



Cagayan Electric Power and Light Company, Inc.

Business Plans
for
CFL Distribution Programs

COMPACT FLUORESCENT LAMP PROGRAM

30 December 2002

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Under the



IFC/GEF
EFFICIENT LIGHTING INITIATIVE – PHILIPPINES
PROGRAM



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Introduction

This business plan has been prepared by CEPALCO together with the Efficient Lighting Initiative – Philippines (ELI-Philippines) and its international and local consultants. The purpose of this plan is to provide information to CEPALCO executive management as inputs to its decision making with respect to the company's CFL program, such as the possible features of the program, and budget and staff commitments that may be needed from the company.

In light of the restructuring of the power industry, CEPALCO recognizes that the utility must prepare for a more competitive playing field in the future. Its objectives for the medium- to long-term include the following:

- Improve customer satisfaction level through this value-added service;
- Foster customer relations;
- Fulfill regulatory mandates;
- Realize utility system benefits through avoided investment in generation, transmission, and distribution;
- Develop new businesses that may open up for utilities in the DSM field; and
- Contribute environmental and economic benefits to society.

This business plan for the distribution of Compact Fluorescent Lamps is also envisioned to be a major component of a DSM plan for CEPALCO.

1.0 Background: Cagayan Electric Power and Light Company, Inc.

1.1. Company Background

The Cagayan Electric Power and Light Company, Inc. or CEPALCO began its operation in 1952 by its founder Mr. Gonzalo T. Abaya with a modest power-generating capacity of 500kW and a customer base of only 750. The company obtained on June 17, 1961 a legislative franchise to serve Cagayan de Oro City. Shortly thereafter, this franchise was expanded to cover the municipalities of Tagoloan, Villanueva, and Jasaan in Misamis Oriental, including the 3000-hectare PHIVIDEC Industrial Estate.

The company serves 93 out of 94 barangays including the hinterlands and remote areas within its franchise, with a total of close to 80,000 customers. It has total assets of P1.114 million and total revenue of P1.305 million. CEPALCO's sales consisted of 36.7 million kWh, of which 25 per cent were to residential customers, 20 per cent to commercial customers, 54 per cent to industrial and bulk power customers, and 1 per cent to streetlights. CEPALCO has total substation capacity of 75MVA. This is distributed among the Company's four power substations that are strategically located in the franchise area. As of date, CEPALCO maintains and operates a total of 38 kilometers of 69KV transmission line, and has a total peak load of 91MW.

1.1.1. CEPALCO's Customer Base

As of August 2001, CEPALCO had a total of 79,155 customers. The Company distributes power to the following types of consumers: streetlights, residential, commercial, industrial, government buildings, hospitals and bulk power consumers (high voltage consumers). Among the major consumers of the Company, those under the residential category have contributed the most number of subscribers (81.34%). The residential consumers are followed by the commercial consumers with a percentage to total of 18.19%, the industrial consumers at 0.41%, the streetlight consumers at 0.14% and then the bulk power users at 0.053%. Shown below is the actual number of connections per customer classification and its corresponding kWh consumption as of August 2001.

Table 1: Consumption by Customer Classification

<i>Customer Classification</i>	<i>No. of Connections</i>	<i>% of Total</i>	<i>kWh Consumption</i>	<i>% of Total</i>
Residential	64,382	81.34	9,760,699	24.23
Commercial	14,396	18.19	7,772,778	19.33
Industrial	324	0.41	10,077,811	25.07
Bulk Power	11	0.014	11,918,176	29.65
Streetlights	42	0.053	672,476	1.67
TOTAL	79,155		40,201,929	

1.2. Lighting Technologies in CEPALCO Franchise Area

In the residential Lighting Technology Survey conducted within CEPALCO's franchise area in 2001, customers were asked a series of detailed questions regarding the nature of their lighting technologies, the number and types of lights they had in their homes and the amount of time that these lights were used. The different market penetration for a variety of lighting technologies is presented in Table 2. This table shows the percentage of respondents with each lighting technology in the different consumption segments and in the total market.

Table 2: Market Penetration of Lighting Technologies

<i>Lighting Technology</i>	<i>Market Penetration of Technologies (in %)</i>			
<i>Consumption Segment</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total Sample</i>
Incandescent	79	83	82	81
Compact fluorescent	18	48	81	31
Fluorescent (long)	51	59	50	54
Fluorescent (short)	80	80	73	80
Fluorescent (circular)	8	29	59	18
Spotlight	0	2	0	1
Reflector lamps	0	2	0	1
Halogen	0	2	0	1

The above tabulation shows that there are only five lighting technologies that have significant share of the residential market in CEPALCO's franchise area: incandescent lamps, compact fluorescent lamps, and the 2-feet, 4-feet and circular fluorescent tubes.

The number of each type of light per home was obtained from the customers surveyed. The mean number of lights was calculated for those respondents who used that type of lighting technology and also for all respondents. These results were presented in Tables 3 and 4 respectively. The analysis showed that incandescent lights have the greatest market presence followed by short fluorescent tubes.

Table 3: Mean Number of Lights per Home for Homes Using Technology

<i>Lighting Technology</i>	<i>Mean No. of Lights per Home Where Technology is Used</i>			
<i>Consumption Segment</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total Sample</i>
Incandescent	2.5	3.3	5.4	2.9
Compact fluorescent	2.0	3.5	5.6	3.2
Fluorescent (long)	1.3	1.7	4.4	1.6
Fluorescent (short)	2.2	3.4	3.8	2.7
Fluorescent (circular)	1.0	2.0	3.5	2.0

Table 4: Mean Number of Lights per Home for Total Market

<i>Lighting Technology</i>	<i>Mean No. of Lights per Home Where Technology is Used</i>			
<i>Consumption Segment</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total Sample</i>
Incandescent	2.1	2.8	4.2	2.4
Compact fluorescent	0.4	1.7	4.6	1.1
Fluorescent (long)	0.7	1.0	2.2	0.9
Fluorescent (short)	1.8	2.7	2.8	2.2
Fluorescent (circular)	0.1	0.6	1.9	0.3

The two types of means were calculated and are presented to serve different purposes in designing energy efficiency program. The mean number of lights with each respective type of light technology will be useful when considering the impact of a specific program on an existing segment of the market, which already has the light technology. The mean number of lights in the total market on the other hand, will be a more important statistic when determining which of the several programs will have the greatest impact in the total market.

1.2.1. Consumption by Lighting

The daily consumption of each lighting technology in each location for individual respondents was calculated by multiplying the number of lights by the average number of hours of daily use. The results were multiplied by the wattage of the light. Standard wattage values were used to determine the consumption of each light technology. The standard wattages used are presented in Table 5 below.

Table 5: Standard Wattage of Different Light Technologies

<i>Light Technology</i>	<i>Standard Wattage</i>
Incandescent	50
Compact Fluorescent	21
Long Fluorescent	40
Short Fluorescent	20
Circular Fluorescent	32
Spotlights	120
Reflector Lamps	100
Halogen	20
1 Foot Long Fluorescent	10
Discharge Lamps	35

The average consumption by lighting was then calculated for the different areas in respondent homes. The mean consumption was calculated for both those respondents who were already using the technology and again for the market. The results are presented in Table 6 and 7. Naturally the consumption means for the total market are lower than for the market segments where a particular light technology is used.

Table 6: Consumption for Lighting by Location per Home for Homes Using Technology

<i>Location in Home</i>	<i>Daily Consumption 1n kWh</i>			
	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total Sample</i>
Living area	0.22	0.37	0.61	0.29
Bedrooms	0.20	0.37	0.66	0.29
Outside (Perimeter)	0.16	0.46	0.60	0.30
Other areas	0.07	0.09	0.13	0.09
<i>Total Home</i>	<i>0.53</i>	<i>1.20</i>	<i>1.99</i>	<i>0.83</i>

Table 7: Consumption for Lighting by Location per Home for Total Market

<i>Location in Home</i>	<i>Daily Consumption 1n kWh</i>			
	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total Sample</i>
Living area	0.22	0.38	0.62	0.29
Bedrooms	0.19	0.37	0.67	0.28
Outside (Perimeter)	0.10	0.38	0.58	0.22
Other areas	0.03	0.07	0.13	0.05
<i>Total Home</i>	<i>0.54</i>	<i>1.20</i>	<i>2.00</i>	<i>0.83</i>

These results indicate that the use of lighting in the living areas, bedrooms and outside the households contribute almost equally to electricity consumption.

The average consumption by lighting was then calculated for the different types of lighting technologies. The mean consumption was calculated for both those respondents who were already using the technology and again for the total market. The results are presented in Tables 8 and 9.

