

ENERGY FOR
SOUTH ASIA

A Task in Participatory Rural Energy
Services in Karnataka (PRESK)

Study Report on Metering, Billing and Collection in the Electrical Distribution System in Karnataka

October 2004

Prepared by



Contract No. 386-C-00-03-00135-00

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USAID SARI/Energy Program

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Acronyms and Abbreviations

AEH	All Electric Homes
APDRP	Accelerated Power Development And Reforms Program
BESCOM	Bangalore Electricity Supply Company
BJ/KJ	Bhagya Jyothi /Kutir Jyothi Consumers
CR	Crore - Ten Million
ESCOM	Electricity Supply Company
FY	Financial Year
GVP	Gram Vidyuth Prathinidhi
H.T	High Tension Consumers
KERA	Karnataka Electricity Reforms Act
KPTCL	Karnataka Power Transmission Corporation Limited
kW	kiloWatt
kWh	kiloWatt hour
LT-1A	BJ/KJ One-Light Bulb Consumers
LT-1B	Domestic Fan and Light (now grouped with LT-2)
LT-2	All Electric Homes and Domestic Light and Fan
LT-3	Commercial
LT-4	Irrigation Pump Sets Less Than 10 Hp.
LT-5	Industrial Heat and Motive
LT-6	Public Water Supply and Street Lights
LT-7	Temporary Connections
LT	Low Tension

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Executive Summary

Electricity Supply Companies (ESCOMS) face many difficulties in the distribution of electricity in the rural areas of India. Metering, billing, and collection by these companies in rural areas are often inefficient and uneconomical. In this context, the government in the State of Karnataka in southwestern India is considering persuading the gram panchayats, which are local electricity distribution cooperatives, to accept the responsibility of electricity distribution in rural areas.

USAID has been supporting state governments and ESCOMS in power reforms through a project called Participation in Rural Electricity Services (PRESK). This report presents the results of a study commissioned in 2003 under PRESK to examine the various factors involved in metering, billing, and collection activities at the gram panchayat level and to study the present system and its cost structure in detail. This report also reviews the current levels of subsidies and possible alternatives to the present system of metering, billing, and collection in the rural areas of Karnataka, particularly in the four subdivisions, or *taluks*, of Doddaballapur, Gubbi, Chintamani, and Molakalmuru.

For this study, data were collected from primary and secondary sources, and interviews were conducted with officials of Bangalore Electricity Supply Company (BESCOM) at the headquarters, subdivision, and community levels. Interviews were also conducted with representatives of gram panchayat (local area electricity distribution cooperatives) and gram vidyuth prathinidhi (local area cooperatives established for electricity billing and collection activities). The collected data was analyzed and metering, billing, and collection costs were calculated for each subdivision. The reasons for low collection efficiencies in certain categories of consumers were identified.

Based on the analyses, a two-stage program was proposed. In stage I, responsibility for metering, billing, and collection activities for certain customer categories would be transferred to the gram panchayats. The gram panchayats could gain the necessary expertise through outsourcing certain billing functions. It was calculated that the metering, billing, and collection cost would go down to an average of Rs 5.30 per installation in place of the current Rs 17.76. The gram panchayats should be encouraged to take up the work of metering, billing, and collection, which is expected to augment their revenues, providing a proper contract is drawn between the gram panchayat and the utility. Because of historical reasons, and the high salaries paid to their employees, the distribution companies are inefficient at conducting metering, billing, and collection activities in rural areas. Many ESCOMs want to dispense with this area and concentrate on other priorities.

In stage II of the proposed program, the gram panchayat would be billed at the distribution transformer point through a meter, and it would in turn meter, bill, and collect the revenue from the customers. The compensation to the gram panchayat would be negotiated with the utility based on the current expenses incurred for this activity by the distribution company.

The study inferred that unless the state government announces a clear policy on subsidy to irrigation pump consumers, the gram panchayats would hesitate to take over the responsibility for power distribution in the rural areas. This policy is needed because waivers of irrigation pump fees are a political issue in farming communities.

The study concluded that conducting metering, billing, and collection activities could be a boon to cash strapped gram panchayats and it also has a potential for generating rural employment.

Background

Rural electricity distribution in India is beset with many problems. There is a very high level of inefficiency in the process of meter reading, billing, and collection. This inefficiency is due in part to the distribution companies' unrealistic salary structure, which developed for historical reasons and continues to exist. In addition, although **80%** of electricity used for irrigation pump set consumption is already subsidized, collection from these consumers is inconsistent. The total subsidy nationwide for irrigation pump use was Rs 31,941 crores for the year 2003-2004. This study examines the expenses incurred for metering, billing, and collection activities, and it also assess alternative cost-effective systems. The study considered the advantages of improving collection by involving the gram panchayats in the process. This innovation could have the added advantages of providing a sense of ownership and responsibility passed on to the people through their elected representatives, and it could increase the efficiency of electricity consumption by the rural population.

The United States Agency for International Development's (USAID) South Asia Regional Initiative on Energy (SARI/E) is providing support to the government of the state of Karnataka and the Bangalore Electricity Supply Company (BESCOM) in implementing an innovative program called Participation in Rural Electricity Services in Karnataka (PRESK), which aims at enhancing communication and customer service by training village governments in electricity administration services to improve revenue generation. The project activities are being conducted in four *taluks*, or subdivisions, of the state: Gubbi in Tumkur District, Doddaballapur in Bangalore Rural District, Molakalmuru in Chitradurga District, and Chintamani in Kolar District.

This study of metering, billing, and collection in the electrical distribution system in rural Karnataka was conducted as part of PRESK in 2003 by Nexant Inc. and its local consultant.

The objectives of this study were to:

- Review BESCOM's billing and collections systems, including billing software;
- Identify and analyze the cost of billing in four subdivisions under the PRESK program;
- Help develop appropriate and cost-effective billing and collections systems to maximize revenue generation at the gram panchayat level; and
- Identify appropriate hardware and software systems suitable for use by gram panchayats.

Methodology

The associated costs involved in the process of metering, billing, and collections, and maintenance were studied in detail in the four subdivisions of Doddaballapur, Chintamani, Gubbi, and Molakalmuru. All expenditures on metering, billing, and collection as well as maintenance were separated, and the costs were calculated apportioning the employee costs for different functions. For better accuracy, section-level detailed analyses were made. Metering, billing, and collection cost per gram panchayat and per installation were calculated. Alternative possibilities for conducting these activities at the gram panchayat level are discussed for comparison.

The issues addressed and process methodologies used in this analysis included:

- Describing different tariff categories and their characteristics;
- Assessing all the expenses of the subdivisions for their activities;
- Assessing the expenses for metering, billing, and collection activities for the subdivisions of Doddaballapur and Chintamani rural subdivisions and their analysis;
- Reviewing Karnataka and BESCO accounts and projections;
- Calculating the metering, billing, and collection cost per gram panchayat and per installation;
- Calculating the metering, billing, and collection costs per installation for different categories by attaching relevant weights to account for the differing frequencies of billing, the existence of categories with meters, and categories without meters;
- Defining the dimensions of a standard gram panchayat in terms of number of consumers in different consumer categories, connected load, monthly demand, and consumption;
- Assessing the possibilities (by category) for the gram panchayats to take over the functions of metering, billing, and collection from the electricity supply companies (ESCOMs); and
- Discussing alternate metering, billing, and collection options.

