

PROJECT BRIEF

IDENTIFIERS:

PROJECT NUMBER	PIMS 1128
PROJECT NAME	Philippines Efficient Lighting Market Transformation Project (PELMATP)
DURATION	5 years
IMPLEMENTING AGENCY	United Nations Development Programme
EXECUTING AGENCY	Department of Energy
REQUESTING COUNTRY	The Philippines
ELIGIBILITY	UNFCCC Ratified, August 1994
GEF FOCAL AREA	Climate Change
GEF PROGRAMMING FRAMEWORK	Operational Programme No. 5
GEF STRATEGIC PRIORITY	(S1) Transformation of markets for high-volume, commercial, low GHG products or processes

SUMMARY

The project addresses the barriers to widespread utilization of energy efficient lighting systems (EELs) in the Philippines. It will cover energy efficient versions of linear fluorescent lamps (standard vs. the slim tubes), compact fluorescent lamps (CFL), high intensity discharge (HID) lamps, ballasts (low loss electromagnetic and electronic), and luminaires. The Project will accelerate integration of EEL programs to the planned DOE activities, enhance private sector's involvement and appreciation of the benefits of EEL and ensure that environmental impacts associated with the use of EELs are mitigated. The project will achieve its objectives by: updating of policies, standards/guidelines; institutional capacity building; consumer education and information dissemination; developing and implementing financing mechanisms; and, mitigating environmental impacts of the project. The implementation of the Project will result to an aggregate energy savings of 29,000 GWh equivalent to 21% reduction relative to the Philippines energy efficiency scenario from 2003 to 2012. The equivalent GHG emission reduction is about 4,600 Gg of CO₂ equivalent.

COSTS AND FINANCING

GEF	US\$ 3,130,655
CO-FINANCING	
Government	US\$ 8,493,958
Private	US\$ 3,506,042
TOTAL FULL PROJECT COST:	US\$ 15,130,655
+ PDF-B Cost (GEF)	US\$ 97,800
+ Co-Financing for PDF-B Exercise (DOE)	US\$ 20,00
TOTAL PROJECT COST (FP & PDF-B)	US\$ 15,248,455

OPERATIONAL FOCAL POINT ENDORSEMENT

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BACKGROUND AND CONTEXT

1. Conservation and efficient utilization of energy had been one of the major strategies the Government of the Philippines (GOP) in improving the efficiency of energy utilization in various sectors of the national economy. The goal of the country's energy conservation and energy efficiency (EC&EE) efforts is to achieve energy self-sufficiency and reduce environmental impacts of energy generation and utilization.
2. The country took positive turns toward EC&EE during the global oil crisis in the early 70s and the countrywide power crisis in the early 90s. Significant policies and programs, which influenced the implementation of EC&EE improvements in the residential, commercial and industrial sectors in the country were formulated and implemented. The progress made in the area of EC&EE was however slowed down by several events, e.g., the 1997 Asian financial crisis, the change in Administration in 2000, and the insurgency problems. The private sector became hesitant to invest on energy efficiency technologies because of economic uncertainty and the basic fact that money is in short supply.
3. However, with a market of nearly 80 million people and improving infrastructure, it seems only a matter of time before investors can take advantage of liberalized investment regulations and trade agreements and invest in production facilities. According to a study done on DSM Potential in the Philippines (USTDA, 1994)¹, the national market for energy efficiency technologies in the commercial and industrial sectors is at more than US\$ 655.6 million, about 8% of which can be attributed to lighting. This large potential national market could be realized if and when the private sector determines that it makes good business sense to invest in energy efficiency technologies and services.
4. The use of energy efficient lighting (EEL) is one of the strategies by the government and the private sector in promoting energy efficiency. Lighting represents a large share of the energy used by the residential (25% in urban areas; 50% in rural areas - at an average of 35%) and commercial/institutional (25%) sectors². Lighting energy consumption accounts for 5% of the total electrical consumption in the industrial sector. The total lighting consumption by these three sectors in 2002 was 7,970 GWh or 16.5% of the total national electricity consumption. EEL systems are the easiest to install/retrofit among other energy efficient equipment used in households and in commercial and industrial establishments. However, barriers to its widespread use continue to persist despite the numerous promotional activities conducted since the country embarked on EC&EE.
5. The Philippine government's efforts so far to promote EELs were primarily on information and education campaign (IEC) and development of lighting standards and labeling. IEC on EELs was implemented through the Power Patrol Program of the Department of Energy. The Bureau of Product Standards (BPS) of the Department of Trade and Industry (DTI) spearheads the development of lighting standards and labeling.

¹ Study cited in the report on Market for Energy Efficiency Technologies and Services in the Philippines by IIEC in 1998.

² Lighting consumption by sector was based on previous studies conducted by DOE on Household Energy Consumption Survey (HECS) in 1995 and the ELI Market Assessment conducted in 2000.

NATIONAL CIRCUMSTANCES AND OUTLOOK OF ENERGY SECTOR

6. The annual gross domestic product (GDP) growth rate of the country in 1999 was 3.32% and 3.95% in 2000. In 2001, the GDP per capita was PHP 45,454 (current prices). The service sector had the highest contribution to GDP at 53.5% followed by industry at 31.6%. The agriculture, fishery and forestry sectors contribute the remaining 15.1%. Within the industrial sector, manufacturing has the highest contribution at 72.2% followed by construction at 15.84%. There are a total of 494,974 industries in the Philippines, 99.5% of which are considered small scale (asset size equivalent to US\$ 30,000 - US\$ 300,000).
7. The 2002 to 2011 Philippine Energy Plan (PEP) reported that the country's total energy consumption over GDP for the last ten years reveals an increasing energy use intensity from 1.67 barrels of fuel oil equivalent (BFOE) per PHP 10,000 in 1990 to 2.71 BFOE per PHP 10,000 in 1998 and decreased thereafter to 2.62 BFOE per PHP 10,000 in 2000. The decline is attributed to the economic slow down that period, devaluation of the peso against the US dollar, and the unabated oil price increases in the international market.
8. The PEP forecasts an increase in the country's total energy consumption from 264 MMBFOE in 2002 to 467.5 MMBFOE in 2011. Reduced share of oil is expected in the next 10 years due to retirement of most of the oil-based power plants and the possible displacement of oil by natural gas for power and non-power utilization. Indigenous energy utilization will have an annual growth rate of 3.2%. The barangay electrification program projects to achieve a 100-percent electrification by 2006. Most of the targeted usage in the electrification program, particularly in the initial stages, will be for lighting.
9. Through technology innovations and aggressive implementation of EC&EE programs (Figure 1), DOE expects to soften the demand projection by realizing a total savings of 68.5 MMBFOE from 2002 to 2011. This is equivalent to cumulative deferred electricity generating plant capacity of 2,196 MW. Under its efficiency/energy labeling & standard program, DOE projected to implement fluorescent lamp ballast energy efficiency standard by 2003 with a total energy savings of 0.18 MMBFOE until 2011. The total potential CO₂ equivalent avoidance from implementation of EC&EE programs from 2002 to 2011 is estimated to be 37,000 Gg (37.0 million tons) equivalent to an average annual CO₂ emission avoidance rate of 3.4%.

EXPERIENCES ON EC&EE

10. EC&EE programs in the country started during the oil crises in the 70s. The Omnibus Energy Conservation Law was formulated and passed in 1980 and provided the basis and support for building energy use standards, energy audits, energy conservation among intensive energy users, energy labeling and standards program and incentives to private sector. In the early 90s, DOE drafted a new version of the Energy Conservation Bill but was not acted upon by the Philippine Congress up to the present.
11. In 1989, DOE developed the code for energy efficient design of buildings and was included as a Referral Code in the National Building Code in 1992. The building energy code entitled "Guidelines for Energy Conserving Design of Buildings and Utility

Systems” was issued in 1994 incorporating the requirements for the design of the building envelope, lighting, and HVAC systems. It was expected that the implementation of the Energy Code would save about 60 kWh/year-m² in new commercial buildings. While the Code has been officially in place for 8 years, it has never been fully implemented due to lack of implementing guidelines to follow.

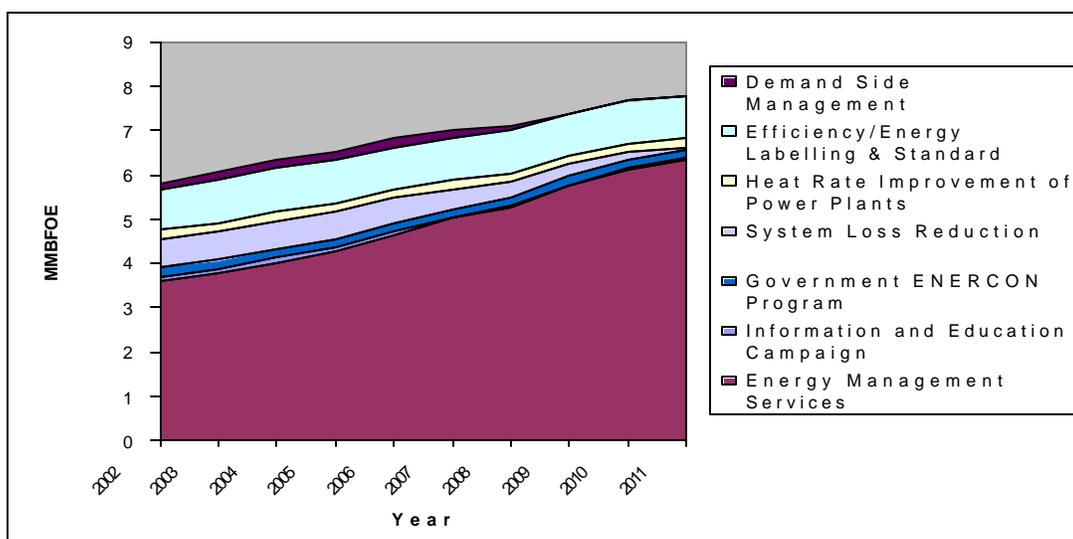


Figure 1. Potential Savings from GOP's Energy Efficiency Programs

12. One of the financing sources that were positively identified for the implementation of EC&EE technologies in the Philippines is the Technology Transfer for Energy Management Demonstration Loan Fund (TTEM-DLF). This program provides technical assistance and revolving loan pool to commercial and industrial establishments to implement EC&EE technologies. Based on the earlier projects supported by the program, the financial rates of return to firms availing the loan ranged from 12 to 28%. This relatively successful program is still under operation but is limited as it can only fund each eligible EC&EE project by as much as US\$ 100,000. Moreover, because of budget constraints the Department of Budget Management (DBM) was not able to release the funds allocated for TTEM-DLF in 2001 to 2002.
13. The DOE's Lighting and Appliance Test Laboratory (LATL), commenced operation as testing laboratory for fuels and appliance in the mid-80s. It serves as a neutral test facility for energy performance testing of household appliances - energy efficiency standards and labeling program for room air conditioners and household refrigerators and freezers. In 2001, the government has expanded the coverage of the labeling program to lighting products (although lighting testing activity started as early as 1992 with the World Bank - ASTAE Project) starting with fluorescent lamp ballast (electromagnetic ballast), and eventually to compact fluorescent lamps by July 2003.
14. The acute power shortages in the early 90s prompted the pursuit of Demand Side Management (DSM) in the country. In August 1995, the DOE mandated the then Energy Regulatory Board (ERB) to develop a DSM regulatory framework. In December 1996, ERB promulgated the DSM framework that required utilities to submit DSM plans within

one year from the effectivity of the framework. Only 32 of the 140 distribution utilities submitted, and of these, only 25% got approved due to procedural issues and strategic uncertainties in the preparation of the DSM Plans by the utilities. The reason cited for the resistance of the utilities to comply with and implement DSM was the “lack of clear-cut and more responsive regulatory policy to encourage the promotion of the DSM program”. Among the measures proposed by the utilities to ERB include promotion and use of EEL systems such as use of compact fluorescent lighting (CFL), public awareness programs for residential and commercial consumers, street lighting and school lighting.

15. The enactment of Republic Act 9136 or “Electric Power Industry Reforms Act (EPIRA) on 8 June 2001 shifted the priorities of the energy sector to deregulation and privatization. While the government has maintained its support for DSM activities under a deregulated electric industry, it is expected that its full benefits will not be realized until the deregulation process has progressed further. This is manifested in the continued delays in the approval of the revised 1996 DSM Framework, which was prepared under the Efficient Lighting Initiative (ELI) Project in the Philippines in 2002.
16. The concept of Energy Service Company (ESCO) was introduced in the Philippines during the implementation of DSM programs in 1996. Despite the strong support of DOE and other private institutions, several attempts to implement energy performance contracting projects became unsuccessful. A survey conducted by the Manila Electric Company (MERALCO) in 1998 showed that there is no ESCO existing in the country that is providing turnkey efficient lighting services, including analysis, project financing, and installation. Under the Green Malls Project (USAID, 1996), an attempt was made to conduct an energy efficiency retrofit of a large shopping mall. Unfortunately, the project was not implemented because the prospective client and the project proponent could not agree on monitoring and verification issues. Other reasons that made ESCO operations unfavorable are the falling power prices in the late 90s, and shortage of financing. A study made in 1999 (Energy Efficiency Policy and Technology Transfer: A Hawaii-Philippines Case Study) cited the following reasons in addition to those mentioned earlier: (1) Insufficient information on the benefits of energy efficiency and performance contracting by commercial and industrial establishments; and, (2), lack of financial resources and delayed implementation of DSM. To date, ESCO operations in the country are mostly limited to providing technical services (for a fee) to commercial and industrial establishments (e.g., energy audits).
17. On information education campaign (IEC), DOE launched the Power Patrol Program in January 1994 to educate the public about energy conservation through seminars/training programs and information dissemination. The Power Patrol is one of the successful and long-running IEC programs of DOE. The Power Patrol Regional Council was established to build local chapters and institutionalize the program through task forces on commercial, industrial and household sectors. Power Patrol was also included in the elementary curriculum set for grades 5 and 6. The dissemination of building energy use guidelines and efficient lighting practices is part of the IEC under this program.
18. Professional and non-government organizations have likewise been active in the promotion of EC&EE through technical workshops and training especially to practicing professionals in the academe and industries. These include the Energy Management Association of the Philippines (ENMAP), the Institute of Integrated Electrical Engineers

(IIEE) of the Philippines, International Institute for Energy Conservation (IIEC) and International Council for Local Environmental Initiatives (ICLEI).

19. The utilities like MERALCO, CEPALCO and VECO and some cooperatives continue to promote energy efficiency in their service areas as part of their customer service programs. Among the services provided to their customers are free energy audits for commercial and industrial establishments and awareness campaign for households.

Status of Energy Efficient Lighting Systems Implementation

20. Households in urban areas prefer to use fluorescent lamps because they are considered brighter, gives off less heat, and are more energy efficient. Rural households prefer the incandescent lamps mainly because they are cheaper and widely available. Another reason rural households prefer incandescent lamps is that these lamps work even with voltage dips common in rural power supplies. With voltage sags, fluorescent lamps sometimes do not light up when they are switched.
21. A household survey conducted under PDF-B exercise to design the PELMATP showed that 66% of the household lighting energy consumption in Metro Manila, Cebu City and CALABARZON is attributed to conventional fluorescent lamps (T12) and 30% to incandescent lamps. The most popular fluorescent lamps are the T12 linear lamps rated at 40W and 20W. The more energy efficient CFL became a popular replacement for incandescent lamps starting the mid-90s. Households want to buy more energy efficient lamps because of their lower power consumption and longer life. The major reasons why households do not buy energy efficient lamps, particularly CFL, are their relative high cost and lack awareness of product and their proper usage. The survey on lamp application indicates that CFL are used in areas where lighting needs are frequent and shorter duration (e.g., comfort rooms and dining areas).

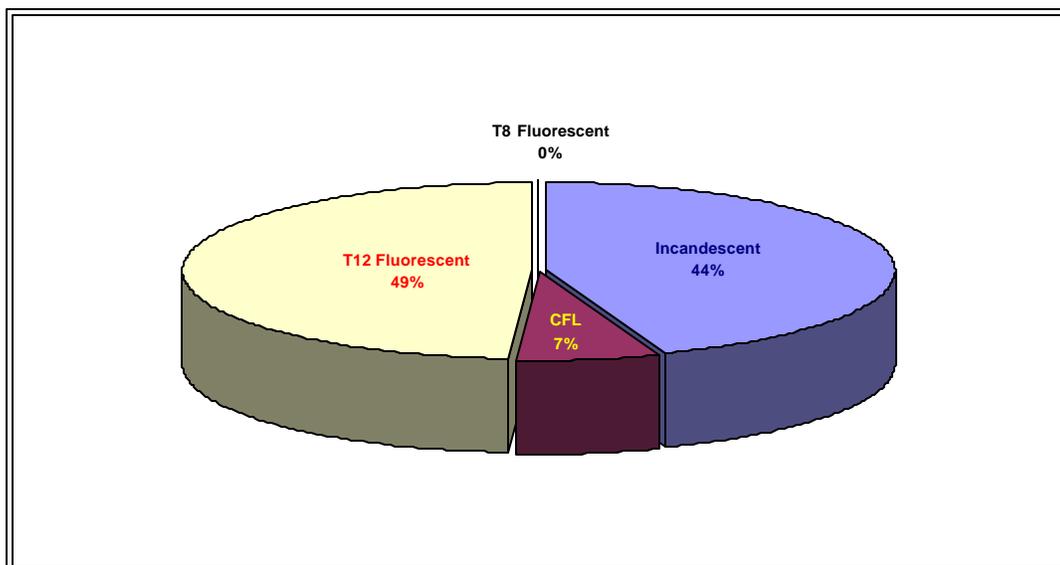


Figure 2. Electrical Consumption of Lamps in Households in 2002

22. Most commercial and industrial establishments use fluorescent lamps for general lighting. Establishments begun changing conventional fluorescent lamps (T12) to slim type T8s starting the 90s and utilized lamp fixtures with reflectors starting late 80s as part of their EC&EE program. The PELMATP survey showed the use of T8 in commercial establishments is relatively low compared to that of T12, at one out of five lamps.
23. Incandescent lamps (ILs) and CFLs are more prevalent in commercial establishments than industries. The PELMATP survey indicated that about 51% of 317 commercial establishments sampled are using CFL, at a ratio of 1 CFL to 3 ILs. HID lamps are used in selected sections inside the building and more commonly in walkways and for security lighting. There is a low usage of high-pressure sodium (HPS) lamps compared to mercury (Hg) lamps in both commercial (1HPS:37Hg) and industrial establishments (1HPS:28Hg). Industrial and commercial establishments use low-loss electromagnetic ballasts to replace electromagnetic ballasts as an energy efficiency measure, at 1 out of 4.

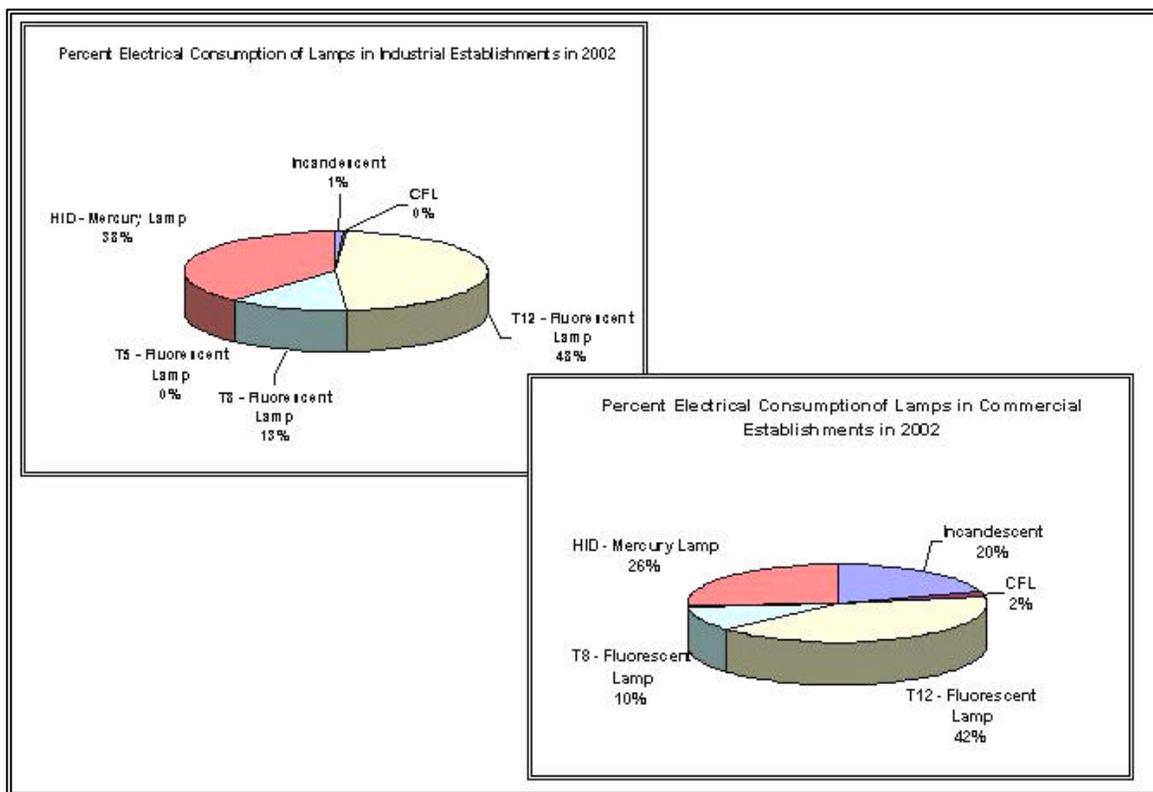


Figure 3. Electrical Consumption of Lamps in Commercial and Industrial Establishments in 2002

24. The PELMATP survey showed that commercial and industrial establishments' criteria for selecting lighting systems installed in their respective facilities are: (1) low power consumption; (2) "longer lasting"; and (3) "gives brighter light". The reasons for non-use of EEL systems are: (1) lack of information on energy efficiency; (2) energy objectives are not incorporated in operating and maintenance policies; and (3) other priorities of management. EC&EE measures popular to both commercial and industrial establishments are selective switching, task lighting and day lighting.

25. The major sources of information about EELs by households and commercial and industrial establishments in urban areas are TV, radio and newspapers.
26. Local lighting product manufacturers, with the exception of General Electric Lighting (GE) are predominantly small industry players. GE, the only multi-national company manufacturing conventional linear fluorescent tubes (T12), produces 6 million pieces annually for the domestic market. For ballasts, there are presently 5 active local manufacturers. Assemblers of housing for linear tubes and other lighting fixtures are numerous, some of which are carrying various electrical product lines.
27. At present, there is no single lamp and bulb manufacturer that is producing EELs in the country. GE and Philips are the biggest importers of EELs sold locally. Other importers and suppliers of efficient lamps include, among others, Osram, Electrolux, Toshiba, National, Hitachi, Sylvania, and a growing number of Chinese importers.
28. The proliferation of cheaper low quality imported alternatives, that are apparently EEL products, causes unfair competition with bigger and known brands. There are CFL products sold at 3 pieces for PHP 100 claiming the same specifications as those sold by GE, Osram and Philips at PHP 200 to 350. To address this problem, the government launched the CFL energy labeling program in December 2002. This program requires mandatory labeling of CFLs sold in the market starting January 2004.
29. Local ballast manufacturers mostly produce electromagnetic ballasts for fluorescent lamp tubes - being one of the light sources commonly used in most residential and small-scale commercial and industrial establishments. Among these local ballast manufacturers, Quantum Electronics Corporation, Trilux/BAG and Clalight are presently producing electronic ballasts. Some of the major constraints identified by the ballast manufacturers in their bid to improve the energy performance characteristics of their products are high cost of imported raw materials, labor and electricity.
30. The lighting fixture manufacturers, on the other hand, are more flexible in, and readily adaptable to, addressing the needs of their target market. They produce standard or off-the-shelf fixtures for customers who are tight on budget, and fabricate lighting fixtures using energy efficient lamps for more forward-looking and energy-conscious customers. The majority of local luminaire manufacturers do not send their luminaires to independent photometric testing laboratories so they are not able to make comparisons between luminaires of equal or different performance quality.
31. There is a wide range of lamps from miniature indicator bulbs to general services lamps imported into the Philippines in the last five years. From 2000 to 2001, the Philippine National Statistics Office (NSO) reported a total importation of 46.7 million of incandescent lamps, 25.6 million fluorescent lamps, 3.8 million HID lamps and 5.2 million ballasts. During the same years, DTI-BPS issued import commodity clearances (ICC) to importation of 1.6 million CFLs. DTI-BPS data also showed that ICCs issued for importation of ballasts were for electromagnetic ballasts (96.6%), low loss electromagnetic ballasts (2.1%) and electronic ballasts (1.3%).

32. To protect buyers from false claimed ratings indicated on the labels and to provide level playing field for manufacturers and importers, the BPS and DOE established the energy standards and labeling program for lighting products. At present, minimum energy performance standards (MEPS) for lighting products apply only for electromagnetic ballasts. The labeling program on electromagnetic ballasts is at the testing stage (July 2002 to June 2003) while the voluntary labeling for CFLs started December 2002. The development of labeling program for linear fluorescent lamps is planned for mid-2003.
33. Handling and disposal of waste lamps can cause negative impacts to the environment. The presence of mercury (Hg) in fluorescent lamps and HIDs may become hazardous when handled in large volumes. In the Philippines, lamp wastes are considered special wastes. At present there are no clear guidelines on how special wastes will be treated by waste generators. Households and small businesses usually throw busted lamps together with other wastes. Large commercial and industrial establishments store lamp wastes, dispose them through mixed waste haulers, sell them to recyclers, or throw them directly to municipal landfills. Some ISO certified industries export mercury containing lamp wastes to other countries with recycling capabilities.

Efficient Lighting Initiative (ELI) Program

34. The ELI Program is a GEF-funded EEL program administered globally by the IFC in 7 countries including the Philippines. The 3-year ELI project in the Philippines focused on residential and small business consumers to increase the CFL market share of through building awareness and establishing partnerships with various stakeholders.
35. The following are the significant accomplishments of this program³:
 - Introduction of the ELI Quality Mark, a globally recognized symbol for compliance to ELI standards and specifications for lighting. Through the ELI quality mark system the program successfully advocated the adoption of ELI standards and specifications. There were 5 brands and a total of 46 models of ELI-qualified CFLs currently available in the Philippine market, with at least 2 more brands expected for certification soon.
 - Adoption of global ELI specifications for other lighting technologies. The program promoted and catalyzed consensus building towards adoption of ELI specifications and standards for other energy efficient technologies among stakeholders. Among them are ERC, MERALCO, CEPALCO, DBP and IIEE.
 - Strengthening of the local lighting product testing capability through the provision of an integrating sphere and auxiliary equipment for CFL energy performance testing to DOE-LATL. The LATL served as the venue for the global random testing of CFL samples under the ELI Program. DTI-BPS conferred to DOE-LATL a certificate of laboratory accreditation for energy performance testing of CFLs based on ISO 17025, a globally-recognized standard for laboratory competence.
 - Implementation of public relations, advocacy and advertising campaigns through print and radio media, television commercials, and vendor education at points-of-sale

³ These are based on the discussions between DOE, UNDP and ELI Phils Project Team, the draft Executive Summary of the ELI Phils Country Program Implementation Final Report, and as validated in the Process Evaluation Report on the ELI Program in the Philippines (dated 23 February 2004).

- Development of, together with the Institute of Integrated Electrical Engineers (IIEE) an IIEE–ELI Manual of Practice on Efficient Lighting. There were 2,000 copies produced under ELI technical assistance. The manual is sold by IIEE to lighting designers, specifiers, contractors, suppliers and other interested parties. It is also continuously used by IIEE and PLIA for their professional training seminars. It was reported that the manual influenced the procurement processes of some local government units (e.g., Lipa City in Batangas, Naga and Quezon City) and institutions/entities (e.g., the Senate).
- Provision of technical assistance to the Energy Regulatory Commission (ERC) in the review, amendment and improvement of the 1996 DSM Framework. A government-industry consensus on the Revised DSM Framework, which includes standard/default DSM plans, was developed through collaborative agreement involving 71 power industry stakeholders.
- Provision of technical assistance to CEPALCO’s Paylight/Megalight CFL distribution program. A pilot CFL distribution program (Paylight) was developed and implemented. Further, a business plan was prepared for the scaled-up CFL distribution program (Megalight).
- Collaborated with MERALCO in the development of a business plan for Smartlight CFL Program, which is to be implemented in three phases.
- Developed a Model ESCO transaction in cooperation with DOE and DBP. The program developed the Request for Proposal (RFP) and the Energy Services Agreement (ESA), which will be used for the procurement of ESCO services for the lamp retrofitting project of DBP. This catalyzed the formation of 14 independent ESCOs (e.g., RNFA-Romago, CEPALCO ESG and MERALCO Energy, Inc.). The existing environmental credit facilities of DBP were extended to include energy efficiency and ESCO project financing. Other government agencies (e.g., DENR) were influenced to consider adoption of similar program as DBP.
- Facilitation of the establishment of consumer cooperatives as viable distribution channel for EEL products. A Memorandum of Agreement (MOA) was signed between ELI and the Metro Manila Federation of Consumer Cooperatives (MMAFECCO). At least eight member cooperatives under the MMAFECCO indicated interest to be long-term distribution channels for ELI-qualified CFLs regardless of the type of credit offered to their members. Commercial negotiations have been initiated.
- Establishment of two associations – The National Advisory Council for Energy Efficient Lighting (NACEEL) and Philippine Lighting Industry Association (PLIA). NACEEL is meant to catalyze alliance between the government and the private sector and is envisioned to evolve into the Philippine Council for an Energy Efficient Economy. PLIA was formed to represent the lighting industry for lobbying and cooperation with the government, participate actively in the formulation of policies and standards affecting the lighting industry and to serve as catalyst in the market transformation towards efficient lighting. NACEEL launched the Government Standards and Policies on Efficient Lighting (GSPeL). PLIA was appointed by NACEEL Board to lead the GSPeL Technical Working Group.

