				2.10	738865			
Paba-2	3.34	1296000				3.10	1260000			
Mohonpur-2	0.00	0				0.00	0			
Total	**53.75**	**21,369,856**				**49.59**	**18,633,848**			

Sub-Station	November					December				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba-1	5.90	2515000				5.90	2446000			
Tanor	5.19	1807000				6.05	2403000			
Durgapur-1	6.30	1894000				5.10	1859000			
Chargat	0.00	0				0.00	0			
Ai-Hai	5.50	2311000				5.80	2746000			
Kaligonj	1.80	792000				1.62	666000			
Mohonpur	6.10	2466000	**15133495**	**0.92**	**51.01**	6.18	2552000	**14,536,666**	**11.69**	**55.21**
Durgapur-2	3.50	1090000				2.87	1112000			
Mundumala	2.10	569686				1.90	719915			
Gulai	2.00	766095				1.65	729310			
Paba-2	3.20	1063000				3.00	1227000			
Mohonpur-2	0.00	0				0.00	0			
Total	**41.59**	**15,273,781**				**40.07**	**16,460,225**			

Sub-Station	January					February				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba-1	6.30	2487000				6.13	2461000			
Tanor	8.69	4024000				9.00	4043000			
Durgapur-1	5.23	2042000				5.66	2184000			
Chargat	0.00	0				0.00	0			
Ai-Hai	10.20	4550000				10.10	4518000			
Kaligonj	2.52	1098000				3.00	1188000			
Mohonpur	6.10	2523000	**19324632**	**11.22**	**56.93**	3.80	1792000	**21,430,733**	**4.58**	**58.05**
Durgapur-2	3.25	1207000				3.68	1345000			
Mundumala	3.00	1333584				3.00	1298679			
Gulai	3.20	1334332				3.00	1352083			
Paba-2	2.90	1169000				3.02	1231000			
Mohonpur-2	0.00	0				5.20	1047750			
Total	**51.39**	**21,767,916**				**55.59**	**22,460,512**			

Sub-Station	March					April				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba-1	10.00	3934000				8.85	3733000			
Tanor	9.80	5334000				10.27	4041000			
Durgapur-1	8.05	3461000				8.13	3160000			
Chargat	0.00	0				0.00	0			
Ai-Hai	10.80	5745000				10.10	3660000			
Kaligonj	3.60	1800000				3.96	1188000			
Mohonpur	6.10	2256000	**27745664**	**13.27**	**63.70**	4.70	2027000	**23373291**	**7.01**	**53.25**
Durgapur-2	4.35	1903000				4.60	1846000			
Mundumala	4.50	1895930				3.45	1211058			
Gulai	4.50	2041338				3.60	1125017			
Paba-2	3.30	1507000				3.40	1420000			
Mohonpur-2	2.50	2112000				4.50	1724250			
Total	**67.50**	**31,989,268**				**65.56**	**25,135,325**			

Sub-Station	May					June				
	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor	Peak Demand	Unit KWh(Purchase)	Total KWh(Sold)	Substation SL %	Load Factor
Paba-1	8.03	3718000				8.87	3997000			
Tanor	7.18	2718000				7.14	2945000			
Durgapur-1	7.82	2943000				8.09	3475000			
Chargat	0.00	0				0.00	0			
Ai-Hai	7.20	2762000				8.20	3750000			
Kaligonj	2.50	1026000				2.70	1152000			
Mohonpur	4.59	1889000	**18,482,639**	**13.74**	**53.36**	4.80	2196000	**21837750**	**11.29**	**61.00**
Durgapur-2	4.07	1729000				4.35	1966000			
Mundumala	2.80	759680				2.00	930240			
Gulai	2.00	759320				2.30	961957			
Paba-2	3.65	1481000				3.60	1529000			
Mohonpur-2	4.13	1641750				4.00	1716000			
Total	**53.97**	**21,426,750**				**56.05**	**24,618,197**			