3.1 Characteristics of Different Categories of Consumers

Electricity supply companies in rural areas of Karnataka have two types of consumers: metered consumers and non-metered. Thirty-one percent of consumers are non-metered and the remaining **69%** are metered. The Bhagya Jyothi/Kutir Jyothi category, which includes the poorest sections of the population, constitutes **17%** and irrigation pump consumers constitute **14%** of the non-metered consumers.

The different categories of consumers have very different characteristics and any choice of alternatives for billing, metering and collection must consider these differences. In our research we have tried to find the metering, billing, and collection costs for each customer category based on the features of each category, such as frequency of billing and bill distribution, and whether the consumers are metered. The metering, billing, and collection cost per installation in each category was derived by giving suitable weights to these features.

The characteristics of each of the consumer categories are described in the following:

- **LT-1:** This category includes the Bhagya Jyothi and Kutir Jyothi (BJ/KJ) consumers and is meant for the very poorest sections of society. The tariff rate for this category is Rs 30 per month and allows one light bulb connection. If any consumer is found to have more than one light bulb, then this consumer is shifted to the LT-2 category and metered. The collection in this category is **42%** (based on figures for 2001-2002-Doddaballapur Subdivision).

It was the opinion of most of the Assistant Executive Engineers that were interviewed for this study that collection could go up to **100%** with proper publicity and efforts from the collecting agency for this category of customers. The very low level of individual consumption makes any cost-intensive metering, billing, and collection activity unproductive. This category consumes **1.2%** of the total energy sold and billed by BESCOM. Revenue projections are **1%** of the total revenues. This category includes about **15%** of total consumers and the number of such consumers per gram panchayat is 329.

- **LT-1B:** This category was formerly for low load domestic consumers using electricity for light, fans, and television. These consumers have been metered once in two months. This category has now been merged with LT-2
- **LT-2:** This category, with more than 66 lakh consumers, constitutes **60%** of the total consumers and contributes **30%** of total revenue, consuming **22%** of the energy. (The previously designated LT-1B category has been merged into this category.) Collection efficiency in this category is almost **100%** according to BESCOM. At the gram panchayat level, handling such consumers would not be difficult. This category as a whole is paying at a rate matching the average cost of supply. The number of consumers per gram panchayat is 872, which breaks out to 836 in LT-1A and 36 for all electric homes (AEH). These consumers have been metered once in a month, and

BESCOM has proposed to bill all consumers currently in this category on a monthly basis.

- ? **LT-3:** This category consumes **4.8%** of energy and contributes **8.6%** of the revenue according to BESCOM. The number of consumers in this category per gram panchayat is around 36 and can be handled by gram panchayats. This category is billed once a month.
- **LT-4A:** This category includes irrigation pump consumers (<10 horsepower). These consumers are not metered and the collection percentage in this category is very low; for example, in Chintamani Subdivision it is less than **5.4%**. These collections are also low because of the compulsory **50%** collection of arrears before repairing failed transformers. There was increased collection in this category during June and July 2003 as the government had waived the accumulated interest if arrears were paid before September 30, 2003. The momentum of collection fell sharply, when the government announced on August 29, 2003 that all the arrears up to March 31, 2001 had been waived. This has caused much confusion among irrigation pump owners, particularly among farmers, who have paid the arrears under the interest waiver scheme and are awaiting the government clarification regarding possible credits to their accounts.

During our interviews with the current and past Konaghatta Gram Panchayat presidents and the officer in charge of the gram panchayat, the opinion that emerged was that gram panchayats would not be able to handle collection for this category of consumers. One reason given was that there would be factional disputes between different party members of gram panchayats, which would be a great impediment in revenue collection. Other major reason cited was that by offering piecemeal solutions, the government was sending the wrong signals to the consumers.

- ? **LT-5:** The distribution company best handles this category, when the connected load is greater than 40 horsepower. Other smaller consumers in this category can be handled by the gram panchayats.
- **LT-6:** This category includes the consumption by the gram panchayats for rural water supply and streetlights. It should be handled by the gram panchayats themselves. The possibilities for separate transformers at each village to feed these installations should be studied.
- **HT:** This category of high tension consumers should be administered by the ESCOM.

To illustrate the importance of the differing consumer categories for metering, billing and collection, the revenue data for Karnataka are presented in Table 3.1.

Table 3.1 Revenue Realization-Karnataka

Categories	Expected Revenue in Rupees Crores
Unmetered Categories	670
Irrigation Pump Sets	603
Bhagya Jyothi/ Kutira Jyothi	69
Total	5725

Source: KERC Tariff Order 2003.

For Karnataka, the specific revenue data are as follows¹:

- Percentage revenue from unmetered category: **10.5%** (This is because of a high level of cross-subsidization.).
- Average revenue from irrigation pump sets: Rs 0.59/unit (This is the expected revenue based on the tariff structures.) This category presently is subsidized by **80%**. Based on the present tariff, the cross-subsidizing amount is Rs 2,200 crores per year. The billed amount per year is around Rs 600 crores, of which around **5%** is collected; thus, the total subsidy to this sector is around Rs 2,800 crores.
- Collection efficiency in metered category: **97%**.
- Collection efficiency in unmetered category: **17%**.
- Overall collection efficiency for BESCOM: **84%**. This high collection rate is due to a high percentage of industrial consumers, which consume substantial levels of energy and collection for them is almost **100%**.
- The average cost of supply: Rs 3.4 per unit.

Revenue collection cannot be attributed to metering, but depends upon the category and the economic status of the consuming category.

3.2 Irrigation Pump Set Consumption

Table 3.2 Irrigation Pump Set Consumption – Estimated by the Commission for FY03

ESCOM	Total Irrigation Pump Consumption as per Expected Revenue from Changes (after deducting LT line loss) (MU)	Total Irrigation Pump Consumption worked out by Commission (MU)	Mid-year Number of Irrigation Pump Sets	Specific Consumption per Irrigation Pump/Year as Worked out by Commission (Units) *
BESCOM	3,293	3,293	4,66,786	7,055
MESCOM	1,315	1,315	3,07,246	4,280

¹ Source: KERC Tariff Order, 2003.

HESCOM	2,069	2,069	3,69,880	5,594
GESCOM	1,362	1,330	1,84,804	7,197
Total	8,039	8,007	13,28,716	6,026

Source: Table-47 (KERCT.O _03)

- Irrigation pump set consumption per year per pump set: 6,026 units
- Flat rate charge for the average for 5 HP pump: 3,600 @ Rs 60 per HP /Month
- Realization per unit of consumption: Rs 0.59 per unit

However, even this amount is not collected by the ESCOMS due to various reasons.²

3.3 Gram Panchayat Arrears

As per the statement of the Karnataka Power Corporation Limited (KPTCL) chairman on July 27, 2003 in the *Times of India*, the total arrears from irrigation pump set owners and gram panchayats was Rs 1,000 crores. Based on data from the study of Doddaballapur subdivision, the average estimated for the state would be the following:

Accumulated Arrears (12 Months):	Rs 1.6 crores
Average Demand/ Subdivision/Month:	Rs 14 lakhs
Average Demand/gram panchayat/Month:	Rs 78,572
Average Demand/gram panchayat/Year:	Rs 942,863

The average annual budget of a gram panchayat in the state is about Rs 5 lakhs and the demand for power itself exceeds Rs 9 lakhs. Hence, it is unrealistic to imagine that the gram panchayats would ever be able to clear the electricity bills by internal earnings. Hence, it is the responsibility of the state government to formulate a policy to address this deficiency. The state government clears these dues as and when finances permit them to do so. The government can fix an amount per gram panchayat and give it to the gram panchayat. Savings would accrue to the gram panchayat and this would act as an incentive to save energy.