Table 8: Consumption by Light Technology for Homes Using Technology

<i>Lighting Technology</i>	<i>Daily Consumption (in kWh)</i>			
	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total Sample</i>
<i>Consumption Segment</i>				
Incandescent	0.26	0.49	0.66	0.35
Compact fluorescent	0.17	0.30	0.54	0.29
Fluorescent (long)	0.25	0.36	0.90	0.32
Fluorescent (short)	0.19	0.28	0.31	0.22
Fluorescent (circular)	0.08	0.22	0.49	0.23

Table 9: Consumption by Lighting Technology for Total Market

<i>Lighting Technology</i>	<i>Daily Consumption (in kWh)</i>			
	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total Sample</i>
Incandescent	0.21	0.41	0.51	0.29
Compact fluorescent	0.03	0.15	0.44	0.09
Fluorescent (long)	0.13	0.22	0.45	0.17
Fluorescent (short)	0.15	0.22	0.23	0.18
Fluorescent (circular)	0.01	0.06	0.27	0.04

The results indicate that *electricity consumption from the use of incandescent lights is the greatest contributor to the total consumption by the market due to lighting*. This result holds for all three consumption segments. Replacing incandescent lights with compact fluorescent lamps would have a significant impact on the energy consumption of the household segment and of the entire market.

1.2.2. Potential Energy Efficiency Program for Lighting

Apart from the various types of lighting technologies and lighting consumption level, CEPALCO was also able to gather data that would help design potential energy efficient lighting programs for its customers. Respondents were asked a series of questions concerning compact fluorescent lamps (CFLs) and the thinner, more efficient fluorescent tubes to determine their awareness of these technologies and the factors that might encourage them to purchase the technologies.

1.2.3. Awareness of Compact Fluorescent Lamps

Survey showed a high awareness (75%) of CFLs. Most customers come to learn primarily through “word of mouth” as well as through the stores and on television ads. Table 10 shows the results of the survey.

Table 10: CFL Awareness

<i>Have you heard of CFLs?</i>		
<i>Consumption Segment</i>	<i>Yes</i>	<i>No</i>
Low	68%	32%
Medium	86%	14%
High	96%	5%
<i>Total (Weighted)</i>	<i>75%</i>	<i>25%</i>

<i>Where did you learn about CFLs?</i>	
<i>Medium</i>	<i>% of Aware Respondents</i>
Word of mouth	60%
Store	16%
Television	12%
Radio	4%
Newspaper Advertisement	2%
Electric utility bill insert	2%
Manufacturer's billboard	2%

All respondents were then given some information about the costs of CFLs and subsequently asked about their willingness to buy CFLs. The results are presented in Table 11.

Table 11: Likelihood of Buying CFLs

<i>How likely are you to buy CFLs?</i>						
<i>Consumption Segment</i>	<i>Definitely</i>	<i>Very Likely</i>	<i>Maybe</i>	<i>Not Likely</i>	<i>Definitely Not</i>	<i>Do Not Know</i>
Low	33%	26%	13%	7%	20%	1%
Medium	61%	17%	8%	3%	10%	2%
High	57%	29%	5%	0%	10%	0%
<i>Total (Weighted)</i>	<i>43%</i>	<i>23%</i>	<i>11%</i>	<i>5%</i>	<i>16%</i>	<i>1%</i>

The results suggest that *majority or about 66% of respondents are likely to buy CFLs*, though this result should be treated cautiously as respondents might overestimate their willingness to buy such technology. In addition, 31% of respondents report already having CFLs in their homes, which will further reduce the number of additional respondents that are likely to buy CFLs.

Those respondents who were not likely to buy CFLs were asked to indicate the main reasons as to why they would not purchase this technology. The results are presented in Table 12 below. The findings indicate that the cost of the product is the main barrier to the purchase of CFLs.

Table 12: Reasons for Not Buying CFLs

<i>Main reasons for not buying CFLs</i>	<i>% of Respondents</i>
Cost	75%
Quality of light	12%
Do not believe the lamp life	9%
Do not believe the savings	7%
Not suitable for fittings	2%
Looks/Appearance	2%
Already have CFLs	1%
Do not know about CFL	4%

Respondents willing to purchase CFLs were asked to identify the main reasons for this. The results are presented in Table 13. The findings indicate that concern for the environment and energy savings are the main reasons respondents intend to buy CFLs.

Table 13: Reasons for Buying CFLs

<i>Main reasons for buying CFLs</i>	<i>% of Respondents</i>
Save energy/help environment	80%
Quality of light	26%
Long life of lamp	18%
Reduced cost of using lamps	2%
Looks	1%
Convenience of using (no starter; instant start)	2%
Inexpensive	1%
Do not know	1%

All respondents were then asked whether they would be interested in buying CFLs if they could purchase the CFLs from their utility and pay for them by adding PhP 10-20 to their electric bill each month over 2-3 years. The results to this question are presented below. Table 14 shows that majority or about 56% of the respondents would be interested in this option, if available.

Table 14: Interested in Acquiring CFLs from Utility and Paying-off through Bill

<i>Consumption Segment</i>	<i>Yes</i>	<i>No</i>	<i>Do not know/ not sure</i>
Low	57%	27%	15%
Medium	56%	33%	11%
High	41%	45%	14%
<i>Total (Weighted)</i>	<i>56%</i>	<i>30%</i>	<i>14%</i>

1.3. Survey Findings Relevant to Design of Scaled Up Program

The survey findings that were found to be most relevant to the design of a CFL program are summarized below:

1. With a penetration rate of 81%, incandescent lamps have the greatest market presence among CEPALCO's residential customers among all lighting technologies.

Significance: The target appliances to be replaced by CFLs are incandescent lamps. CEPALCO franchise area has a lot of potential CFL customers.

2. Those who use incandescent lamps have an average of 2.4 lamps in their homes.

Significance: This is the average number of CFLs that potential CFL buyers can buy. This will allow us to estimate the total potential units of CFLs that the program should target.

3. Electricity consumption from the use of incandescent bulbs is the greatest contributor to total consumption due to lighting.

Significance: This validates the soundness of the CFL program with respect to economic benefits to customers, and the environmental benefits in terms of kWh avoided.

4. Majority of respondents (75%) have heard of CFLs, and a good portion (66%) are likely to buy CFLs.

Significance: There is potentially substantial interest in the purchase of CFLs.

5. Those who are not likely to buy CFLs cite the lamp's high cost (72%) as the main reason for their reluctance. Secondary reasons may be attributed to the lack of knowledge about CFLs (28%). Such reasons pertain to light quality, lamp life and energy savings.

Significance - The CFL program to be designed should squarely address the high cost of CFLs. This should be then supported by an information and marketing/promotional campaign to overcome the lack of knowledge and disbelief about the economic and environmental benefits of CFLs.

2.0 PAYLIGHT - CEPALCO's Pilot CFL Program

2.1 Program Features

Lighting accounts for 11-12% of the electricity used by a typical residential customer of CEPALCO. Any improvement in efficiency offered by efficient lighting technologies will have a considerable impact in residential energy consumption. In addition to energy savings, new longer life light sources and new fixture designs can reduce lighting system maintenance costs, and use of new phosphors and light source designs result in high quality light.

In late 2001, CEPALCO launched a CFL Sale on Installment Program named **"PAYLIGHT"**. The program was launched last October 2001, serving selected residential areas within the company's franchise area in Cagayan de Oro. The implementation of the pilot was made possible in collaboration with the ELI Working Group. ELI set aside around P300,000.00 to finance the procurement of CFLs to be used in the project, while CEPALCO provided the conceptual design, technical and administrative requirements of the project.

PAYLIGHT was intended to test on a pilot scale a distribution plan that aims to overcome institutional barriers to lighting retrofits: high first cost, consumer anxiety about lighting quality, perceived risk towards savings, low product availability, low product awareness and physical limitations. The concept was based on the CFL leasing programs in other developed countries, which provided innovative means of overcoming these barriers. However in the Philippine scenario the concept has been modified from "leasing" to "installment plan" for the purpose of overcoming cultural barriers.

PAYLIGHT's goal was to distribute up to 1,000 units of 11-15 watt CFLs divided among three major brands namely: Osram, Philips, and Ultralamp. The project was launched on October 21, 2001 at Xavier Heights Subdivision. The lamps were distributed or sold to customers under the following conditions:

1. No down payment;
2. 18-month warranty from the manufacturer;
3. Payable in cash or installments of 12, 24, and 36 months; and
4. Provided buyer has not defaulted.

The primary objective of the program was to test the viability of implementing the mechanics of a utility-led CFL leasing project, specifically the following factors:

1. Customer acceptance of a utility-led energy efficiency project involving customer focus group;
2. Customers' willingness to pay on a lease or own arrangement;
3. System (technical) impact of the project to the electric utility;
4. Regulatory approved cost recovery mechanism; and
5. Assess the impact of partnership between the utility company, its customers and a network of qualified product vendors.