36. The PELMATP is designed to build on the major accomplishments of the ELI Program, and includes activities that will promote further the work initiated under that program. It will involve the implementation of lighting market transformation activities utilizing the tools and sustaining institutions that the ELI program has developed and established.

While the ELI Program focused primarily on CFL adoption, PELMATP will cover other lighting systems such as linear fluorescent and HID lamps, ballasts and luminaires. It will address EEL applications and promotion not only in the residential and small and medium enterprises but also in the commercial and industrial sectors, which are major users of linear fluorescent lamps and fixtures. PELMATP will make use of some policies, frameworks and pilot projects laid out under the ELI Program, with modifications where needed, along with jumpstarting their wider implementation, up scaling and/or replication. It will reinforce the existing linkages among the various key industry players in order to ensure success of the project.

37. The ELI standards will be set as norms that will have to be complied with as voluntary standards by enterprises participating in the PELMATP.
38. The revised 1996 DSM Framework initiated under the ELI Program has not been acted upon by the ERC as the latter shifted its priorities to the deregulation and privatization of the power industry. PELMATP will continue to work towards ERC approval and enforcement of amended DSM framework and approval of standard/default DSM Plan Templates. Technical assistance will be provided in the review and updating of the DSM Framework and DSM Plan Templates, as necessary. PELMATP will provide assistance to utilities and RECs in preparing their respective plans. The pilot study conducted under the SMART Light CFL Leasing Project will be expanded to other EEL systems and fully implemented through utilities and RECs.
39. PELMATP will continue to build the capacity of DBP and ESCOs and complete the demonstration process as a showcase to the commercial and industrial sectors. The RFP and ESA developed by ELI Program will be used as model procurement documents for subsequent ESCO transactions by other government/private entities.
40. PELMATP will design and implement EEL micro-financing schemes that will overcome difficulties by the consumer cooperatives in collecting amortization and paying the supplier of EELs based on the lessons learned under the ELI Program. PELMATP will pursue the commercial negotiations that have been initiated with the MMAFECCO member cooperatives under the ELI Program.
41. PELMATP will institute the inclusion of EEL training in school curricula, which was identified as one of the activities in the IFC/GEF ELI-Tranche II Project Document but was left out during its implementation.
42. PELMATP will align and integrate all ongoing efforts of NACEEL and GSPEL Technical Working Group. The role of PLIA as an advocate and catalyst of EEL in the private sector will be strengthened. GSPEL is a joint government-private undertaking initiated and led by PLIA. GSPEL (Government Standards and Policies on Efficient Lighting) is meant to promote energy efficiency in government buildings and street lighting.

BASELINE AND ALTERNATIVE SCENARIO

43. The DOE projects a total nationwide electricity consumption of 769,607 GWh in the next ten years (2003 to 2012), 20% or 153,921 GWh of which is attributed to lighting. Over the same period, households are projected to account for 60% of the total lighting

consumption while the commercial establishments will account for 30%. Industrial lighting is expected to be 9% of the overall lighting energy consumption.

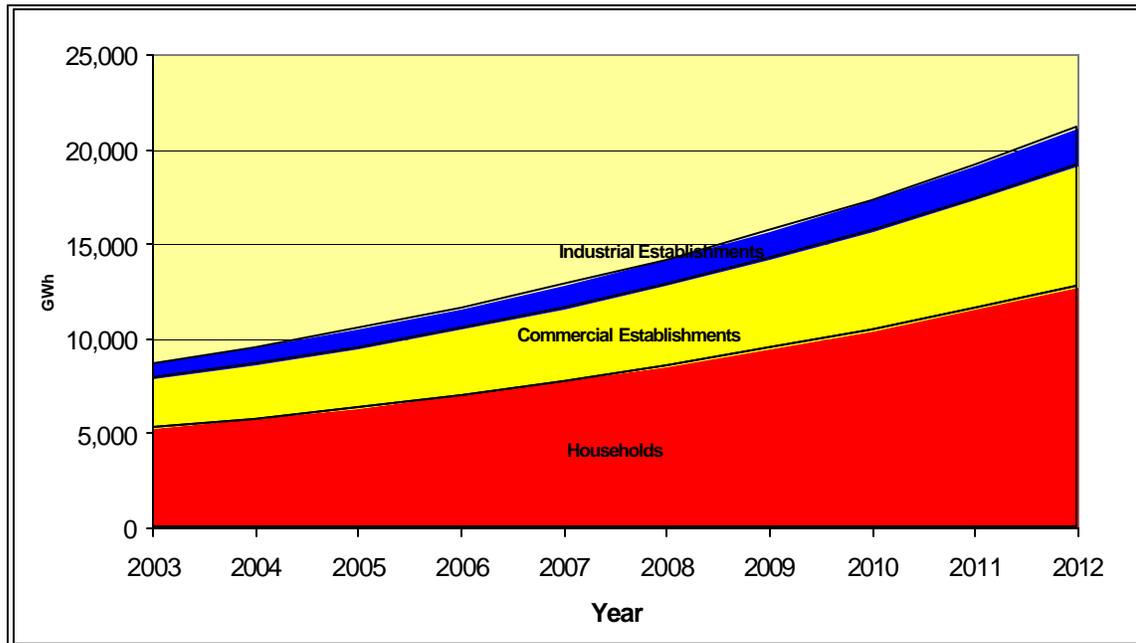


Figure 4. Lighting Electricity Consumption by Sector, GWh

44. Under a baseline scenario, efforts on EE lighting will continue, as in the past, to be promoted in a fragmented manner through the EC&EE programs of the DOE such as: (a) Energy management services; (b) Information and education campaign; (c) Government ENERCON Program; (d) Efficiency/Energy Labeling and Standards; and, (e) Demand Side Management, along with the implementation of other energy efficiency technologies. It is up to the public and the private sector to decide and prioritize which will best fit to their daily operations and financial capabilities.
45. Initiatives of the private sector are important in the adoption of EEL technologies in the next 10 years. As stated in the PEP (2002-2011) the government can only provide 1.3% of the total investment requirements for EC&EE, and expects the private sector to make up for the rest. The highest potential savings from EC&EE programs are projected to come from energy management services program. The government however recognized that the shortfall of the various programs in the past would continue unless certain forms of intervention will be implemented to address the following:
 - a) Inadequate information on energy management services market such as energy end-use indicators and base level energy intensity for all sectors.
 - b) Inadequate interest in energy efficiency.
 - c) Slow penetration of EC&EE technologies due to lack of financing, lack of incentive information delivery system and lack of data on monitoring and verification.
 - d) Lack of awareness on the impact of efficient energy utilization on the environment and the country's limited resources.

46. The proposed GEF-supported alternative to the baseline scenario is intended to contribute to the realization of the country's sustainable development objectives and its goal in reducing GHG emissions in the energy sector. The proposed alternative will specifically focus on the promotion of energy efficient version of linear fluorescent lamps (i.e., slim tube T8 triphosphor), CFLs, high intensity discharge (HID) lamps, ballasts (low loss electromagnetic and electronic), and energy efficient luminaires. The proposed alternative will consider all other lighting objectives in prescribing EELs such as: a) Providing suitable illumination levels; b) Improving lighting controls; c) Integrating electric and day lighting systems; and, d) performing appropriate maintenance which preserves illumination and light quality.
47. The proposed alternative will build on the present capacity and existing energy efficiency programs of the government and initiatives by other sectors, as well as on the outputs and lessons learned from the implementation of ELI Program in the Philippines. It will comprise a range of interventions that will address major policy and institutional, market, information, financing, and technical barriers that persist in the promotion and widespread utilization of efficient lighting systems. New EEL distribution channels and market segments will be created to ensure a sustainable market transformation. Fig. 5 shows the envisioned lighting market structure in the baseline and alternative scenarios.

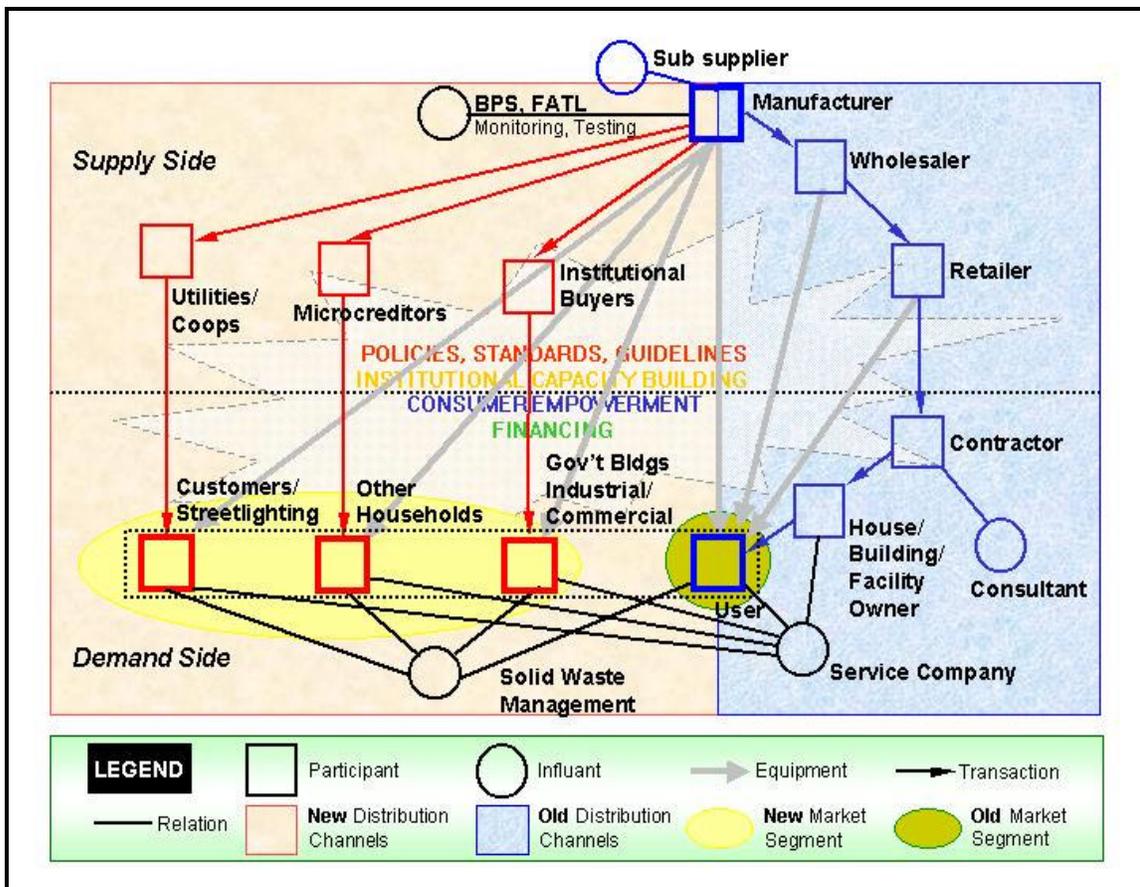


Figure 5. Lighting Market Structure in the Baseline and Alternative Scenarios

48. The proposed alternative will bring about an increase in the use of EEL products by 46% at the end of the PELMATP and by 82% five years later. The estimated energy savings is 7,100 GWh at the end of the PELMATP (2008) and 29,000 GWh during the ten-year period (2003 to 2012) The anticipated energy savings is accounted from households (71%), from commercial establishments (24%) and from industrial establishments (5%).

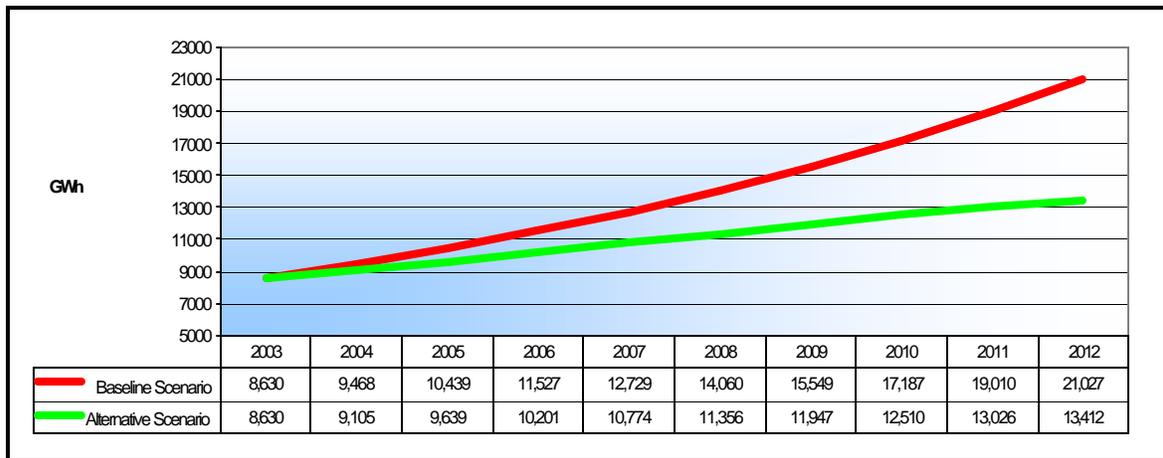


Figure 6. Lighting Electricity Consumption in the Baseline and Alternative Scenarios

49. The proposed alternative will also implement programs on lamp waste recovery, reuse and recycling to ensure proper handling and disposal of lamp wastes.

BARRIERS TO WIDESPREAD USE OF ENERGY EFFICIENT LIGHTING SYSTEMS

50. The barriers to widespread utilization of EELs were identified through literature survey, interviews, round table discussions, survey questionnaires, and the logical framework analysis workshop with key stakeholders in the lighting industry during the PELMAT PDF-B exercise. These were also identified from the assessment of roles of all stakeholders in providing awareness, stimulation, advice, financial resources, and regulations during the EEL product life cycle – introduction, manufacturing, importation, distribution, utilization and finally waste disposal.
51. Collectively, the barriers listed below may be referred to as any of the contributing factors or problems getting in the way of efforts to promote and facilitate the widespread utilization EELs in the country.
- High initial cost of EEL products. *Relamping and/or replacing fixtures to save energy require higher investment cost.*
 - Non-implementation of government incentives. *Applications for incentives available for projects that are in line with compliance to multilateral agreements such as the UNFCCC are scarce due to lack of awareness by the investors and lack of clear and simplified guidelines on how to avail them.*
 - Poor protection of consumers. *The Consumer Act of the Philippines does not provide specific warranties on EEL products. Consumers are also not informed of the on how to handle and dispose mercury-containing lamps in product packaging.*

- d) Poor understanding of use and benefits of EEL products. *Manufacturers and importers usually do not properly introduce new product variants to the market. Consumers cannot adequately understand and compare product specifications as to their use and benefits.*
- e) Building lighting system designers and developers lack knowledge on the full benefits of using EEL products in new commercial and industrial establishments. *The country still lacks technical knowledge on the application of efficient lighting system, as well as on the life cycle benefits of different EEL technologies available in the market.*
- f) Inadequate promotion and advocacy programs on application of EEL. *The government and the private sector have not aggressively pursued the acceleration, development and application of EEL systems.*
- g) Lack of locally assembled energy efficient luminaires. *The industry needs dedicated manufacturers of energy efficient but economical luminaires for various applications and market needs.*
- h) Poor quality of power supply. *Frequent abnormal voltage fluctuation and voltage surges, particularly in rural areas affect the performance of lamps and ballast and shorten their lives.*
- i) Ineffective implementation of the DSM Framework. *The ERC has been slow in approving the DSM plans of utilities and electric cooperatives, and this has put the implementation of DSM to a standstill. Attention of both the utilities/cooperatives and ERC are at present focused on EPIRA and the deregulation activities.*
- j) Non-implementation of, and outdated, Building Energy Use Guidelines. *The Building Energy Use Guidelines became a referral code of the National Building Code in 1994 and was never updated. The general requirements of energy-efficient lighting designs were based on conventional lighting products, such as incandescent, T12 fluorescent lamps and electromagnetic ballasts.*
- k) Inadequate EEL testing facilities. *The only existing lighting performance testing facility in the country is inadequate to test the increasing number of lighting products in the market.*
- l) Insufficient monitoring and verification of products as to their compliance to PNS. *The government body responsible for lighting products standards lacks resources and manpower to monitor, verify and enforce compliance of importers and manufacturers to PNS standards.*
- m) Poorly developed ESCO transactions. *The government and the private sector have not been fully successful in demonstrating highly visible ESCO transactions that includes project financing through energy savings. There is no mature industry for local ESCOs and stable sources for financing. Protocols and procedures for measuring and verifying energy savings are not available.*
- n) Lighting product manufacturers and consumers are unable to access financing for EELs. *Commercial and industrial establishments and lighting manufacturers lack understanding on accessing existing credit facilities for financing (e.g., DBP) for financing EC&EE projects like EEL systems retrofits and product line expansion. Also, DBP and other financing institutions lack experience and technical know-how to evaluate and develop EEL project portfolios.*

Basically, there is an active interplay of institutional, policy, marketing, financial and technical problems that impede the transformation of the local lighting market to EEL systems. See Annex E for details about these barriers.

RATIONALE & PROJECT STRATEGY

52. The Philippine Efficient Lighting Market Transformation Project (PELMATP) is proposed to address the barriers to widespread utilization of EEL systems, which exists despite the various government and private sector's programs/activities in the past. This project will cover energy efficient versions of linear fluorescent lamps (slim tubes), CFLs, HIDs, ballasts (low loss electromagnetic and electronic) and luminaires. The project will contribute to the transformation of the local lighting market from that of conventional lighting systems to EEL systems through integration of various EEL programs in the country to the planned DOE EEL system promotion activities, enhance the private sector's involvement and appreciation of the benefits of EEL and ensure that environmental impacts associated with the widespread utilization of EELs are mitigated. It will achieve the above objectives through: (1) capacity development and technical assistance on stimulating/enhancing awareness about benefits and applications of EELs; (2) provision of technical advice; (3) development and implementation of appropriate and up-to-date policies on EC&EE; (4) development of EEL standards and guidelines; (5) monitoring of, and enforcement of EC&EE policies; (6) provision of infrastructure for EEL testing and manufacturing; and, (7) establishment of incentive systems and financing mechanisms for EEL system manufacturing and applications.
53. PELMATP will supplement and reinforce the existing EEL programs of the government and the private sector. The DOE's major programs (Power Patrol, GEMP, PEREZ, PERC, and development of lighting standards and labeling) will be strengthened. Specific activities will be conducted to build capacity of both the DOE and the private sector and gain acceptance of residential, commercial and industrial consumers of EEL. Promotional activities of electric utilities and cooperatives, EEL product manufacturers/importers, professional organizations and other key actors in the lighting industry will be utilized and enhanced for broader and more intensified IEC and capability building.
54. Successful activities and lessons learned from the ELI Program will be put to use in the project. These include the DSM Framework and Plans, ESCO transaction models, CFL Leasing Models, IIEE-ELI manual on lighting, voluntary standards and micro-financing program through consumer cooperatives. PELMATP shall adopt the ELI standards and specifications as voluntary standards and specs for utility DSM programs, ESCO projects, EE lighting demonstration projects and other projects, where applicable. The PLIA, which was established under the ELI Program, will play a critical role in implementing activities under PELMATP. Accomplishments and lessons learned during the implementation of the ELI Program's PRAAC would be complemented to include all other types/variants of EELs.
55. PELMATP activities on the mitigation of the negative impacts of EEL waste disposal will supplement the plans and activities of the DENR, local government units (LGUs) and the private sector on management of special wastes.

BENEFITS OF THE PROJECT

Global Benefits

56. The implementation of the PELMATP is estimated to reduce greenhouse gas (GHG) emissions due to an aggregate potential energy savings of 7 thousand GWh at the end of PELMATP (year 2008) and projected to increase up to 29 thousand GWh at the end of 2012. The projected energy savings will result from the reduction in energy consumption in households, and commercial and industrial establishments.
57. The total GHG emissions reduction due to the project is estimated to be 497 Gg of CO₂ equivalent at project completion. With the PELMATP outputs in place, GHG emission reduction is expected to reach 4,600 Gg of CO₂ equivalent at the end of 2012. It should be noted that the total GHG emissions due to lighting will diminish starting 2008 as DOE plans to significantly increase utilization of new and renewable energy resources for power generation. The assumptions and emission calculations are presented in Annex G.

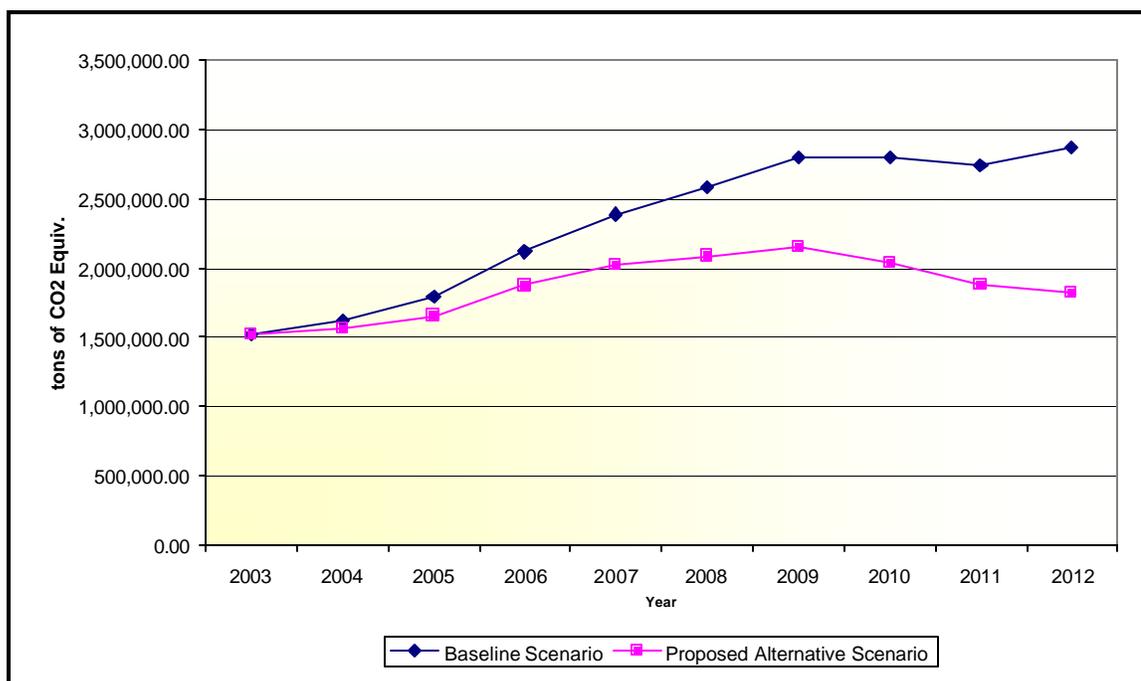


Figure 7. GHG Emissions from Lighting in the Baseline and Alternative Scenarios

National Benefits

58. The cumulative energy savings at the end of the PELMATP will be equivalent to 12 million BFOE, a hard currency savings for the country. Increased use of EEL will result to increased production capacity of local lighting system manufacturers and business activities among other stakeholders in the supply chain.
59. Adoption of EELs by commercial establishments and industries will reduce their operations cost and improve productivity. Monetary savings in households from the use of EELs can be used for other daily needs, potentially improving their quality of life.
60. The project will facilitate the development of harmonized energy performance standards and labeling of EEL products sold in the local lighting market and will strengthen the

monitoring and enforcement capabilities of the Government. This will win confidence from would-be investors of EEL products in the country.

61. The energy savings from the reduction of lighting electricity consumption will also result to avoidance of pollutant emissions from fossil fuel use. The estimated cumulative amount of pollutant emissions avoided is 14,200 tons of SO₂; 3,000 tons of NO_x; and, 194,000 kgs of CO at the end of PELMATP.
62. PELMATP will prepare implementing guidelines on managing Hg-containing lamps that may pose as health hazards to public. Proper handling and efficient collection of lamp wastes from household, commercial and industrial sources and Hg recovery will also be promoted. The projected quantity of Hg emissions from lamp wastes generated nationwide is about 1,000 kgs per year. At the end of PELMATP, it is expected that the collection efficiency of lamp wastes will increase by at least 30% and a lamp waste recycling facility is available in Luzon to serve the urban and industrial areas.

PROJECT OBJECTIVES

63. The goal of the project is the reduction in the annual growth rate of GHG emissions from the energy sector through sustained and widespread utilization of EEL systems. The project purpose is the removal of barriers to widespread utilization of EEL systems. The removal of such barriers is expected to achieve an aggregate energy savings of at least 11% relative to the baseline scenario on lighting for 2003 to 2008 (leading to 21% savings relative to 10 year period, until 2012). The expected increase in the utilization of EELs in various sectors is from 13% in 2003 to 46% in 2008 and 82.5% in 2012. Annex F provides the details of the lighting technology conversion projections.
64. To achieve the project purpose, the following objectives were set:
 - a) Establishment of a functioning mechanism for sustained periodic review/updating and enforcement of policies, standards, guidelines and programs on EEL applications, and implementation of product quality and energy performance standards for EEL products.
 - b) Strengthened capacity of relevant GOP agencies and other organizations on EEL product testing, labeling and development and market monitoring and enforcement of standards with the consumers.
 - c) Empowerment of consumers in making informed decision in choosing EEL products.
 - d) Better quality EEL products become affordable and accessible to consumers.
 - e) Establishment/enhancement of collaboration and partnership among organizations for promoting the adoption of EEL products and the creation/facilitation of business opportunities in EEL product financing.
 - f) Mitigation of the negative environmental impacts brought by utilization of EELs.

PROJECT COMPONENTS AND EXPECTED RESULTS

65. Each of the above objectives addresses the major groups of barriers to the widespread utilization of EELs in the country. The proposed project is comprised of five (5) major components that will be implemented to achieve the expected project outputs. Each project component is a specific program consisting of specific activities designed to

address the barriers to the widespread adoption of energy efficient lighting systems in the Philippines. These activities will address the shortfall of the past and current efforts by the government and the private sector in promoting the widespread use and commercialization of energy efficient lighting (EEL) systems.

- Component 1:** EEL Policies, Standards and Guidelines Enhancement Program
- Component 2:** EEL Applications Institutional & Technical Capacity Building Program
- Component 3:** EEL Applications Consumer Awareness Improvement Program
- Component 4:** EEL Initiatives Financing Assistance Program
- Component 5:** EEL Systems Waste Management Assistance Program

Table 1: Barriers vs. Components Matrix

Barriers	Project Components				
	1	2	3	4	5
• High initial cost of EEL products	RCI	RCI	RCI	RCI	
• Non- implementation of government incentives	RCI		RCI		
• Poor protection of consumers	RCI	RCI			RCI
• Poor understanding of use and benefits of EEL		RCI	RCI		RCI
• Building designers/developers lack of knowledge and simplified tools to calculate full benefits of using EEL products in new commercial and industrial establishments	CI	RCI	RCI		
• Inadequate promotion and advocacy programs on application of EEL	RCI	RCI	RCI	RCI	RCI
• Lack of locally assembled energy efficient luminaries		RCI	RCI		
• Poor quality of power supply		RCI	RCI		
• Ineffective implementation of the DSM Framework		RCI	RCI	RCI	
• Non-implementation of and outdated Building Energy Use Guidelines	CI		CI		
• Inadequate EEL testing facilities	RCI	RCI	RCI		
• Insufficient monitoring and verification of products as to their compliance to PNS	RCI	RCI	RCI		
• Poorly developed ESCO transactions		CI	CI	CI	

Legend: R – residential C – commercial I - industrial

66. **Component 1: EEL Policies, Standards and Guidelines Enhancement Program.** This component will involve the review and update of the existing policies, standards and guidelines and the development/formulation of new ones to promote use of energy efficient lighting. This will also include the formulation of appropriate quality and energy performance standards and labeling for lighting products and improvements in consumer

protection policies to help protect consumers as well as manufacturers from proliferation of non-certified lighting products.