3.4 The Present Metering, Billing, and Collection Cost Structure

Table 3.3 presents the collection efficiency data for all four subdivisions. Each subdivision is described in detail in the following paragraphs.

Table 3.3 Collection Efficiency – Four Subdivisions

Category	Collection Efficiency (%)			
	Doddaballapur	Chintamani	Gubbi	Molakalmuru
LT-1A	5.2	6.4	1.5	6.6
LT-1B	91	86		90.12
LT-2	95	114	103	100.61

² The government of Karnataka waived the irrigation pump set arrears up to March 31, 2003 by an order on September 29, 2003 (Newspaper Report, September 30, 2003) amounting to Rs 331 crores.

LT-3	93	103	94	14
LT-4	14	5.4	4.1	16.43
LT-5	96	169	92	91.6
LT-6(I)	0	0	31	0
LT-6(II)	0	0	0	0.6

Source: Records of Doddaballapur, Chintamani, Gubbi, and Molakalmuru Subdivisions,

Doddaballapur Subdivision

The Doddaballapur Taluk subdivision has 398 villages. In this subdivision, the accounting is maintained by only one revenue section located at the subdivision office itself. Data were provided by five section offices: O&M-I, O&M-II, Section Office Doddabelavangala, Section Office Tubagere, and Section Office Kanawadi.

The overall collection efficiency for the Doddaballapur Subdivision is **56%** in terms of money collected:

- Cost per installation for metering, billing, and collection activity is Rs 11.40. (This is because of the higher number of meter readers per section, which is on the order of two to three meter readers [including some linemen acting as meter readers], one permanent lineman, and two to three temporary linemen who do disconnection and collection activity).
- The collection efficiency for (LT-1B, LT-2, LT-3, and LT-5) is **94%** and monthly demand on this category is Rs 66,315,396.
- For categories LT-4 and BJ/KJ, the monthly demand is Rs 5,990,231 with a collection efficiency of **17.2%**. (This collection is partly due to the interest waiver scheme.)
- For LT-6 category, the monthly demand is 22 lakhs.

Chintamani Subdivision

The Chintamani Taluk subdivision has 282 villages. This subdivision has six sections: Kencharanahalli, Battalahally, Irgampalli, Yagavakote, Kaiwara-I, and Kaiwara-II. As the number of installations in Battalahally, Irgampalli, and Yagavakote is quite small, the accounting is maintained by only one revenue section located at Battalahally. Also the details of the number of installations of Battalahally, Irgampalli, and Yagavakote are grouped in the accounting section. Since the number of installations in Kaiwara-I and Kaiwara-II is low, the accounting for both sections is maintained by only one revenue section located at Kaiwara-I; the number of installations of Kaiwara-I and Kaiwara-II are also grouped in the accounting section.

The overall collection efficiency for the Chintamani subdivision is **31%**:

- The cost per installation for metering, billing, and collection is Rs 11.32 (This is because of the greater number of people involved in metering, billing, and collection activity in comparison with Gubbi and Molakalmuru Taluks. (There is a higher number of meter readers per section, which is on the order of two or three meter readers [including some linemen acting as meter readers]. One permanent lineman and two to three temporary linemen do disconnection and collection activity.)
- The collection efficiency for LT-1B, LT-2, LT-3, LT-5, is **118%**. (This is not an anomaly, as the collection during certain months includes previous dues.)

- For categories LT-4 and BJ/KJ, the collection efficiency is **5.9%**.

Gubbi Subdivision

The Gubbi Taluk subdivision has 172 villages and three sections: Gubbi, C.S. Pura, and Chelur. Gubbi Section includes the town panchayat and five gram panchayats, whereas C.S. Pura Section includes seven gram panchayats, and the Chelur Section includes six gram panchayats.

The overall collection efficiency is **25%**:

- Cost per installation for metering, billing, and collection activity is Rs 7.90. (There are fewer meter readers per section compared to other sections. One permanent lineman and one temporary lineman are involved in disconnection and collection activity. This is in contrast with greater number of permanent and temporary linemen involved in this activity in the subdivisions of Doddaballapur and Chintamani).
- The collection efficiency for LT-2, LT-3, and LT-5, is **96%**, and monthly demand on this category is Rs 1,063,810
- For categories LT-4 and BJ/KJ the monthly demand is Rs 44 lakhs with a collection efficiency of **2.8%**.
- For LT-6 category, the monthly demand is Rs 10 lakhs.

Molakalmuru Subdivision

The Molakalmuru taluk subdivision has four sections: Molakalmuru, Rampura, B.G. Kere, and Thalaku. The Thalaku section area comes under Chellakere Taluk and the **70%** of B.G. Kere area comes under the Chellakere Taluk; thus the calculations here are restricted to Molakalmuru area of this subdivision.

The overall collection efficiency is **25%**:

- Cost per installation for metering, billing, and collection is Rs 9.93. (This is in contrast to larger figures for other subdivisions. Only one-meter reader per section is used for meter reading activity. This is in contrast with higher number of meter readers per section in the subdivisions of Doddaballapur and Chintamani, which is two to three meter readers (including some linemen acting as meter readers). One permanent lineman and one temporary lineman do disconnection and collection activity.)
- The collection efficiency for LT-2, LT-3, and LT-5, is **79%** and monthly demand on this category is Rs 776,087.00.
- For categories LT-4 and BJ/KJ the monthly demand is 12.0 lakhs with collection efficiency of **12%**.
- For LT-6, the monthly demand is 11.0 lakhs.

3.5 Inferences

As cost per gram panchayat and cost per installation were thought to reflect metering,

billing, and collection activity efficiency, these have been calculated for each of the four subdivisions. The costs were calculated by giving weights to different categories using a calculation based on Doddaballapur data.

Costs were separated by considering the total number of bills generated, meters read, and the number of bills for which collection efforts were used. This was calculated, using Gubbi subdivision data. The values of the different parameters are enumerated in the following Tables.

Table 3.4 Metering, Billing, and Collection Costs per Installation (Irrespective of the Category)

Subdivision	Cost in Rs
Chintamani	11.32
Doddaballapur	9.93
Gubbi	7.90
Molkalmuru	10.13

Calculated values

Table 3.5 Cost per Installation by Category

Category	Cost in Rs
BJ/KJ (Weight-4)	8.6
LT-2 (Light and Fan) (Weight-6)	13.0
LT-2 (AEH), LT-3, LT-5, LT-6 (Weight-8)	17.30
LT-4 (Weight-2)	4.3

Calculated values

Table 3.6 Average Costs for Different Activities by Function

Function	Cost in Rs
Revenue and billing expense per bill	9.85
Meter reading, spot billing expense per bill	6.93
Collection expense per bill	0.93

Calculated values

Table 3.7 Cost per Gram Panchayat and Cost per Installation for Different Subdivisions

	Chintamani	Doddaballapur	Gubbi	Molakalmuru
Total cost per Gram Panchayat in Rupees	13,245	17,721	18,585	12,916
Total cost per installation	28.88	29.98	21.24	45.33
MBC cost per installation	11.32	11.40	7.9	9.93

Calculated values

Average values:

Total cost per gram panchayat:	Rs 45,598
Metering, billing, collection cost per gram panchayat:	Rs 15,516
Total cost per installation:	Rs 31.35
Metering, billing, collection cost per installation:	Rs 10.13

3.6 Segregation of Cost Elements and Comparison with Outsourcing Options

Gram Vidyuth Prathinidhis (GVPs) are community level cooperatives that are created for the purposes of electricity meter reading, bill distribution, and collection. They have been established in Devanahalli Taluk of Bangalore Rural District. The GVP model referred to throughout this section is based on their experience.