The installment program aimed to overcome the principal obstacle to the purchase of energy-efficient lamps, which is the high first-cost. For CEPALCO, the energy-saving effect of a great number of residential customers using CFLs translates to reduction in system peak demand up to a maximum of 1.20%. For every 50-watt incandescent bulb replaced by an ELI-qualified 15-watt CFL, 51 kWh are avoided annually. The effort also pays off in terms of improved image of the company in the eyes of its nearly 80,000 customers.

CEPALCO took extra effort in educating its customers about energy-efficient lighting technologies and their benefits. The company initially conducted a personalized recruitment of program for pilot participants then moved on to advertising in primetime radio programs.

2.2 Initial Results

In April 2002, the ELI Team visited CEPALCO's office in Cagayan de Oro City, the subdivisions that were served by PAYLIGHT, as well as retail outlets for ELI-qualified CFLs. The purpose of the visit was to get a feedback on initial results and observe the effects of the program. The ELI Team gathered that as of 31 March 2001, some 70 customers had participated in the program, purchasing a total of 181 bulbs. Of the total, 94 pieces were Philips, 38 were Osram, and 49 were Ultralamp. The bulbs were 11- and 15-watt CFLs, obtained by the customers from CEPALCO's main office in the Divisoria area in downtown Cagayan de Oro City.

PAYLIGHT's initial distribution strategy was to visit the houses within an identified housing subdivision to promote and sell the CFLs. The problem encountered with this strategy was that there was a limited time within the weekend when the decision makers were at home. It was surmised that the low take up rate was due to the fact that the project was managed on an ad hoc basis so that the initial momentum could not be sustained.

Despite the low take up rate during the initial launch, the Team gathered that PAYLIGHT had very positive effects in the housing subdivisions. While CEPALCO had distributed only 181 CFLs in the area, it had created a certain snowball effect. This is based on inspection of installed CFLs and interviews conducted by the ELI team in the subdivisions served by PAYLIGHT. Residents from the pilot area started to purchase CFLs on their own, just through word of mouth having learned about the benefits of CFLs, as revealed by the market survey results. CEPALCO, however, believed that PAYLIGHT could benefit from a more aggressive information and promotion campaign.

CEPALCO developed a stand-alone program for billing and to keep track of payments. As of April 2002, billing for the installment payments for PAYLIGHT had already started. The first billing started in March 2002 with 35 customers paying on time, representing 50% collection efficiency. There is no sufficient data and information to study billing and collection performance as yet. More information is expected at the end of the pilot period in the last quarter of 2002. Such data would provide inputs and lessons that can be used for the scaled up CFL program.

The documentation of the transaction was through a two-page “Sale by Installment Agreement, CFL ‘PAYLIGHT’ Program, ELI/CEPALCO DSM Project”. Customers selected for the pilot were the registered owners of the house and lot where the CFLs were to be installed, with no delinquent accounts with CEPALCO. Product warranty was also provided for in the Agreement.

To some extent CEPALCO conducted an after-market survey and noted that the questions most frequently asked by customers pertain to the following:

- Freedom to choose brand and model;
- Information about illumination compared with incandescent bulbs;
- Procedures for calling on warranty;
- Maximum number of CFLs that can be bought; and
- Payment terms

When the customers were asked why they did or did not participate in the PAYLIGHT Program, the following reasons were given:

Reasons for participating

- No up-front cost;
- Energy saving;
- Easy payment terms;
- Quality of light;
- Long warranty;
- Long life of lamp;
- Lamp cost lower than market price; and
- Convinced by CEPALCO.

Reasons for not participating

- Already using CFLs; and
- Do not believe in claims of lamp life and savings.

There are early indications that PAYLIGHT could be a profitable undertaking on a gross margin basis. However, this will require CFL manufacturers/importers to provide price discounts. The three CFL manufacturers/importers have agreed to supply CEPALCO with 11- and 15-watt ELI-qualified CFLs at a uniform cost of P260, or up to 33% discount to market price. CEPALCO has added a 25% per annum mark-up. For a 24-month installment term, the customer has to pay only P16.25 monthly for the CFL.

The manufacturers have also provided inventory financing for PAYLIGHT in an indirect way. To avoid frequent delivery of small quantities of stock, manufacturers have reorganized their distribution process by forward placing their inventory, similar to a consignment arrangement. However in this case they maintained a predetermined level of inventory with CEPALCO. At the end of every month, they billed CEPALCO based on withdrawals made.

2.3 Re-launch

As of early April, CEPALCO was already planning a re-launch of PAYLIGHT, which was eventually carried out in May. The company set up booths and tables inside and around CEPALCO's office during selected days of the month when the most number of customers paid their bills. The CFL manufacturers/importers showed their support for the activity by having representatives present on those days. The customers were encouraged to sign up for the installment plan.

The re-launch was preceded by marketing and promotional activities that included distribution of leaflets provided by ELI. The leaflets were in Cebuano, explaining the economic benefits to users of the installment program and the ELI-qualified CFLs. CEPALCO also enlisted the support of local radio stations and ran advertising campaigns in radio and print.

CEPALCO implemented certain changes internally to support the re-launch of PAYLIGHT. This consisted of assigning a fairly permanent Task Force to implement PAYLIGHT. The Task Force was headed by an officer from ESG, supported by a team of engineers and public relations staff.

The re-launch produced very significant results. The targeted number of 1000 CFLs under the pilot was almost completely attained by end of June 2002, with a total of 946 lamps distributed. From an original participant base of 70 customers, the total number of participants reached 346. Most of the participants bought 2 lamps each with a good number buying 3 or 4. There were 54 lamps sold on cash basis. For those who bought on installment, the 12-month term was the most preferred, followed by the 6-month and then the 36-month. Following is a summary table.

Table 15: Results of PAYLIGHT

<i>Indicators</i>	<i>First Launch (as of 31 March 2002)</i>	<i>After Re-Launch (as of 31 May 2002)</i>
No. of Participants	70	364
Total No. of CFLs sold	181	946
Average per Customer	3	3
Breakdown by Brand		
Philips	94	294
Osram	38	330
Ultralamp	49	340
Payment Terms		
6 months	46	99
12 months	98	135
18 months	0	0
24 months	14	21
36 months	23	87
No. of Units Purchased (per customer)		
1 unit	8	66
2 units	27	144
3 units	34	53
4 units	11	75
5 units	0	3
6 units	0	2
10 units	0	3
Returns by Brand		
Philips		2
Osram		2
Ultralamp		8
Collection Efficiency		38 out of 88 = 43%

The improvements introduced by CEPALCO, particularly on the criteria on the selection of participants, also contributed to the success of the project. The prevailing no-arrears criteria turned off and/or disqualified a lot of potential participants. CEPALCO thus simplified the requirement to cover all those who have not been disconnected within the last six months.

The system of direct installation was not pursued because (1) it rendered the project expensive in terms of manpower cost; and (2), there was a limited time window for selling CFLs to the housewives or homeowners. With CEPALCO's limited manpower the take up rate would have continued to be low.

CEPALCO continues to use a stand-alone billing and monitoring system for PAYLIGHT. The company believes, however, that for the scaled up program, there will be a need to modify the existing billing system to accommodate the CFL distribution program, essentially fitting it and other similar future programs into the existing "Read and Bill" system of CEPALCO.

2.4 Monitoring

CEPALCO will be monitoring the number of CFLs distributed under PAYLIGHT since participating customers are tracked by a PAYLIGHT database program or through the existing Customer Information Management System (CIMS). Replacement lights must be picked up from CEPALCO for tracking purposes.

One of the clear advantages of an installment program is that information about CFLs in use are easily fine-tuned and monitored through simple database recording. Data collected from the CFL leasing or purchase on installment program will be entered into a database that will trigger a line item on customer bill for lease payment. Reports on the program's progress can be also monitored on a real-time basis.

2.5 Evaluation

PAYLIGHT project evaluation is specifically designed to meet the following concerns:

1. *Evaluation of Utility Benefits.*

Identify and possibly quantify the benefits enjoyed by the utility from the project. Benefits to be quantified may include: (1) acquired regulatory incentives such as tax rebates, (2) supply, demand and energy savings, (3) return on investments, (4) impacts on customer service personnel, and (5) improvement in customer relationships. This should be highlighted in the section on regulatory approval since the DSM protocol requires utility cost/benefit analysis on an ongoing basis.

2. *Evaluation of Customers' Benefits.*

CEPALCO will monitor and evaluate the amount of savings (energy and equipment costs) and the improvement in the level of comfort (through improved efficacy) throughout the repayment period. A customer survey would be necessary to cover this task.