- a) ***Establishment of PELMATP Technical Working Group.*** A multi-sectoral group will be created to review, integrate, recommend, and update policies, standards, guidelines and programs including the adoption of the ELI logo as an endorsement label, subject to the regular testing and evaluation by the DOE. This technical working group (TWG) will be composed of representatives from the government agencies (e.g. DOE, DTI, DENR, ERC and NEDA), private sector, (e.g., PLIA, and utilities), NGOs (e.g., Consumer Watch and Clean and Green Foundation), professional organizations (e.g., IIEE and ENMAP), and the academe. The TWG will also coordinate all on-going activities of various organizations in the country that are involved in the lighting industry such as NACEEL and GSPEL Technical Working Group. It will regularly report on EEL policy issues related broadly to policies within the country's energy, industry, commercial and financial sectors. This group will also monitor impacts of policy implementations and coordinate the revision/improvement of policies as necessary in accordance with the EC&EE goals, in general, and the EEL market development, in particular. It will assist the DOE in the implementation of the PELMATP activities. *GEF assistance is not needed.*

- b) ***Updating of Lighting System Guidelines in the National Building Code.*** This activity will involve the review and updating of the Building Energy Use Guidelines for Non-Residential Buildings to incorporate EEL systems, develop the relevant implementation procedures; and building the capacity of government building inspectors on application and monitoring of EEL systems. Lighting power indices will be re-calculated and updated taking into consideration the presently available and applicable EEL technologies. The new guidelines and procedures will be disseminated to the building inspectors of the local governments, and training on the implementation of the guidelines will also be provided. Building permit requirements and building inspector's checklists will be reviewed and will be revised accordingly to include specifications from the updated lighting system guidelines. *GEF assistance is needed for TA on the updating of the lighting use guidelines and capacity development of the office of the building officials (OBOs) of LGUs.*

- c) ***Development of lighting product standards.*** Product standards (quality and energy performance) for EEL products that will be covered in this project will be developed under this activity. The minimum mandatory standards that the government, through the Philippine National Standards (PNS), presently enforces for lighting products remain focused only on product safety and quality. In this activity, the PNS on EELs will be updated to consider presently available and applicable lighting technologies and products. The standards development process is aimed at introducing and/or upgrading standards on energy performance (e.g., lumens/watt) and other product performance parameters (e.g., average initial light output, power input, operating hours, power factor, lumen maintenance, etc.) that the prevailing conditions of the Philippine lighting market, from both the supply and demand side, can reasonably sustain. Part of this activity is the consolidation of EEL product performance standards based on relevant codes or standards in other countries and information that will be gathered from consultations with the local lighting industry. The minimum energy performance standards (MEPS) will be tailor made for Philippine conditions

and will include among others recommendations for appropriate lamp – ballast combinations. ELI-Philippines’ technical specifications for CFLs and other international lighting product and energy performance standards for other lighting systems where applicable will be made as voluntary technical specifications and/or reference standards for energy efficient lighting. Technical support from the project will be provided, if necessary, in government deliberations concerning the setting of, the MEPS and the regulations concerning the specification and performance of EEL systems used in the country. *GEF support is needed for TA in the updating of the PNS and the development of the MEPS for EEL products.*

- d) ***Implementation of Lighting Products Standards*** – This activity will involve the mandatory implementation of the developed MEPS. A monitoring and evaluation systems will be developed and used to track the progress of the standards compliance, as well as any difficulties encountered and assistance that need to be provided to the local lighting products manufacturers/distributors by the project to assist them in meeting the MEPS. Periodic review of the standards by the EEL Technical Working Group will be instituted to facilitate periodic stepping-up or upgrading through time and ensure continuous enforcement of the standards beyond the PELMATP. This task will be implemented by the DTI-BPS with the assistance of the DOE. *GEF support is required for the testing/monitoring of standards of EELs sold in the local market.*

- e) ***Development and Implementation of a Voluntary Agreement (VA) Scheme with Lighting Manufacturers and Distributors*** – All EEL products that will be manufactured and distributed in the country will have to comply with the MEPS. This activity aims to create an environment in which local lighting product manufacturers and distributors agree to voluntarily comply with performance standards way above that of the MEPS. Initially, the ELI standards will be set as the norms that will have to be complied with as voluntary standards by enterprises participating in this activity. Voluntary agreements with at least one enterprise manufacturing and/or distributing each type of EEL product, and are not yet ELI standards compliant, will be signed and implemented. Technical assistance will be provided by the project to the selected enterprises to assist them in meeting the voluntary target standards. The performance of these enterprises in achieving the voluntary standards will be monitored and the initial results will be evaluated for possible expansion and/or improvements to the VA scheme. *GEF support is required for TA in the preparation and implementation of the voluntary agreements.*

- f) ***Application of EELs in Government Facilities*** – This activity will demonstrate the benefits of the adoption of EELs as standard lighting systems in government facilities. It will showcase the technical and financial feasibilities of EELs, study and develop procedural changes associated with procurement standards and contracting (i.e., ESCOs) and assessment of benefits derived from these activity. A pilot study will be carried out in a government school building in the City of Malabon in cooperation with the Office of the City Mayor, the City Electrical Engineering Department, the Commission on Audit in the National Capital Region and the District Office of the Department of Education. The results of the pilot study will be disseminated to other LGUs and line agencies of the government and will serve as an input to the preparation and issuance of a procurement policy (in the form of an Executive Order) that will mandate all government offices to include energy

efficiency as one of the criteria in the procurement of lighting products. Further, the project shall get the commitment of at least 5 government offices to carry out lighting retrofits. *GEF support is needed on TA on design and implementation of EEL demonstration on school buildings.*

- g) ***Establishment of Incentives for EEL Product Importers and Manufacturers*** - This activity will evaluate the feasibility of, and propose, the inclusion of EEL system projects in the Investment Priority Plan (IPP) of the Board of Investment being a UNFCCC qualified activity. Guidelines on how the manufacturers/assemblers can access the incentives for EEL system projects will be prepared. The feasible incentives for lamp waste recycling facilities will also be evaluated and established. The DOE, with the assistance of the PELMATP experts will carry out the feasibility studies on the appropriate incentives and the formulation of policies and guidelines. *GEF support is not needed.*
- h) ***Establishment of Consumer Protection Guidelines*** - This activity will involve the formulation of the implementation guidelines on product warranties for EELs and labeling of lamps on proper handling/recycling.. *GEF support is required for TA on the formulation of implementing guidelines on warranties for and labeling of EEL products.*
- i) ***EEL Policy and Standards Implementation Monitoring and Evaluation*** - This activity entails the monitoring and evaluation of the impacts of the enforcement of policy and regulatory (i.e., standards) measures that are recommended and implemented under PELMATP in order to promote the use of EEL products. Lessons learned around issues such as incentive mechanisms, further barriers to market uptake, communication and policy strategies will be identified and appropriate actions recommended. *GEF support is not necessary.*

67. **Component 2: EEL Applications Institutional and Technical Capacity Development Program.** This component of the PELMATP will build the capacity of DOE-LATL, ERC, local lighting manufacturers, households and commercial/industrial establishments on the promotion of the utilization of EEL systems. The capacity of DOE-LATL and DTI-BPS on testing, labeling and development, market monitoring and enforcement of standards will be strengthened. The capabilities of the ERC and the utilities in designing and implementing EEL system applications as part of the utilities' DSM plans will also be strengthened. Local lighting product manufacturers will be assisted in the design, production and making available affordable EELs in the market, while the consumers will be adequately informed on the benefits of using the EELs.

- a) ***Testing, Labeling and Market Monitoring of EELs*** - This activity aims to improve the EEL product testing and labeling capabilities of BPS-DTI and the LATL. This is to cope with the increasing volume of lighting products for testing and certification. It will also involve capacity building for these 2 institutions in monitoring the local lighting market, and in conducting lighting applications research and development activities. The following sub-activities will be carried out:
 - i) ***Technical Assistance for Accreditation of DOE-LATL and DTI-BPS*** – This activity will involve assisting the DOE-LATL to prepare for accreditation to

ISO/IEC 17025 (for lamp ballast-electronic and low-loss electromagnetic; linear lamps testing; and luminaires) and DTI-BPS for accreditation by Asia Pacific Laboratories Accreditation Cooperation. This will facilitate mutual recognition of LATL as an international lighting test laboratory. The PELMATP experts will assist the DOE-LATL and DTI-BPS in preparing the accreditation requirements. *GEF support is needed for the technical assistance work.*

- ii) *Improvement of Testing Capability of the DOE-LATL* – This activity will involve the provision of capacity building and technical assistance in the implementation of the additional test procedures and protocols for EEL types that are covered under the project but are not yet tested by LATL, as well as in the operation of the required test instruments. To be able to accommodate these additional types and variants of EELs, additional test equipment are necessary for testing ballasts, linear fluorescent lamps, and luminaires. *GEF support is needed to procure, test and commission incremental testing equipment.*
- iii) *LATL Technical Skills Upgrading* - This activity will involve the provision of adequate training for LATL technical personnel on up to date EEL concepts and application, laboratory testing, measurement uncertainty, calibration and quality management. The training will involve both attendance in technical courses on lighting systems abroad and study visits to model laboratories. Also, international lighting manuals/standards and software will be purchased. *GEF support is needed for TA in the LATL technical skills upgrading and acquisition of international lighting reference materials.*
- iv) *LATL R&D Capacity Upgrading* - This activity involves the strengthening of LATL's capacity to conduct R&D activities on lighting systems. As part of the capacity upgrading, the LATL with the assistance of PELMATP experts will conduct R&D work on the effects of accelerated life test (switching cycle), ambient conditions, positioning testing, and voltage variation to overall lamp performance. Consultation with other international R&D laboratories in lighting will be conducted. The R&D results will be documented and disseminated, and presented in the publication materials produced by the project. *GEF assistance is needed to supplement the baseline funds for the R&D activities.*
- v) *Monitoring of the Local Lighting Market* – This activity will involve the monitoring of the prices, sales volume, and availability of the different types and brands of EEL products sold in the market, and their corresponding market shares. A lighting products monitoring program will be developed (including the implementation guidelines) and implemented and the monitoring activity will be instituted as part of the regular activities of the BPS, DOE, and PLIA to ensure sustainability of the process. *GEF support is required for technical assistance in the development of the lighting products monitoring program.*
- vi) *Dissemination of Information on EEL Products* - This activity entails the dissemination of information derived from the market monitoring activities (*Activity 1. a.v*) and the lighting product quality and energy performance testing activities of the LATL. The technical and energy performance specifications of the various EEL products in the market will also be disseminated for the purpose

of enabling consumers to choose the appropriate lighting product for a particular lighting application. The DOE will collaborate with BPS-DTI, PLIA, and Consumers' Union of the Philippines in this undertaking. *GEF support is needed to supplement baseline funds for disseminating information on EEL products.*

b) ***Support to Local Lighting Product Manufacturers*** - This major activity will provide technical assistance to local lighting product manufacturers to design, produce and make available affordable EELs in the market. The specific activities will include:

i) *Establishment of a Comprehensive Database of Lighting Product Manufacturers* – This activity will involve the improvement of the existing database of PLIA. Data will include annual production, imports and exports and sales volume by type of lighting product. PLIA and lighting manufacturers/importers/distributors that will be involved in cooperative projects under PELMAT shall be required to provide the aforementioned data. *GEF support is necessary in the conduct of inventory of local manufacturers and locally available EEL products.*

ii) *Assessment of Capabilities of Local Lighting Products Manufacturers* – This will entail the evaluation of the manufacturing capabilities of the local lighting product manufacturers in the country. It will include an assessment of production facilities to identify processes and equipment that have to be improved and upgraded to allow better design and production technologies. *GEF support is required for the TA in the evaluation of manufacturing capabilities.*

iii) *Potential Improvements and Efficient Designs for Locally made Lighting Products* – This activity will build on the results of *Activities 2. b.i and 2. b.ii* and will involve the identification of potential improvements and recommendation of new efficient designs for locally made lighting products. *GEF support is required for the TA in the evaluation of potential improvements and efficient designs for locally made lighting products.*

iv) *Capacity Building for Lighting Manufacturers* - Networking among local lighting product manufacturers and international manufacturing organizations on EEL application and manufacturing technology transfer will be facilitated in this activity. PELMAT in coordination with PLIA shall sponsor trade missions and facilitate business partnering between the local manufacturers and foreign lighting product manufacturers. Training will also be provided to selected local manufacturers. Based on the PDF-B findings, the initial training courses will be on:

- Low-loss electromagnetic and electronic ballast designs and production technologies
- Lighting design modeling and applied design and lighting technology options and selection

The aim of this activity is to introduce local manufacturers to more efficient and better lighting product production processes. *GEF support is required on TA in the development of the training modules and the conduct of the training courses.*

v) *Development of Local EEL Manufacturing Capacity and a Lighting Services Industry* - This activity will build the capability of interested local lighting product manufacturers to produce EEL products. Capacity building of both local manufacturers and the local consultants in reconfiguring production lines to EEL systems production will be enhanced. A set of selection criteria will be developed and used to select the interested manufacturers that will be provided with technical assistance in converting to EEL system production such as:

- Technical advice on the processes and equipment needed to improve and upgrade ballast/lighting fixture design and production technologies.
- Preparation of business plans and project proposals for financing.
- Linking with funding institutions, banks and other financial intermediaries for sourcing of funds for facility and production improvements to accommodate EEL product manufacturing.

This activity will also address the need for an enhanced local expertise in the area of EEL technology that will support the lighting market transformation efforts. It will also include capacity building for energy consultants in providing consultancy service on EEL technology. The lighting service industry will provide the technical services associated with the design, installation and maintenance and troubleshooting of EEL systems. *GEF support is required for the required TA.*

vi) *Improvement of Lighting Product Quality and Manufacturing* – This activity will involve the demonstration of the application of improved design of locally made lighting products (lamps and/or ballasts) to make them more energy efficient. Two demonstration cases will be conducted to showcase the application of improvements in the design and manufacturing of lighting products to make them compliant to the MEPS. Technical assistance will be provided by PELMATP to the host demonstration companies, FUMACO (lighting fixtures manufacturer) and Quantum (electronic ballast producer) in the improvement of the product design and manufacturing process, quality systems and products, as well as the correction of typical deficiencies. The improved product design will be performance tested and locally certified, based on the set MEPS. Results of the demonstration will be disseminated to other local lighting product manufacturers. *GEF support is needed for TA in product design and/or manufacturing process improvements.*

c) ***Technical Assistance on the Design of EEL System Initiatives in DSM Plans*** - This activity will involve assisting the ERC in evaluating the design and implementation of EEL system activities in the DSM plans of utilities and regional electric cooperatives.

i) *Updating of the DSM Plan Templates* – This activity will update the DSM Plan templates of ERC to ensure that all applicable and cost-effective EEL options are considered (ELI specifications included). Relevant ERC staff members will be involved in the conduct of review and revision of the DSM Plan templates to ensure capacity building for them. A series of coordination/consultation meetings with DOE, ERC, utilities and electric cooperatives (RECs) on the expeditious implementation of the DSM Framework will be conducted. Relevant support studies (e.g., loss recovery for utilities/RECs) that would support decision on the modification (if necessary) and eventual implementation of a mutually acceptable

DSM Framework will also be carried out. *GEF support is needed for TA on the conduct of review of DSM Framework, DSM Plan templates and support studies.*

- ii) *Training on the Preparation of EEL System Applications DSM Program* - Utilities and RECs will be trained to prepare DSM programs, in general, and EEL system application activities, in particular, in their respective DSM Plans. *GEF support is needed for the required capacity building activities.*
 - iii) *Design and Demonstration of EEL Product Leasing Model* - This activity will design and implement an EEL product leasing model through utilities and RECs for households, as part of their customer service program and/or DSM Plans. Experiences gained and lessons learned from the SMART Light CFL Leasing Project of CEPALCO will be a major input to the design of the model. The model will be implemented in one REC that will be selected during the PELMATP implementation. The results of this demonstration activity will be disseminated for replication by other utilities and RECs. *GEF support is needed for TA on the design of EEL product leasing model.*
 - iv) *Development of Street Lighting Guidelines* – PELMAT in collaboration with PLIA-GSPEL shall develop mandatory efficiency standards/guidelines for the use of EELs in street lighting. The guidelines are intended for use as reference by utilities, local government units and the industries in street lighting and possibly for perimeter lighting. It will also be used by utilities and RECs in the preparation of the street lighting DSM activities. The guidelines will be disseminated to the target groups and included in the training course module on preparation of DSM Plans for utilities (*Activity 2.c.ii*). *GEF support is needed for TA on the design of the street lighting guideline.*
 - v) *Demonstration of Street Lighting Application of EELs* - This will involve the implementation of a demonstration activity to showcase the design, development, financing and implementation of street lighting projects utilizing EELs. The demonstration will be carried out in a particular area of the City of Valenzuela in cooperation with the Office of the City Mayor and the City Electrical Engineering Department. The demonstration scheme will be monitored and evaluated together by the project and City of Valenzuela. This activity is expected to result in the issuance of ordinances or executive orders in cities on the adoption of EELs in city/municipal/town street lighting. *GEF support is required for TA on the design of the street lighting demo scheme.*
- d) ***Development and Design of EEL Savings Calculator*** – This activity will involve the design and development of an EEL savings calculator that will be used as a tool and guide by both the end-users and lighting designers/developers for easy comparison and better appreciation of the benefits of EELs. Use and application of the calculator will be demonstrated and promoted through the DOE's Power Patrol Program for households and during the conduct of technical assistance activities for commercial and industrial establishments. *GEF support is needed for the TA in developing the EEL savings calculator and preparation of promotional materials for such tool.*

- e) ***Capacity Building on the Application of EEL systems*** - This activity consists of training building designers/developers, and architects on the application of EELs. The IEEE-ELI Manual of Practice on Efficient Lighting will be the major reference for the training. Outputs of project activities on street lighting and energy saving calculator will be included as part of the course agenda. ENMAP and UP-NEC will be the lead partners in conducting this activity. *GEF support is required to supplement baseline funds for the training programs.*
- f) ***Promotion of Mass Purchasing*** - This activity involves the design and piloting of the implementation of mass purchasing agreements between government/private sector and manufacturers/importers of EEL products. Mass purchasing, as a market aggregation activity is intended to provide consumer with better quality products, efficient delivery and lower first cost. The appropriate mass purchasing agreements that will be developed will be implemented in 3 private establishments. The impacts of this market aggregation activity will be monitored and evaluated. Results of the exercise will be disseminated to all government offices and other buyer groups to include, housing estate developers, homeowners and commercial centers association, and industrial zones. *GEF support is needed on TA in the development of mass purchasing agreements.*
- g) ***Implementation of EEL Programs in the Industrial Sector*** - This activity is intended to assist and enable industrial establishments to implement EEL Programs. Through DOE's collaboration with the Philippine Economic Zone Authority (PEZA) and other industrial zones, this activity will take off from the Partnership for Energy Responsive EcoZones (PEREZ) Program and the Partnership for Energy Responsive Companies (PERC) concepts designed by DOE. The PEREZ Program covers an agreement between DOE and PEZA to facilitate voluntary action with regards to assisting industrial establishments to identify, install, operate and monitor their EC&EE programs. The PERC Program covers other industries, as well commercial establishments, outside the PEZA zones. The specific activities that will be carried out are the following:
- i) ***EEL System Application Demonstrations in Industries*** – This activity will involve the presentation of the PELMATP objectives to industrial establishment to get their commitment to participate in the demonstration of the design and application of EEL systems in industries. Promotional seminars will be conducted in 3 strategic sites, one each in Metro Manila, Visayas and Mindanao. In these seminars, the objectives and activities of the PELMATP will be presented as well as the application and benefits of EELs, management and disposal of lamp waste and the lamp waste recycling facilities will also be promoted. Selected ESCOs will also be involved in the implementation of this activity. This activity will also involve the preparation of case studies of existing EEL projects in the country. *GEF support is needed to supplement baseline funds on the conduct of information dissemination.*
- ii) ***Selection of Host Demonstration Sites*** - This activity will identify and select 9 industrial firms (3 each in Luzon, Visayas and Mindanao) that will participate in the EEL System Application Demonstration. A set of selection criteria will be

developed and used to determine and select the most appropriate companies that will host the demonstration activities. *GEF support is not required.*

iii) *Technical Assistance on EEL System Applications* - As part of the demonstration scheme, technical assistance will be provided to the host demonstration companies in the assessment of lighting energy use and recommendation of appropriate EEL systems application. DOE will take the lead in conducting the required energy audits to assess lighting energy use in these firms. ESCOs will be encouraged to participate in the design and implementation of appropriate EEL systems in the host companies. Participating industrial firms will be assisted in the monitoring of electricity consumption and benefits derived from use of EEL, prepare and submit reports of resulting energy savings and the critical factors that affected the actual lighting energy performance. *GEF support is needed for TA in assessing and identifying appropriate EEL systems for the participating industrial firms.*

iv) *Dissemination of Results of the Demonstration Scheme* – Profiles of the different industrial EEL application demonstrations will be prepared for presentation in technical conferences and for dissemination to different industrial firms. *GEF support is needed in preparing the project profiles for dissemination.*

h) ***EEL Systems Application Demonstrations in Commercial Sector.*** This major activity will be similar to that carried out in industries (*Activity 2.h*) made possible through the DOE's collaboration with commercial centers and associations. The activities and GEF support required would be similar to those implemented for industries.

68. **Component 3: EEL Applications Consumer Awareness Improvement Program.** This component will encourage collaboration of both government and the private sector in the promotion of EEL products. A project website will be created to provide fast and easy access to PELMATP activities and EEL technology information. Regular consultations with the public will be carried out to monitor and improve (if necessary) the program.

a) ***Joint Government-Private Sector Promotion of EEL Products*** - This will require the close collaboration of DOE and other concerned government agencies, non-government organizations and the private sector in the promotion of EEL products to households and commercial and industrial establishments. The specific activities are:

i) *Conduct of Annual Lighting Industry Convention* – This will involve the holding of yearly meetings of concerned organizations and individuals in the lighting industry to exchange information on EEL technologies, business opportunities, success stories, and in addressing environmental impacts of lamp wastes. The convention would be a venue for presenting and disseminating the results of the project activities in the previous year. Manufacturers and importers can promote products and services and further form alliances among them and among other key stakeholders. PLIA, in close cooperation with DOE, will spearhead the activity. *GEF assistance is needed for the provision of resource persons to the annual convention.*

ii) *Promotion of EEL Products to Households* – The DOE in association with the DTI-BPS, PLIA, the utilities and RECs will implement this activity. Information

dissemination will be made using television and print media. Endorsements by DOE on EELs will be aired on TV during prime time. For prints, simplified and illustrative information materials written in English and native dialect will be distributed to households explaining the use and benefits of EEL systems. Utilities and electric cooperatives will distribute the materials to their respective clients. The promotional program and materials will be incorporated in the Power Patrol Program of DOE. The materials will also contain information from the results of the project activities. *GEF support is needed in the design and production of promotional materials.*

- b) ***Consolidation of Information on EEL Systems*** - This activity will consolidate all information on EEL systems from the lighting industry and the PELMATP to facilitate information exchange among the stakeholders and ensure coherent sector wide IEC. The preparation and dissemination of all information materials, brochures, and publications that are required in the other components of PELMATP will be done under this activity. A project website will be developed to make the data available to the public. The specific activities that will be implemented include: (1) Inventory and consolidation of information; (2) EEL database and website development; and, (3) Information exchange on EEL technology, EEL product prices, products availability, lamp wastes recycling, and linkages to websites of manufacturers, financing institutions and other energy efficiency-related organizations. Success stories on EEL applications (past and current) as well as emerging technologies will be made available through the web site. Specific outputs of project activities will also be included in the website. *GEF support is needed for TA in the development of website and production and consolidation of IEC materials generated from other project activities.*
- c) ***Inclusion of EEL Training in School Curricula*** - This activity will develop and implement EEL instructional modules/manuals for inclusion in vocational electrical courses to be implemented by UP Engineering and UP-NEC. It will involve the preparation of instructional modules/manuals, testing of the modules in selected schools, training of trainers, and reproduction of instructional materials. *GEF support will be needed for TA in the design of initial set of instructional modules/manuals.*

69. **Component 4: EEL Initiatives Financing Assistance Program.** This component will design and establish financing mechanisms to assist EEL system project proponents in coping with the first cost of EEL systems. As follow up to the ELI program, activities on micro-financing of EEL products by consumer cooperatives will be improved. For bigger EEL projects, a pipeline of eligible projects will be developed and will be funded out of the available credit facilities of DBP. This program will promote EEL business development opportunities between: (1) consumers and EEL manufacturers and distributors in financing of EEL application projects; and, (2) consumers and financial institutions and EC&EE services providers in the design and financing EEL projects.

- a) ***Design and Implementation of EEL Micro-Financing*** - This activity will involve the design of appropriate financing mechanisms to enable consumer cooperatives to provide credits or financial assistance to households for purchasing EELs. PELMATP will take into consideration lessons learned from the ELI Program experience and

design innovative schemes to overcome difficulties by these consumer cooperatives in collecting amortizations and paying the supplier of EELs.

This major activity will involve: (1) Inventory and assessment of existing consumer cooperatives; (2) Provision of training on micro-financing for consumer cooperatives; (3) Identification of cooperatives that will participate in the micro-financing scheme implementation; (4) Development and selection of applicable micro-financing models; (5) Conduct of negotiations on financing arrangements with EEL suppliers (importers and manufacturers); (6) Training of consumer cooperatives on the implementation of the selected micro-financing scheme; and (6) Implementation of the micro-financing scheme. The micro-financing scheme will be implemented in 3 consumer cooperatives (one each in Luzon, Visayas and Mindanao). *GEF support is required in the provision of TA in the design of the micro-financing schemes.*

- b) ***Development of ESCO-led EEL System Projects*** - This activity will build on the ELI-Philippines "Model ESCO Transaction Project" with DBP on the design and implementation of two model energy performance contracts: (1) Between the owner of the establishment and the ESCO; and, (2) Between ESCO and the bank. The latter can be used by DBP or other banks in extending loans for energy performance contracting and promotion of ESCO transaction. This activity will be supplemented with capacity building for commercial and industrial establishments on ESCO operations, financing, developing of measurement and verification procedures.
- i) *Promotion of ESCO-led EEL System Projects* - This activity will involve the demonstration of the "business angle" of EEL system applications. The demo will showcase the various aspects of the ESCO process from the conceptualization, development, promotion and negotiation, design, financing, implementation, operation, monitoring and evaluation of performance-based contract projects on EEL system applications. Specifically, it will demonstrate the application of the ELI-DOE-DBP Energy Performance model. The demonstration of ESCO-led EEL Systems Projects will be carried out in 5 industrial facilities. The 5 ESCO projects will be implemented by CPI Energy Philippines, Inc., a local ESCO. *GEF support is required for TA in implementation and M&E of the demonstration activity.*
- ii) *Design of Energy Performance Models for EELs* – Considering lessons learned from the ESCO-led EEL System Projects demonstration activities (*Activity 4.b.i*), this activity will develop simplified and user-friendly guidelines for the utilization of the available credit facility in DBP that can be used for Energy Performance Contracting (EPC) services. Guidelines and framework to establish monitoring and verification protocols for future ESCO contracts also will be developed. *GEF support is needed on TA to design the improved EPC Models.*
- iii) *Establishment of Market for ESCO Services* – This activity will involve promotion of partnerships between ESCOs and engineering companies, construction firms, and/or finance companies. Qualified ESCOs will be promoted to commercial and industrial establishments. This activity is tied up with the technical assistance activities for industrial and commercial establishments in implementing EEL system project. *GEF support is not needed.*

- c) ***Establishment of Financing Scheme for EEL System Projects*** - This activity will involve the design and implementation of guidelines and arrangements on how to avail EEL financing from the existing DBP financing windows and the provision of technical assistance in meeting the financing requirements. The guidelines developed under this activity will be made seamless as possible in order to facilitate easy compliance of the financing requirements by interested lighting product manufacturers and consumers (e.g., commercial buildings, industrial firms, and electric cooperatives for their EEL DSM projects).

Under this financing assistance program, a pipeline of EEL system projects will be developed. A portfolio of EEL system projects amounting to at least US\$ 3,910,000 will be developed and will be assisted in securing financing from DBP. These projects will include individual company (industrial and commercial) EEL projects, EEL design and manufacturing improvement projects by lighting product manufacturers and waste lamp recycling projects. The EEL system projects that will be considered in the industrial and commercial EEL system application demonstrations (*Activities 2.g and 2.h*) can also be included in this portfolio of projects, if the host demonstration company will require financing assistance.

A set of criteria will be developed to evaluate the EEL system projects that will be proposed for financing. This will include criteria for technical and economic viability of the proposed EEL system projects. *GEF support is required for TA in the design and implementation of guidelines and arrangement for EEL financing, and capacity development on their implementation.*

- d) ***EEL Business Financing Capacity Building*** - This activity will be focused on local financing institutions (e.g., DBP and other financial/banking institutions) to improve their understanding and appreciation of the economic and financial benefits of EEL system initiatives. Specially designed training courses will be catered to financial institutions to teach them how to evaluate EEL system project proposals (technical and economic/financial feasibility, including risk analysis and management) and help them develop their EEL project portfolio. *GEF support is needed in the capacity development activities.*
- e) ***Development and Implementation of a Voluntary Agreement (VA) Scheme with Industrial and Commercial Establishments*** – This activity will involve the forging of voluntary agreements with selected industrial and commercial establishments to adopt the use of EEL systems/products in their facilities. This will be a follow up to the project's consumer education and information awareness activities. Technical assistance will be provided to the selected enterprises (if requested) to assist them in the proper application of EELs, and in availing of the incentives that will be provided for EEL system projects. The performance of these enterprises in achieving reduction in energy utilization for lighting will be monitored and the initial results will be evaluated for possible expansion and/or improvements to the VA scheme. *GEF support is required for TA in the implementation of the voluntary agreements.*
- f) ***Evaluation of the EEL Initiatives Financing Assistance Program*** - The evaluation of the impacts of the financing schemes and voluntary agreements, as well as the provision of recommended revisions (if necessary) to the relevant policy and

implementation guidelines that affects the EEL Initiatives financing assistance will be carried out under this activity. *GEF support is not necessary*

70. **Component 5: EEL Systems Waste Management Assistance Program** – This major component of the PELMATP is aimed at addressing the potential negative impacts of the widespread use of EELs. Mercury (Hg) containing EEL wastes can end up in dumpsites when EELs are already widely used in the country. In line with the premise of assisting sustainable development efforts that will bring about positive impacts without causing negative impacts on other aspects of development, this component of the PELMATP will primarily address the management of EEL wastes. It will be coordinated with the on-going activities conducted by the National Solid Waste Commission, the Environmental Management Bureau, the LGUs and all other initiatives by development agencies on solid waste management and by NGOs. The activities under this component include:

a) ***Formulation and Implementation of Guidelines for Managing Mercury containing Wastes*** – This activity will include:

i) *Conduct of a policy study on cost recovery from managing Hg containing lamp wastes* – The recovery of costs involved in managing such wastes – handling, storage, collection, recycling, and disposal and treatment of non-recyclables, will be studied. The study will recommend technically and financially viable schemes of recycling the lamp wastes.

ii) *Formulation of national policy and guidelines in managing Hg containing lamp wastes in households, commercial and industrial establishments.*

iii) *Development of guidebook on managing Hg containing lamp wastes* – The guidebook that will be developed will be incorporated into the Local Government Solid Waste Management Plan.