The following compares expenses incurred by an ESCOM with outsourced revenue accounting, meter reading, and spot billing and collection by GVPs, based on Gubbi Section in Gubbi Subdivision:

ESCOM

(a) Revenue Accounting Expense/Bill*.....	: Rs 9.85
(b) Collection Expense/Installation*.....	: Rs 0.93
(c) Meter Reading and Spot Billing Expense/Installation*.....	: Rs 6.98
(b) & (c) together.....	: Rs 7.91

Outsourcing**

(a) Revenue Accounting Expense/Bill*.....	: Rs 2.60
(b) & (c) together—Collection Expense, Meter Reading, and Spot Billing Expense (GVP model)	: Rs 2.70

Based on the proposed fee of Rs 4,000 for the baseline collection to GVP (taking 1500 installations for the gram panchayat).

Comparable figures are Rs 9.85 and Rs 2.60 for revenue accounting per bill for ESCOM and outsourcing, respectively, and Rs 7.91 and Rs 2.70 for spot billing and collection efforts for ESCOM and outsourcing (GVP model), respectively.

Notes: * all installations except LT-7, HT. (One-third of LT-4 is taken to account for the billing frequency of once in three months.) ** (based on the present outsourcing contracts of BESCOM.)

3.7 The Metering, Billing, and Collection Cost per Gram Panchayat

- Metering, billing, and collection cost per gram panchayat has been calculated for the four subdivisions in an elaborate way, allocating the expense of the subdivision by activity. The average cost per gram panchayat works out to Rs 15,616.00 per month.
- For the standard gram panchayat (shown in Table 3.8), we have calculated the metering, billing, and collection cost per gram panchayat, using the values calculated by assigning weights to different consumer categories. This value works out to Rs 16,696.00 per gram panchayat per month.

- The cost per gram panchayat is calculated for the standard gram panchayat, using the segregated values of metering, billing, and collection activities. This works out to Rs 22,005.00 per month per gram panchayat

The average of these three values (i.e., Rs 15,616, Rs 16,696, and Rs 22,005) works out to Rs 18,105 per gram panchayat per month.

The values do not vary widely, which indicates that the allocation of weights and the methodology for calculating the bifurcation of metering, billing, and collection costs are reasonable.

- Average metering, billing, and collection cost per month per gram panchayat works out to Rs 18,000, which will be used for further evaluations and comparisons.

Table 3.8 Calculation of Demand and Metering, Billing, and Collection (MBC) Costs for a Standard Gram Panchayat

Category	No. of Installations	Load K.W	Demand Monthly Rs	Present MBC Cost per month (Rs)	Weighted MBC Cost (Rs) /inst.
LT-1A	329	39	20,388	2,829	8.6
LT-1B	836	200	1,02,804	10,868	13
LT-2	15	46	2742	195	13
LT-3	36	8.7	12,408	623	17.3
LT-4	322	1494	1,86,551	1,385	4.3
LT-5	25	142	99,813	398	17.3
LT-6-1	11	23	46,488	190	17.3
LT-6-II	12	47	32,083	208	17.3
TOTAL	1,562	2,076	4,24,708	16,696	10.3

Calculated values

Note: This table uses the (Demand–Collection–Billing) statement of July 2003 for the Doddaballapur Subdivision.

4.1 Stage I

As a starting activity, the gram panchayats can be given the metering, billing, and collection responsibility of electricity supply to the villages for lighting, gram panchayats' own requirements of streetlights and water supply, irrigation pump sets, and other small commercial and motive power consumers. The categories covered are LT-1, LT-2, LT-3, LT-4, LT-5, and LT-6. Gram panchayats can meter the individual connections and collect the electricity charges as is being done currently for water billing. Since the total billing is quite low, there should not be much difficulty in collecting the same. In addition, electricity billing activities can be a revenue-generating exercise for the gram panchayats, which are struggling financially. The gram panchayats responsibilities can be broken into the following activities:

1. Revenue accounting;
2. Meter reading and issuing of spot bills; and
3. Collection activities.

4.2 Cost per Gram Panchayat – Present Cost

We have calculated the metering, billing, and collection cost per gram panchayat as Rs 18,000 as the present expenses incurred by the ESCOM for carrying out all the elements of these activities, and this value will be used for all comparisons.

4.3 Cost per Gram Panchayat – Outsourcing Scenario

Outsourcing Costs (based on the present outsourcing contracts of BESCO):

(a) Revenue accounting Expense/Bill*	Rs 2.60
(b) & (c) Total Meter Reading, Spot Billing and Collection Expense	Rs 2.70

(* Based on the proposed fee of Rs 4,000 for the base line collection of Rs 4,000 to GVP, taking into consideration 1,500 installations for the gram panchayat.)

Revenue and billing expense per month (All categories + 1/3 of LT-4)	Rs 3, 570.00
Meter reading and collection Expense on GVP Model for base line collection	Rs 4, 000.00
Total Gram Panchayat Baseline Collection	Rs 7, 570.00

The cost per gram panchayat on outsourcing is Rs 7,570 per month for baseline collection, which is to be compared with previously calculated Rs 18,000 for metering, billing, and collection expense per month per gram panchayat to reflect the same baseline collections.

(d) The gram panchayats can outsource these three activities. It would be Rs 7,570 per gram panchayat per month for the baseline collection (present collection). The 8%, which the GVPs are allowed by ESCOM, presently for additional collection, can be the gram

panchayat's share if they can collect the money. The details of "Subcontracted Revenue Management" are given in the following chapter.

This additional activity can help the economy of the gram panchayats and also provide employment to rural youth. The gram panchayat may have to have a person to take care of subcontractor supervision and some local maintenance. According to our estimates, this would not be more than Rs 2,500 per month. Hence, the total expense per month per gram panchayat would be around Rs 10,000.

The details of the work by the subcontractor in revenue management and the functions of a GVP in the GVP model are given in the following paragraphs. The software and hardware setup is presented graphically in Figure 1 and the details are given in the box below. This is the setup that is used, by M/S NSOFT in their contract for revenue management at the subdivision level.³

³ The items are contributions from Mr. Nagaraj of M/S NSOFT and Mr. Venkatasubba Rao, earlier Director (Tech) at BESCOM.