3. *Evaluation of Financing and Repayment Scheme.*

One of the major tasks in the pilot project is to evaluate the effectiveness of the financing and repayment schemes. A random consultation may be conducted with participating customers to determine how the project affects their finances considering the additional cost in their electric bills.

The customers' willingness to participate and pay the cost through the repayment scheme, which integrates the amortization in the regular utility bill, will also be tested and further refined. The added burden, owing to the increased risk of disconnection due to increased amount of monthly bill, shall be evaluated.

CEPALCO's main focus is not on the utility benefits but on the customers' acceptance of the program. Initial billing analysis notes that the effort could be muddled by a number of factors, such as:

1. Residential lighting accounts for only a small fraction (about 11%) of electricity use in the home. Variations in customer bills are hard to directly attribute to CFL installation; and;
2. Economic crisis and the continued rise in electricity cost may have an impact on electricity use.

Experience teaches that savings are not detectable through billing analysis. Since the savings are easy to demonstrate with engineering techniques, efforts will be directed towards getting good data on lamp usage through surveys. A possibly more effective means of confirming savings is through the use of light-loggers, a device attached to lighting fixtures that measure actual energy consumption of that particular fixture.

4. *Data Quality*

Energy savings values presented are based on engineering estimates that each CFL replacement installed will result in an annual saving of 51kWh, assuming a duty factor of four (4) hours per day. The estimate of daily lamp use is based on the survey information obtained from program participants. Determining the number of lamps in service actually providing kW and kWh savings is difficult.

5. *Participation Rates*

With PAYLIGHT, CEPALCO was primarily interested in discovering whether the concept of leasing energy-efficient lighting would be viable for residential customers. While initial results were slow, the subsequent re-launch yielded very positive effects on the program, which is very encouraging for the scaled up project.

6. *Lamp life*

The average lifetime of the CFLs distributed is 6,000-8,000 hours. Assuming a duty factor of four (4) hours per day the average CFL will last for four years. This lifetime will be used to calculate lifecycle savings for PAYLIGHT and to calculate the cost of saved energy of the program.

3.0 MEGALIGHT – THE SCALED UP PROGRAM

3.1 Company’s Plans and Programs

The decision to pursue the Scaled-Up CFL Program or “**MEGALIGHT**” shall depend, among others, on the evaluation of the results of the CFL Pilot Program or PAYLIGHT. MEGALIGHT should be demonstrated to have significant effect on improving the system, that is, reduced evening peak and improved reliability, and acceptable collection efficiency. The focus of MEGALIGHT shall be residential customers and small commercial and industrial customers.

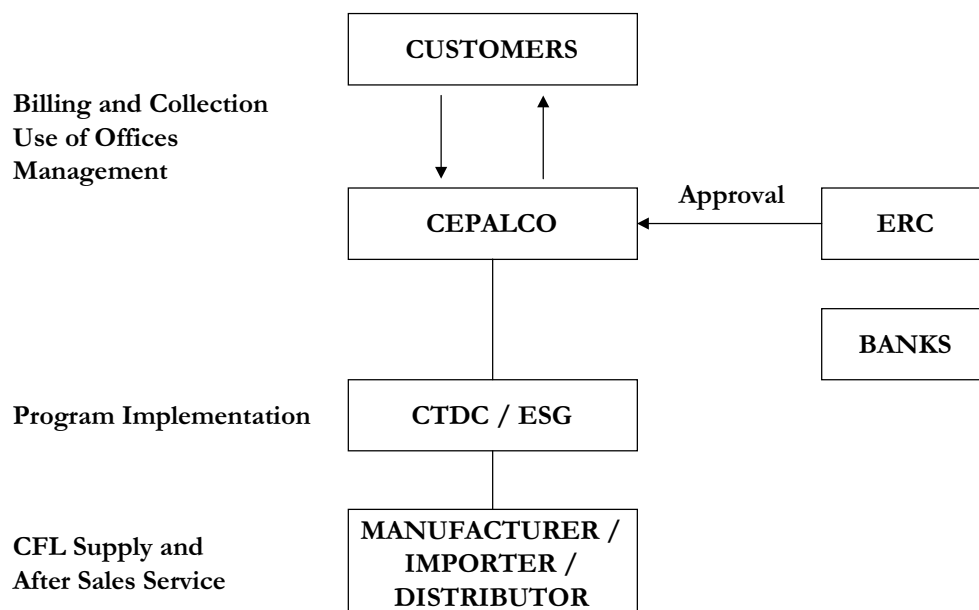
MEGALIGHT shall be a DSM project of CEPALCO, which will be applied for approval by ERC for DSM compliance and cost recovery. The timing of implementation shall depend on:

- Approval by ERC; and
- Implementation of necessary changes in the billing and collection system of CEPALCO

The latter is necessary to keep the cost of the program down by utilizing an existing billing and collection system to allow the inclusion of the CFL installment as another line in the energy bill. The changes in the billing and collection system are part of the unbundling process that all utilities are implementing.

3.2 Project Structure

The program structure is illustrated in the diagram below.



CEPALCO intends to implement the program with CESTCO acting as project manager and authorized agent for some transactions. As of date of this report, the documents for CESTCO are being prepared, as well as the transition plan for the transfer of ESG to said company.

CEPALCO shall have the following functions and responsibilities:

- Obtain ERC Approval for MEGALIGHT for Partial DSM Compliance
- Identify and implement MIS revisions
- Authorize use of its head office and field offices for MEGALIGHT
- Raise funds for project
- Screen technology
- Set payment terms
- Carry receivables
- Integrate CFL amortization into power bill
- Bill and collect from customers.

CESTCO shall have the following functions:

- Provide project manpower support
- Train MEGALIGHT staff and concerned CEPALCO staff
- Conduct marketing and project promotion
- Issue RFP
- Negotiate with distributor/manufacturer
- Enter into contracts with distributor/manufacturer
- Coordinate CFL supply with distributor/manufacturer
- Ensure CFL performance and warranty
- Attend to customer complaints
- Collect overdue accounts
- Monitor MEGALIGHT performance and prepare necessary reports

The Distributor/Manufacturer shall perform the following:

- Supply specified number of ELI-qualified CFLs
- Monitor inventory of CFLs in CEPALCO branches and restock, as needed
- Honor warranty

CEPALCO shall enter into a Project Management Agreement or Agency Agreement with CESTCO. CESTCO shall act as project manager and shall implement the program. CESTCO shall issue the Request for Proposals, and negotiate and enter into Supply Agreements with CFL Manufacturers and/or Suppliers. Likewise, CESTCO shall evaluate and recommend to CEPALCO the technology, i.e. the brands and models of ELI-qualified CFLs, which will be offered under the program.

CEPALCO shall fund the project through advances to CESTCO. CEPALCO shall also pay CESTCO a fee of 2.5% based on total collection as Management and Agency Fee. In the first few months when collections are still small, CEPALCO will advance start up costs and initial operating and administrative expenses, especially salaries of the dedicated staff.

CESTCO shall be principally responsible for program marketing and promotion, as well as the implementation of warranty features of the CFL. Dedicated CESTCO staff shall accept and process applications for CFL purchase. The sales contract, however, shall be between the customer and CEPALCO so that sanctions may be more easily imposed in case of default.

Accounting of all project cash flows, and overall program monitoring shall be done by CESTCO as program manager. It will prepare for CEPALCO any CFL program reports that may need to be submitted to the regulatory bodies.

3.2.1 Distribution

Distribution of CFLs shall primarily be through customer pick up from the CEPALCO office. This is deemed efficient and realistic due to the following:

1. More than 80% of CEPALCO customers pay their bills at the company's branches;
2. For residential customers, the persons who actually pay the bills are usually the homemakers or those who hold the household's purses and make decisions on lamp purchases;
3. PAYLIGHT's take up rate significantly improved when the CFLs were offered inside CEPALCO branches.

3.2.2 Organization

It is envisioned that a staff of four will be needed, working full time for the MEGALIGHT. They shall be employed by CESTCO on a contractual or project basis. One computer terminal will be provided to each Program staff. The staff will be handling marketing, distribution, accounting, and program monitoring in CEPALCO's main office in the Divisoria area in Cagayan de Oro City, and in the field offices as may be needed.

CESTCO shall train the dedicated staff on marketing, processing of application for CFL purchase, terms and conditions of the installment sale, features of the CFL including warranty, and billing and collection of charges. CESTCO will also give training to CEPALCO employees who will be performing functions related to MEGALIGHT, especially in billing and collection.