GEF support is needed on TA in the conduct of the policy study and in the development of guidelines.

b) ***Information Campaign on Management of Hg containing lamp wastes*** – This activity will establish collaboration among local government units, non-government organizations and private institutions in promoting and implementing waste management and recycling of Hg containing lamp wastes. IEC programs and training modules on lamp waste management will be designed and incorporated in the existing IEC activities of the National Solid Waste Commission, LGUs and other government agencies, and NGOs. Training modules that will be developed will be distributed to DENR, non-government associations, local government and all other organizations that conduct IEC on solid waste management. *GEF support is needed to supplement baseline funds in preparing IEC programs and training modules.*

c) ***Market Development for Lamp Recycling*** - The following activities will be carried out to develop market for lamp recycling through increasing availability of recyclable lamps and ensuring demand for by-products after recycling:

i) *Inventory of large commercial and industrial lamp waste generators.*

- ii) Technical assistance to materials recovery facilities (MRFs) on proper collection, handling and storage of lamp wastes. MRFs will be linked with lamp waste recycling facilities. A study will be conducted to determine the most appropriate management of lamp wastes before transport to the lamp waste recycling facility. The cost of recovery and recycling lamp wastes to MRFs will be established.
- iii) Establishment of specifications of local buyers of by-products from recycled Hg containing lamps.

GEF support is required for the associated technical assistance activities.

- d) **Demonstration of the Recycling of Waste Lamps** - This activity will demonstrate the design, implementation and commercial operation of a waste lamp recycling facility. PELMATP will provide technical assistance in the establishment of such recycling facility. This demonstration activity will include:
 - i) Evaluation and selection of appropriate site for the lamp waste recycling facility. This includes selection of sites where supply of lamp wastes justify the investment cost for a recycling facility. Partnerships with large generators will be facilitated.
 - ii) Preparation of environmental impact assessment for the demo lamp waste recycling facility.
 - iii) Accreditation of the lamp waste recycling facility to DENR
 - iv) Promotion and marketing of lamp waste recycling services of the facility.

GEF support is necessary for TA in the implementation of the waste lamps recycling facility project.

PROJECT RISKS AND SUSTAINABILITY

PROJECT RISKS

- 71. While all efforts are made to ensure the effective design and implementation of the project activities, there are some risks that have to be addressed to ensure success of the project. The different risks that were identified during the project formulation and the recommended mitigation measures are the following:

Risk	Level of Risk	Mitigating Actions
Insufficient Support from the Government - Shift of government energy program priorities leading to reduced technical and budgetary support to EC&EE efforts; Insufficient manpower and infrastructure in DOE leading to slow execution and poor enforcement regulatory mechanisms; and, Uncertainties to approval of the revised DSM Framework delaying	Moderate	Government commitments to the project will be clearly established and confirmed during the LPAC meeting, including the commitment to provide adequate project staff; Use of champions both in the government and private sectors to ensure implementation of formulated policies; Provision of capacity building to ERC to review and finalize the DSM Framework right at the start of the project.

Risk	Level of Risk	Mitigating Actions
implementation DSM programs of utilities.		The project, through GSPEL, will develop a procurement policy in the form of an executive order by the Philippine President that will require all government offices to include energy efficiency as a criterion in the purchase of lighting products.
Lack of Cooperation by the Private Sector - Private sector not participating adequately in the project, due to lack of interest, disruption to operation and business priorities. Investments for EEL retrofits may not be available.	Moderate	Industry associations, professional organizations, NGOs and private individuals will be consulted and involved in project work planning. The present effective working relationships with PEZA and other industrial zone authorities will be further enhanced to ensure cooperation from industries in their respective zones to participate.
Technology Risk - Failure of EEL products to perform as claimed by manufacturers resulting to customer dissatisfaction; Proliferation of illegally traded and unreliable EELs; Poor quality of power supply in rural areas may severely affect EELs with low tolerance to power fluctuations.	Low	Implementation of EEL standards, labeling & warranty requirements. Consumers will be educated on use and application of wide range of EEL products as well as consumer protection programs of the government. Inclusion of capacity building for improving EEL product tolerance to local conditions.
Market Risk - Unwillingness of consumers to buy EEL products due to bad experiences in the past and high initial cost may lead to failure of the project to induce increased sales and widespread use of EELs.	High	Project will empower consumers to make real time, informed decision making when buying EEL products. Micro-financing, incentives, and mass purchasing programs will be developed and their implementation facilitated under the project to help reduce first cost of EELs, especially for households.
OVERALL	Moderate	

72. The overall project risk is moderate. The PELMATP is designed to facilitate close coordination and consultation of the relevant stakeholders in each of the proposed activities. Activities that provide policies, product standards, guidelines and incentives, tools and procedures to implement EEL programs, information and education are sufficient to ensure mitigation of the risks. Government agencies, NGOs, manufacturers, and commercial and industrial establishments/associations have committed to financially support the project and use part of their budget in 2003 to 2008 for the PELMATP.

SUSTAINABILITY

73. The primary objectives of the project are directed toward sustainability by accelerating widespread use, and increase the market share, of EEL products in the country. Sustainability of project outputs is ensured through the outputs of most of the project components, e.g., updated lighting guidelines; conversion of government building lighting systems to EEL; EEL standards, labeling, and warranties; upgraded capacity of LATL; informed consumers; collaboration among key players of the lighting industry; in-placed information management system; incorporation of EEL in school curricula; instituted mass purchasing; ESCOs that are capable of implementing performance-based EEL system projects; and an operational lamp waste recycling facility.
74. DOE will execute the project and will continue to spearhead and sustain the activities after the project life. DOE's capacity will be further enhanced during the project implementation specifically on testing, monitoring, information dissemination and collaboration with other key stakeholders in the lighting industry. The activities of the project will be anchored with the DOE's program in the next 10 years such as Power Patrol, GEMP, PEREZ and PERC. The project will strengthen the role of PLIA in the lighting industry to become the advocate and catalyst of EEL in the private sector. The lighting industry information-based management system consisting of a website will continue to provide accessible information to the industry and the public. The incorporation of EEL training courses in school curricula will instill to the would-be-practitioners and decision makers the value of practicing energy efficiency.

STAKEHOLDER PARTICIPATION AND IMPLEMENTATION ARRANGEMENTS

PROJECT STAKEHOLDERS

75. During the conduct of PDF-B exercise for PELMATP, numerous stakeholders were consulted through market survey, interviews, round table discussions and logical framework analysis workshop. The following are the stakeholders of PELMATP:

Institution	Role in EC&EE & EEL Promotion
Department of Energy (DOE)	Policy formulation and planning and management of the overall energy sector; preparation of the Philippine Energy Plan (PEP) that embodies the totality of government objectives, policies, strategies, and programs for the sector
DOE-Energy Efficiency Division (EED)	Formulation and implementation of EC&EE programs, promotion of practical conservation and efficient utilization of energy and facilitate cost effective, wiser and efficient use of energy.
DOE-Lighting and Appliance Testing Laboratory (LATL)	Development of product energy standards, conduct laboratory testing and research to improve the energy efficiency of appliances, equipment and other energy consuming devices in support of the national conservation objectives.
Department of Trade-Bureau of	Development, implementation, promotion and

Institution	Role in EC&EE & EEL Promotion
Product Standards (DTI-BPS)	coordination of standardization activities, including product certification, registration of quality assessors, laboratory accreditation, accreditation of quality system certification bodies, Mutual Recognition Agreements
Energy Regulatory Commission (ERC)	Responsible for, among others, fixing and regulating the rates and other cost adjustments charged by private electric utilities/RECs; oversees the implementation of the DSM regulatory framework and ensuring fair competition in the electric industry.
Department of Environment and Natural Resources (DENR)	Environment enforcement agency in the Philippines, and the national GEF operational focal point
Inter-agency Committee on Climate Change (IACCC)	Coordination of various climate change related activities, propose climate change policies and prepare the Philippine positions to the UNFCCC negotiations.
Energy Management Association of the Philippines (ENMAP)	Promotion of energy management and engineering technologies and applications aimed toward global competitiveness, environmental preservation and improved quality of life.
Philippine Lighting Industry Association (PLIA)	Primary agent in lobbying for market transformation reforms in the lighting industry in partnership with the DTI. Leads the Government Standards and Policies on Efficient Lighting (GSPEL) Technical Working Group.
Institute of Integrated Electrical Engineers (IIEE)	An organization of electrical practitioners with the mission of instilling excellence in the electrical engineering practice and enhance the electrical profession in the Philippines. IIEE in cooperation with PLIA conducts seminar/workshops on efficient lighting for electrical engineers, building officials, architects, interior designers, and other interested parties.
National Economic Development Authority (NEDA)	Preparation of the national development plan and overseeing of the implementation of Overseas Development Assistance
Philippine Export Zone Authority (PEZA)	Acceleration of the creation of employment opportunities, particularly in the countryside, and to spur the growth and diversification of exports while developing environment-friendly economic zones
Department of Science and Technology (DOST)	Technical assistance in research and development on EEL and waste recycling
University of the Philippines (UP) College of Engineering and the UP National Engineering Center (UP-NEC)	Education of engineering professionals and technicians; UP-NEC provides regular vocational courses & continuing education to engineering professionals; UP-Engineering provides course on electrical engineering and architecture.
Development Bank of the Philippines & Land Bank of the Philippines	Funding of EC&EE projects and energy performance contracting; existing loan windows maybe used for implementation of EEL projects in commercial and industrial establishments.

Institution	Role in EC&EE & EEL Promotion
Utilities and Electric Cooperatives (e.g., MERALCO, CEPALCO and VECO)	Possible distribution channels for EEL products and EEL information/promotion agents, as these activities could be part of their customer service orientation and customer retention program (in addition to their seizing another business opportunity).

76. NGOs and other professional and private organizations such as United Architects of the Philippines (UAP), Philippine Institute of Architects (PIA), Society of Philippine Electrical Contractors and Suppliers (SPECs), Philippine Institute of Interior Designers (PIID), Building Owners and Managers Association of the Philippines (BOMAP), Hotel and Restaurant Association of the Philippines (HRAP), Philippine Technological Council (PTC), Maintenance Association of the Philippines (MAPHIL), Chamber of Real Estate and Builders Association (CREBA), Subdivision and Housing Development Association (SHDA), Philippine Association of Building Administrators (PABA), and Condominium Management Association of the Philippines Inc (CMAP) have been directly involved in lighting projects and could be potential agents for implementation of EEL initiatives.

IMPLEMENTATION ARRANGEMENTS

77. The project will establish a Policy Advisory Board consisting of representatives from DOE, BPS-DTI, NEDA, DENR, PLIA and UNDP to provide policy guidelines for the various project components. The DOE Undersecretary will chair the Board.
78. The DOE, through the Energy Research and Testing Laboratory Services (ERTLS), will be the executing agency of the PELMATP. DOE will ensure that all project activities are coordinated with related initiatives and are complementary to activities already undertaken.
79. To provide overall guidance and approval of key program activities including fund commitments and co-financing arrangements, DOE will establish a Technical Working Group (TWG) consisting of representatives from DOE, PLIA, DTI-BPS, MERALCO, NEDA, DENR-EMB, ERC, ENMAP, IIEE, a consumer group, academe and other stakeholders. The TWG will be co-chaired by the PLIA President and DOE. DOE, through the ERTLS Director, will coordinate with UNDP in the implementation of the project activities and project monitoring and evaluation.
80. The UNDP Country Office in Manila together with the UNDP-GEF Regional Coordinator for Climate Change in the Asia-Pacific region will undertake the GEF oversight. DOE will be responsible to UNDP for the achievement of the project objectives, for all project reporting, including the submission of work plans and financial reports. The project will be executed in accordance with UNDP National Execution (NEX) Procedures.
81. DOE will create a Project Management Office (PMO), which will be responsible for the overall project operations and financial management and reporting in accordance with the rule and regulations for nationally executed project (Figure 8). The PMO will be responsible for the staffing, planning and implementation of project activities, provide mechanisms and technical inputs necessary to integrate the results of various activities,

ensure satisfactory performance of the project members and contractors, and provide official reports to the Project Director and the Advisory Board as needed. The PMO will be based at DOE. It will be composed of the Project Manager and three task specialists to implement the five components of the PELMATP, and will be under the supervision of the ERTLS Director. Local and international experts will support the PMO as and when needed to undertake the project activities.

The proposed project will be implemented for five years. Annex G shows the tentative schedule of project activities. Considering the duration of obtaining GEF funding, it is expected that the project will start by January 2004

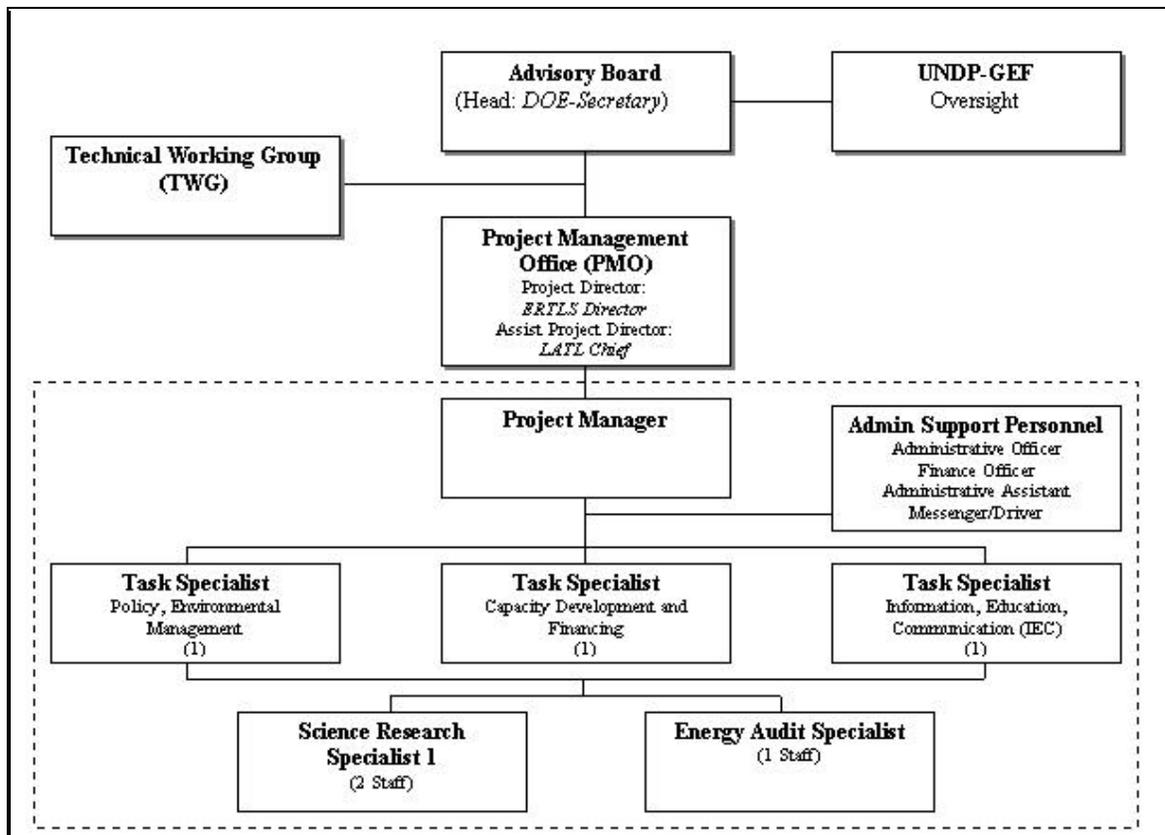


Figure 8. Proposed Implementation Arrangement

INCREMENTAL COSTS, PROJECT FINANCING AND SCHEDULE

82. The total estimated project cost is US\$ 15,130,655. In addition to the US\$ 3,130,655 GEF funding request, the GOP and the private sector will provide a total of US\$ 12,000,000. The GOP will provide US\$ 4,342,167 (cash and in-kind contributions). The project budget will be distributed as follows: US\$ 832,753 for enhancement of EEL policies, standards and guidelines; US\$ 3,888,218 for institutional and technical capacity building; US\$ 4,269,050 for consumer education and information dissemination; US\$ 4,489,198 for EEL projects financing assistance; and US\$ 1,651,436 for EEL waste management technical assistance.

83. The fund request from GEF will be utilized for the provision of technical assistance in the various barrier removal activities (US\$974,679); training cost (US\$363,340), purchase of necessary equipment for capacity building, and limited number of additional EEL testing equipment (US\$1,179,090); and, subcontract costs (US\$ 613,545). The equipment that will be purchased are mainly the incremental lamp/ballast testing instruments (US\$ 1,033,900) that will be used for enhanced EEL MEPS development and implementation, as well as the lighting energy audit instruments (US\$10,500) that will be used to measure and verify energy savings from EEL implementation by industrial and commercial establishments.
84. The baseline contribution from the DOE (US\$ 4,300,000) is that portion of its budgetary allocation for EC&EE specifically on lighting systems for the years when the PELMATP is being implemented. The contribution in cash is US\$ 2,802,923 and is allocated for consumer education and information dissemination. The remaining DOE contribution will be used for the review and updating of policies, standards and guidelines (US\$ 208,705), institutional capacity building (US\$ 788,816) and consumer education and information dissemination (US\$ 499,556). The baseline contribution for efficiency labeling and standard formulation, monitoring and enforcement will come from the DOE-LATL budget for testing of lighting systems.
85. Other contributions from the government will come from DTI-BPS and the local governments of Valenzuela City and Malabon City. These are from their budget allocations for the years when the project is being implemented. The DTI-BPS contribution (US\$42,167) is based on the allocated budget for the creation of additional, and updating of existing, national standards on lighting. The contributions of the cities of Valenzuela and Malabon are from their budget allocations for lighting government buildings and streets.
86. The Development Bank of the Philippines (DBP) confirmed the availability of credit facilities for energy efficient lighting projects that will be tapped for financing the pipeline of EEL system projects (including EEL design and manufacturing improvements, and EEL waste recycling) that will be developed under PELMATP. A portfolio of EEL system projects amounting to a minimum of US\$ 3.91 million is targeted for financing from the DBP. The policy-based environmental management credit facilities in DBP that are available for PELMATP are: (1) Environmental Infrastructure and Support Credit Program (EISCP II); (2) Industrial and Support Services Expansion Program (ISSEP II); and, (3) Industrial Pollution Control Loan Project (IPCLP II).
87. Budget contribution from the private sector will be allocated to capacity building on the use and application of EELs and it amounts to US\$ 3,552,278. This does not include yet the expected investments by manufacturers to produce of EEL products, installation of EEL systems by commercial and industrial establishments. PLIA will contribute US\$ 1,500,000 to forge partnership between the government and the lighting industry through congruent capacity building and information and education programs. Quantum Electronics Corporation (US\$ 121,311) and FUMACO (US\$ 64,731) are contributing baseline funds for product research and improvement of production lines towards increase production of EEL systems. CPI, Energy Philippines, Inc. will be financing a minimum of US\$ 300,000 demonstration activities for capacity development of

commercial and industrial establishments and ESCOs. GlobeCare will shoulder the investment cost for the demonstration EEL waste recycling facility (US\$1,500,000) that will be showcased by the PELMATP. In-kind contributions are also available from UP-NEC (US\$ 46,236), and ENMAP (US\$ 20,000) for information dissemination and consumer education activities. Potential in-kind contribution is expected from the IIEE during the duration of the PELMATP implementation for the conduct of seminar/workshops on efficient lighting for electrical engineers, architects, building designers/developers and building officials.

PROJECT BUDGET

PELMATP Components	Baseline	GEF	Total	% Share
Component 1: EEL Policies, Standards and Guidelines Enhancement Program	410,872	421,881	832,753	6
Component 2: EEL Applications Institutional Capacity Building program	2,027,210	1,861,008	3,888,218	26
Component 3: EEL Applications Consumer Awareness Improvement Program	3,848,715	420,335	4,269,050	28
Component 4: EEL Initiatives Financing Assistance Program	4,213,203	275,995	4,489,198	30
Component 5: EEL Systems Waste Management Assistance Program	1,500,000	151,436	1,651,436	10
Total	12,000,000	3,130,655	15,130,655	100

MONITORING, EVALUATION AND DISSEMINATION

88. Project monitoring, evaluation and dissemination will be undertaken in accordance with UNDP and GEF established procedures. The executing agency will be required to prepare quarterly project reports (QPR) and combined annual project and project implementation review reports (APR/PIR) to UNDP. The QPR will provide the summary of the project results, progress and variances from the original plan, implementation issues, and steps being taken to address these issues, and work plans for the successive quarter for review and endorsement. Quarterly work plans will be prepared based on the overall project objectives and performance indicators. These will be used to measure performance. It is through these reports and meetings that the project approach and activities will be formally refined. The PMO will present the project status and accomplishment to the Project Advisory Board every quarter. A quarterly work plan based on project objectives and performance indicator will be presented, evaluated and adjusted as and when necessary. The APR/PIR will provide a more in-depth summary of work-in-progress, measuring performance against both implementation and impact indicators. Any adjustments in project approach will be reported to the Advisory Board who will evaluate and approve the adjustments recommended.
89. The project is subject to two in-depth independent reviews. One will be conducted in the mid-term (first quarter of the third year) and the other will be scheduled upon project

termination. A terminal report would be completed prior to the completion of the project detailing achievements and lessons learned. Additional independent evaluation may be conducted if UNDP and the GEF deemed it necessary.

90. As executing agency, the DOE will carry out continuous self-monitoring. The Project Framework Design (PFD) in Annex B states all the success indicators and means of verification for each activity that will be carried out under this project. These indicators are the parameters that have to be monitored by the DOE under this project. The annual growth in the market share of EELs in the country provides a clear indication of the realization of the project's purpose. As such, this is one parameter that has to be monitored and evaluated during the course of project implementation. Surveys will be conducted during the first quarter of the third year (mid-term) and the second quarter of the fifth year (final term) of the project to track the current status of the EEL market. The success indicators or objectively verifiable indicators for each objective and activity in the PFD will be monitored and evaluated during the course of project implementation. The extent by which the GEF developmental goal is achieved can be evaluated from the monitored results. The annual target values for the indicators will be agreed upon during project document finalization.
91. The project will coordinate with all the project partners, particularly those implementing parallel projects whose results feed in, or are integral parts, of the PELMAT project. The continuous monitoring and evaluation of the project sites, even after completion of the project period, will bring sustainability of the project with desired benefits in the long run. DOE will also carry out monitoring and evaluation of all the demonstration sites. The evaluation report will be uploaded to the project website for widespread dissemination.

Annex A

Incremental Cost Analysis

Broad Development Goals

1. Conservation and efficient utilization of energy had been one of the major strategies the Government of the Philippines (GOP) in improving the efficiency of energy utilization in various sectors of the national economy. The goal of the country's energy conservation and energy efficiency (EC&EE) efforts is to achieve energy self-sufficiency and reduce environmental impacts of energy generation and utilization.
2. The government's EC&EE strategy is to enhance awareness/understanding of the consumers on energy use and encourage them to use energy efficient technologies through energy management services, information and education campaign, government energy conservation program and efficiency/energy labeling and standards. To pursue its EC&EE goal, the government anticipates a total investment from 2002 to 2011 of US\$ 2.181 billion, 98.7% of which will be provided by the private sector and only 1.3% by the government. This represents 5.8% of the total that will be invested in the energy sector.
3. The Philippines, stricken by the Asian crisis in 1997, had experienced significant currency devaluation, reduction of imports and exports and reduction of gross domestic product and imports/exports, which resulted to the tightening of government budgets and capital investment by the industries up to the present. These factors have discouraged adoption of energy efficiency technologies and development of domestic energy services industry. The uncertainties on deregulation and privatization of the electric power industry and the interim excess electricity generation capacity had placed the demand side management program by utilities to an effective standstill.

Baseline Scenario

4. Considering a business-as-usual scenario, the promotion of energy efficient lighting (EEL) by DOE will continue as in the past, together with the development and application other energy efficient technologies. As laid down in the Philippine Energy Plan (PEP), the country's EC&EE programs will include: (a) Energy management services; (b) Information and education campaign; (c) Government ENERCON Program; (d) Efficiency/Energy Labeling and Standard; and, (e) Demand-Side Management.
5. The government's EC&EE program however has limited activities for promoting EELs. The specific activity on lighting is efficiency/energy-labeling standards. So far, the minimum energy performance standards for lighting products applies only for electromagnetic ballasts while energy labeling are required for fluorescent lamp ballasts (electromagnetic) and compact fluorescent lamps. Labeling of fluorescent lamps is planned for 2003. Energy savings associated with fluorescent lamp ballast energy efficiency standard is estimated to be 0.02 MMBFOE (12 GWh) per year.

6. The implementation of the Efficient Lighting Initiative (ELI) Program (2000 to 2002) has enhanced the promotion of ELI qualified compact fluorescent lamps in the market. The ELI program has effected specific improvements in CFL awareness, technology application and innovative financing mechanisms and business transaction models. It was estimated that the total GWh avoided due to ELI Program is 2,842 GWh from year 2000 to 2010⁴.

Global Environmental Objective

7. The project will reduce greenhouse gas emissions by reducing electric energy consumption for lighting through widespread use of EEL systems in the Philippines. The project aims to remove the barriers to adoption of EEL and promote its accelerated and widespread utilization.

Alternative Scenario

8. The GEF supported alternative to the baseline scenario will promote the large-scale commercialization and widespread utilization of EEL systems, as follows: compact fluorescent lamps, linear fluorescent lamps, high intensity discharge (HID) lamps, ballasts (low loss and electronic), luminaries and reflectors.
9. The proposed Alternative Scenario will: a) strengthen the policies, standards and guidelines on EEL; b) build capacity of government and private sector to collaborate and sustainably implement programs; c) educate consumers and provide effective information delivery system to continuously support promotion of EEL, d) establish financing schemes to reduce initial cost of EEL product, and e) ensure that mercury containing lamps are recycled and properly disposed. For CFLs, the project will make use of and build upon the results/outputs of ELI Program and continue/enhance promotion of the said products.
10. The proposed alternative will focus on building/enhancing the capacities of lighting product manufacturers/distributors and lighting system designers to help transform the local lighting market from conventional lighting products to EEL products. Moreover, negative environmental impacts of mercury containing lamps will be mitigated by encouraging proper handling of lamp wastes and recycling. A waste recycling facility will be established.

Domestic Benefits

11. The GEF alternative will bring about economic benefits derived from savings in energy (12 million barrels of fuel oil equivalent) due to use of energy efficient lighting systems. The savings in electricity will also result to avoidance of carbon dioxide and pollutant emissions due to use of fossil fuels. The amounts of pollutants avoided at the end of PELMATP are:

⁴ Project Document – IFC/GEF Efficient Lighting Initiative (ELI) Tranche II, The Czech Republic, Hungary, Latvia and the Philippines. January 2000

Gases	Emissions avoided in the Alternative Scenario*
CO ₂ equivalent	497 Gg
SO ₂	14.2 thousand tons
NO _x	3 thousand tons
CO	194 thousand kg
Hg	4.4 thousand grams

** Values given without pollution control devices installed*

12. The Alternative Scenario will also address the gaps and challenges identified and implement strategies/policies that will facilitate market transformation. Some of the strategies/policies that are envisioned are:

- Private sector involvement and voluntary agreements in energy efficiency program
- Promotion of energy service companies
- Provision of accurate information on use of energy efficient technologies
- Integration of energy efficiency concepts in the procurement practices of the government

The Alternative scenario's support to promoting DSM will not only benefit the energy efficient lighting activities of the government but also all of its other EC&EE programs. Increase in use of EEL will result to increase in production capacity of local manufacturers and business activities among other stakeholders in the supply chain. On the demand side, the adoption of EELs by commercial and industrial establishments will result in energy savings and improved productivity. Monetary savings by households from use of EEL can be used for other daily chores, potentially improving their quality of life.

13. The proposed PELMATP is made up of five (5) components that will address in an integrated fashion the barriers to the widespread utilization of EELs in the Philippines. Each component of the project will consist of several specific activities designed to address these barriers. These will address the shortfall of the past and current efforts by the government and the private sector in promoting widespread use and commercialization of EELs. Component 1 will address policy/regulatory and institutional barriers, and seeks to establish a functioning mechanism to support sustained periodic review and updating of policies; guidelines and programs related to EEL products. Component 2 will involve the strengthening of capacity of relevant GOP agencies and other organizations on EEL product testing, labeling and development and market monitoring and enforcement of lighting product standards, including the provision of technical assistance to local lighting manufacturers to design, produce and make available affordable EELs in the market. The third component (Component 3) is made up of activities that will address the information and advocacy problems/issues of EEL promotion and adoption, and is aimed at making quality EEL products affordable and accessible to consumers, and empowering consumers to make informed decision in choosing EEL products. Component No. 4 aims to address the financial barriers to EEL promotion and widespread application, through the provision of micro-financing schemes for households, enabling manufacturers and commercial and industrial establishments to avail financing, and establishing business partnerships through ESCOs. Lastly, the fifth component (Component 5) involves activities that will facilitate mitigation of the negative domestic environmental impact brought by utilization of EELs.