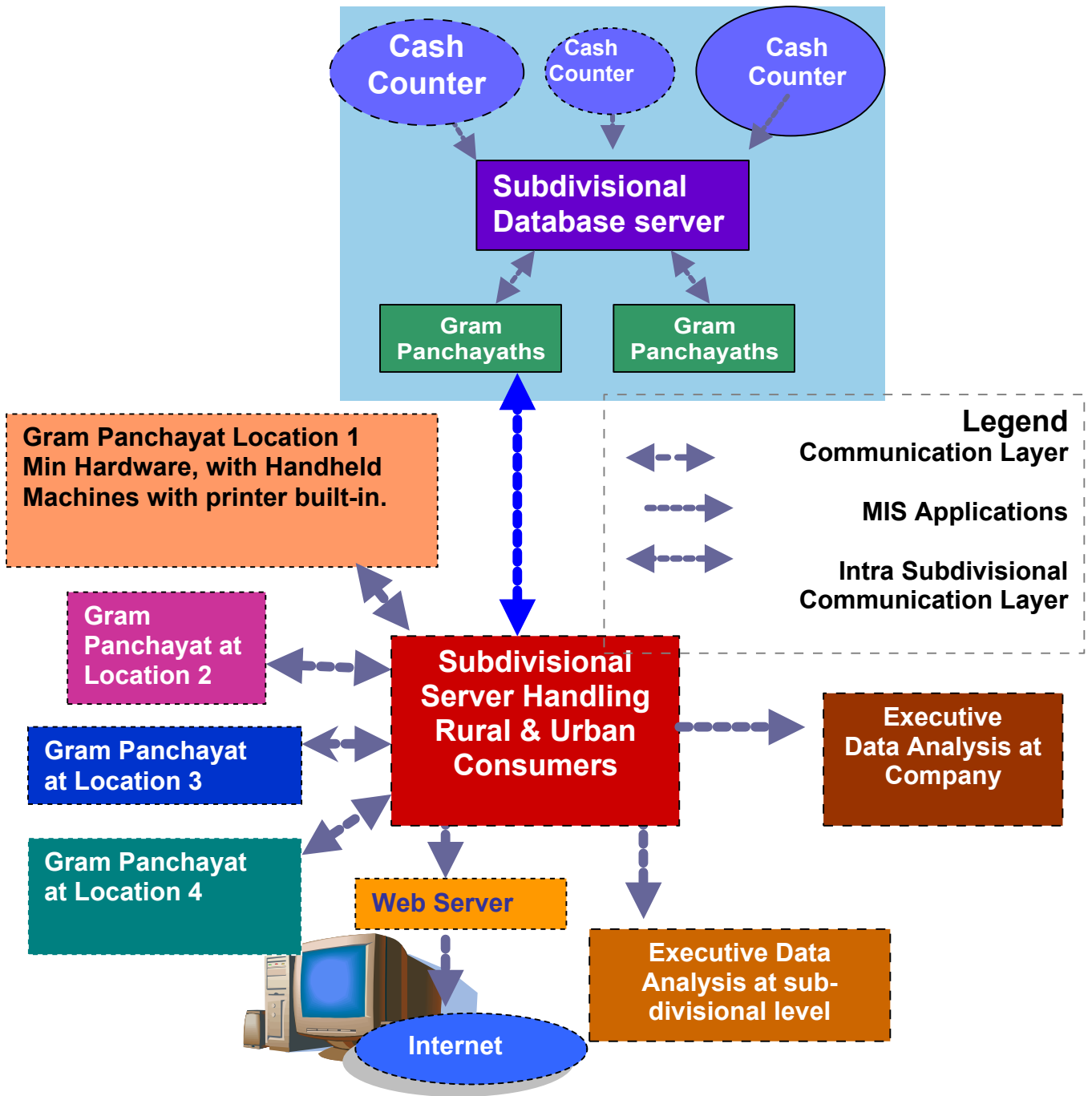


Fig 4.1 Schematic for Billing and MIS at Subdivision Level

The Operations and Communications Architecture

The chart in Figure 1 depicts the operational structure of full-fledged centralized revenue billing system and its management. The sub divisional database server is capable of handling a wide range of data from various gram panchayats, and urban locations. Each unit of gram panchayat will be assisted with mobile printer embedded units capable of billing and collection along with transfer of data to a centralized location, from which the data is moved to the Subdivisional server. The Subdivisional server also has dedicated mobile-printer-embedded units capable of billing and collection to cover the urban areas falling under the subdivision. The subdivisional server is capable of merging the rural and urban data and generating consolidated reports. For example, it can provide DCB, daily collection, demand report, faulty meters report, abnormal and sub-normal consumption report, and disconnection list on a daily as well as on a monthly basis.

The solid arrow in the figure shows the communication layer responsible for handling and maintaining a smooth and error-free link between the various gram panchayats and the subdivisional database server. The dash-and-dot arrows are the communication layers responsible for handling and maintaining a smooth and error-free link between the various systems available within the gram panchayats used as means to transfer data.

All the collected data of the gram panchayats are accumulated at one place, the subdivisional server, and it is the starting point for authorized personnel to view the data on various Internet locations. The web applications are responsible for bifurcation of data as per the user's cadre. For example, a consumer who has applied for a new connection would have been allocated a connection number at the subdivisional level and will be able to view the status of his/her application and take appropriate steps. This consumer will not be able to view other data that is available to other consumers. In the same way, depending on the cadre, the staff of the company can view data of interest. The cost of hardware at one gram panchayat location is approximately Rs 25,000.

Briefly the details are as follows. The server at the subdivision, catering to around 50,000 consumers, acts as the resource center and all the data is stored there. All the MIS activities are done at this server. Each gram panchayat will have a mobile billing machine that can communicate with the subdivision server through a modem using the telephone line, for uploading and downloading the information required for spot billing and collection activity. The subdivision server can generate required data and information, and pass it on to the gram panchayats to assist in their collection and follow-up activity. The present cost charged for this activity by the subcontractor, including supplying of this mobile spot-billing machine, is Rs 2.60 per bill per month.

4.4 Stage II

Stage II envisages making gram panchayats, small and independent distribution companies, which can be billed at the distribution transformer level by the utility. For this transition,

the following infrastructure would be needed for transferring this activity to gram panchayats:

- All the transformers that feed the gram panchayat area for lighting and other domestic loads, water pumping and streetlights, and irrigation pump sets must be metered.
- Presently, the number of transformers that feed into a gram panchayat area, on an average, is around 40, which varies by **20%** in different subdivisions.

Taking the cost of metering at around Rs15, 000 for each transformer, this involves an outlay of Rs 6 lakhs per gram panchayat. Metering is a necessary prerequisite for energy accounting and clarity in any transfer of rural electricity distribution activity to gram panchayats. This is part of the Accelerated Power Development and Reforms Program (APDRP), which requires **100%** metering of all distribution transformers.

The infrastructure and systems created for the Stage I metering, billing, and collection activity would continue to be used. The energy consumed in a gram panchayat area would be billed to that gram panchayat by metering at the distribution transformer level by the utility. The gram panchayats will need to develop the expertise and manpower to handle all activities at the low voltage level within the gram panchayat area. The services of the retired staff of the utilities may be utilized to help develop the needed expertise.

Manpower Requirements	
Linemen for line maintenance and meter reading:	2
Supervisor for co-ordination with utility and subcontractor, etc. and managing accounts:	2
The total staff salaries expense @ Rs 4,000 per month (average):	Rs 16,000
Other miscellaneous expense (including maintenance):	Rs 8,000
Total expense per month	Rs 24,000

The total monthly expense of Rs 24,000 has to be compared with the total expenses per gram panchayat computed in the earlier analysis at (average value) around Rs 45,548. The difference amounts to a profit of Rs 20,000.00 per month, which could be a great financial support to the gram panchayats. For the approximately 6,000 gram panchayats in the whole of Karnataka, this works out to a huge total of Rs 144 crores per year. Employment is also transferred to the gram panchayat level and helps provide rural youth with viable employment. GVPs working under the present scheme can be absorbed in the new scheme. A study of the Hukkeri co-operative society, which currently operates the retail sale of electricity and manages the low voltage distribution after purchasing power from KPTCL may help in refining this model.

The government should provide a clear policy on subsidy to irrigation pump set consumers. In Tamilnadu, farmers, schoolteachers, and doctors working in the Primary Health Centers (PHC) get a direct subsidy. If the issue of subsidy to irrigation pump set consumers is not clarified, gram panchayats would hesitate to come forward and accept the responsibility of distribution.

The ESCOMS should invest in metering all the transformers, either on their own or with the help of the government. The total investment required per gram panchayat area would be about Rs 6 Lakhs. If we amortize this expense to take care of interest and depreciation (interest at **10%** and linear depreciation for a conservative life of 15 years), the expense per month comes to Rs 8,800 per gram panchayat per month. This works out to be **1.7%** of the monthly demand from a gram panchayat, which is a small investment from the utility.