3.2.3 CEPALCO's Energy Services Group

CEPALCO's Energy Services Group or ESG, which is implementing the pilot CFL program, will be responsible for the scaled up CFL leasing program. The group has been acting as CEPALCO's Energy Services Company (ESCO). ESG, essentially an energy service team, is still part of the corporation but will eventually be spun off as a separate company. ESG handles all DSM programs of CEPALCO, energy efficiency audits and retrofits for selected CEPALCO customers, and other non-supply services. Over the years, ESG has developed the technical and administrative capability to offer and perform energy services.

The ESG was formed in the 70s to initially provide electrical line construction and service works within the confines of the CEPALCO franchise area. Through the years, however, it eventually widened its service reach to cover neighboring municipalities. This expansion significantly contributed to the growth of CEPALCO's client base, which now encompasses surrounding private utility companies as well as electrical cooperatives and their commercial and industrial customers. The ESG likewise shares with CEPALCO a portfolio that includes such names as the Iligan Light & Power Inc., the Visayan Electric Company, and even state-owned National Power Corporation.

While it is possible for CEPALCO itself to perform the ESCO services including CFL Leasing, eventually with the unbundling policy to be implemented under R.A. 9136 or EPIRA, ESG will have to be eventually spun off. Likewise, from the financial point of view, it is also better for the non-supply revenues to be booked in another company so they will not be subjected to franchise tax.

ESG is composed of engineers, technicians, linemen, ground crew, mechanics and draftsmen, complemented by state-of-the-art facilities. At the helm is the ESG Vice President who oversees three work units - the electrical, mechanical, and civil work groups. The ESG is accredited by the Philippine Contractors Association Board (PCAB) with a General Building B classification, specializing in power generating plants, power transmission, and distribution facilities.

3.2.4 CTDC

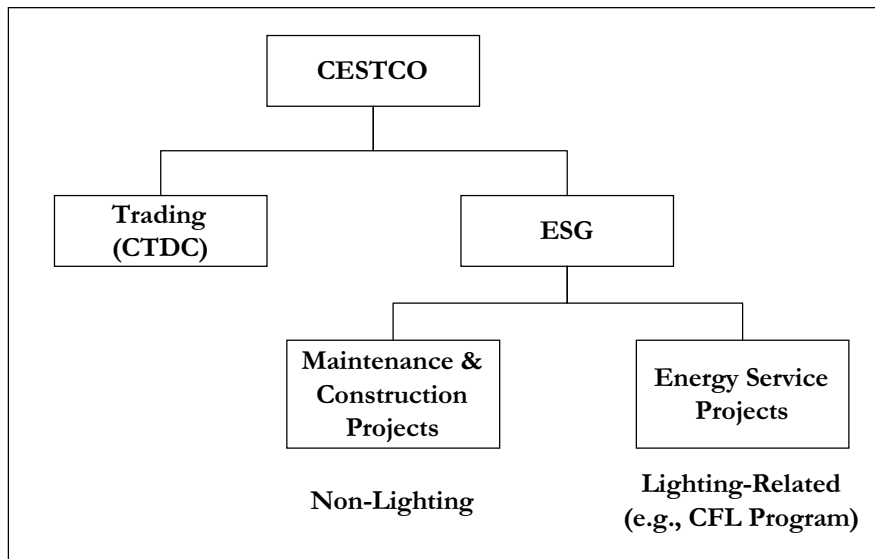
ESG's merger with CTDC will be beneficial to the CEPALCO group as both entities deal in non-supply businesses, and have many common customers. CTDC was incorporated in 1974, and its primary purpose is trading. The company sells electrical materials and equipment, and its main clients are electric cooperatives and utilities. It has offices in Manila and Cagayan de Oro. As of the end of 2001, CTDC had total assets of P56M and net worth of P22M.

Under the merged scenario, CTDC will have two major business lines: (1) trading of electrical materials and equipment, and (2) ESCO services. Upon transfer of ESG to CTDC, the receivables related to the PAYLIGHT Pilot Program estimated at P295,000.00 shall be transferred and may be considered equity from CEPALCO. Equipment for ESG operations, as well as other assets required by ESG should also be transferred. Likewise, any liabilities directly assignable to ESG should be moved to CTDC. These will be identified by CEPALCO prior to implementing MEGALIGHT.

For the ESCO operations of CESTCO, it is foreseen that there will be two sub-groups, one focusing on lighting-related projects, and the other on non-lighting energy-efficiency projects. A lighting project such as MEGALIGHT will have a portfolio of receivables and will require personnel for monitoring, billing and collection, on more retail basis than other projects. Non-lighting ESCO projects do not necessarily have the same need for billing and collection.

Shown below is the envisioned organization of the merged CTDC and ESG

Exhibit A: Table of Organization, CESTCO



Shown below is CESTCO’s cash flow from the implementation of MEGALIGHT. All of its direct expenses will be reimbursed by CEPALCO. CESTCO will earn an income of 2.5% of sales as management fee, which will be subject to 10% Value Added Tax.

Table 16: Projected Cash Flow, CESTCO

CESTCO CASH FLOW	
MEGALIGHT PROJECT MANAGEMENT	
	Project Total
Inflows	
Management Fee	1,261,996
Reimbursement of Staff Salaries	1,560,000
Reimbursement of Training Expenses	200,000
Subtotal - Inflows	3,021,996
Outflows	
Salary - CESTCO Staff	1,560,000
Training Expenses - CESTCO & Staff	200,000
VAT on Management Fee	126,200
Subtotal - Outflows	1,886,200
Net Inflow (Outflow)	1,135,797
Beginning Cash Balance	0
Ending Cash Balance	1,135,797

3.3 Size of the Program

MEGALIGHT targets the 64,000-plus residential customers of CEPALCO, and its 15,000 small commercial/industrial (C/I) clients.

Based on the Lighting Technology Survey, average penetration of incandescent lamps in residences is 81%. This implies that up to approximately *52,000 households* have incandescent lamps. This becomes the real target of the CFL program, i.e., houses that have incandescent lamps.

Without first considering the criteria of dwelling ownership and a measure of the account being up-to-date, MEGALIGHT's goal shall be around half of the 52,000 households that are still using incandescent lamps. This translates to around 27,500 households. Then, using the survey result of an average of 2.4 incandescent lamps per home that uses such lamps, a total CFL count of 66,600 or roughly *70,000 lamps* should be set for the residential sector. In peso terms, 70,000 lamps at P260.00 per lamp translate to P18.2 million, for cost of CFLs alone.

The small commercial/industrial sector consists of 15,000 mom-and-pop operations that have a variety of lighting fixtures that still include an average of four incandescent lamps. Assuming a penetration rate of 50%, or 7,500 establishments, and an average of 4 CFLs per customer with a daily duty factor of 6 hours, the potential size of small C/I market is 30,000 CFLs.

This brings to 100,000 the total CFL target of MEGALIGHT for an aggregate lamp cost of P26 million.

3.3.1 Qualified Customers

CEPALCO customers that meet the following criteria shall be qualified to participate in the program:

- Owners of their dwelling;
- Tenants that have the electric bill in their names;
- Current in payment as of date of purchase of CFL; and
- No disconnection notice for the past six months.

The above customers may purchase from one (1) to five (5) CFLs. They have the option of paying in cash, or on installment basis on 12- and 18- month term. The installment term is based on the maximum warranty provided by the supplier/manufacturer, which is 18 months at present. CEPALCO will try to work with manufacturers to extend the warranty period to 24 months to enable it to correspondingly extend payment terms to CFL buyers.

Basic cost of one CFL is assumed for this business plan at P260. For a 12-month term, a 36% per annum mark up is added up front to the basic cost or P93.60. For an 18-month term, the mark up is 36% x 1.5 or 54% (P140.40), bringing the total cost to P400.40. Table 16.0 below gives the mark-up and the resulting monthly installment payments.

Table 17: Price Offering to Customers

Term (Months)	Basic Cost (PhP)	Mark-up (%)	Mark-up (PhP)	Total Cost (PhP)	Monthly Installment
12	PhP260.00	36.10%	PhP93.60	PhP353.60	PhP29.47
18	PhP260.00	54.15%	PhP140.40	PhP400.40	PhP22.24

3.3.2 Marketing and Promotion

MEGALIGHT will be marketed using more aggressive marketing and educational techniques than the pilot. The high quality of the ELI-qualified CFLs will be emphasized. The ELI logo, which indicates and guarantees the quality the CFLs, will be given prominence. Marketing will also appeal to customers' documented interest in saving the environment (e.g., "Save the environment as you save money!").