14. **COMPONENT 1: EEL POLICIES, STANDARDS AND GUIDELINES ENHANCEMENT PROGRAM.** This project component will involve activities intended to enhance the capacity of government policymakers in coming up with appropriate, proactive and integrated plans and policies (and policy instruments), as well as standards, that will make the widespread utilization and commercialization of EELs possible. It will involve the implementation of enabling activities that will enhance the capability of government and consumers in the various economic sectors in coming up with policies and plans that will the widespread adoption of EEL technologies. These additional capacity building activities of the PELMATP will cost US\$ 421,881 to implement. This budget is in addition to the cost involved in the implementation of the usual standards development, lamp testing, and EC&EE activities that are carried out by the government. The total cost of these baseline activities is US\$ 410,872. This component of the PELMATP will cost a total amount of US\$832,753 to implement.
15. **COMPONENT 2: EEL APPLICATIONS INSTITUTIONAL CAPACITY BUILDING PROGRAM.** This project component will involve activities intended to enhance capacities of: (a) DOE on lighting product testing, product monitoring and R&D by government and lighting industry; (b) local manufacturers to produce affordable energy efficient lighting ballasts and fixtures; (c) ERC and electric utilities/cooperatives to deliver effective DSM program to households, commercial and industrial establishments; and, (d) building designers/developers to evaluate EEL product applications and benefits and implement them. It will cost US\$ 3,888,218 to implement this component of the project. The cost of implementing the baseline activities (US\$ 2,027,210) accounts for 52% of the total amount. The rest US\$ 1,861,008 is the incremental cost that GEF will support.
16. **COMPONENT 3: EEL APPLICATIONS CONSUMER AWARENESS IMPROVEMENT PROGRAM.** This project component will enhance collaboration of various sectors to act together in the promotion of widespread use of EEL systems. The government and the private sector will join resources for effective information delivery mechanisms. A common website for the lighting industry will be established to have a readily accessible EEL information for the public. Households and commercial and industrial establishments will be provided with factual information on use and application of EEL to enable them to make educated decision making when buying of lighting products. The baseline activities will cost US\$ 3,848,715 (90%) to implement. The incremental cost that GEF will support amounts to US\$ 420,335. The total budget for this project component is US\$ 4,269,050.
17. **COMPONENT 4: EEL INITIATIVES FINANCING ASSISTANCE PROGRAM.** This project component will provide new market distribution channels and segments intended to reduce the impact of first-cost/investment cost to consumers. The capacity of micro-creditors, specifically consumer cooperatives, will be enhanced to distribute EEL products to households at reduced first-cost and/or at installment basis. ESCOs capacity to provide energy performance contracting services will be improved by providing them access to financing from banks and other lending institutions. Guidelines and procedures on how to avail financing from the existing Development Bank of the Philippines (DBP) windows will be established. DBP confirmed the availability of credit facilities for energy efficiency lighting projects in the total amount of PHP 24.54 billion (US\$ 454 million). A portfolio of EEL systems projects amounting to a minimum of US\$3.913 million is targeted for financing from the DBP. The incremental cost that GEF will support amounts to US\$

275,995. The cost of implementing the baseline activities (US\$ 4,213,203) accounts for 94% of the total budget for this project component. The total budget is US\$ 4,489,198.

18. **COMPONENT 5: EEL SYSTEMS WASTE MANAGEMENT ASSISTANCE PROGRAM.** This project component will enhance capacity of the government and the EEL consumers to handle, collect, treat and dispose lamp wastes properly without threat/damage to public health and the environment. The incremental activities will include: formulation of guidelines in managing mercury containing lamp wastes, design IEC programs and training modules for distribution to government and private organizations conducting IEC on solid waste management, develop market for lamp recycling through increasing availability of recyclable lamps and ensuring demand for by-products after recycling and provision of technical assistance to establish lamp waste recycling facilities. The baseline activities, primarily the installation of a lamp waste recycling facility will cost US\$ 1,500,000 (89%) to implement. The incremental cost that GEF will support amounts to US\$ 151,436. The total budget for this project component is US\$ 1,651,436.

Incremental Cost Matrix

19. Table A-1 shows the incremental cost matrix (Table A-1). The baseline and alternative courses are presented together with the costs of achieving them.

20. The indicative budget for each project component is as follows:

Components	Baseline	GEF	Total	% Share
1: EEL Policies, Standards and Guidelines Enhancement Program	410,872	421,881	832,753	6
2: EEL Applications Institutional Capacity Building Program	2,027,210	1,861,008	3,888,218	26
3: EEL Applications Consumer Awareness Improvement Program	3,848,715	420,335	4,269,050	28
4: EEL Initiatives Financing Assistance Program	4,213,203	275,995	4,489,198	30
5: EEL Systems Waste Management Assistance Program	1,500,000	151,436	1,651,436	11
Total	12,000,000	3,130,655	15,130,655	100

21. The distribution of the project budget by component is as follows:

COMPONENTS	Personnel	Training	Hardware	Contract Costs	Total
1: EEL Policies, Standards and Guidelines Enhancement Program	186,148	45,314	22,388	168,031	421,881
2: EEL Applications Institutional Capacity Building Program	380,144	264,928	1,089,538	126,398	1,861,008
3: EEL Applications Consumer Awareness Improvement Program	140,733	32,098	22,388	225,116	420,335

COMPONENTS	Personnel	Training	Hardware	Contract Costs	Total
4: EEL Initiatives Financing Assistance Program	191,607	18,000	22,388	44,000	275,995
5: EEL Systems Waste Management Assistance Program	76,048	3,000	22,388	50,000	151,436
Total	974,679	363,340	1,179,090	613,545	3,130,655

22. Excluding the co-financing for the PDF-B exercise (i.e., US\$ 20,000 in kind contribution from the DOE), the following shows the breakdown of the baseline cost contributors:

Baseline Contributors	Amount, US\$		Total
	Cash	In-Kind	
Government Agencies			
DOE	2,802,923	1,497,077	4,300,000
BPS		42,167	42,167
City of Valenzuela	32,352		32,352
City of Malabon	160,000		160,000
Development Bank of the Philippines	3,913,203		3,913,203
UP College of Engineering & UP-NEC		46,236	46,236
Private Sector			0
Philippine Lighting Industry Association	1,000,000	500,000	1,500,000
Quantum Electronics Corp (Ballast Mfg)	104,784	16,527	121,311
FUMACO (Lighting Fixtures Mfg.)	45,312	19,419	64,731
Globe Care	1,500,000		1,500,000
ENMAP		20,000	20,000
CPI (ESCO)	300,000		300,000
Total	9,858,574	2,141,426	12,000,000

23. The following shows the distribution of the baseline costs by project component for the PELMAT Full Project (excluding PDF-B co-financing):

Fund Contributors	Type	Components				
		1	2	3	4	5
DOE	Cash			2,802,923		
	In-Kind	208,705	788,816	499,556		
BPS/DTI	Cash					
	In-Kind	42,167				
Valenzuela City	Cash		32,352			
	In-Kind					
Malabon City	Cash	160,000				
	In-Kind					
Development Bank of the Philippines	Cash				3,913,203	
	In-Kind					
UP-NEC	Cash					
	In-Kind			46,236		
Philippine Lighting Industry Association	Cash		1,000,000			
	In-Kind			500,000		

Fund Contributors	Type	Components				
		1	2	3	4	5
Quantum Electronics Corporation	Cash		104,784			
	In-Kind		16,527			
FUMACO	Cash		45,312			
	In-Kind		19,419			
Globe Care	Cash					
	In-Kind					1,500,000
ENMAP	Cash					
	In-Kind		20,000			
CPI (ESCO)	Cash				300,000	
	In-Kind					
Total		410,872	2,027,210	3,848,715	4,213,203	1,500,000

Table A-1: Incremental Cost Matrix

Components of the Project	Baseline	Alternative	Incremental
<p>Component 1: EEL Policies, Standards and Guidelines Enhancement Program</p>	<p>Business-as-Usual</p> <p>Development/Update and implementation of consumer incentives and protection and guidelines, efficiency standards on energy use were, if not overlooked, are limited and slowly progressing with respect to variety of emerging EEL products available in the market.</p>	<p>Proposed Situation:</p> <p>Policies and guidelines are in-place or updated to enhance promotion and use of EEL by both the government and private sector and consumer protection.</p>	<p>Additional Features:</p> <p>Timely updating of energy efficient standards and labeling prevents proliferation of cheap alternatives that are apparently EEL products.</p> <p>Proper application of EEL products to buildings leads to significant energy savings.</p> <p>Government-led utilization of EEL products sets model procurement policies, and demonstrates benefits from energy savings.</p> <p>Manufacturers and consumer are provided with incentives</p>
	<p>Domestic Benefits:</p> <p>EEL systems will make some gains.</p>	<p>Domestic Benefits:</p> <p>Increased use of certified EEL systems leading to energy savings by consumers and decrease in power generating capacities from fossil fuel.</p>	<p>Domestic Benefits:</p> <p>Government becomes pro-active in EEL standards development and leader in EEL use and application. Improved consumer protection.</p>

Components of the Project	Baseline	Alternative	Incremental
	<p>Global Benefits:</p> <p>None.</p>	<p>Global Benefits:</p> <p>The Philippines developed a strong national profile on EEL product standards and consumer protection.</p>	<p>Global Benefits:</p> <p>Reduced GHG emissions.</p>
	<p><u>Cost: US\$ 410,872</u></p>	<p><u>Cost: US\$ 832,753</u> <u>(Baseline + Incremental Cost)</u></p>	<p><u>Cost: US\$ 421,881</u></p>
<p>Component 2: EEL Applications Institutional Capacity Building Program</p>	<p>Business-as-Usual:</p> <p>Lighting product testing capabilities are inadequate to accommodate current and future workload.</p> <p>Monitoring of EEL products in the market as to their compliance to product standards are not being undertaken and will most likely be not undertaken in the future due to lack of resources.</p> <p>Local manufacturers continue to produce less efficient ballasts and fixtures due to uncompetitive and imperfect market conditions. Small backyard industries continue to operate</p>	<p>Proposed Situation:</p> <p>Locally and internationally accepted lighting product testing facilities to adequately address present and future product testing/certification requirements, product monitoring and R&D by government and lighting industry.</p> <p>Consumers are informed on the status of EEL products in the market - compliance to standards and their proper application.</p> <p>Local lighting manufacturers are given support to design, manufacture and sell affordable energy efficient lighting ballasts and fixtures</p>	<p>Additional Features:</p> <p>Upgraded LATL's testing facility and manpower</p> <p>Market monitoring guidelines are in-place and capacity established.</p> <p>Consumers are empowered to choose the right product in the market.</p> <p>Values of efficiency parameters are conspicuously labeled on EEL products to aid consumers in comparing and selecting product types. Increase in</p>

Components of the Project	Baseline	Alternative	Incremental
	<p>without product certification.</p> <p>Approval of amended and improved DSM Framework may ensue but will have a slow start or may be initially neglected because the efforts of ERC and the utilities are similarly focused towards liberalization of the power industry. There is weak institutional support and lack of appropriate knowledge and skills for effective DSM program delivery.</p> <p>Households, commercial and industrial establishments, and building designers/developers have insufficient understanding on use and benefits of using EEL products.</p>	<p>Concerted pro-active effort in building capabilities of ERC and utilities to deliver effective DSM program</p> <p>Households, commercial and industrial establishments, and building designers/developers are enabled to evaluate EEL product applications and benefits and implement them.</p>	<p>production and sale of affordable and locally manufactured energy efficient ballasts and lighting fixtures</p> <p>Approved Revised DSM Framework</p> <p>Utilities' DSM Plan adopts innovative ways of promoting/implementing EEL systems</p> <p>EEL savings calculators will be provided to households and commercial and industrial establishments to assist them in evaluating the benefits derived from using EEL products.</p> <p>Integration of energy efficiency concepts/financial analysis in marketing and procurement</p> <p>Industrial and</p>

Components of the Project	Baseline	Alternative	Incremental
			commercial establishments realized the benefits of using EEL and capable of implementing EEL programs – able to overcome technical and financial barriers
	<p>Domestic Benefits:</p> <p>Moderate use of EEL products with poor application and limited demand for local EEL products.</p>	<p>Domestic Benefits:</p> <p>Expertise on EEL use and application is developed. Increased cost and energy savings from use of EEL by consumers due to proper application. This would lead to widespread utilization thus more energy savings. Reduction of other pollutant emissions due to reduced use of fossil fuel.</p>	<p>Domestic Benefits:</p> <p>Timely and effective testing of EEL products. DSM framework effectively implemented. Increase use of EEL products.</p>
	<p>Global Benefits:</p> <p>GHG emissions reduce marginally.</p>	<p>Global Benefits:</p> <p>Improved competency can be transferred internationally.</p>	<p>Global Benefits:</p> <p>GHG emission reduction</p>
	<p>Cost: US\$ <u>2,027,210</u></p>	<p>Cost: US\$ <u>3,888,218 (Baseline + Incremental Cost)</u></p>	<p>Cost: US\$ 1,861,008</p>

Components of the Project	Baseline	Alternative	Incremental
<p>Component 3: EEL Applications Consumer Awareness Improvement Program</p>	<p>Business-as-Usual</p> <p>The government continues to provide information to the market to support development of energy efficient technologies and energy efficiency industries through its existing programs.</p> <p>Program implementation is limited and retarded due to lack of resources.</p>	<p>Proposed Situation:</p> <p>Enhanced multi-sectoral collaboration but target market specific and information-based promotion of EEL systems</p>	<p>Additional Features:</p> <p>Joint promotion by government and private sector of EEL products</p> <p>An effective information delivery system to support EEL products promotion</p> <p>EEL application and benefits are introduced in college and electrical training courses.</p> <p>Consumer empowerment by periodic publication of actual energy performance of lighting products available in the market.</p>
	<p>Domestic Benefits:</p> <p>DOE, other government agencies and some professional organizations continue limited promotion of EEL with other energy conservation and efficiency programs. Information on EEL will be collected independently by interested parties and will be hard to access.</p>	<p>Domestic Benefits:</p> <p>Effective information delivery systems established in various sectors including schools/training institutions.</p>	<p>Domestic Benefits:</p> <p>Readily available information on EEL. Experiences on EEL use and application well disseminated.</p>

Components of the Project	Baseline	Alternative	Incremental
	Global Benefits: None	Global Benefits: Access to investment and development information	Global Benefits: GHG emission reduction
	<u>Cost: US\$ 3,848,715</u>	<u>Cost: US\$ 4,269,050 (Baseline + Incremental Cost)</u>	<u>Cost: US\$ 420,335</u>
Component 4: EEL Initiatives Financing Assistance Program	Business-as-Usual The government continues to support new and innovative financing schemes/models but has to become feasible business options.	Proposed Situation: Collaborative, coordinated and voluntary creation of new market distribution channels and segments.	Additional Features: Promotion of micro-financing and energy service companies Gain support of local development banks and other financing institutions
	Domestic Benefits: Scarce EEL financing opportunities are available.	Domestic Benefits: Improved capacity to buy EEL products by consumers.	Domestic Benefits: Promotion of EEL micro-financing and leasing
	Global Benefits: None	Global Benefits: Creation of investment opportunities.	Global Benefits: Reduced GHG emissions.
	<u>Cost: US\$4,213,203</u>	<u>Cost: US\$ 4,489,198 (Baseline + Incremental Cost)</u>	<u>Cost: US\$ 275,995</u>

Components of the Project	Baseline	Alternative	Incremental
Component 5: EEL Systems Waste Management Assistance Program	Business-as-Usual Lamp wastes will continue to be managed as special waste but may also continue to be handled, collected, recycled and treated as non-hazardous waste until implementing guidelines for “low level hazardous and universal wastes” are formulated.	Proposed Situation: Lamp wastes are properly handled, collected and treated without threat/damage to public health and the environment.	Additional Features: Labeling of mercury containing lamps (to include its disposal) Promotion of lamp waste recycling Establishment of lamp waste recycling facilities.
	Domestic Benefits: None.	Domestic Benefits: Reduced threat to public health. Establishment of an environmentally acceptable lamp waste generator recycling facility.	Domestic Benefits: Proper handling and disposal of mercury containing waste. Income generation from by-products of recycling facilities
	Global Benefits: None	Global Benefits: International commitments to environmental management and sustainable development are upheld	Global Benefits: Industrial and commercial establishments exporting goods are ISO certified.
	Cost: <u>US\$ 1,500,000</u>	Cost: <u>US\$ 1,651,436 (Baseline + Incremental cost)</u>	Cost: <u>US\$ 151,436</u>

Annex B

Project Framework Design (Log Frame)

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
A. Project Goal			
Reduction in the annual growth rate of GHG emissions from the energy sector through sustained and widespread utilization of EEL systems.	1. Total GHG emissions due to lighting sector is reduced by 4% at the end of Year 2 and 11% at the end of PELMATP relative to the baseline (starting 2004).	<ul style="list-style-type: none"> a. DOE data on sectoral energy use and power energy mix. b. Project M&E results. 	<ul style="list-style-type: none"> ▪ Project monitoring activities are fully supported. ▪ Monitoring of energy savings from energy efficient lighting continued beyond project life. ▪ GHG emission factors used in the Project consistent with the DOE projections and the National GHG inventory.
	2. Aggregate energy savings equivalent to at least 6% is realized at the end of Year 2 and 11% at the end of PELMATP relative to the Philippines' baseline scenario.	<ul style="list-style-type: none"> a. Philippines Energy Plan. b. Documentation of volume of EEL importation and local manufacturing, and sales volume. c. Project M&E results. 	<ul style="list-style-type: none"> ▪ M&E activities are fully supported. ▪ Monitoring of energy savings from energy efficient lighting undertaken beyond the project implementation stage.
B. PROJECT PURPOSE			
Removal of barriers to widespread utilization and commercialization of energy efficient lighting systems.	<ul style="list-style-type: none"> 1. About 57% of lamps and 56% of ballasts used in households are energy efficient by end of Year 5. 2. About 63% of lamps and 68% of ballasts used in the commercial and industrial establishments are energy efficient by end of Year 5. 	<ul style="list-style-type: none"> a. Project M&E Reports. b. Volume of EEL importation and local manufacturing and sales volume. 	<ul style="list-style-type: none"> ▪ Capacity to monitor status of EEL in the market is in place (developed). ▪ Monitoring and documentation of activities in the lighting industry are maintained after the Project ▪ Private sector's interest to collaborate with the GOP is sustained.

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
C. PROJECT OUTPUTS			
Component 1: EEL Policies, Standards and Guidelines Enhancement Program			
<u>1.1 Establishment of EEL Technical Working Group</u>	1.1.1 A multi-sectoral working group, which includes ELI-created institutions, on the promotion of widespread utilization and commercialization of EEL is operational by Year 1.	a. Quarterly and annual project reports b. Minutes of meetings	
<u>1.2 Update of Lighting Guidelines in the National Building Code</u>	1.2.1 EEL application in Building Energy Use Guidelines is updated and implemented by Year 2 1.2.2 Pertinent provisions for EEL systems in the ELI-produced Lighting Manual are included in the Building Energy use Guidelines by mid-Year 2	a. Documentation of the Revised Building Energy Use Guidelines	
<u>1.3 Development of lighting product standard</u>	1.3.1 Existing PNS on EEL are updated, and new standards are formulated by Year 2. 1.3.2 Minimum Energy Performance Standards (MEPS) are developed by Year 3	a. Documentation of PNS for EELs b. Documentation of updated Energy performance standards	▪ EEL manufacturers and importers fully support energy performance standards
<u>1.4. Implementation of lighting product standards</u>	1.4.1 At least 75% of EEL samples tested each year starting Year 3 are MEPS compliant 1.4.2 MEPS are upgraded by 10% by Year 3 and every 3 years thereafter	<ul style="list-style-type: none"> • LATL test records • Documentation of LATL recommendations on MEPS upgrade • Documentation of upgraded MEPS 	▪

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
<u>1.5 Development and Implementation of a Voluntary Agreement (VA) Scheme for the adoption of Higher Performance Standards for Lighting Products</u>	1.5.1 VA with at least one local enterprise manufacturing and/or distributing each type of EEL product are signed and implemented each year starting Year 3.	a. Documentation of the voluntary agreements	▪ EEL manufacturers and importers fully support the voluntary standards
<u>1.6 Application of EELs in Government Facilities</u>	1.6.1 An executive order on procurement policy to convert government buildings to EEL passed by Year 2.	a. Executive Order on Procurement Policy b. Quarterly and Annual Project Reports	▪ Government offices able to allocate budget to lighting retrofit.
	1.6.2 At least 5 government buildings carry out EEL projects each year starting Year 3.	a. Documentation of the demonstration scheme at a school building in Malabon City b. Quarterly and Annual Project Reports.	
<u>1.7 Establishment of Incentives for EEL Product Importers and Manufacturers</u>	1.7.1 Government incentives and consumer protection policies and guidelines updated and implemented by Year 1.	a. Investment Priority Plans for 2004 to 2012	▪ DOE cooperates with BOI in formulating EEL incentives for IPPs, annually.
	1.7.2 Guidelines on how to avail of incentives through IPPs prepared and issued by Year 2.	a. Documented guidelines on how to avail incentives through IPPs	
<u>1.8 Establish consumer protection guidelines</u>	1.8.1. EEL product warranty guidelines formulated and implemented by Year 3 1.8.2. Lamp packages are labeled with “mercury containing lamps” and “recycle” by Year 3.	a. Guidelines on warranties and labeling b. Presence of project labels.	

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
<u>1.9 EEL Policy and Standards Implementation Monitoring and Evaluation</u>	<p>1.9.1. Improvements in EEL policy implementation and impacts carried out by Year 2 and every year thereafter.</p> <p>1.9.2. Relevant recommendations on policy improvements are made and carried out by end of each year starting Year 3</p>	<p>a. Documentation of policy impact analysis and recommendations for policy revisions/modifications.</p> <p>b. Documentation of policy reviews and recommendations</p>	<ul style="list-style-type: none"> ▪ MEPS policy impact analysis is a regular activity of the DOE. ▪ DTI-BPS regulations include provision of policy reviews on MEPS issues.
COMPONENT 2: EEL APPLICATIONS INSTITUTIONAL CAPACITY BUILDING PROGRAM			
<u>2.1 Testing, labeling and market monitoring of EELs</u>	<p>2.1.1 DOE-LATL accredited to ISO/IEC 17025 for ballasts and linear lamps by Year 2.</p> <p>2.1.2 DTI-BPS accredited by APLAC by Year 1.</p> <p>2.1.2 LATL satisfactorily meets testing demands of BPS for EELs, as well as market monitoring, R&D activities and local international testing for manufacturers applying for voluntary standards certification by Year 3.</p> <p>2.1.3 25% increase in brands and models of certified EEL products by Year 5.</p> <p>2.1.4 50% of EEL products in the market comply with international EE standards by Year 5.</p> <p>2.1.5 Energy Efficiency Rating (EER) for EELs established by Year 3.</p>	<p>a. ISO/IEC 17025 Certification of DOE-LATL.</p> <p>b. APLAC Certification of DTI-BPS</p> <p>c. Project Reports</p> <p>a. Presence of procured equipment at DOE-LATL</p> <p>b. Certificate of attendance or successful completion of trainings by LATL staffs.</p> <p>c. Project M&E Results</p> <p>d. Quarterly and Annual Project Reports</p> <p>a. DOE-LATL and DTI-BPS data</p> <p>b. Project database</p> <p>a. DOE-LATL and DTI-BPS data</p> <p>b. Project database</p> <p>a. Project Report on EER pilot study.</p> <p>b. Project M&E Results</p> <p>c. Quarterly and Annual Project Reports</p>	

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
	2.1.6 At least 5 EEL products are certified under the VA scheme by Year 3.	a. M&E reports on the VA Scheme (initially based on ELI Standards)	
<u>2.2 Support to local lighting product manufacturers</u>	2.2.1 50% of the local manufacturers increased investment in energy efficient ballasts and fixtures by Year 5.	a. Project Database b. Manufacturer's data on production and sales volume	<ul style="list-style-type: none"> ▪ Local manufacturers willing to invest on EEL production process improvements.
<u>2.3 Technical Assistance on the Design of EEL System Initiatives in DSM Plans</u>	2.3.1 Utilities and cooperatives have prepared their DSM Plans by Year 3 - 2.3.2 At least 5 utilities and RECs become EEL products distribution channels by Year 4. 2.3.3 Street lighting guidelines designed and implemented by Year 2 2.3.4 At least 5 cities carry out EEL street lighting each year starting Year 4. 2.3.5 50% of utilities/RECs installed EEL systems for street lighting by Year 5.	a. Documentation of data from ERC, utilities and cooperatives. b. Submitted DSM Plans by electric utilities/cooperatives c. Project M&E Results d. Street lighting guidelines e. Report on street lighting demonstration project.	<ul style="list-style-type: none"> ▪ Revised DSM Framework approved by end of 2004 ▪ Utility DSM includes promoting use of EELs such as EEL product leasing and street lighting programs.
<u>2.4 Development and Design of EEL Savings Calculator</u>	2.4.1 Energy savings calculator designed, disseminated and used by households and commercial and industrial establishments by Year 2.	a. Quarterly and Annual Project Reports b. Documentation of energy savings calculators.	
<u>2.5 Capacity Building on the Application of EEL Systems.</u>	2.5.1 More than 50% of lighting system designers in the country trained on EEL application by Year 5.	a. IIEE/PLIA data on training and list of participants b. Quarterly and Annual Project Reports	

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
<u>2.6 Promotion of Mass Purchasing</u>	<p>2.6.1 Mass purchasing agreements developed and implemented in 3 private establishments by year 4.</p> <p>2.6.2 About 5 private establishments are implementing mass purchasing by Year 5.</p>	<p>a. Quarterly and Annual Project Reports</p> <p>b. Manufacturers/Importers sales data</p> <p>c. Project Database</p>	
<u>2.7 Implementation of EEL Programs in the Industrial Sector</u>	<p>2.7.1 About 50% of investments on EEL applications in 9 industrial demo sites are recovered by end Year 5</p> <p>2.7.2 By end of PELMATP, 63% of lamps used in industrial establishments are energy efficient.</p>	<p>a. Project M&E Results</p> <p>b. Project database</p> <p>c. Energy audit reports of DOE</p> <p>d. Manufacturer's/importer's sales report.</p>	
<u>2.8 Implementation of EEL Programs in the Commercial Sector</u>	<p>2.8.1. About 50% of investments on EEL applications in 9 commercial demo sites are recovered by end Year 5</p> <p>2.8.2. By end of PELMATP, 63% of lamps used in commercial firms are energy efficient.</p>	<p>a. Project M&E Results</p> <p>b. Project database</p> <p>c. Energy audit reports of DOE</p> <p>d. Manufacturer's/importer's sales report.</p>	
COMPONENT 3: EEL APPLICATIONS CONSUMER AWARENESS IMPROVEMENT PROGRAM			
<u>3.1 Joint Government-Private Sector Promotion of EEL Products</u>	<p>3.1.1 Annual forum among stakeholders are held and sustained from Year 1 to 5 of the project and beyond.</p>	<p>a. Minutes of meetings</p> <p>b. Workshop proceedings</p> <p>c. Annual Project Reports</p>	

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
	<p>3.1.2 About 5% increase in sales of EEL products each year attributed to promotions on major national and regional newspapers during the project life.</p> <p>3.1.3 Electric utilities/cooperatives distribute EEL promotional materials to HH starting Year 2.</p>	<p>a. Television reports and newspaper articles</p> <p>b. Documentation of brochures, leaflets and prints distributed by electric utilities/cooperatives.</p>	<ul style="list-style-type: none"> ▪ Electric utilities/cooperatives and retail stores willing to participate to EEL promotional activities,
3.2 <u>Consolidation of Information on EEL Systems</u>	<p>3.2.1 About 100 hits on the EEL industry and government websites each month starting Year 3.</p> <p>3.2.2 Results of project activities are disseminated through prints starting Year 1 and the website starting Year 3.</p>	<p>a. EEL industry website</p> <p>b. Quarterly and annual Project Reports.</p> <p>c. Documentation of printed materials disseminated.</p>	<ul style="list-style-type: none"> ▪ Stakeholders are willing to participate in IEC and share information for database build-up and website development
3.3 <u>Inclusion of EEL Training in School Curricula</u>	3.3.1 At least 25% of trainees on EEL use, application and benefits in TESDA electrical courses are engage in the EEL industry by end of Year 4.	<p>a. UP College of Engineering and UP-NEC course curricula.</p> <p>b. TESDA records</p>	
Component 4: EEL Initiatives Financing Assistance Program			
4.1 <u>Design of Micro-financing Mechanism</u>	<p>4.1.1 25% of consumer's cooperatives in the country become distribution channels by end of Year 5.</p> <p>4.1.2 57% of lamps and ballasts used by households are energy efficient by Year 5.</p>	<p>a. Quarterly and Annual Project Reports</p> <p>b. Consumer cooperatives report on EEL distribution.</p> <p>c. Project M&E Results.</p>	<ul style="list-style-type: none"> • Existing cooperatives and other micro-financing institutions capable of providing credit facilities • GEF to support provision of seed money

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
<u>4.2 Development of ES ESCO-led EEL System Project</u>	4.2.1 Energy performance models and procedures for measurement and verification are utilized by ESCOs starting Year 3. 4.2.2 Energy performance contracting for EEL projects is being implemented with about US\$ 300,000 worth of transactions by Year 5.	a. Quarterly and Annual Project Reports b. Documentations of ESCO projects	<ul style="list-style-type: none"> • Financing institutions in the Philippines are willing to provide money for energy performance contracting • International ESCOs are willing to participate and form partnerships with local firms.
<u>4.3 Establishment of Financing Scheme for EEL Systems Project</u>	4.3.1 Financing guidelines for EEL are designed and implemented by Year 2. 4.3.2 A portfolio of EEL systems projects amounting to US\$ 3.9 million is financed by DBP by Year 5.	a. Documentation of the financing guidelines b. Accomplishment report of training program conducted. c. Documentation of approved financing agreements. d. Documentation of implemented EEL system projects.	
<u>4.4. EEL Business Financing Capacity Building</u>	4.4.1. At least 5% private and government financial institutions, and commercial banks that received training are considering providing loans for EEL projects by Year 3 4.4.2. At least 3 private and government financial institutions, and commercial banks are providing loans for EEL projects by Year 5	a. Documentation of training course materials as well as the individual training course evaluation reports submitted to DOE. b. Documentation of lending schemes for EEL projects by private/government financial institutions and commercial banks.	<ul style="list-style-type: none"> • Financial/banking institutions will cooperate and the bankers association will endorse this activity.