4.5 Spot Billing Contract at Davanagere and Other Towns

In some towns and cities, such as Davanagere, part of the metering, billing, and collection activity is already outsourced with contractors, such as M/S NSOFT. The billing is done on the spot-billing machine in these subcontracted areas.

The subcontracted area of the activity is as follows:

- The meter reader (BESCOM employee) loads the spot-billing machine with the details of the consumer and previous meter reading at the computer maintained by the contractor.
- At the customer's premises, the customer's meter is read and latest meter reading is entered into the spot-billing machine. The bill is issued on the spot. In case the customer makes the payment, the same is collected and receipt is issued to the customer. The revised readings are uploaded at the end of the day into the computer system maintained by the contractor. The contractor has to supply the spot-billing machine and maintain it. The contractor also maintains the computer system and supplies the necessary hardware and software and gives the final data to BESCOM in a format that is accepted by the BESCOM computer. Copies of the bills issued are also deposited in BESCOM office.
- One activity that is not done by the contractor, in the above case, is that of meter reading and spot-billing, which is done by the BESCOM meter readers. This is because BESCOM is currently not able to either relocate or offer an attractive voluntary retirement scheme for employees so that cost reduction can be made.

If in future tenders, the meter reading and spot billing activity are also added, then the rate per bill may reach a figure Rs 4.00 from the present Rs 2.60. In the gram panchayats, where the GVP concept is applied, the work of meter reading and spot billing is done by the GVP. The utility wants to go full speed in implementing the GVP model and the probability of this function of spot billing and collection going along with the revenue management contract looks distant.

Applicability of this outsourcing must be studied in detail for rural areas for different categories of consumers. It is not known whether contractors would be interested in taking all gram panchayats in a subdivision so that a critical mass is achieved for an economical operation. In our discussions with Mr. Nagaraj of M/S NSOFT, we found that they have no

problem with rural areas for revenue management part. The spot billing is proposed to be done by the GVPs, using the data and support, along with the mobile billing machines supplied and maintained by the contractor for total revenue management.

All the gram panchayats could outsource this activity using the same contractor, and the individual gram panchayats could provide overall supervision of the subcontractor and do the collection and minor maintenance work. In this scenario, too, the gram panchayats can make money. The subcontracted prices for the activities of meter reading, spot billing, and account maintenance and giving management information to the gram panchayat/ESCOM is estimated at Rs 4 per bill (based on discussions with M/S NSOFT).

4.6 Gram Vidyuth Prathinidhi (GVP)

Gram Vidyuth Prathinidhis (GVPs) have already been formed in Devanahalli Taluk of Bangalore Rural District, and during the study we visited four such GVPs. They are responsible for meter reading, bill distribution, and collection. Bills are being prepared by BESCOM at present. The GVPs are also responsible for minor repairs, such as fuse replacements and disconnections. For disconnections, they are presently getting help from BESCOM linemen. GVPs have deposited **50%** of the average monthly demand of the respective gram panchayat as security deposit with BESCOM. As compensation for their services, they are currently getting **8%** of the collection, which is soon to be revised. It will be Rs 4,000 per month for maintaining the collection level at an average of the past six months and an incentive of **8%** of the collection over and above the six-month average.

At present, average billing per gram panchayat by the utility is about Rs 5 lakhs and average metering, billing, and collection expenses per gram panchayat is Rs 18,000. The gram panchayats would take over the function of metering, billing, and collection from the utility in Stage I of the proposal. The gram panchayats would use the subcontracted revenue management system at subdivision level and use a spot billing machine, maintained by the contractor, which is loaded and unloaded at the subcontractor's computer. The metering, billing, and collection cost can be brought down to Rs 10,000 per month per gram panchayat for the present level of activity with the participation of the gram panchayats in the metering, billing, and collection activity at Stage 1.

It is envisaged that complete rural electricity distribution would be handed over to the gram panchayats at Stage II of the proposal; at that time, the utility would bill the gram panchayats at the distribution transformer level. It has also been suggested that, for irrigation pump set consumers, the subsidy may be directly paid as in the case of Tamil Nadu. If the irrigation pump set subsidy were routed through the gram panchayats, then the gram panchayats would have better control over the collection from this category.

KERC Tariff Order – 2003.

BESCOM Tariff Filing – 2003-2004.

Demand collection and billing of the Four subdivisions.

Collection efficiencies and other details provided by the Assistant Executive Engineers of the subdivision.

Details collected from BESCOM Headquarters and Division Office. The persons who provided information and suggestions are listed in pages above.

Table A-1
Details of Karnataka, BESCOM & ESCOMS

Sl No.	Particulars	Details
1	Area	1,91,349 Sq km
2	Number of Districts	27
3	Total Population	527 lakhs
4	Number of Consumers:	
	Domestic and AEH	66.63 lakhs
	Commercial	8.96 lakhs
	LT industry	2.37 lakhs
	HT industry	4339
	Water Works	55742
	Irrigation pump Sets	12.77 lakhs
	BJ/KJ	17.16 lakhs
	Street Lights	42,992
	TOTAL	108.90 lakhs
5	Total Connected Load	15,350 MW
6	Number of Substations (220, 110 & 66 kV)(All maintained by KPTCL except 5 nos. of 33 kV Stations)	700
7	Number of DTCs.	1.57 lakhs
8	Total Assets	Rs 2,704 cRs
9	Length of HT Lines	1,38,107 km
10	Length of LT Lines	3,73,270 km
11	Total Man power	
	Sanctioned	47,259 Nos.
	Working	32,294 Nos.
12	Capital Expenditure Program for the year 2002-03	Rs 552.99 cRs
13	Captive Generation capacity	2954 MVA

Source: KPTCL

Table A-2
Bangalore Electricity Supply Co. Ltd. (BESCOM)
Statistical Details

SI No.	Particulars	Details
1	Area	41092 Sq km
2	Number of Districts	6
3	Total Population	168 lakhs
4	Number of Consumers:	
	Domestic and AEH	28.56 lakhs
	Commercial	3.91 lakhs
	LT industry	1.12 lakhs
	HT industry	2415
	Water Works	20486
	irrigation pump Sets	4.54 lakhs
	BJ/KJ	4.81 lakhs
	Street Lights	16052
	TOTAL	43.33 lakhs
5	Total Connected Load	7197 MW
6	Number of Substations (220, 110 & 66 KV)(All maintained by KPTCL except 5 nos. of 33 kV Stations)	195
7	Number of DTCs.	58,706
8	Total Assets	Rs 1171 cRs
9	Length of HT Lines	40,621 km
10	Length of LT Lines	1,22,950 km
11	Total Employee Strength	
	Sanctioned	15,994 Nos.
	Working	11,376 Nos.
12	Capital Expenditure Program for the year 2002-03	Rs 163.58 cRs
13	Captive Generation capacity	1,702 MVA

Source: BESCOM, Bangalore

Table A-3
Details of ESCOMs Collection Efficiency

Month	Collection Efficiency in %			
	BESCOM	GESCOM	MESCOM	HESCOM
June 2002	88.23	82.21	79.87	81.54
July 2002	89.64	83.57	89.56	79.56
August 2002	90.56	83.86	97.37	92.24
September 2002	83.96	66.64	78.97	67.67
October 2002	87.54	66.90	86.56	70.67
November 2002	87.71	67.67	87.16	75.99
December 2002	83.54	69.35	87.43	78.73