There are two types of marketing needed, the first being generic marketing. Generic marketing about the benefits of participating and using ELI-certified products must reach everyone before distribution begins in order to create as much acceptance of the products as possible. For the program to reach its goal, the products must not only be accepted by those who buy the CFLs at CEPALCO business offices but also by all other household members. This pre-launch campaign may be implemented through radio or television ads, and/or video presentations. To the extent possible, CEPALCO should enroll as its honorary program director(s) persons with strong credibility among its customers. These trusted persons should be featured in press releases and television news spots and advertisements to broadcast messages that might include the following:

- MEGALIGHT is coming soon
- ELI-qualified CFLs are better, and suffer from none of the problems customers may associate with fake and low-quality CFLs (poor function, breakage, flicker, poor color, interference).
- If enough customers participate, our air will be cleaner, our electric system will work better, and our economy will do better.

Pre-launch marketing to hype interest of the customers will be undertaken. A mass media campaign will be implemented for a period of three to four months before the actual launching.

The second type of marketing, the type designed to get customers to act, should be focused solely on those customers who actually go to CEPALCO offices to pay their bills. This should dramatically reduce marketing costs while helping to control where and when distribution occurs.

For example, CEPALCO can come up with posters and small half-page fliers describing the MEGALIGHT offer. The posters can be placed on the wall and the fliers can be handed out about a month prior to the actual start of MEGALIGHT. The fliers can be handed out during the time customers pay their bills. This may be done along with a personal invitation to participate by the billing agent. The fliers should highlight the no-down-payment feature, the economic benefits of using CFLs, and the customers' role in saving the environment.

For subsequent months, a different flier could be used. This one would be handed out only to those customers eligible for MEGALIGHT (those with accounts in their name and whose billing is current), amounting to "pre-qualification". In other words, this flyer can double as a coupon to aid in the distribution of CFLs. The persons giving out the fliers can direct customers to the CEPALCO office where they can use the said fliers to pick up their CFLs.

If appropriate, the MEGALIGHT booth in the CEPALCO office where leases are signed and CFLs are distributed should have a working lighting display comparing CFLs to incandescent lights and ELI-quality CFLs to grey market products. It could be made attractive by adding decorations such as balloons and streamers.

This approach allows CEPALCO to take the posters, displays, staff (and fliers) to other offices and control distribution by limiting the number of offices each month where it occurs.

Market research may be conducted through direct mail to determine possible project penetration rates. Many customers are deterred when faced with the prospect of shelling out cash for energy efficiency projects, which they consider as an expense rather than as an investment. In addition, there is some degree of doubt about product quality and the realization of promised benefits of the installation and retrofits.

Other marketing and promotional activities contemplated could include the following:

- Public consultation with selected focus groups;
- Product presentation (by selected manufacturers and suppliers) and CEPALCO presentation and launching. and
- Radio, print, and video promotions.

3.4 Role of Manufacturers

Initially, manufacturers are envisioned to provide product performance warranty and after sales support. However there are other manufacturers that are well in advance of others in providing more benefits to CEPALCO which the utility can pass on to their customers. As MEGALIGHT is being designed, it is being contemplated to increase the role of the manufacturers, possibly to carry the inventory in effect providing financing for that particular aspect of the transaction.

Since warranty is a major attraction of the program, the possibility of further lengthening the warranty period will continue to be negotiated.

Procedures for claiming against warranty should continue to be simple and inexpensive for both parties to process or avail of, but with sufficient control mechanisms to avoid fraudulent claims. For the customers' convenience, they should be able to claim on the warranty from the same CEPALCO offices where they originally acquired the CFLs. CESTCO/CEPALCO staff would honor the warranty and make the claim with the manufacturer/distributor.

Control mechanisms, which will be discussed with manufacturers, may include labeling or stamping serial number on bulbs.

The manufacturers will also be asked to participate in the financing of inventory, such as supplying the lamps on a consignment-like arrangement. This should minimize up-front costs for the utility. For the manufacturers, CEPALCO may be considered a distributor like others in their distribution chain due to the very substantial volume of the lamps that it will sell.

3.5 Billing and Collection Issues

Billing and collection systems, policies, and procedures for MEGALIGHT must abide by the provisions of the DSM framework. For cost effectiveness and collection efficiency, CEPALCO's MIS will have to be revised to accommodate the CFL charges as a line in the electricity bill. Thus the customer receives only one bill that contains both the electricity charge and the CFL charge.

The MEGALIGHT customers will receive just one bill from CEPALCO, showing their electric charges and the CFL payments. Payments for utility and CFL dues may be made in one lump sum, with CEPALCO crediting the MEGALIGHT payments to a separate CESTCO account.

3.5.1 Taxes

Since CFL payments are included as a line in the electric bill, the installment becomes subject to the 2% franchise tax. This expense as well as other taxes will be included in the project's cash flow especially when applying for cost recovery.

3.6 Project Cost and Financing

3.6.1 Project Financing

MEGALIGHT will require financing, depending on the terms to be given by manufacturers, both for inventory and receivables. CEPALCO shall add a 36% per annum mark-up to basic lamp cost, to cover administrative and financial costs.

It is expected that lamps will be bought mostly on installment. Thus, the CEPALCO should be prepared for receivables on these installment sales, at a peak of about P27.2 M by Month 16, steadily going down as payments from buyers are collected.

With regard to bulk purchase, CESTCO should negotiate with manufacturers for the latter to take care of effectively financing inventory, through extended credit terms. One way is for a consignment-like arrangement where the manufacturer delivers the goods on "consignment" basis, but with a target as to sale of goods and collection of payments.

Assuming, however, that no such arrangement can be made with manufacturers, financing should be obtained elsewhere such as a bank for the inventory and even the receivables. Programs of government financial institutions for environmental projects include the Environmental Infrastructure Support Credit Program or EISCP can be availed of through DBP or accredited commercial banks to finance the CFL program. The advantage of the special programs is their relatively lower rates, and should it be required, longer repayment term.

CEPALCO may tap its own funds to finance costs of the project, as equity or advances to MEGALIGHT. It may use internally generated funds for this purpose, or avail of lines from its own banks.

3.6.2 Projected Cash Flow, Project Costs and Assumptions

The features of the MEGALIGHT Program as developed so far have been translated into assumptions for the projected cash flow. Following is a discussion of the assumptions:

- I. Start Up Costs
 - A. Planning - costs related to the design of the program and preparation of business plan.
 - B. Legal - Provision for legal fees for lawyer's review of CFL Program as DSM Program proposal to ERC. Items to be reviewed include:
 - Overall program as to compliance with ERC requirements as DSM program;
 - Contracts between CEPALCO and CESTCO;
 - Draft documents between CEPALCO/CESTCO and customer; Draft documents between CEPALCO/CESTCO and suppliers.
 - C. MIS - Costs related to changes in CEPALCO's Billing and Collection System, estimated by CEPALCO at P450,000 including hardware cost.
 - D. Training - Costs related to training dedicated staff to the program, assumed at total cost of P200,000.
 - E. Marketing - Costs related to initial marketing of the program, before actual implementation. Total marketing cost, for both start up and operating periods, is assumed not to exceed 4% of sales. Start up marketing expenses include promotional activities such as launching events, media advertising, brochures and fliers, assumed not to exceed 40% of total marketing expenses.
 - F. Equipment - Office equipment, mainly computers and accessories to be used by dedicated program staff.
- II. Operating Costs
 - A. Management Fee of CESTCO – 2.5% based on gross revenues
 - B. Marketing - Total expenses for marketing for the program is budgeted at 4% of total sales, of which 40% is allocated for start-up marketing cost, and 60% for marketing expenses during implementation phase.
 - C. Distribution - Distribution expenses of CFLs are covered by the salaries of dedicated staff personnel. Since main distribution method will be “customer pick up”, only minimal incidental expenses for distribution are expected. Salary of personnel is under salaries expense item.

- D. Billing and Collection - Monthly expenses for billing and collection, includes bill production, distribution and collection at a fee of P1.00 per bill generated.
- E. Bad Debts - Provision for bad debts is at 2.5% of total sales. The assumption is that the CFL customer will pay the entire bill (electricity and CFL charge) or not at all, since amount of CFL monthly installment is small relative to the electric bill.
- F. Accounting and Reporting - Cost of accounting personnel is included in salaries.
- G. Evaluation of Utility Benefits - Part of Accounting and Reporting costs.