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
<u>4.5 Development and Implementation of a Voluntary Agreement Scheme with Industrial and Commercial Establishments</u>	<p>4.5.1. VAs with at least 3 firms in each industrial sub-sectors and commercial building types are implemented by Year 3.</p> <p>4.5.2. At least 10% of lighting energy consumption is reduced in each firms involved in VA scheme by Year 4.</p>	<p>a. Documentation of the voluntary agreements</p> <p>b. Documentation of EEL project M&E activities</p> <p>c. Lighting energy consumption records</p>	<ul style="list-style-type: none"> Industrial and commercial establishments fully support the use of EELs
<u>4.6. Evaluation of the EEL Initiatives Financing Assistance Program</u>	<p>4.6.1. About 50 industrial & commercial firms availed of EEL system project financing by Year 5.</p> <p>4.6.2. Favorable economic and financial performance of EEL system projects, whereby about 50% of investment recovered halfway through the expected payback period of each project.</p>	<p>a. Documentation of approved project-financing applications.</p> <p>d. Documentation of financial reports submitted by the companies availing of financing for their EEL projects.</p>	
COMPONENT 5: EEL SYSTEMS WASTE MANAGEMENT ASSISTANCE PROGRAM			
<u>5.1 Formulation and Implementation of Guidelines for Managing Hg containing Wastes</u>	<p>5.1.1 Policy Study and guidelines on handling mercury-containing lamps formulated and incorporated in National and Local Solid Waste Management Plans by Year 2.</p>	<p>a. National and Local Government Solid Waste Management Plan</p> <p>b. Documentation of policy study and guidelines</p>	

Project Strategy	Objectively Verifiable Indicators	SOURCES OF VERIFICATION	Critical Assumptions
<u>5.2 Information Campaign on Management of Hg Containing Lamp Wastes</u>	5.2.1 National Solid Waste Commission, Local governments and at least 2 NGOs regularly conduct information campaigns by Year 3.	a. Survey of consumer opinions b. Documentation of training modules and IEC Programs c. Documented activities by National Solid Waste Commission, Local governments and non-government organizations	<ul style="list-style-type: none"> ▪ Concerned government agencies and non-government organizations supports the IEC Program.
<u>5.3 Market Development for Lamp Recycling</u>	5.3.1 National directory of lamp waste generators, recycling/disposal firms and buyers of by-products completed and disseminated by Year 2. 5.3.2 Specifications of recycled by-products from lamp waste are established by Year 1. 5.3.3 Materials Recovery Facilities in Metro Manila incorporates lamp waste recycling by Year 3.	a. Documentation of directory in existing waste exchange websites and Project website. b. The lamp waste recyclers are registered and accredited as recyclers in all PEZA zones and other industrial zones and commercial center associations.	
<u>5.4 Demonstration of the Recycling of Waste Lamps</u>	5.4.2 A lamp waste recycling facility is operating in Luzon by Year 3. 5.4.3 About 30% of lamp wastes in targeted areas Metro Manila and CALABARZON area is processed by the recycling facilities by Year 5	a. Documentation of the recycling facility design b. Documentation of the facility operations data (e.g., volume of waste processed per day and amount of Hg recovered)	<ul style="list-style-type: none"> ▪ Private sector interested in investing on lamp waste recycling facility.

Annex C

GEF Focal Point Endorsement Letter

Annex D

STAP Review Comments and Response

A. FIRST STAP REVIEW

A.1. Comments:

Overall Impression:

This is a potentially strong proposal. As currently written, it is clouded and overshadowed by the immediate-past implementation of ELI project in the Philippines. (ELI Philippines commenced its work on May 2, 2000, and was supposed to go on for 3 years.) The project proposal needs to more sharply clarify what tasks ELI left unfinished, and which it aims to complete, and which new tasks it aims to undertake and why. This omission is frustrating since the project must distinguish itself from ELI, and must persuasively argue that it is the next logical step after ELI.

Key Issues

1. Scientific and Technical Soundness

The scientific and technical basis of the project is sound. Savings from the perspectives of the overall economy and the utility and full-tariff consumers are clearly identified in the literature, as are CO₂ emission reductions from increased use of CFLs. The need for market transformation, and the high penetration of CFLs in the market after successful market transformation, are also well documented in other parts of the world (e.g., with the PELP project in Poland).

The second technical comment is regarding the estimation of CO₂ avoided resulting from the “alternative scenario” compared to the baseline scenario. This is a bit tricky, because assumptions about future CFL demand growth are required for such estimation, and these are possibly erroneous. The estimates used in the report are reasonable, and no iron-clad estimation is possible. The report should make a clear note of the tentativeness of the estimation.

A third comment is regarding the occasional presentation of engineering estimates with 3, 4 or even 6-digit accuracy, when such high accuracy is not warranted by the science and engineering. Presenting data of unwarranted accuracy leads to impression that the proposers are exaggeratedly certain regarding their estimates, when in reality, confidence of about 1 part in 10 is justified, and would be adequate. An example is in paragraph 9, on page 3, quoting estimated CO₂ savings of 37,093.4 Gg by 2011.

The proposal makes perhaps too strong an issue of the mercury content of the fluorescent lamps. New technology of fluorescent lamps uses much lower levels of mercury. Second, the mercury is in metallic, not compound, form – thus less toxic. Lastly, lower mercury emissions from power plants owing to lower electricity demand are known to more than compensate for the increased introduction of mercury into the environment via the waste stream of used

fluorescent lamps. It is certainly desirable that the mercury issue be addressed properly, however, it is not as big an environmental threat as the proposal language might lead a novice to believe.

The last (and major) technical comment is a repeat of the one given in the summary. This comment is not so much about the content of the proposal – the content is fine. It is about the presentation. The proposal needs to make a clear and compelling case as to why it is the next logical step after ELI. It needs to say what problems ELI address fully (the proposal does say this in numbered paragraph 38), but it also needs to say what problems were addressed incompletely, or revealed only during the progress of ELI and are therefore left to the current proposal to address. This argument needs to be presented in a coherent way to create a compelling justification for the tasks that will be addressed by PELMATP.

2. Identification of global environmental benefits and/or drawbacks of the project

The project aims to accelerate adoption of energy efficient lighting technologies by removing various institutional, informational, policy, technical and financial barriers. The project will avoid emission of about 37 million tons of CO₂ emissions by 2011.

There are no global environmental drawbacks of the proposal.

3. How the project fits within the context of goals of GEF, its operational strategies, programme priorities, GEF Council guidance and relevant conventions.

The project fits well within the goals of GEF and its operational strategies and priorities. It aims to create introduce in a viable and sustainable manner energy efficient lighting technologies, systematically removing various barriers to the penetration of such technologies in the Philippines. The activities identified in the proposal fit GEF programme priorities and meet the council guidance.

4. Regional Context

Introducing the institutional support for energy efficient lighting technologies in the Philippines will assist in the introduction of these technologies and similar support institutions in the region.

5. Replicability of the project

Several of the problems identified in the Philippines in this proposal are also seen, to various degrees, in other developing countries. The sections of the project dealing with removal of these barriers are replicable in other countries.

6. Sustainability of the project

Project is designed to be sustainable beyond the horizon of GEF support.

Secondary Issues

The proposal has no significant linkages to other focal areas (e.g., biodiversity protection or coastal waters).

- Other (non-stated) beneficial or damaging environmental effects are negligible.
- The degree of involvement of stakeholders in the project is planned to be adequate.
- The project will build significant capacity in the Philippines in the private, NGO and government sectors for energy efficient lighting technology commercialization.
- The project is innovative in terms of comprehensively addressing removal of barriers at the technical, institutional and financial level, and also in terms of private sector, NGO and government institutions.

Additional Comments

Project Brief. First page, Section 2 “Summary”. This paragraph states in line 3 that CFL is an example of non-fluorescent lamps. Not true. CFLs are fluorescent lamps.

Overall stylistic comment. The proposal uses too many acronyms. This slows down (rather than helps!) the reader, and makes for completely opaque sentences. I suggest avoid using an acronym unless you use that phrase at least three times in the text.

Page 2, paragraph 3, line 3. Change “invests” to “invest”. In the same paragraph, USTDA 1994 is cited but the reference is nowhere given.

Page 2, paragraph 4. Data source(s) for the estimates of lighting contribution to sectoral energy consumption need to be cited.

Page 2, section 6, bottom line of page. Suggest replace “In” with “Within” for improved clarity of the sentence. Also top line of page 3, suggest remove phrase “to the country’s GDP” for improved clarity.

Page 5, paragraph 16, line 11, suggest insert words “shortage of” before the word “financing”.

Page 6, paragraph 23. Another reason rural households prefer incandescent lamps is that these lamps work even with voltage sags common in rural power. With voltage sags, fluorescent lamps sometimes do not light up (i.e., the initial arc does not strike and create a plasma) when they are switched on.

Page 8, paragraph 32. Unclear why the electromagnetic ballast manufacturers are citing problems of high costs of imported raw materials labor and electricity for making higher efficiency ballasts. The higher efficiency electromagnetic ballasts need more iron and copper.

Page 9, paragraphs 37 and 38. These are about the ELI program. Here what is missing is “what are the lessons learned in implementation of ELI Philippines?” “what new barriers were identified, or could not be fully addressed by ELI Philippines?”

Page 11, paragraph 44. You mention the lessons learned from ELI, but do not state anywhere what these lessons are. You mention just above the figure that “New EEL distribution channels and market segments will be created” but never state whether these were identified by ELI as

the roadblocks that ELI could not address! Why did ELI fail to create a sustainable market transformation? And why do you think this project will do so? These are the critical questions you must answer here.

Page 12, paragraph 46. There are NO major increases in adverse environmental impacts of going from T12 lamps to T8 lamps, from low efficiency ballasts to high efficiency ballasts, and from low efficiency luminaires to high efficiency luminaires. The only increase in mercury in the waste stream comes from replacing incandescents with CFLs. Thus, this paragraph seems a bit exaggerated in its concerns.

Page 12, paragraph 48. item c). Consumers in advanced industrial countries are also not warned of the mercury content of CFLs when they purchase them. Primarily because the risk of exposure is low. This again seems like creating a concern where perhaps there is not enough cause for one.

Page 14, paragraph 49. Last 7 lines. The reader needs to know: “why do you think you will succeed this time, when others failed earlier?”

Page 14, paragraph 53. Suggest you clearly use the words “is estimated” in place of “will” in the first line. What are your confidence intervals on these predictions?

Page 15, paragraph 55. First line. Suggest clarify if the energy savings are “Cumulative” or “Annual”.

Page 15, paragraph 56. Suggest quantify monetary savings rather than just saying there will be such savings for households.

Page 16, paragraph 58. Suggest insert the word “cumulative” before the work “amount” in the second line, for improved clarity.

Page 16, paragraph 60. This paragraph gives estimates of future impact of implementing the project, in the last 3 lines. What is the basis of these estimates?

Page 19, top 4 lines. Need to state somewhere clearly why ELI was inadequate, and why Govt. of Philippines can’t undertake these activities by their own resources.

Page 19, section (e). Sentence beginning “Voluntary agreements...” is unclear. Needs rewriting in clear English.

Page 23, section (vi). How will you ensure fairness in selection of the enterprises you will help?

Page 23, section (c) subsection (i). Delete word “of” from first line.

Page 27, paragraph 66, section (b). Why do you think that you are addressing a bottleneck or a barrier by development of the two model contracts? There are no functioning ESCOs in the country as you mention earlier. Reference a study that says that the lack of the model contract is a significant barrier worth addressing.

Page 41, Table at top of the page. Why should one use values “without pollution control devices installed”? Why are such values relevant to environmental impact? One would think that emissions *after* pollution control devices are the relevant ones.

A.2. Responses to First STAP Review

The STAP Reviewer provided constructive comments and some specific issues. Below are the responses to the specific issues raised by the STAP Reviewer. References to the specific locations in the project brief are also included for each response. All other comments, (e.g., editorial/typo corrections) were accepted and taken care of in the revision of the project brief.

Issues and Response	Reference
<p>PELMATP MUST DISTINGUISH ITSELF FROM THE ELI PROJECT</p> <p>Issue: <i>The project must distinguish itself from ELI and must persuasively argue that it is the next logical step to ELI.</i></p> <p>Response: The ELI program in the Philippines primarily focused on adoption of compact fluorescent lamps (CFL). PELMATP will build on the major accomplishments of the ELI Program on CFL and will cover other energy efficient lighting (EEL) systems such as linear fluorescent and HID lamps, ballasts and luminaires. In addition, PELMATP will address the application of EELs not only in the residential and small and medium enterprises but also in the commercial and industrial establishments. It will make use of the policies, frameworks and pilot projects laid out under the ELI Program, with modifications where needed, along with jumpstarting the wider implementation, up scaling and/or replication thereof. Further, PELMATP will reinforce the existing linkages among the various key industry players in order to ensure success of the project.</p>	<p>PB: Paragraphs 36 to 41</p>
<p>CLEAR NOTE OF THE TENTATIVENESS OF ESTIMATION OF CO₂ AVOIDED AND OTHER ENGINEERING ESTIMATES</p> <p>Issue: <i>Occasional presentation of engineering estimates with high accuracy (3, 4 or even 6 digit accuracy) is not warranted by science and engineering. Confidence of about 1 part in 10 is justified and would be adequate</i></p> <p>Response: Relevant figures were rounded off to take into consideration the staff reviewer comments. Suggestion was considered in the project brief.</p>	<p>Various portions of the project brief where numerical data are quoted.</p>
<p>ENVIRONMENTAL IMPACT</p> <p>Issue: <i>The proposal makes the issue of the mercury content of fluorescent lamps too strong. Though it is desirable to properly address the mercury issue, it is not a big environmental threat and therefore must not be over exaggerated</i></p> <p>Response: The paragraphs presenting environmental impacts of PELMATP were revised to tone down the statements.</p>	<p>PB: Paragraphs 33, 50 C, 65 h, 69</p>
<p>CFL IS AN EXAMPLE OF NON-FLUORESCENT LAMP</p>	

Issues and Response	Reference
<p>Issue: <i>STAP Reviewer indicates that CFL are fluorescent lamps</i></p> <p>Response: This was an inadvertent mistake. Necessary correction on the summary was made.</p>	<p>PB: Cover page: Section 2 – Summary</p>
OVERALL STYLE	
<p>Issue: <i>The proposal uses too many acronyms. The STAP reviewer suggested avoiding using acronyms unless used at least three times in the text. Inclusion of several words/phrases was recommended to improve clarity of the report.</i></p> <p>Response: Suggestions were incorporated in the project brief.</p>	<p>Various portions of the project brief where names of specific institutions and terms are repeatedly mentioned.</p>
USE OF INCANDESCENT LAMPS IN RURAL HOUSEHOLDS	
<p>Issue: <i>STAP Reviewer presented that another reason rural household prefer incandescent lamps is that these lamps work even with voltage sags common in rural power.</i></p> <p>Response: Suggestion incorporated in the project brief.</p>	<p>PB: Paragraph 20</p>
HIGH COST OF ENERGY EFFICIENT ELECTROMAGNETIC BALLAST	
<p>Issue: <i>Unclear why the electromagnetic ballast manufacturers are citing problems of high cost, as they need more iron and copper.</i></p> <p>Response: As stated in the project brief, there are three factors identified, which manufacturers consider as barriers: high cost of imported raw materials, labor and electricity. Thus, even if the cost of iron and copper may become reasonable, there are still the high costs for labor and electricity. Also, most components used for electronic ballasts are imported and are expensive.</p>	<p>PB: Paragraph 29</p>
SUCCESS OF PELMATP	
<p>Issue: <i>STAP Reviewer would like to know why the PELMATP would succeed this time, when others failed earlier.</i></p> <p>Response: The PELMATP includes activities that are aimed at creating an enabling environment and reinforce the linkages among stakeholders to ensure success and sustainability of transformation. It will provide activities on development/improvement of policies related to EEL, building of technical capacity of the government and the private sector to implement EEL systems, improvement of consumer awareness, and provide assistance on financing and waste management. The project will have larger coverage than the previous similar efforts that were carried out in the country, hence, a more significant impact. Through DOE's collaboration with the Philippine Economic Zone Authority (PEZA) and other industrial zones, and through its Partnership for Energy Responsive Companies (PERC) program, PELMATP would be able to effectively work with the commercial and industrial sectors in the promotion of EEL systems. One of the important aspects of EEL promotion is financing, which previous efforts were not</p>	<p>PB: Paragraphs 51 to 54</p>

Issues and Response	Reference
<p>able to successfully address. PELMATP includes relevant activities that would promote financing, and provide financing assistance to, purchase of EEL products and implementation of EEL system projects. These activities consider the lessons learned from previous financing programs on EEL projects and other EC&EE projects.</p>	
BASIS OF ESTIMATES OF FUTURE IMPACT OF IMPLEMENTING THE PROJECT	
<p>Issue: <i>Basis of estimates the increases in utilization of EELs in various sectors.</i></p> <p>Response: The basis of estimates were based on the penetration rates of the EEL technologies as recorded in the National Statistics Office and the Department of Trade and Industry and applied to the shift in project electricity consumption per sector. Baseline estimates were based on the market survey conducted during the preparation of PDF B.</p>	PB: Paragraph 62, Annex F
FAIRNESS IN SELECTION OF ENTERPRISES	
<p>Issue: <i>Ensuring fairness in selection of enterprises that will be helped.</i></p> <p>Response: As part of the project activities, a set of criteria will be formulated. On improvement of lighting product quality and manufacturing, two EEL manufacturing firms were pre-selected as they expressed their interest and participation in this activity. The two firms committed to co-finance this PELMATP sub-activity.</p>	PB: Paragraphs 66 b-v, b-vi, 66 g-ii
ESCO CONTRACT MODELS	
<p>Issue: <i>Reference a study that says that the lack of the model contract is a significant barrier worth addressing</i></p> <p>Response: Other than the references cited in Paragraph 16 of the report, consultations with stakeholders during the PELMAT PDF-B preparation indicate that lack of model contract is one of the major causes of failure of ESCO transactions.</p>	PB: Paragraphs 68 b, 16 Annex E; Item M
POLLUTANT EMISSIONS	
<p>Issue: <i>Pollutant emissions values presented in the report based on “without pollution control devices installed”. One should think that emissions after pollution control devices are the relevant ones.</i></p> <p>Response: All diesel-based power plants and boilers installed in the Philippines do not have pollution control devices. Likewise, coal fired plants do not employ pollution abatement technologies except for one power plants in Northern Luzon. Projected pollutant emissions until 2012 were also based on “without pollution control devices installed” as clean coal technologies and low sulfur fuels are becoming more popular. It must be noted that the projected emissions were still based on emission factors derived from convention fossil fired power plants. Penetration rates of new technologies in the country are uncertain.</p>	Annex A – Incremental Cost Analysis

B. SECOND STAP REVIEW

B.1. Comments:

1. In general I think this is an important and well-designed project, and one with a high likelihood of success. I recommend that it be funded. In addition, I have the following comments regarding potential refinements to the project design.
2. There appears to be one inconsistency in the proposal. Section 16 on p. 5 explains that there are no ESCOs operating in the Philippines. But reference is made to use of ESCOs throughout the project components sections. It would be reasonable to foster the creation and use of ESCOs as part of the project, but reliance on ESCOs should be approached with care if it is true that full-fledged ESCOs still do not exist in the country.
3. The energy savings goals, namely cutting lighting electricity use nearly 20% by 2008 and by about one-third by 2012, are very ambitious but achievable. However, the project will need to be well-implemented and highly effective in order to achieve this high level of energy savings in my opinion.
4. Regarding Components 1 c) and d), if possible, I suggest developing and adopting minimum efficiency standards that are mandatory for key lighting products such as incandescent lamps, fluorescent lamps, ballasts, CFLs, etc. Mandatory efficiency standards on such products have been adopted in other countries including the U.S. Japan, South Korea, and Mexico. Also, the Philippines has adopted mandatory efficiency standards on other products such as room air conditioners. Adopting mandatory standards should lead to much greater energy savings than voluntary standards, thereby helping to meet the ambitious energy savings goals. Also, the mandatory standards should apply to imported as well as domestically produced lighting products, and a strategy should be developed to ensure that imported products meet the standards. NOTE: It is not clear from the discussion on pp. 20-21 if the lighting product standards will be voluntary or mandatory.
5. The background discussion mentioned that the presence of low-quality imported CFLs is a problem. Therefore, I suggest creation of a labeling and certification program, like the U.S. Energy Star program, to designate higher quality CFLs and other major lighting products. This labeling and certification program could be implemented along with minimum performance standards (i.e., the standards would set the floor on efficiency and other characteristics, but the "Energy Star" label would designate better quality products.) Market research could be carried out to develop a well-understood and popular logo and name for the "Energy Star" label in the Philippines. This two-pronged approach is successfully used in other countries.
6. Regarding Component 1 f), the application of EELs in government facilities is a good idea. This makes sense as an energy and money savings strategy for the government, and can help build the market for EELs and for ESCOs. Perhaps the federal government could be asked to commit to carrying out lighting retrofits in some minimum number of federal buildings (say at least 5 to 10 buildings), making use of ESCOs if necessary.

7. Regarding Component 2 a) v), the collection of manufacturing and market data on EELs is important in order to know what overall impact the project is having, as well as to get a sense of where the energy savings opportunities are. I suggest attempting to get the PLIA to agree to collect and provide annual shipment data (national totals) for key products such as CFLs, electronic ballasts, high efficiency fluorescent tube lamps, high pressure sodium lamps, etc. Funding for cooperative projects with the PLIA and to local lighting manufacturers could be predicated on provision of this data.
8. Regarding Component 2 b), developing local manufacturing capability for EELs, I suggest that promotion of licensing and joint ventures be added to Component 2 of the project. The project could sponsor trade missions and facilitate business partnering between Philippine and foreign lighting product manufacturers. Similar activities could be undertaken with respect to bringing international ESCOs to the country.
9. Regarding Component 2 c, promoting EELs through utility activities, first I suggest encouraging utilities to purchase EELs in bulk and sell them to consumers at cost or at a slight profit. Utilities, for example, could offer residential consumers CFLs and charge for them through the utility bill, say in a 24 month period. Also, utilities could offer to finance energy-efficient lighting retrofits carried out by businesses, and could provide businesses assistance via audits and identification of qualified contractors. This would be a relatively simple and straightforward way to finance EELs for consumers, and is done by many utilities in other countries. Also, it would be much easier to do than setting up new financing mechanisms.
10. Regarding Component 2 c.iv, the development of street lighting guidelines, I suggest considering developing mandatory efficiency standards, not just guidelines, concerning street lighting. This could save much more energy than promulgating voluntary guidelines.
11. Regarding Component 2 f), promotion of mass purchasing, the public sector should also be included. I suggest setting a target of getting at least 3 public agencies to agree to purchase EELs in bulk and hopefully at a discount.
12. Regarding Components 2 g) and h), I suggest preparing case studies of existing EEL projects in both the industrial and commercial sectors, not just case studies of new projects. No doubt there are many examples of efficient lighting that have already been implemented in the country that could be analyzed and promoted.
13. Regarding Component 3 c), I suggest implementing EELs in schools, not just including EEL training in school curricula. School lighting efficiency projects are highly visible and can also enhance student performance (i.e., studies in the U.S. have shown that day lighting projects in public schools lead to improved learning and student test performance).
14. Regarding Component 4 a), I am skeptical about the ability to develop practical and cost-effective micro-financing for EELs for households. In all likelihood, the transaction costs will be too high. I suggest that this sub-component be dropped and replaced by working with utilities to supply and finance EELs to households.
15. Regarding Component 4 c), establishing a financing scheme for major EEL projects, the

goal of a \$3.9 million project portfolio is ambitious but possible for a country as large as the Philippines. One way to facilitate project financing could be to establish a loan guarantee fund for major EEL projects. I don't know the situation in the Philippines, but loan guarantee requirements are often onerous and an obstacle to practical financing for energy efficiency projects in other developing countries. If this is an obstacle in the Philippines, it may be possible for the GOP to set up a guarantee fund for EEL projects (and possibly other energy efficiency projects).

16. Regarding project risks, first I suggest that obtaining a commitment to retrofit X number of government buildings as another way to mitigate the risk of Insufficient Support from the Government. Second, I consider the technology risk to be low (not moderate) in the case of EELs. In general, the energy savings from EEL projects is highly certain.
17. Regarding the project budget, I suggest considering increasing the amount and fraction of the budget dedicated to policies, standards and guidelines. This is a key area that can result in large energy savings, and it deserves more than 5% of the total budget in my opinion.
18. Given that household electrification is still underway in the Philippines, consideration should be given to requiring that all newly electrified households have EELs such as more efficient fluorescent tube lamps and CFLs, prior to getting an electricity connection. If necessary, the EELs could be subsidized by utilities as part of their DSM programs. This strategy should be cost effective and should create significant markets for EELs where electrification is occurring.
19. I agree with the previous reviewer that the issue of mercury pollution from EELs and waste management is overblown. As the review pointed out, mercury (or other hazardous waste) is only increased when CFLs replace incandescent lamps, and levels of mercury in fluorescent lamps are declining. I strongly suggest scaling back this part of the project, and cutting the budget allocation in this area by at least 50%.
20. The monitoring and evaluation plan is well conceived in my opinion.
21. The incremental cost and environmental analyses appear to be sound and reasonable

B.2. Response to Second STAP Review

Issues and Response	Reference
Comment 1: <i>In general I think this is an important and well-designed project, and one with a high likelihood of success. I recommend that it be funded. In addition, I have the following comments regarding potential refinements to the project design.</i>	
Comment 2: <i>There appears to be one inconsistency in the proposal. Section 16 on p. 5 explains that there are no ESCOs operating in the Philippines. But reference is made to use of ESCOs throughout the project components sections. It would be reasonable to foster the creation and use of ESCOs as part of the project, but reliance on ESCOs should be</i>	

Issues and Response	Reference
<p><i>approached with care if it is true that full-fledged ESCOs still do not exist in the country.</i></p> <p>Response: There are full-fledged ESCOs existing in the country but have failed to have successful contracts with commercial and industrial establishments due to: (1) lack of knowledge on energy performance contracting by C&I establishments; (2) lack of monitoring and evaluation procedures for monitoring and evaluation of performance-based contract projects; and, (3) lack of financial resources.</p> <p>This project will enhance the awareness of C&I establishments and eventually build their confidence by introducing them to ESCO transactions and demonstrating the benefits derived from ESCOs. Promotion of partnerships between ESCOs and engineering companies, construction firms, and/or finance companies will also be done under PELMATP.</p> <p>An example of a full-fledged ESCO in the country is the CPI Energy Phils., Inc., which agreed to co-finance the project in the amount of US300,000.00.</p>	<p>Para 16 & 51.m</p> <p>Para 67.g.i, 67.h, and 69.b.iii</p> <p>Para 88</p>
<p>Comment 3: <i>The energy savings goals, namely cutting lighting electricity use nearly 20% by 2008 and by about one-third by 2012, are very ambitious but achievable. However, the project will need to be well-implemented and highly effective in order to achieve this high level of energy savings in my opinion.</i></p> <p>Response: Proponent agrees. Provisions for effective implementation are included in the project brief.</p>	<p>Para 71-92</p>
<p>Comment 4: <i>Regarding Components 1 c) and d), if possible, I suggest developing and adopting minimum efficiency standards that are mandatory for key lighting products such as incandescent lamps, fluorescent lamps, ballasts, CFLs, etc. Mandatory efficiency standards on such products have been adopted in other countries including the U.S. Japan, South Korea, and Mexico. Also, the Philippines has adopted mandatory efficiency standards on other products such as room air conditioners. Adopting mandatory standards should lead to much greater energy savings than voluntary standards, thereby helping to meet the ambitious energy savings goals. Also, the mandatory standards should apply to imported as well as domestically produced lighting products, and a strategy should be developed to ensure that imported products meet the standards. NOTE: It is not clear from the discussion on pp. 20-21 if the lighting product standards will be voluntary or mandatory.</i></p> <p>Response: The project intends to develop and adopt minimum energy efficiency standards (for lighting) for mandatory implementation. This is implied in Para 66c. The word “mandatory” has been inserted in Paragraph 66.d, as follows: “The activity will involve the <u>mandatory</u></p>	<p>Para 66.c and 66.d</p>