Source: KPTCL

Table A-4
ESCOM Consumption, Collection, and Average Collection per Unit,
Oct.–Dec. 2002

Particulars		BESCOM	MESCOM	HESCOM	GESCOM	TOTAL
Oct. 02	Consumption in MU	989.08	393.20	436.74	341.61	2,160.63
	Collection in Crores	203.36	90.91	50.98	31.93	377.18
	Avg. Collection Per unit in paise	206	231	117	93	175
Nov. 02	Consumption in MU	1,008.86	430.75	514.59	371.44	2,325.64
	Collection in Crores	208.97	95.27	55.00	34.22	393.46
	Avg. Collection Per unit in paise	207	221	107	92	169
Dec. 02	Consumption in MU	1,104.85	506.43	371.44	384.31	2,390.58
	Collection in Crores	193.08	91.88	55.66	33.76	374.38
	Avg. Collection Per unit in paise	175	182	150	88	157
Jan. 02	Consumption in MU	1,173.03	544.57	518.99	356.00	2,529.59
	Collection in Crores	222.53	100.32	58.70	42.27	424.62
	Avg. Collection Per unit in paise	189.70	184.22	113.10	118.74	163.78

Source: KPTCL

Table A-5
Consolidated Revenue Gap of ESCOMs for FY 2003

Particulars	BESCOM	MESCOM	HESCOM	GESCOM	TOTAL
Energy Available (MU)	12,324	5,416	5,461	3,708	26,909
Energy sold (MU)	9173	4,107	3763	2,613	19656
Distribution Loss (%)	25.57%	24.17%	31.09%	29.53%	26.95%
INCOME (Rs crores)					
Revenue from Sale of Power	2,675.4	1,139.63	773.55	563.23	5,151.81
Revenue Subsidy from Government	355.85	272.42	545.39	341.45	1,515.11
Other income	13.21	5.22	3.85	2.12	24.4
TOTAL	3,044.46	1,417.27	1,322.79	906.8	6,691.32
EXPENDITURE (Rs crores)					
Purchase of power	2,648.47	1,163.79	1,173.59	796.76	5,782.61
Repairs and Maintenance	37.72	15.4	17.41	12.05	82.58
Employee Costs	239.93	165.09	144.28	87.06	636.36
A&G Expenses	22.1	14.54	9.66	8.62	54.92
Depreciation	88.41	62.04	38.52	34.83	223.8
Interest & Finance charges	53.22	32.62	26.42	20.2	132.46
LESS:	0	0	0	0	0
Expenses capitalized	-1.65	0	-0.01	0	-1.66
Other Debits	0	0	0	0	0
Net Prior Period Credits	0	0	0	0	0
Return on NFA	19.15	11.9	9.27	7.6	47.92
Total Expenses (Rs crores)	3,107.35	1,465.38	1,419.14	967.12	6,958.99
Less Other income	13.21	5.22	3.85	2.12	24.4
Net Revenue requirements	3,094.14	1,460.16	1,415.29	965	6,934.59
Total Revenue Gap	-62.89	-48.11	-96.35	-60.32	-267.67

Source: Karnataka Electricity Regulatory Commission tariff order-03

The commission notes that the revenue and expenditure figures furnished in the filing are estimates and the actual may be different. It would have been ideal to assess the revenue gap after the actual figures are available at the end of the year.

Table A-6
Revenue Gap for FY 2004 Consolidated Expected Revenue from Changes of ESCOMs

Particulars	Units	Revised filing by ESCOMS	Approved Estimates
Total Energy Input	MU	28,016	27,999
Total Sales	MU	20636	20,913
Sale of Energy			
Losses	%	25.93%	26.19%
Additional Metered Sales	MU		531
Approved Sales @ 28% T&D Loss	MU		21444
Revised Losses	%		23.41%
INCOME			
Revenue from Sale of Power (net of rural rebate)	Rs Crs	5,708.65	5,708.65
Revenue from Additional Sales	” ”		180.54
Other income	” ”	24.40	24.40
Total Revenue	” ”	5,733.05	5,913.59
EXPENDITURE			
Purchase of Power	” ”	6,556.16	5,942.50
Repairs and Maintenance	” ”	94.84	94.84
Employee Costs	” ”	643.96	621.06
A&G Expenses	” ”	65.91	54.92
Depreciation and Related Debits	” ”	245.26	245.26
Interest & Finance Charges	” ”	148.83	148.83
LESS:		0.00	0.00
Expenses capitalized	” ”	(1.66)	(1.66)
Other Debits	” ”	0.00	0.00
Net Prior Period Credits	” ”	0.00	0.00
Return on NFA @ 3%	” ”	49.80	49.80
Total Expenses	” ”	7,803.10	7,155.55
LESS : Other income	” ”	24.40	24.40
Aggregate Revenue Requirement	” ”	7,778.70	7,131.15
Surplus/(Deficit) before Subsidy	” ”	(2,070.05)	(1,241.96)
Average Cost of Supply	Rs/unit	3.77	3.41

Source: Karnataka Electricity Regulatory Commission tariff order-03 Table-106

The average cost of supply which was Rs 3.31 per unit in FY03 as determined by the Commission in the Tariff Order 2002, has now increased to Rs 3.41 per unit that is an increase of 10 paise per unit.

Table A-7
Energy Sales for FY 2004 as Approved by Karnataka Electricity Regulatory Commission

Category	Type of Installation	Consolidated Statement of Sales for FY 04	
		BESCOM	
		Revised filing (MU)	Approved Sales (MU)
LT-1(a)	Bhagya Jyothi /Kutir Jyothi	120	120
LT-2(a)	Domestic/AEH	2,213	2,213
LT-3	Commercial	472	472
LT-4 (a)&(b)	Irrigation pump sets unmetered (less than 10 HP)	3,296	3,388
LT-4(c)	Irrigation pump sets more than 10 HP	4	4
LT-4(d)	Private Horticulture Nurseries, Coffee and Tea Plantations	14	14
LT-5	Industrial, Non-industrial, Heating, Motive Power	850	850
LT-6(a)	Water Supply-Rural	184	184
	Street Light-Rural	209	209
LT-7	Temporary Consumers	29	29
	Subtotal LT	7,391	7,483
HT-1	Public Water Supply	351	351
HT-2(a)	Industrial, Non-industrial, & Non- Commercial	1,508	1,508
HT-2(b)	Commercial	443	443
HT-3 (a)&(b)	Irrigation & Agricultural Farms,	2	2
HT-5	Residential apartments and colonies	55	55
	Subtotal HT	2,359	2,359
	Metered	6,111	6,111
	Unmetered	3,639	3,731
	Additional Sales due to Reduction in Losses		243
	Total Sales	9,750	10,085

Source: Karnataka Electricity Regulatory Commission Tariff Order-03-BESCOM

Table A-8
Summary Profile of BESCOM FY 2002

Customer Class	Number of Consumers ('000)	Sales (MU)	Revenue (Rs crores)
Domestic	3,333.79	2,024	583.42
Commercial	390.21	366	215.30
Irrigation	455.06	3,201	176.09
LT Industries	112.47	791	342.85
Water Supply	19.14	143	52.52
Street Lighting	17.76	180	47.62
Temporary Consumers	15.93	24	20.48
HT-Water Supply & Agriculture	0.07	330	97.38
HT-Industrial	1.61	1,247	540.25
HT-Commercial	0.81	308	163.45
HT-Residential	0.10	46	16.88
	4,346.95	8,660	2,256.24

Source: Karnataka Electricity Regulatory Commission tariff order-03

Domestic consumers account for **77%** of the total providing **26%** of the revenue and **23%** of the sales. A major share of sales is from irrigation sector, which consists of about **10.5%** of consumers contributing about **8%** of the revenue while accounting for **37%** of sales. The industrial class accounts for about **24%** of the sales but about **39%** of the revenue.