III. Sales Assumptions

- A. Cost of CFLs - Cost per CFL is P260 from manufacturer, delivered to CEPALCO, regardless of brand or model.
- B. Mark up – 36% per annum to cover administrative costs and financial charges. The mark-up is computed for the term of the sale. In the base case projections, the assumed installment period is 18 months or 1.5 years, so the mark up is 36% multiplied by 1.5 years or 54.15%. This markup is added up front to the cost of the CFL and divided by 18 months, the term of the sale. This results to the P22.24 monthly amortization per CFL.
- C. Distribution Period –18 months, with the number of CFLs distributed gradually increasing, and after reaching the peak, gradually decreasing.
- D. Payment of CFLs to manufacturer - 30 days after delivery. It is assumed that CEPALCO /CESTCO will have negotiated a guaranteed volume of 100,000 CFLs to manufacturers, delivered monthly. Payment will be made monthly by CEPALCO/CESTCO for the number of units delivered.
- E. Number of CFLs - Total is 100,000 to be sold over 18 months, with the number of CFLs distributed gradually increasing and after reaching the peak, gradually decreasing.
- F. Installment Period - An average of 18 months is assumed.
- G. Taxes - It is assumed that the 2% franchise tax will be applicable since the sales proceeds will be booked by CEPALCO.

3.7 Projected Cash Flow

Projected monthly cash flow for the project has been prepared, and a summary cash flow for the 38 months of operation of the project is shown in Table 18.

Table 18: CEPALCO MEGALIGHT Projected Cash Flow

	Project Cash Flow
	<u>Project Total</u>
INFLOWS	
Collections	40,063,374
Loan Proceeds	-
Equity	-
Others - Advances from Cepalco	23,000,000
Subtotal - Inflows	63,063,374
OUTFLOWS	
Cost of CFLs	26,000,000
Program Start Up Costs	-
MIS Revision of Billing and Coll'n System	450,000
Legal - Start Up	240,380
Training	200,000
Equipment	160,000
Marketing - Start Up	641,014
Preparation of Proposal to ERC	400,634
Operating Costs	-
Fixed Operating Costs	-
Salaries - CESTCO Staff	1,560,000
Utilities & Supplies	390,000
Admin & Management	-
Management (Agency) Fee - CESTCO	1,261,996
Billing & Collection Expense	750,000
Allowance for Bad Debts	1,001,584
Legal - Operating	380,602
Marketing - Operating	961,521
Franchise Tax	801,267
Repayment of Advances	-
Principal	23,000,000
Interest	4,854,375
Income Tax	-
Subtotal Outflows	63,053,374
Net Inflow (Outflow)	10,000
Cumulative Inflow (Outflow)	10,000
Beginning Cash Balance	-
Ending Cash Balance	10,000

The timetable of the project consists of the following:

Table 19: Project Timetable (for Cash Flow Projections)

<i>Month 0</i>	- Preparatory activities, including purchasing of CFLs, hiring, and other administrative work
<i>Month 1-18</i>	- An 18-month period for the actual distribution of CFLs.
<i>Month 19-38</i>	- The subsequent 18-month period for collecting receivables. An average of 18 months for the installment has been assumed.

The projected cash flow for the duration of the project shows a breakeven operation. There remains a modest cash balance at the end of the project life. This amount is net of all project costs including agency fees and financial charges.

Project inflows consist of sales, made up of the basic cost of the lamp plus the 36% per annum mark-up, plus advances from CEPALCO as the project owner.

The biggest cost is for lamps at P26 million. Start-up costs cover necessary revisions to CEPALCO's MIS to allow for the inclusion of the CFL installment line item in the customers' electric bill. Other significant start-up expenses are for marketing, legal services, equipment and training. A start-up budget is shown below:

Table 20: CEPALCO MEGALIGHT Start-up Budget

Cepalco MEGALIGHT Start up Budget	
Program Start Up Costs	
MIS Revision of Billing and Coll'n System	450,000
Legal - Start Up	240,380
Training	200,000
Equipment	160,000
Marketing	641,014
Preparation of Proposal to ERC	400,634
	<u>2,092,028</u>
First Six Months Operating Costs	
Salaries	240,000
Utilities & Supplies	60,000
Admin & Management	-
Management (Agency) Fee - CESTCO	135,214
Billing & Collection Fee	14,583
Allowance for Bad Debts	5,564
Legal - Operating	50,079
Marketing - Operating	128,203
	<u>633,644</u>
Total Start Up Costs	<u>2,725,672</u>

The salaries of the dedicated staff, the management fee to CESTCO and the marketing expenses form the bulk of the operating costs. Financial charges are based on market rates for interest on short-term loans. The advances by CEPALCO will be repaid as soon as enough cash is accumulated starting after Month 19. The advances will be needed in the first half of the project to pay for CFL purchases and initial administrative expenses, as well as financing of receivables. Operations will be cash negative until the end of Month 18 when all the CFLs would have been distributed. Starting Month 19, cash flows will become positive, as collections will become more substantial.

3.7.1 Marketing and Educational Techniques

CEPALCO intends to implement MEGALIGHT program using more aggressive marketing and educational techniques to attain the program's targeted penetration rate. It will have to employ a combination of approaches, addressing the needs of the different market strata. Among these are: direct mail, door-to-door approach, print and mass media, newsletter and educational seminars that may be done through large organizations. Marketing efforts shall highlight the light payments, as well as the features, quality, and benefits of the ELI-qualified model being promoted.

To improve marketing efficiency, advance information about MEGALIGHT shall be given to walk-in customers, who are the direct target market for the branch distribution method. This could be done in steps. Customers could be pre-qualified through their bill-paying transaction, and then encouraged to participate at the same time or the next time they came in. This can be implemented starting with the head office and then with the other branches, one branch at a time so that a coordinated approach over a short period of time could be used.

The scaled-up program will cover all residential customers of CEPALCO. CEPALCO will educate customers on the attractive economics of the installment program and will suggest applications where CFL usage makes sense. Customers interested in consultation and direct installation of efficient lamps in cost-effective applications will be able to call CEPALCO to schedule Saturday visits.

3.7.2 CFL Models

The energy efficient lamps that will be sold on terms through the MEGALIGHT program are Philips Ecotone SL 15W, Osram Dulux Eco 12W and Ultralamp Eco 11 watts CFLs. These brands were chosen based on price, lumens, rated life, color rendition, size, availability, manufacturers support, interference and aesthetics. More brands were used to determine the CFL model that provides the best performance. The selection of various brands was also intended to help manufacturers and local suppliers promote their products.

Another purpose of choosing an extended range of lighting products is to reach a larger number of customers and facilitate a higher level of product penetration. Offering a range of lamps to the MEGALIGHT program will make the program more attractive, even though it may mean complicating administrative processes due to pricing difference and lamp life. The benefits of offering more products vis-à-vis the administrative implications will first be evaluated before any new offerings are introduced. In order to

simplify marketing and administration and minimize customer hesitancy, MEGALIGHT's product offering and pricing shall be kept simple. After the three basic models, other CFL models shall only be phased in once the program is up and running smoothly.

3.8 Cost Recovery

CEPALCO shall apply with ERC for MEGALIGHT as a DSM program. Recoverable costs such as program costs and lost revenues shall be determined and likewise applied with ERC for cost recovery. Cost recovery mechanism proposal for MEGALIGHT shall be based on the following general formula: direct costs shall be charged to the participating customers, while lost net revenue shall be recovered from the entire customer base much in the same way that utility power cost savings from DSM are passed along to all customers over the long term of power purchasing.

Direct cost refers to cost of the energy efficiency equipment, in the case of MEGALIGHT the ELI-qualified CFLs, together with administrative, project planning design and monitoring expenses. This charge shall appear as a monthly installment payment, which will appear as a separate line item in the customer's monthly billing to the extent that other principles designed into the customer offer can be maintained. Recovery of the net lost revenue shall be throughout the residential customer segment of CEPALCO.

3.8.1 Utility Costs and Possible Incentives

The utility's costs in spearheading into an energy efficiency program may include:

1. Administrative cost incurred in the development, implementation and monitoring of the program package;
2. Equipment and materials costs;
3. Installation, and Operations and Maintenance Cost; and;
4. Net lost revenue associated with load reduction.

The electric utility that engages in energy efficiency promotion shall be provided with incentives that may include, among others tax- or tariff-related measures and access to better financing terms.

3.8.2 Utility Lost Net Revenue

The utility shall be allowed to recover lost net revenue associated with the project. Full recovery of lost revenue shall be applied throughout the residential customer sector. The amount shall be integrated or tucked-in the residential customers' "*distribution charge*" until the total amount has been recovered.

For MEGALIGHT's 100,000 units of CFL for distribution, kWh avoided over the life of the program is 20 million kWh. CEPALCO's ESG estimates its net revenue at P0.18 per kWh, net revenue opportunity loss due to MEGALIGHT is P3.8 million over the 49-month life of an ELI-qualified CFL.

3.8.3 *Regulatory Intervention*

The Energy Regulatory Commission plays a vital role in the successful and sustainable implementation of utility initiated energy efficiency projects. Since energy efficiency runs counter to the primary business objective of an electric utility, which is selling electricity, ERC should find ways to provide incentives for electric utilities that embark on massive energy efficiency projects, such as the CFL leasing or deferred payment project.