Issues and Response	Reference
<p>implementation of the developed MEPS...”</p> <p>Comment 5: <i>The background discussion mentioned that the presence of low-quality imported CFLs is a problem. Therefore, I suggest creation of a labeling and certification program, like the U.S. Energy Star program, to designate higher quality CFLs and other major lighting products. This labeling and certification program could be implemented along with minimum performance standards (i.e., the standards would set the floor on efficiency and other characteristics, but the “Energy Star” label would designate better quality products.) Market research could be carried out to develop a well-understood and popular logo and name for the “Energy Star” label in the Philippines. This two-pronged approach is successfully used in other countries.</i></p> <p>Response: Agree. At present, the Philippines has an ongoing labeling program for CFLs, which required the same to carry an energy label that would show the light output, power rating, efficacy (efficiency) and average life in hours. The energy label aims to allow buyers to compare the different CFL, models in the market and select the more efficient one.</p> <p>Under the project, labeling and certification will become part of the development and implementation of the lighting product standards.</p> <p>The proponent agrees that a well understood and popular logo to symbolize high efficiency and quality could be implemented side by side with the minimum performance standards. In this regard, the first sentence of paragraph 66.a has been revised to read as follows: “A multi-sectoral group will be created to review, integrate, recommend, and update policies, standards, guidelines and programs <u>including the adoption of an endorsement label</u> related to promotion of EEL.”</p>	<p>Para 66.c and 66.d</p> <p>Para 66.a</p>
<p>Comment 6: <i>Regarding Component 1 f), the application of EELs in government facilities is a good idea. This makes sense as an energy and money savings strategy for the government, and can help build the market for EELs and for ESCOs. Perhaps the federal government could be asked to commit to carrying out lighting retrofits in some minimum number of federal buildings (say at least 5 to 10 buildings), making use of ESCOs if necessary.</i></p> <p>Response: Agree. Paragraph 42 has been expanded to include the following statement: GSPEL is a joint government-private undertaking initiated and led by PLIA. GSPEL stands for Government Standards and Policies on Efficient Lighting and is meant to promote energy efficiency in government buildings and street lighting.</p> <p>Component 1f has been revised as follows: ... This will showcase the technical and financial feasibilities of EELs, study and develop procedural changes associated with procurement standards and contracting (i.e., ESCOs) and assessment of benefits derived from the</p>	<p>Para 42</p> <p>Para 66.f</p>

Issues and Response	Reference
<p>activity. A pilot study will be carried out in a government school building ...The results of the pilot study will be disseminated to other LGUs and line agencies of the government and will serve as an input to the preparation and issuance of a procurement policy (in the form of an Executive Order) that will mandate all government offices to include energy efficiency as one of the criteria in the procurement of lighting products. Further, the project shall get the commitment of at least 5 government offices to carry out lighting retrofits.</p>	
<p>Comment 7: <i>Regarding Component 2 a) v), the collection of manufacturing and market data on EELs is important in order to know what overall impact the project is having, as well as to as get a sense of where the energy savings opportunities are. I suggest attempting to get the PLIA to agree to collect and provide annual shipment data (national totals) for key products such as CFLs, electronic ballasts, high efficiency fluorescent tube lamps, high pressure sodium lamps, etc. Funding for cooperative projects with the PLIA and to local lighting manufacturers could be predicated on provision of this data.</i></p> <p>Response: DOE fully agrees on the importance of market data. DOE shall coordinate with BPS and PLIA regarding this activity. Para. 67 b.i. has been revised as follows:</p> <p><i>Establishment of a Comprehensive Database of Lighting Product Manufacturers and Market Data on EELs.</i> This activity will involve the improvement of the existing database of PLIA. Data will include annual production, imports and exports and sales volume of EEL products. PLIA and lighting manufacturers/importers/distributors that will be involved in cooperative projects under PELMAT shall be required to provide the aforementioned data. <i>GEF support is necessary</i></p>	<p>Para 67.b.i.</p>
<p>Comment 8: <i>Regarding Component 2 b), developing local manufacturing capability for EELs, I suggest that promotion of licensing and joint ventures be added to Component 2 of the project. The project could sponsor trade missions and facilitate business partnering between Philippine and foreign lighting product manufacturers. Similar activities could be undertaken with respect to bringing international ESCOs to the country.</i></p> <p>Response: Agree. Para. 67 b.iv has been expanded to include the following statement:</p> <p>“PELMATP, in coordination with PLIA shall sponsor trade missions and facilitate business partnering between Philippines and foreign lighting product manufacturers.”</p>	<p>Para 67.b.iv</p>
<p>Comment 9: <i>Regarding Component 2 c, promoting EELs through utility activities, first I suggest encouraging utilities to purchase EELs in bulk and sell them to consumers at cost or at a slight profit. Utilities, for example, could offer residential consumers CFLs and charge for them</i></p>	

Issues and Response	Reference
<p><i>through the utility bill, say in a 24 month period. Also, utilities could offer to finance energy-efficient lighting retrofits carried out by businesses, and could provide businesses assistance via audits and identification of qualified contractors. This would a relatively simple and straightforward way to finance EELs for consumers, and is done by many utilities in other countries. Also, it would be much easier to do than setting up new financing mechanisms.</i></p> <p>Response: It could have been easier if the DSM framework is already in place. Then, utilities would expectedly purchase EELs in bulk and sell them to consumers, as previously done. Pending the approval of the DSM framework, the project could encourage utilities such as MERALCO to venture into such an activity. With the implementation arrangement envisioned in the project, where MERALCO is a member of the PELMATP Technical Working Group, which is co-chaired by PLIA, and considering the commitment of MERALCO under NACEEL, there is much hope that the scheme as suggested would not be far-fetched.</p> <p>Component 2 Activity c.iii will develop, design implement and promote an EEL product leasing model through utilities and RECs for households.</p> <p>When the DSM Framework is in place, the utilities will be assisted in preparing DSM Plans considering all applicable and cost effective EEL application activities.</p>	<p>Para 79</p> <p>Para 67.c.iii</p> <p>Para 67.c.i & ii</p>
<p>Comment 10: <i>Regarding Component 2 c.iv, the development of street lighting guidelines, I suggest considering developing mandatory efficiency standards, not just guidelines, concerning street lighting. This could save much more energy than promulgating voluntary guidelines.</i></p> <p>Response: Agree. The first sentence of said paragraph Component 2 c.iv has been revised to read: “PELMATP in collaboration with PLIA-GSPEL shall develop mandatory efficiency standards and guidelines for the use of EELs in street lighting.”</p>	<p>Para 67.c.iv</p>
<p>Comment 11: <i>Regarding Component 2 f), promotion of mass purchasing, the public sector should also be included. I suggest setting a target of getting at least 3 public agencies to agree to purchase EELs in bulk and hopefully at a discount.</i></p> <p>Response: The procurement of EELs by the public sector is addressed in Paragraph 66.f, which is about the design and piloting of the implementation of mass purchasing agreements between government/private sector and manufacturers/importers of EEL products. demonstration of the benefits of the adoption of EELs. An executive order on procurement policy for the conversion of government lighting systems to EEL is an expected output of the project.</p>	<p>Para 66.f</p> <p>Annex B, Item 1.6.1</p>
<p>Comment 12: <i>Regarding Components 2 g) and h), I suggest preparing case studies of existing EEL projects in both the industrial and</i></p>	

Issues and Response	Reference
<p><i>commercial sectors, not just case studies of new projects. No doubt there are many examples of efficient lighting that have already been implemented in the country that could be analyzed and promoted.</i></p> <p>Response: Agree. Component 2 g.i has been expanded to include the following statement: “It will also involve preparation of case studies of existing EEL projects in the country.” The same statement holds true for Component 2 h.</p> <p>Component 3, EEL Applications Consumer Awareness Improvement Program (Paragraph 68) includes sub-activities where past and current EEL projects can be analyzed, presented and promoted specifically during the Conduct of Annual Lighting Industry Convention (i.e., annual meetings of concerned organizations/individuals in the lighting industry to exchange information on EEL technologies, business opportunities, success stories, etc.) and Consolidation of Information on EEL Systems (i.e., success stories on past and current EEL technology applications, and emerging technologies, etc).</p>	<p>Para 67.g</p> <p>Para 68.a.i Para 68.b</p>
<p>Comment 13: <i>Regarding Component 3 c), I suggest implementing EELs in schools, not just including EEL training in school curricula. School lighting efficiency projects are highly visible and can also enhance student performance (i.e., studies in the U.S. have shown that day lighting projects in public schools lead to improved learning and student test performance).</i></p> <p>Response: This has been addressed in Component 1 f) which says the use of EELs will be carried out in a government school building in the City of Malabon.</p>	<p>Para 66.f</p>
<p>Comment 14: <i>Regarding Component 4 a), I am skeptical about the ability to develop practical and cost-effective micro-financing for EELs for households. In all likelihood, the transaction costs will be too high. I suggest that this sub-component be dropped and replaced by working with utilities to supply and finance EELs to households.</i></p> <p>Response: DOE would like to retain Component 4 a) as this is doable. ELI has already done initial work here, for example, a memorandum of agreement was signed between ELI and the Metro Manila Federation of Consumer Cooperatives where the latter indicated interest to serve as distribution channel for CFLs.</p> <p>The project brief, as mentioned in Response number 9 above has provided for EEL product leasing for households through utilities.</p>	<p>Annex H, Item 11</p>
<p>Comment 15: <i>Regarding Component 4 c), establishing a financing scheme for major EEL projects, the goal of a \$3.9 million project portfolio is ambitious but possible for a country as large as the Philippines. One way to facilitate project financing could be to establish a loan guarantee fund for major EEL projects. I don't know the situation</i></p>	

Issues and Response	Reference
<p><i>in the Philippines, but loan guarantee requirements are often onerous and an obstacle to practical financing for energy efficiency projects in other developing countries. If this is an obstacle in the Philippines, it may be possible for the GOP to set up a guarantee fund for EEL projects (and possibly other energy efficiency projects).</i></p> <p>Response: DBP has already confirmed the availability of credit facilities in the amount of \$3.9 million. The loan guarantee fund, as suggested, would be assigned to the project Technical Working Group for consideration, during implementation.</p>	<p>Para 86 and 79</p>
<p>Comment 16: <i>Regarding project risks, first I suggest that obtaining a commitment to retrofit X number of government buildings as another way to mitigate the risk of Insufficient Support from the Government. Second, I consider the technology risk to be low (not moderate) in the case of EELs. In general, the energy savings from EEL projects is highly certain.</i></p> <p>Response: On the first suggestion, we have instead included under mitigating actions the following statement: The project, through GSPPEL, will develop a procurement policy in the form of an executive order by the Philippine President which would require all government offices to include energy efficiency as a criterion in the purchase of lighting products.</p> <p>On the second suggestion, the level of risk will be changed to low.</p>	<p>Para 71</p> <p>Para 71</p>
<p>Comment 17: <i>Regarding the project budget, I suggest considering increasing the amount and fraction of the budget dedicated to policies, standards and guidelines. This is a key area that can result in large energy savings, and it deserves more than 5% of the total budget in my opinion.</i></p> <p>Response: Agree. In consideration of Comment number 19, we shall reduce the GEF contribution for Component 5 by about 25%, equivalent to about \$50,000. This amount is transferred to Component 1, increasing the budget for this component from \$371,881 to \$421,881</p>	<p>Annex A – Para 20</p>
<p>Comment 18: <i>Given that household electrification is still underway in the Philippines, consideration should be given to requiring that all newly electrified households have EELs such as more efficient fluorescent tube lamps and CFLs, prior to getting an electricity connection. If necessary, the EELs could be subsidized by utilities as part of their DSM programs. This strategy should be cost effective and should create significant markets for EELs where electrification is occurring.</i></p> <p>Response: To require that all newly electrified households have EELs is a policy matter involving many stakeholders. This would be addressed by the project TWG. Subsidy by utilities will have to be studied carefully. This will assigned to the project TWG.</p>	<p>Para 66.a</p>
<p>Comment 19: <i>I agree with the previous reviewer that the issue of</i></p>	

Issues and Response	Reference
<p><i>mercury pollution from EELs and waste management is overblown. As the review pointed out, mercury (or other hazardous waste) is only increased when CFLs replace incandescent lamps, and levels of mercury in fluorescent lamps are declining. I strongly suggest scaling back this part of the project, and cutting the budget allocation in this area by at least 50%.</i></p> <p>Response: Please see response to Comment No. 17. The proponent reviewed the budget and came up with a reduction in the GEF budget allocation for Component 5 by 25%, which is equivalent to about \$50,000.</p>	<p>Annex A – Para 20</p>
<p>Comment 20: <i>The monitoring and evaluation plan is well conceived in my opinion.</i></p>	
<p>Comment 21: <i>The incremental cost and environmental analyses appear to be sound and reasonable</i></p>	

Annex E

Barriers to the Widespread Utilization of EEL Systems

The barriers to widespread utilization of energy efficient lighting (EEL) may be referred to as any of the contributing factors or problems getting in the way of efforts to promote and facilitate the widespread utilization of EEL systems in the country. The barriers were identified through secondary data collection and round table discussions, survey questionnaires, and the logical framework analysis workshop with key stakeholders in the lighting industry during the PDF-B exercise.

A. High Initial Cost of EEL Products

Re-lamping and/or replacing fixtures to save energy require higher investment cost. Households are price-sensitive and they continue to buy cheaper incandescent lamps, T12 fluorescent lamps, and/or lower-priced imitations and variants of certified energy efficient lighting products. A 50W incandescent bulb costs at an average of PHP 17 while an 11W CFL (with almost the same initial light output) costs PHP 190 (Figure F-1).

High initial cost of EELs discourages smaller commercial and industrial establishments to embark on energy savings activities. Replacing a 40W T12 halophosphor lamp with 36W T8-triphosphor lamp costs five (5) times. Low loss and electronic ballasts costs 8 and 10 times more than the electromagnetic ballasts while high pressure sodium lamps costs 3 times more than mercury lamps. Planned activities and cost allocation priorities are geared towards increase in sales and production.

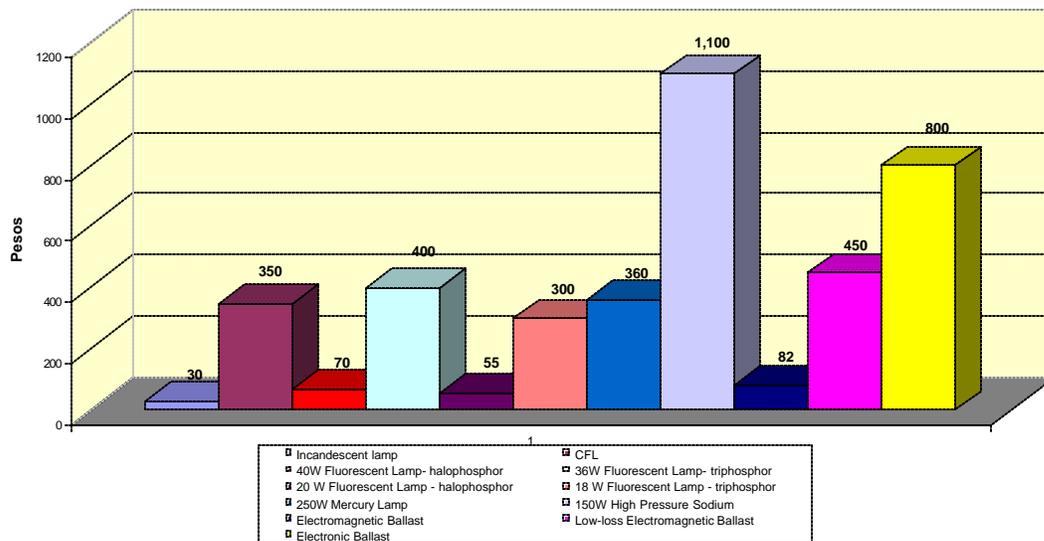


Figure E-1: Unit Prices of Lighting Product in the Market

B. Non-implementation of Government Incentives

One of the major constraints in the local production of lighting systems including energy efficient ones is the high cost of imported raw materials. The Omnibus Investment Code of

1987 (Executive Order 226) through the Investment Priority Plan (IPP), stipulates that incentives shall be provided to those pursuing compliance to multilateral agreements such as the United Nations Framework Convention on Climate Change (UNFCCC). However, applications for incentive are scarce due to lack of awareness by the investors and lack of clear and simplified guidelines on how to avail them.

C. Poor Protection of Consumers

The Consumer Act of the Philippines (RA 7394) provides rules/laws governing warranties on consumer products (Chapter III) and rules on labeling of consumer products that contains elements that pose health hazards (Chapter IV). For EEL products, no specific guidelines on warranty are in place. Consumers are not warned of health hazards associated with handling mercury-containing lamps in product packaging.

D. Poor Understanding of Use and Benefits of EEL Products

There is a wide range of choices from the family of EEL technologies each of which can have dramatically different technical and economic performance. Manufacturers and importers usually do not properly introduce new product variants to the market. Consumers cannot adequately understand and compare product specifications as to their use and benefits. This prevents them from making intelligent decisions for selection and purchase. More often, price becomes the primary consideration thus allowing low-priced but lower-quality products to dominate the market. This makes EEL products vulnerable to consumer criticism and dissatisfaction. Fair competition needs to be based on identifiable, clearly defined common references that can be understood by all industry players.

Households generally tend to rely on product tags/labels, buy the most popular brands, and/or buy the cheaper ones. Inability to assess price against performance causes customer dissatisfaction and skepticism. Households need to fully understand the application, advantages/disadvantages, and benefits of each of these technologies - incandescent lamps, CFL (integral and modular), fluorescent lamps (T12 and T8), and ballasts. Commercial and industrial building owners have limited knowledge on lighting maintenance and do not appreciate the full benefits derived from using EEL. They lack tools to determine the potential energy that can be saved in the long term of possible EEL options.

E. Building lighting system designers lack knowledge and simplified tools to calculate full benefits of using EEL products in new commercial and industrial establishments.

Building lighting system designers often decide which lighting system would satisfy building aesthetics and have the flexibility to propose least-cost options to the owners (whose primary concern is aesthetics and first cost). It is a shared belief that at present the country still lacks knowledgeable architects, engineers, contractors, and electricians on application of efficient lighting system. They are poorly equipped to advice building owners on the life cycle benefits of different EEL technologies available in the market.

F. Inadequate promotion and advocacy programs on application of EEL

The government and the private sector have not aggressively pursued the acceleration, development and application of EEL systems. Though DOE through its continuing Power

Patrol Program had adequately reached consumers in all sectors in the country since 1994, promotion of EEL is still inadequate. Promotion of EEL systems primarily focused on operational intervention (e.g., switching off unnecessary lights and cleaning) and on use of CFL and/or fluorescent lamps in lieu of incandescent bulbs and unsubstantial information on use and application of different types of EEL. Success stories on EEL application from past projects in both the government and the private sectors were inadequately disseminated. Non-government associations such as IIEE and ENMAP had so far provided diffused IECs. At present, there is poor coordination and no concerted effort among stakeholders to analyze market conditions, develop EEL products, provide financial incentives, and develop effective programs, strategies and education programs to promote EELs. Existing collaborative programs of DOE, such as Government Energy Management Programs (GEMP), Partnership for Energy Responsive EcoZones (PEREZ) and Partnership for the Energy Responsive Companies (PERC) Programs need to be strengthened on EEL use and applications.

G. Lack of locally assembled energy efficient luminaires

The industry needs dedicated manufacturers of energy efficient but economical luminaires for various applications and market needs. Fixture assemblers have to work with EEL importers and local manufacturers to develop and make affordable energy efficient fixtures widely available in the local market.

H. Poor quality of power supply

Ordinary fluorescent fixtures cannot be used where there are frequent abnormal voltage fluctuation and voltage surges. These problems do not only affect the performance of the light lamps and ballast but also shorten their lives. In most major urban areas, like Metro Manila, utilities can manage well the power supply quality. However, in rural areas where utilities or cooperatives are constrained to ensure the quality of power supply, locally available special ballasts that have wider voltage fluctuation tolerance must be made available.

I. Ineffective implementation of the DSM Framework

The few submissions of DSM Plans by electric utilities and cooperatives and the slow approval and response by ERC have basically put the implementation of DSM to a standstill. The major reasons are: lack of clear-cut and more responsive regulatory policy to encourage the promotion of the DSM program; restructuring of the power sector, utilities and cooperatives; and non-availability of funding for DSM Programs. Utilities and cooperative have shown difficulty in developing DSM plans and programs of activities. Bigger utilities like MERALCO, CEPALCO and VECO had been lukewarm on implementing their submitted DSM Plans and at present are on a “wait-and-see attitude”. As of 2002, the Revised DSM Framework is still awaiting approval by ERC. The present organizational structure of ERC does not have a specific functional unit directly involved in DSM. However, ERC will definitely continue its DSM mandate even with limited manpower and resources. Attention of both the utilities/cooperatives and ERC are at present focused on EPIRA and the deregulation activities.

J. Non-implementation of and outdated Building Energy Use Guidelines

The Building Energy Use Guidelines became a referral code of the National Building Code in 1994 and was never updated, thereafter. The general requirements of energy-efficient lighting

designs (Section 3.3) which includes efficacy ranges and the maximum lighting power densities were based on the conventional lighting products, such as incandescent, T12 fluorescent lamps and electromagnetic ballasts (Tables 3.2 to 3.6). The local government's building inspectors, building designers, contractors and owners ignored the Energy Use Guidelines, it only being a referral code to the National Building Code. Considering the significant increase in the construction of non-residential buildings from 1997 to 2001, with a total equivalent floor area of 9.7 million square meters to 4.65 billion square meters, the potential energy savings would be 2.3 GWh (assuming a modest decrease in lighting power index of 0.5 watts per square meter).

K. Inadequate EEL testing facilities

The only existing lighting performance testing facility in the country is inadequate to test the increasing number of EEL products in the market. The existing facility is a government-owned facility (DOE-LATL) and has constraints in expanding its capabilities due to insufficient resources. LATL needs to enhance its capability to meet the domestic testing demand in the next 10 years as well as to meet/serve the demands of regional harmonization building upon its experience as a global test site for CFL samples.

L. Insufficient monitoring and verification of products as to their compliance to PNS

DTI-BPS lacks resources and manpower to monitor, verify and enforce compliance of importers and manufacturers to Philippine National Standards.

M. Poorly developed ESCO transactions

The government and the private sector have not been fully successful in demonstrating highly visible ESCO transactions that includes project financing through energy savings. So far, ESCO transactions were only limited to providing technical services to commercial and industrial establishments that could afford to invest on energy efficiency. Poor understanding of energy performance contracting by financing institutions and commercial and industrial establishments causes lack of confidence and disinterest to ESCOs. For energy performance contracting to work in the Philippines, building owners and lenders need to learn more about how the process on performance contracting works and to experience first-hand local success stories. There is no mature industry for local ESCOs and stable sources for financing. Protocols and procedures for measuring and verifying energy savings are not available.

N. Lighting product manufacturers and consumers are unable to access financing for EELs

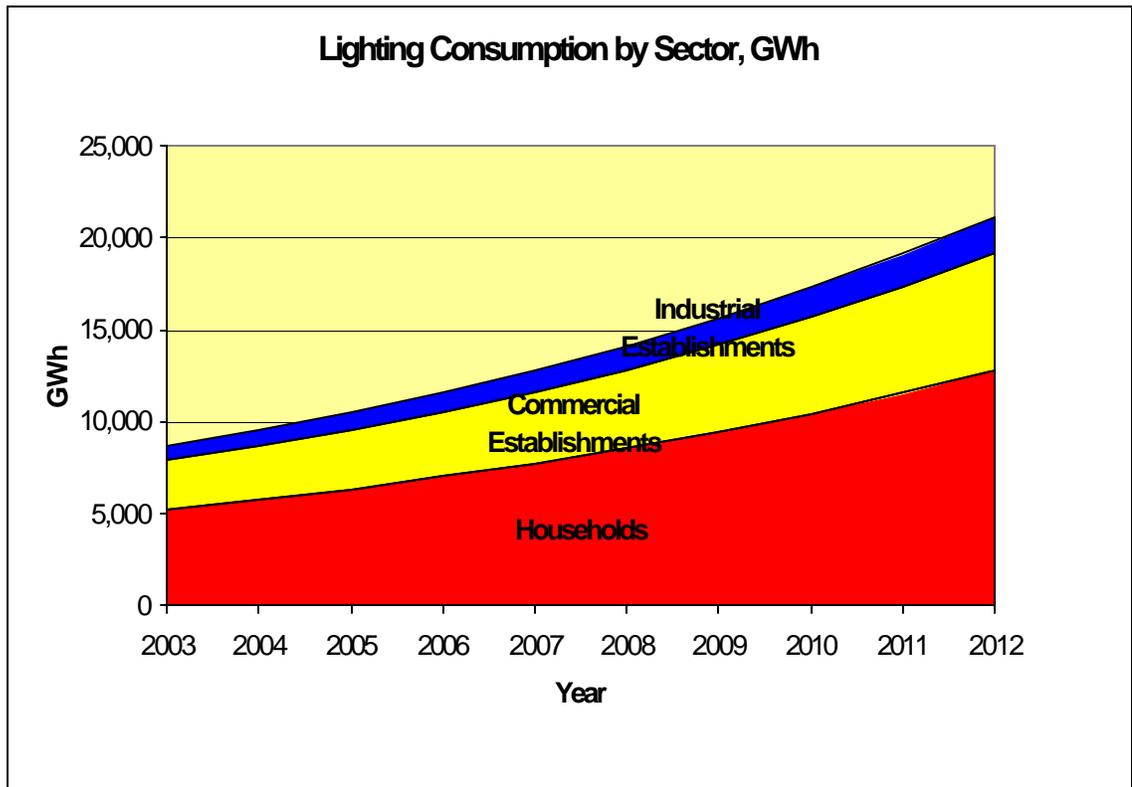
Lighting product manufactures and commercial and industrial establishments that need financing to implement EEL systems retrofits and product line expansion lack awareness and understanding of the existing financing windows from DBP and other financial institutions. The long list of requirements for compliance and the lack of ability to prepare project portfolios suitable for financing discourage the borrowers to avail funds and therefore, implementation of cash-strapped projects. Also, DBP and other financing institutions lack the experience and technical know-how on how to evaluate and develop EEL project portfolios.

Annex F

GREENHOUSE GAS EMISSIONS CALCULATION FOR BASELINE AND ALTERNATIVE SCENARIOS

1. Energy Data

- DOE data on projected electricity consumption in the Philippines were used to determine the electricity consumption of the household and commercial and industrial sectors.
- Electrical consumption by sector was based on the annual average % consumption from 1995 to 2001, as follows (in % of total electricity consumption in the Philippines): households, 27%; commercial establishments, 20%; and industrial, 30%.
- Lighting consumption by sector was based on the previous studies conducted (DOE HECs survey in 1995 and ELI Market Assessment in 2000) as follows (in % of electrical consumption by sector): 37% for households, 25% for commercial, and 5% for industrial.



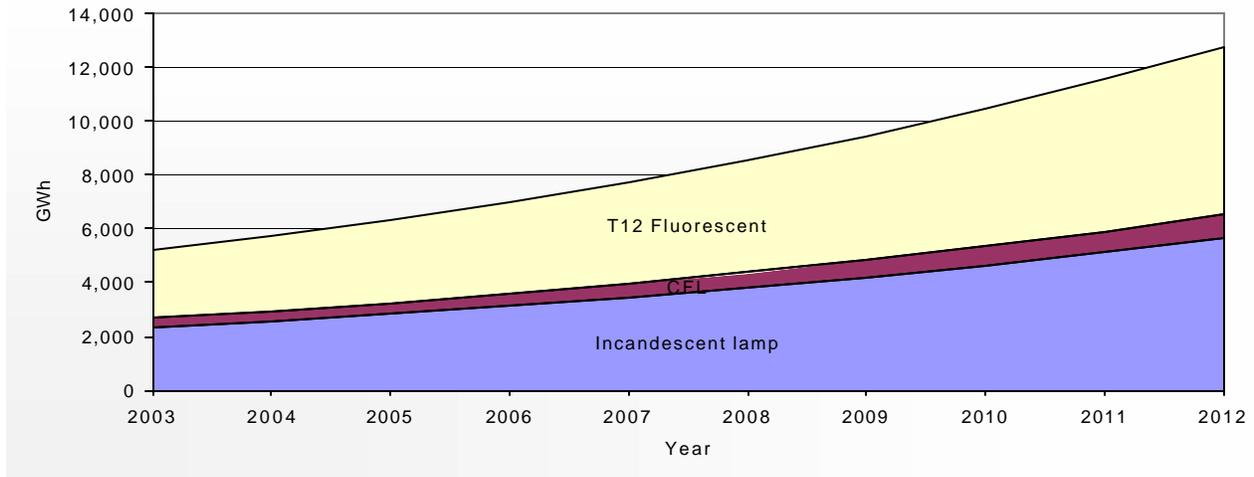
2. Lighting Technology Profile for Business-as-Usual Scenario

- The average percentages by types of lamps and ballasts used by households and commercial and industrial sectors were determined from the PELMAT 2002 survey. The percentages were used for calculation of electrical consumption in GWh by type of lighting technology in each sector for the business-as-usual scenario or baseline scenario.