Table A-9
Collection Efficiency in BESCOM

	April - December FY02	April - December FY 03
Demand (Rs Crores)	1,680.61	1,974.17
Collection (Rs Crores)	1,537.09	1,718.57
Collection Efficiency (%)	91.46	87.05

Source: Karnataka Electricity Regulatory Commission tariff order-03

Even though on an absolute level, the collection has increased, the collection efficiency has come down substantially compared to the corresponding months of the previous year. The Commission notes that this has considerable impact on the working capital needs of the company. The Commission has raised this issue during the validation sessions. BESCOM has stated that the reduction in collection efficiency is mainly due to the reduction in the collection from the unmetered customers. BESCOM has also pointed out that the collections from government installations (mainly LT Water supply by Village Panchayats) is poor as well as delayed. The Commission notes that the demand for the unmetered class (BJ/KJ, irrigation pump sets) for April-December months was Rs 232.87 crores where as the collection is only Rs 39.25 crores showing a collection efficiency of about **17%**, whereas the collection efficiency for the metered class was about **97%**. BESCOM has stated that the collection efficiency after the tariff revision is over **97%** for the metered class as shown in Table A-10.

Table A-10
Collection Efficiency under Metered Category (Excluding LT-1 and LT-4)-BESCOM

Month	Demand (Rs crores)	Collection (Rs crores)	Collection Efficiency (%)
June 2002	188.72	181.71	96.29
July 2002	187.70	185.07	98.60
August 2002	207.84	207.32	99.77
Sept. 2002	207.86	192.13	92.43
October 2002	203.51	201.69	99.11
Total	995.60	967.92	97.22

Source: Information provided by BESCOM

The above figures suggest that the collection from the unmetered class is pulling down the overall collection efficiency. The Commission notes that there is no concerted effort to improve the collection efficiency of unmetered class, which results in the poor collection overall. Besides the Commission notes that the closing balance as at end of December 2002 is Rs 1,025.31 crores, which is about 4.7 months' average demand. Out of this, outstanding for the unmetered class, including irrigation pump sets (27 months), BJ (18.5 months), water supply (16 months), and streetlights (10 months) is staggering.

Revenue from Subsidies

The total revenue deficit estimated by BESCOM for FY03 before subsidy is Rs 418.72 crores. The total subsidy available from the government of Karnataka for FY03 is stated as Rs 1,535 crores, out of which allocation to BESCOM is indicated as Rs 355.85 crores. Thus, the gap after subsidy as per BESCOM's filings comes down to Rs 62.87 crores.

Table A-11
Cost Coverage—FY-04

	Consumer Category	Energy Sales in FY04 (MU)	Revenue (Rs crores)	Average Revenue (Rs/kWh)	Percent of Cost of Supply Covered (%)	Cross Subsidy (Rs crores)
LT-1(a)	Bhagya Jyothi/ Kutira Jyothi	416	69.36	1.67	48.89	-72.50
LT-2(a)	Domestic lighting/ All Electric Homes (AEH)	4,193	1,435.03	3.42	100.36	5.22
LT-2(b)	Private Professional Educational Institutions	15	7.63	5.09	149.17	2.52
LT-3	Commercial and Non-Industrial Light and Fan	860	498.99	5.80	170.15	205.73
LT-5	Industrial Heating & Motive power	1,440	669.89	4.65	136.42	178.85
LT-6(a)	Water Supply - Rural	355	128.80	3.63	106.40	7.74
LT-6(a)	Public Lighting - Rural	305	111.34	3.65	107.05	7.34
LT-6(b)	Water Supply - Urban	116	41.82	3.61	105.72	2.26
LT-6(b)	Public Lighting - Urban	204	75.16	3.68	108.04	5.60
LT-7	Temporary Power Supply	45	38.11	8.47	248.35	22.77
	LT Total	7,949	3,076.13	3.87	113.48	365.52
HT-1	Public Water Supply and Sewage Pumping	694	239.72	3.45	101.30	3.07
HT-2(a)	Industrial, Non- industrial & Non-commercial Purposes	3133	1,439.12	4.59	134.70	370.77
HT-2(a)	Railways				0.00	0.00
HT-2(b)	Commercial	610	336.26	5.51	161.66	128.25
HT-4	Rural Electrical Cooperative Societies					
HT-5	Private Residential Apartments	82	30.66	3.74	109.65	2.70
	HT Total	4,519	2,045.76	4.53	132.76	504.78
LT-4	Irrigation Pump Sets -LT	8,141	594.27	0.73	21.41	-2,181.81
HT-3(a)	Irrigation & Agricultural Farms, LI Societies	24	8.96	3.73	109.48	0.78
LT-4(a)	Irrigation Pump Sets (< 10 HP) -Urban Irrigation Pump Sets					0.00
LT-4(b)	Irrigation Pump Sets (< 10 HP) - Creamy Layer	0				0.00
LT-4(c)	Irrigation Pump Sets (> 10 HP)	24		2.00	58.65	-3.38
LT-4(d)	Private Horticulture Nurseries	75		1.67	48.88	-13.08
						0.00
	Total Irrigation Pump Sets	8,165	603.23	0.74		-2,181.04
	Grand Total	20,633	5,725.12	2.77	81.37	-1,310.73

Source: Karnataka Electricity Regulatory Commission tariff order-03

Table A-12
Revenue Gap for FY04 Consolidated Expected Revenue from Changes of ESCOMs

Particulars	Units	Revised filing by ESCOMS	Approved Estimates
Total Energy Input	MU	28,016	27999
Total Sales	MU	20,636	20913
Sale of Energy			
Losses	%	25.93%	26.19%
Additional Metered Sales	MU		531
Approved sales @ 28% T&D Loss	MU		21444
Revised Losses	%		23.41%
INCOME			
Revenue from Sale of Power (net of rural rebate)	Rs Crs	5,708.65	5,708.65
Revenue from Additional Sales	'' ''		180.54
Other income	'' ''	24.40	24.40
Total Revenue	'' ''	5,733.05	5,913.59
EXPENDITURE	'' ''		
Purchase of power	'' ''	6,556.16	5,942.50
Repairs and Maintenance	'' ''	94.84	94.84
Employee Costs	'' ''	643.96	621.06
A&G Expenses	'' ''	65.91	54.92
Depreciation and Related Debits	'' ''	245.26	245.26
Interest & Finance Charges	'' ''	148.83	148.83
LESS:	'' ''	0.00	0.00
Expenses capitalized	'' ''	(1.66)	(1.66)
Other Debits	'' ''	0.00	0.00
Net Prior Period Credits	'' ''	0.00	0.00
Return on NFA @ 3%	'' ''	49.80	49.80
Total Expenses	'' ''	7,803.10	7,155.55
LESS : Other Income	'' ''	24.40	24.40
Aggregate Revenue Requirement	'' ''	7778.70	7,131.15
Surplus/(Deficit) before subsidy	'' ''	(2,070.05)	(1,241.96)
Average Cost of Supply	Rs/unit	3.77	3.41

Source: Karnataka Electricity Regulatory Commission tariff order-03 Table-106

The average cost of supply, which was Rs 3.31 per unit in FY03, as determined by the Commission in the Tariff Order 2002, has now increased to Rs 3.41 per unit that is an increase of 10 paise per unit.