4.0 Projected Savings

4.1 Lifecycle Economics

Estimates of savings are shown in Table 21 next page (Lifecycle Economics of a CFL vs. Incandescent), using straightforward comparison of electricity consumption between a 15-watt CFL under MEGALIGHT and a 50-watt incandescent bulb. For the customer, this generates a saving of 51 kWh per CFL per year at an assumed daily usage of 4 hours. Using CEPALCO's basic rate of PhP 4.14 per kWh, savings amount to PhP 210 per CFL per year. The analysis shows savings in electricity as well as avoided lamp replacement cost over the lifetime of the lamp.

For the 100,000 CFL to be distributed, energy savings are estimated at 3.8 million kWh annually (See Table 22 Impact of MEGALIGHT on CEPALCO). From the point of view of CEPALCO, this represents an income opportunity loss, which the regulatory bodies should allow recovery.

4.2 Environmental Benefit Statement

In addition to the traditional costs and benefits there are several hidden environmental costs of electricity use that are incurred when one considers the whole system of electrical generation. These costs, which are considered externalities, are real and have profound long-term effects, which are borne by society. Some environmental costs are beginning to be factored into utility resource planning. Because energy efficiency programs present the opportunity for utilities to avoid environmental damages, environmental considerations can be considered a benefit in addition to the direct peso savings to customers from reduced energy used. The direct link to regulatory approval should be made. These benefits are part of why the ERC should allow the recovery of any excess costs from the customer class.

The environmental benefits of energy efficiency programs can include avoided pollution of the air, the land and the water. Because of immediate concerns about urban air quality, acid deposition and global warming, the first step in calculating environmental benefits of a particular DSM program focuses on avoided air pollution.

Table 22: Life Cycle Costs of ELI-Qualified CFL Retrofit Project

PROJECT (ELI-qualified CFL) LIFE		6,000 Hours	49.32 MONTHS
50W INCANDESCENT BULB			
Cost of Lamp	25.00	PESOS	
No. of Replacements	6.00		
Total Lamp Cost	150.00	PESOS	
kWh Consumption	6.00	KWH /MONTH	
Electricity Rate	4.14	PHP/KWH	
Monthly Electricity Payment	24.84		
Equivalent Electricity Cost (49 months)	1,224.99	PESOS	
TOTAL COSTS	1,374.99	PESOS	
15W COMPACT FLUORESCENT LAMP			
Cost of Lamp	260.00	PESOS	
Administrative Markup	23%	PER YEAR	
Repayment Term	18.00	MONTHS	
Total Lamp Cost	317.50	PESOS	
kWh Consumption	1.80	KWH /MONTH	
Electricity Rate	4.14	PHP/KWH	
Monthly Electricity Payment	7.45		
Equivalent Electricity Cost (49 months)	367.50	PESOS	
TOTAL COSTS	725.00	PESOS	
TOTAL SAVINGS	649.99	In Pesos	
TOTAL ENERGY SAVED	207.12	Kilowatt-hours	
(over 49 mos.)			
Monthly savings in kwh	4.23		
Monthly savings in Pesos	210.00		
lost kwh 100K lamps			20,712,329
lost net revenues (P0.18/kwh)			3,728,219

Table 22: Impact of MEGALIGHT on Cepalco

I. FINANCIAL	
A. Net Revenue Lost	
Lost net revenue per kwh (P)	0.18
Number of CFLs to be distributed	100,000
Kwh avoided per CFL per month	4.20
KWh avoided total for one month	420,000.00
KWh avoided for one year	5,040,000.00
Net revenue lost per month (P)	75,600.00
Net revenue lost per year (P)	907,200.00
B. ROI on Megalight	
Ending Cash to Cepalco at end of Project	10,000.00
C. Lower Subsidy for Minimum Billers	
II. NON-FINANCIAL	
A. New Service to Customers	
B. Preparation of the System and the Organization for New Products and Services, and for Competitiveness	
C. DSM Compliance	
D. Societal Benefits	

5.0 Replication and Improvement of Schemes

The approaches employed in the pilot project will be refined and used as a guide in the massive implementation of the CFL Program to a wider customer base. Other focus group and delivery mechanisms for future projects may include the commercial sector and the performance contract scheme, respectively. The result of the pilot project will also serve as a marketing tool in the promotion of similar CFL leasing projects for subdivisions and residential customers within and outside the franchise area of CEPALCO.

CEPALCO believes in the principle that customers shall share in the costs of efficiency projects, since they are the direct beneficiaries of the economic benefits. CEPALCO also feels that customer use of energy efficient products is facilitated when they have ownership of the product. Providing the CFLs for free would likely lessen the value of these products in the eyes of the customers, as well as passing along more of the program costs to non-participants. While the option of having the utility use the budget to purchase CFLs and give these away for free is open, an installment program is deemed better because it has the added benefit of instilling in the customer the habit of *buying* a CFL even if the sales terms are very generous.

The MEGALIGHT program is clearly replicable by other utilities. CEPALCO believes that MEGALIGHT is a very good model for utilities interested in expanding their scope of energy service options while pursuing least cost planning. A utility can sell the energy services that its customers want and then finance its demand-side investments. Customers are then motivated to participate because of the low risk and minimal customer effort offered by the program.

CEPALCO further thinks that implementing programs of similar design and delivery systems to MEGALIGHT can be designed for many types of equipment, including chiller systems and thermal storage for all customer classes. The latter is necessary to keep the cost of the program down, by utilizing an existing billing and collection system, by allowing the inclusion of the CFL amortization in the energy bill. The changes will be part of the unbundling process that all utilities are implementing.

6.0 Next Steps and Possible ELI Assistance

Following the completion of the CEPALCO MEGALIGHT business plan, this chapter discusses the next activities needed to bring the MEGALIGHT program to reality. The chapter also identifies the different steps in the project cycle where further ELI assistance may be most effective.

6.1 Planning Stage

Armed with the experience from the pilot program, Paylight, CEPALCO is currently at the planning stage for MEGALIGHT. With the assistance of ELI, this business plan is being prepared for the internal use of management, as well as the basis for a proposal to ERC.

CEPALCO's management team that will be responsible for MEGALIGHT will have to get approval for the program from higher management and the CEPALCO Board. The company will have to approve resources that will be allocated for the project, such as management and staff, office space, equipment, and funds. Top management and the Board will also have to be aware of the plans and mechanisms for cost recovery to facilitate the decision-making process.

Regarding ERC approval, the proposal to ERC will have to be prepared at the planning stage, i.e. before the start-up phase. Cost recovery within the DSM framework should be clear to CEPALCO management and ERC before any additional resources are committed for the program. Assistance from ELI-Philippines or its successor program may be useful in the following activities:

- Preparation of the RFP for CEPALCO to procure the CFLs from manufacturers/distributors.
- Determining any specific monitoring and evaluation methods for MEGALIGHT
- Preparation of the proposal and/or review of the proposal, including a more detailed quantitative assessment of benefits to the utility, the customer, and the environment and suggestions for specific regulatory treatment.
- Determination of timing of submission to ERC, which is upon finalization of DSM framework
- Policy advocacy at ERC to gain support for DSM efforts

6.2 Start-up Phase

The Start-up phase consists of the following important activities:

- MIS revision of billing and collection system – This will be done by CEPALCO
- Legal activities – These pertain to documentation of agreements among CEPALCO subsidiaries and CEPALCO, suppliers and buyers of CFLs from among CEPALCO customers.

- Training – This refers to training of CESTCO and CEPALCO staff who will be directly involved in MEGALIGHT.
- Marketing - Start-up marketing activities may benefit from whatever ELI promotional and information print materials are available for distribution at this stage.

6.3 Operating Phase

During the operating phase, MEGALIGHT may still benefit assistance from ELI or its successor program on the following:

- Continuing marketing activities - The momentum gathered by the information and educational campaign of energy-efficient lighting should be supported and sustained by continuing marketing activities. ELI's objective of market transformation will be served well by the CEPALCO customers' experiencing the benefits of CFLs, and sharing the knowledge and experience with relatives, neighbors and friends. Thus, it can be justified for ELI to continue to support MEGALIGHT with available print materials about CFLs.
- Reporting, monitoring, and evaluation - In the course of MEGALIGHT implementation, certain reports may be required by regulatory bodies, to ensure that it is complying with any conditions that might have come with its approval. Such conditions may include, among others, indicators of energy saving, cost saving, administrative costs, and timetable of distribution.

The foregoing are just some of the more important activities in MEGALIGHT's project cycle, with special mention to those that can use ELI assistance even after the completion of this business plan.