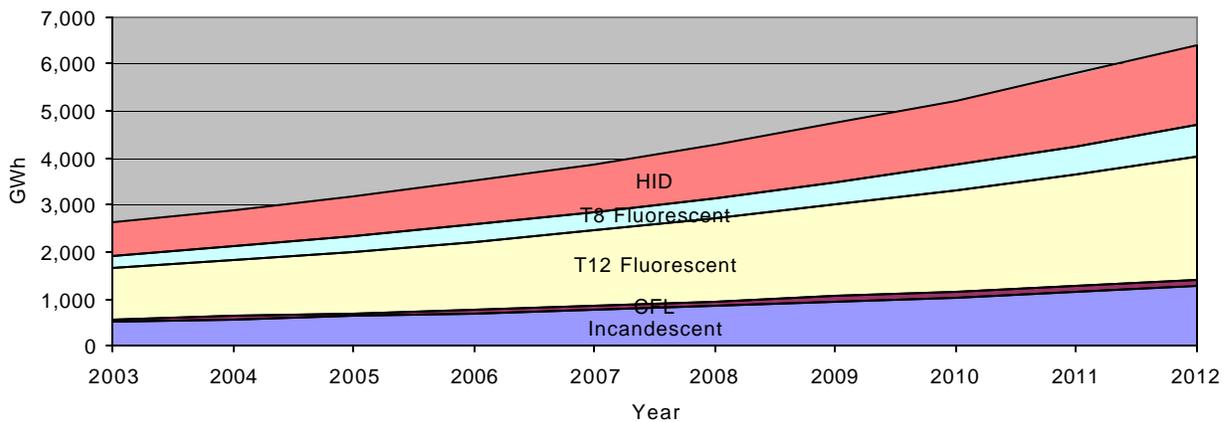
Types of lamps and ballasts used in households and commercial and industrial establishments

Sector	Percentage Distribution							
	Incandescent	CFL	T12	T8	HIDs	Total for Lamps	Electromagnetic ballasts	Low loss electromagnetic ballasts
Households	24	10	66	0	0	100	100	0
Commercial	21	7	54	15	3	100	73	27
Industrial	1	1	72	21	5	100	69	31

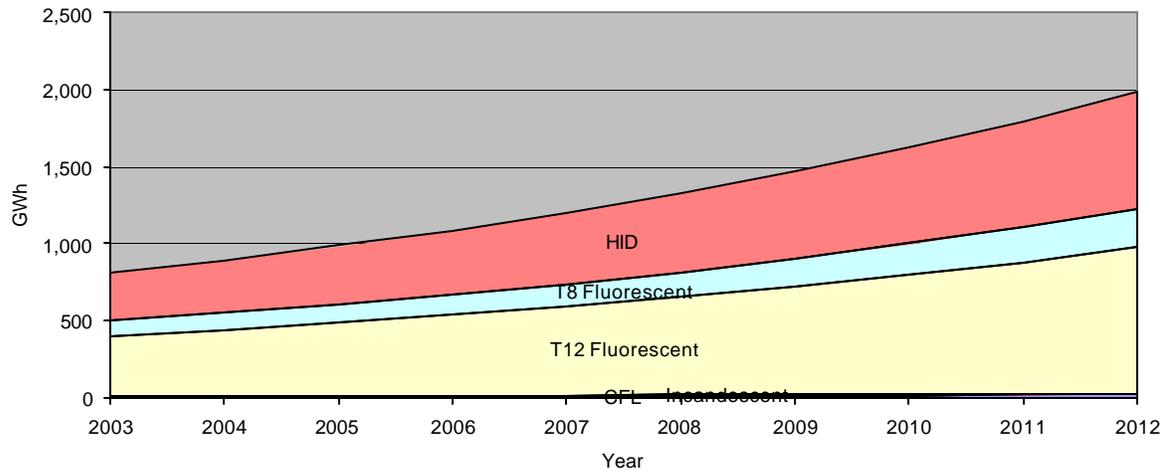
Electricity Consumption by Types of Lamp Used by Households
(Business-as-usual Scenario)



Electricity Consumption by Types of Lamp in Commercial Establishments
(Baseline Scenario)



Electricity Consumption by Types of Lamp in Industrial Establishments
(Baseline Scenario)



3. Lighting Technology Profile for the Proposed Alternative Scenario or with PELMAT

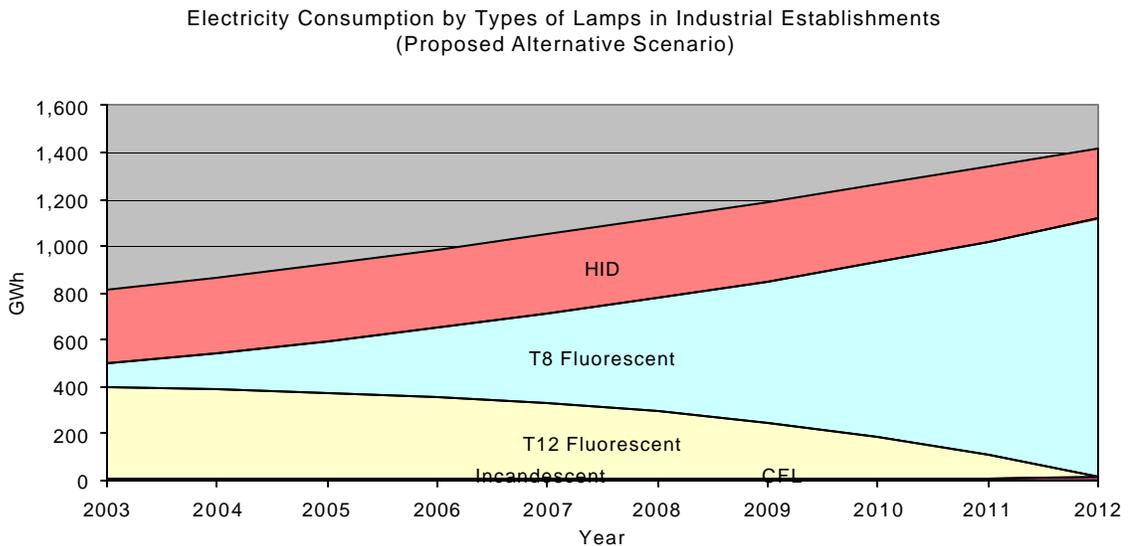
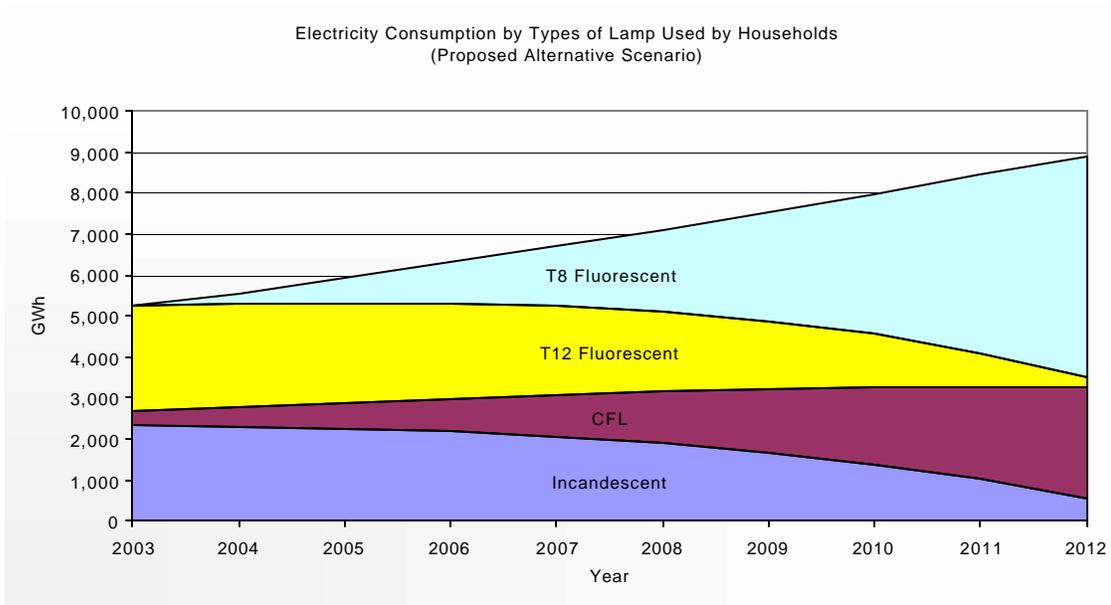
Lighting technology conversion projections were based on the historical trends in the application of conventional lighting systems and EELs from BPS data and National Statistics Office (NSO) data. Some data were also derived from the PDF-B exercise.

- For households:
 - 50% of the incandescent lamp is converted to CFL by the end of PELMATP and 90% by the end of the 10th year.
 - 53% of T12 is converted to T8 by the end of PELMATP and 95% by the end of the 10th year.
 - 54% of the electromagnetic ballasts converted to low-loss electromagnetic ballasts and 2% converted to electronic ballasts at the end of PELMATP. At the end of the 10th year, 70% of electromagnetic ballasts converted to low-loss electromagnetic ballasts and 30% converted to electronic ballasts.

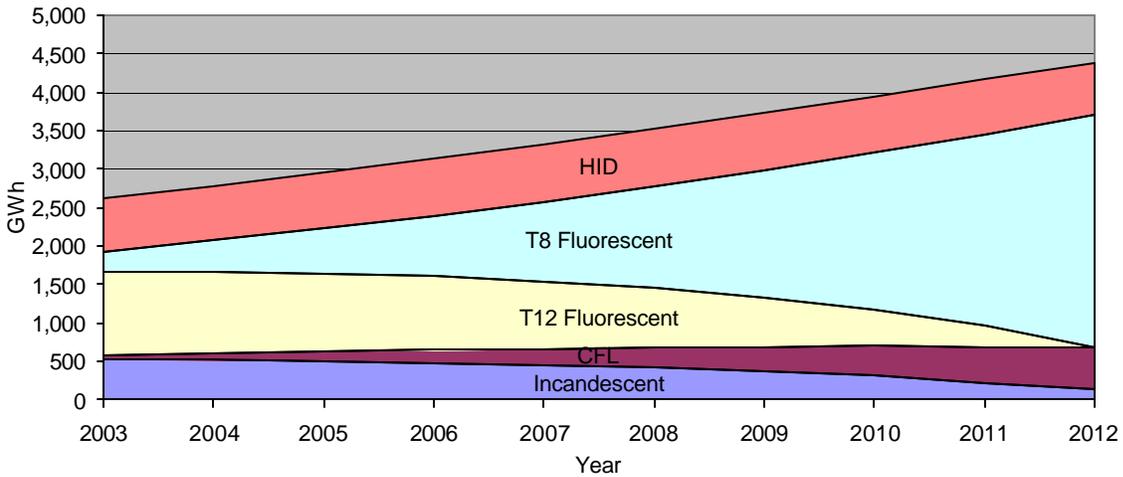
- For commercial establishments:
 - 50% of the incandescent lamp is converted to CFL by the end of PELMATP and 90% by the end of the 10th year.
 - 30% of T12 is converted to T8 by the end of PELMATP and 100% by the end of the 10th year.
 - 33% of HID–Hg lamps converted to HPS by the end of PELMATP and 60% by the end of the 10th year.
 - 43% of the electromagnetic ballasts converted to low-loss electromagnetic ballasts and 12% converted to electronic ballasts at the end of PELMATP. At the end of the 10th year, 70% of electromagnetic ballasts converted to low loss electromagnetic ballasts and 30% to electronic ballasts.

- For industrial establishments:

- 50% of the incandescent lamp is converted to CFL by the end of PELMATP and 90% by the end of the 10th year.
- 55% of T12 is converted to T8 by the end of PELMATP and 100% by the end of the 10th year.
- 40% of HID –Hg lamps converted to HPS by the end of PELMATP and 60% by the end of the 10th year.
- 39% of the electromagnetic ballasts converted to low-loss electromagnetic ballasts and 16% converted to electronic ballasts at the end of PELMATP. At the end of the 10th year, 70% of electromagnetic ballasts converted to low loss electromagnetic ballasts and 30% to electronic ballasts.

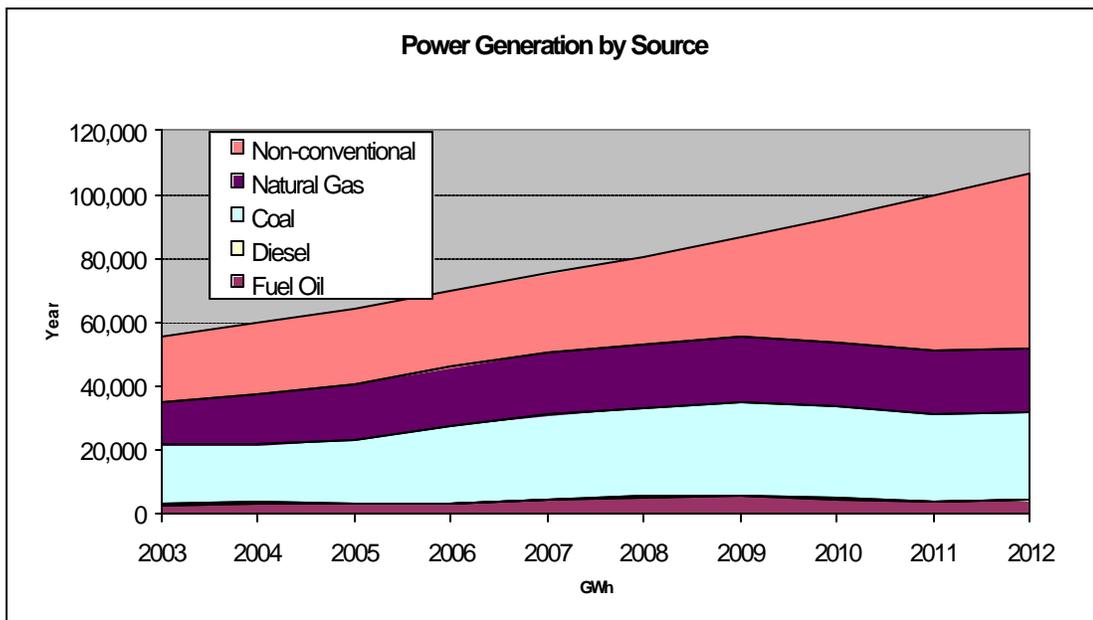


Electricity Consumption by Types of Lamp in Commercial Establishments
(Proposed Alternative Scenario)



4. Emission Factors

- The carbon and N₂O emissions per GWh of electricity generated were derived from the projected power generation mix of DOE from 2003 to 2012 and the emission factors recommended in the Revised 1996 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories.
- IPCC carbon emission factors: fuel oil – 21.1 tons C per teraJoule (TJ); diesel oil – 20.2 tC/tJ; coal – 26.2 tC/tJ; and natural gas – 14.5 tC/tJ.



5. Greenhouse Gas Reduction Projection

Year	Baseline, GWh Consumption Due to Lighting			Alternative, GWh Consumption Due to Lighting			Total Energy Savings due to EEL, GWh	Tons of CO ₂ Equivalent per GWh	Tons of CO ₂ Equivalent savings due to PELMAT
	HH	Comm'l	Ind'l	HH	Comm'l	Ind'l			
2003	5,244	2,588	798	5,244	2,588	798	0	177	0
2004	5,754	2,839	876	5,497	2,753	856	363	172	62,302
2005	6,343	3,130	965	5,777	2,940	922	800	172	137,415
2006	7,005	3,456	1,066	6,066	3,142	993	1,326	183	243,255
2007	7,735	3,816	1,177	6,351	3,353	1,070	1,954	187	366,186
2008	8,544	4,216	1,300	6,627	3,576	1,153	2,704	184	496,824
2009	9,449	4,662	1,438	6,891	3,813	1,242	3,602	180	648,322
2010	10,444	5,153	1,589	7,115	4,059	1,337	4,676	163	761,836
2011	11,552	5,700	1,758	7,271	4,316	1,439	5,985	144	863,071
2012	12,778	6,305	1,945	7,282	4,583	1,547	7,614	136	1,036,586

Annex G

PELMATP: SCHEDULE OF ACTIVITIES

Activities	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<i>EEL Policies, Standards and Guidelines Enhancement Program</i>																				
1. Establishment of an EEL Technical Working Group																				
2. Updating of Lighting System Guidelines in the National Building Code																				
3. Development of lighting product standards																				
4. Implementation of Lighting Products Standards																				
5. Development and Implementation of a Voluntary Agreement (VA) Scheme with Lighting Manufacturers and Distributors																				
6. Application of EELs in Government Facilities																				
7. Establishment of Incentives for EEL Product Importers and Manufacturers																				
8. Establishment of Consumer Protection Guidelines																				
9. EL Policy and Standards Implementation Monitoring and Evaluation																				
<i>EEL Applications Institutional Capacity Building Program</i>																				
1. Testing, Labeling and Market Monitoring of EELs																				
2. Support to Local Lighting Product Manufacturers																				
3. Technical Assistance on the Design of EEL System Initiatives in DSM Plans																				
4. Development and Design of EEL Savings Calculator																				
5. Capacity Building on the Application of EEL systems																				
6. Promotion of Mass Purchasing																				
7. Implementation of EEL Programs in the Industrial Sector																				
8. Implementation of EEL Programs in the Commercial Sector																				
<i>EEL Applications Consumer Awareness Improvement Program</i>																				
1. Joint Government-Private Sector Promotion of EEL Products																				
2. Consolidation of Information on EEL Systems																				
3. Inclusion of EEL Training in School Curricula																				
<i>EEL Initiatives Financing Assistance Program</i>																				
1. Design and Implementation of EEL Micro-Financing																				
2. Development of ESCO-led EEL System Projects																				
3. Establishment of Financing Scheme for EEL System Projects																				
4. EEL Business Financing Capacity Building																				
5. Development and Implementation of a Voluntary Agreement (VA) Scheme with Industrial and Commercial Establishments																				
6. Evaluation of the EEL Initiatives Financing Assistance Program																				
<i>EEL Systems Waste Management Assistance Program</i>																				
1. Formulation and Implementation of Guidelines for Managing Mercury containing Wastes																				
2. Information Campaign on Management of Hg containing lamp wastes																				
3. Market Development for Lamp Recycling																				
4. Demonstration of the Recycling of Waste Lamps																				
<i>Project Monitoring</i>																				
PMO Monitoring																				
UNDP Monitoring																				
Mid-Term Project Review																				
Final-Term Project Review																				

Annex H

Comparison of ELI-Philippines Program and Proposed PELMATP Activities

The following table summarizes the complementarity of the recently completed ELI program in the Philippines and the proposed PELMATP. This is based on discussions between the DOE, UNDP and the ELI Phils Project Team, the draft Executive Summary of the ELI Phils Country Program Implementation Final Report, and as validated in the Process Evaluation Report on the ELI Program in the Philippines (dated 23 February 2004).

ELI ACTIVITIES	ELI PHILS ACCOMPLISHMENT	PELMATP ACTIVITIES	REFERENCE IN PROJECT BRIEF
1. Introduction of Globally Recognized Standards & specifications for Lighting (ELI Quality Mark)	<ul style="list-style-type: none"> - Successfully advocated the adoption of ELI standards and specifications through the ELI quality mark system - 5 brands and a total of 46 models of ELI-qualified CFLs currently available in the Philippine market, with at least 2 more brands poised to be certified 	<ul style="list-style-type: none"> - ELI standards will be set as norms that will have to be complied with as voluntary standards by enterprises participating in the PELTMAP. - Voluntary agreement(s) with at least one enterprise manufacturing and/or distributing each type of EEL product, and are not yet ELI standards compliant will be signed and implemented. - Technical assistance will be provided by the project to the selected enterprises to assist them in meeting the voluntary target standards. - Development and implementation of lighting product standards (update of PNS and development of MEPS). ELI technical specifications for CFLs and other international lighting product and energy performance standards for other lighting systems, where applicable, will be made as voluntary specifications and/or reference standards for EELs. Monitoring and evaluations systems will be developed and used to track the progress of standards compliance. 	<p>Page 10, paragraph 37; also page 21, paragraph 66, e).</p> <p>Page 21, paragraph 66, e).</p> <p>-do-</p> <p>Page 20, paragraph 66, c).</p> <p>Page 21, paragraph 66, c).</p>
2. Adoption of Globally Accepted Specifications for Other Energy Efficient Lighting Technologies	<ul style="list-style-type: none"> - Promoted and catalyzed consensus building towards adoption of specifications and standards for other energy efficient technologies among stakeholders (ERC, MERALCO, CEPALCO, DBP, IIEE, etc..) 	<ul style="list-style-type: none"> ▪ Promotion of products that meet ELI technical specifications for utility DSM programs, ESCO projects, EE lighting demonstration projects and other projects where applicable. 	<p>Page 16, paragraph 54.</p>

<p>3. Strengthen LATL lighting product testing capability</p>	<ul style="list-style-type: none"> - Provided integrating sphere and auxiliary equipment for CFL energy performance testing. LATL served as the venue for the global random testing of CFL samples under the ELI Program. - BPS conferred to DOE-LATL a certificate of laboratory accreditation for energy performance testing of CFLs. 	<ul style="list-style-type: none"> - Accreditation of DOE-LATL for energy performance testing of ballasts, linear fluorescent lamps and high intensity discharge lamps. - DTI-BPS membership to the Asia Pacific Laboratory Accreditation Cooperation. - Procurement of incremental test equipment for ballasts and linear fluorescent lamps. - LATL technical skills upgrading and acquisition of international lighting reference materials - R&D capacity upgrading - Monitoring of local lighting market and dissemination of information (LATL will work with BPS and PLIA - LATL to continue serving for the ELI product testing and qualification program. 	<p>Page 22, paragraph 67, a), i).</p> <p>-do-</p> <p>Page 23, paragraph 67, a), ii).</p> <p>Page 23, paragraph 67, a), iii).</p> <p>Page 23, paragraph 67, a), iv)</p> <p>Page 23, paragraph 67, a), v).</p> <p>Page 9, paragraph 35, third bullet.</p>
<p>4. Public relations, advocacy and advertising campaigns</p>	<ul style="list-style-type: none"> - Print advertisements, television, commercials, radio advertisements, and vendor education at seminars/points-of-sale for CFLs - Awareness of ELI quality mark established to be slightly higher than ICC mark for CFLs 	<ul style="list-style-type: none"> - Dissemination of information on EEL products from market monitoring activities – technical and energy performance specifications - Dissemination of results of demonstration schemes (commercial and industrial) - Joint Gov't-Private Sector Promotion - Conduct Annual Lighting Industry Convention - Promote EEL products to households (TV, distribution by utilities to households, incorporation to Power Patrol Program) through GEF-assisted media placements - Preparation of information materials, brochures, and publications (from demonstration projects and other activities of PELMAT) - EEL database and website development – information exchange 	<p>Page 23, paragraph 67, a), vi).</p> <p>Page 28, paragraph 67, g), iv).</p> <p>Page 28, paragraph 68, a).</p> <p>Page 28, paragraph 68, a), i).</p> <p>Page 28, paragraph 68, a), ii).</p> <p>Page 28, paragraph 68, b).</p> <p>-do-</p>
<p>5. Development of IIEE-ELI Manual of Practice on Efficient Lighting</p>	<ul style="list-style-type: none"> - Sold by IIEE to lighting designers, specifiers, contractors, suppliers and other interested parties (2,000 copies are produced under ELI technical assistance) - Manual continuously used by IIEE and PLIA for their professional training seminars - Influenced positively procurement processes of some LGUs (e.g. Lipa, Naga, Quezon City) and institutions/ entities (e.g. the Senate) 	<ul style="list-style-type: none"> - Training of building designers/developers, architects, LGU building officials, and building maintenance personnel on the application of EELs using the IIEE-ELI Manual of Practice on Efficient Lighting as major reference - ENMAP and UP-NEC will be tapped as partners of IIEE and PLIA 	<p>Page 26, paragraph 67, e).</p>

6. Technical Assistance to ERC	<ul style="list-style-type: none"> - Provided technical assistance to ERC to review, amend and improve the 1996 DSM Framework. - Developed standard/default DSM plans - Developed government-industry consensus on a Revised DSM Framework, as manifested in a collaborative agreement involving 71 power industry stakeholders 	<ul style="list-style-type: none"> - Work towards immediate ERC approval and enforcement of amended DSM framework. - Work towards ERC approval of Standard/Default DSM Plan Templates – ensuring that all lighting DSM programs adopt ELI specifications, where applicable. - Training on preparation of EEL System Applications to DSM Program - Design and Demonstration of EEL Distribution Programs (see next row) - Development of street lighting guidelines and demonstration of its application – included in training course on preparation of DSM Plans for utilities 	<p>Page 25, paragraph 67, c), i).</p> <p>Page 10, paragraph 38.</p> <p>Page 25, paragraph 67, c), ii).</p> <p>Page 25, paragraph 67, c), iii).</p> <p>Page 26, paragraph 67, c), iv)</p>
7. CEPALCO Paylight/ Megalight CFL Distribution Program	<ul style="list-style-type: none"> - Tested the viability and implemented a pilot CFL distribution program (“Paylight”) - Prepared business plan for the scaled-up CFL distribution program (“Megalight”) 	<ul style="list-style-type: none"> - Collaborate with CEPALCO to include other EEL technologies. - Facilitate the development and approval of cost recovery schemes for DSM programs. 	<p>Page 25, paragraph 67, c), iii).</p>
8. MERALCO Smartlight CFL Program	<ul style="list-style-type: none"> - Developed a business plan for Smartlight CFL Program, which is to be implemented in three phases 	<ul style="list-style-type: none"> - Collaborate with MERALCO in the phased implementation of Smartlight CFL Program including its informational campaign 	<p>Page 25, paragraph 67, c), iii).</p>
9. Model ESCO Transaction (DBP-DOE)	<ul style="list-style-type: none"> - Developed the Request for Proposal (RFP) and Energy Services Agreement (ESA) which will be used for the procurement of ESCO services for the lamp retrofitting project of DBP - Initiated extension of environmental credit facilities to include energy efficiency and ESCO project financing by PFIs - Influenced other government agencies like the DENR to consider adoption of similar program as DBP - Catalyzed formation of independent ESCOs (e.g. RNFA-Romago, CEPALCO ESG & MERALCO Energy Inc.); generated long list of 14 independent ESCOs. 	<ul style="list-style-type: none"> - PELMAT will continue to build capacity of DBP and ESCOs and complete the demonstration process as a showcase to the commercial and industrial sectors - Adoption of RFP and ESA as model procurement documents for subsequent ESCO transactions by other government/ private entities. - Design and implementation of model loan agreement between the ESCO and the bank. - Activity will be supplemented with capacity building for commercial and industrial establishments on ESCO operations, financing, developing of measurement and verification procedures. - Promotion of ESCO-led EEL system projects - Design of Energy performance models for EELs- developed simplified and user-friendly guidelines for the utilization of the available credit facility in DBP that can be used for Energy Performance Contracting services. Establish monitoring and verification protocols for future ESCO contracts - Establishment of market for ESCO Services – promotion of partnerships between ESCOs and engineering companies, construction firms, and/or finance companies 	<p>Page 29, paragraph 69, b).</p> <p>Page 10, paragraph 39.</p> <p>-do-</p> <p>-do-</p> <p>Page 30, paragraph 69, b), i).</p> <p>Page 30, paragraph 69, b), ii).</p> <p>Page 30, paragraph 69, b), iii).</p>

<p>10. Consumer cooperatives as viable distribution channels</p>	<ul style="list-style-type: none"> - Facilitation of the establishment of consumer cooperatives as viable distribution channel for EEL products - MOA between ELI and the Metro Manila Federation of Consumer Cooperatives (MMAFECCO) was signed - At least eight member cooperatives under the MMAFECCO indicated interest to be long term distribution channels for ELI-qualified CFLs, regardless of the type of credit offered to their members - Commercial negotiations have been initiated 	<ul style="list-style-type: none"> - Inventory and assessment of existing consumer cooperatives - Provision of training on micro-financing for consumer cooperatives - Identification of cooperatives that will participate in the micro-financing scheme implementation - Development and selection of applicable micro-financing models - Conduct of negotiations on financing arrangements with EEL suppliers (importers and manufacturers) - Training of consumer cooperatives on the implementation of the selected micro-financing scheme - Implementation of the micro-financing scheme (at least 3 cooperatives – Luzon, Visayas and Mindanao) 	<p>Page 29, paragraph 69, a). -do-</p> <p>-do-</p> <p>-do-</p> <p>-do-</p> <p>-do-</p> <p>-do-</p>
<p>11. Establishment of PLIA and NACEEL</p>	<ul style="list-style-type: none"> - National Advisory Council for Energy Efficient Lighting (NACEEL), a high profile public-private policy advisory group composed of the Secretary of Energy (as Chairman), Secretary of Trade & Industry, Secretary of Budget & Management, Chairman of CEPALCO, President of MERALCO, President of PLIA, and ELI/IFC representative, has been established in October 2000. - NACEEL is meant to catalyze alliance between the government and the private sector and is envisioned to evolve into the Philippine Council for an Energy Efficient Economy - Philippine Lighting Industry Association (PLIA) was formed in November 2001 to represent the lighting industry for lobbying and cooperation with the government, participate actively in the formulation of policies and standards affecting the lighting industry and to serve as catalysts in the market transformation towards efficient lighting. - NACEEL launched efforts to formulate the Government Standards and Policies on Efficient Lighting. PLIA was appointed by the NACEEL Board to lead the GSPEL Technical Working Group. 	<ul style="list-style-type: none"> - Alignment and integration of all activities related to the updating and formulation of government policies, standards, and guidelines including all ongoing efforts of the NACEEL and GSPEL Technical Working Group. - Collaborate with PLIA in monitoring of the local lighting market - Collaborate with PLIA in the establishment of a comprehensive database of lighting product manufacturers - Collaborate with PLIA and/or IIEE in the conduct of Annual Lighting Industry Convention - Collaborate with PLIA in the promotion of EEL products to HH - Collaborate with PLIA and IIEE in the establishment of the Lighting Research Center - Project will strengthen the role of PLIA in the lighting industry to become the advocate and catalyst of EEL in the private sector - PLIA member of the Policy Advisory Board - TWG will be co-chaired by PLIA 	<p>Page 10, paragraph 42 and page 20, paragraph 66, a).</p> <p>Page 23, paragraph 67, a), v).</p> <p>Page 24, paragraph 67, b), i).</p> <p>Page 28, paragraph 68, a), i).</p> <p>Page 28, paragraph 68, a), ii). Potential leveraged activity. IIEE committed to collaboration</p> <p>Page 10, paragraph 42 and page 34, paragraph 74.</p> <p>Page 37, paragraph 77. Page 37, paragraph 79.</p>