REVIEW OF OPERATING AND MAINTENANCE EXPENDITURE (OPEX) FORECAST: SECOND REGULATORY PERIOD

IBAAN ELECTRIC & ENGINEERING CORPORATION (IEEC)

Prepared

by the

ENERGY REGULATORY COMMISSION

October 19, 2009

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1 INTRODUCTION

The Energy Regulatory Commission (ERC) has promulgated a Performance Based Rate-Making (PBR) methodology that applies to privately owned electricity distribution utilities (DU) in the Philippines. Under the PBR framework, a DU is entitled to a price cap to compensate for delivering its distribution wheeling services. The reset process for setting of the price cap for the six (6) DUs entering the PBR at the third entry point includes review of the expenditure forecasts. This process will result in the setting of a maximum price path that will determine the Maximum Average Price (MAP) that a DU can charge for the provision of electricity distribution services for each year of the Second Regulatory Period (which commences on 1 July 2010 and ends on 30 June 2014).

The mechanism for the calculation of the price cap, the procedure and timelines for the introduction of this cap, are described in the Rules for Setting the Distribution Wheeling Rate (RDWR) for the Third Entry Group, which was released by the ERC on December 8, 2008[1]. The ERC has also formulated its position on the reset process – as set out in a Position Paper dated December 8, 2008[2].

An important requirement of the reset process going forward is the review of the expenditure forecasts submitted by the DUs as part of their revenue applications filed with the ERC. These expenditure forecasts are critical to the determination of the revenue to which DUs are entitled and on which the price caps will be determined.

Section 4.13.4 of the RDWR requires that the expenditure forecasts provided by a DU be reviewed by a Regulatory Reset Expert/s in isolation or in cooperation with ERC staff as part of the PBR regulatory reset process. Geoff Brown and Associates (GBA) has been engaged by the ERC to provide guidance to the ERC staff to review the operating and maintenance expenditure forecasts and review the capital expenditure forecasts, as well, of the six DUs entering PBR at the third entry point.

The six DUs entering PBR at the third entry point are:

- Cabanatuan Electric Corporation (CELCOR);
- Davao Light and Power Company (DLPC);
- Ibaan Electric & Engineering Corporation (IEEC);
- La Union Electric Company (LUECO);
- Tarlac Electric Incorporated (TEI); and
- Visayan Electric Company (VECO);

This report presents the ERC's review of the operating and maintenance expenditure forecasts of IEEC. These forecasts were submitted to the ERC as part of IEEC's revenue and performance incentive scheme application (revenue application), on June 22, 2009.

[1] *Rules for Setting Distribution Wheeling Rates for Privately Owned Distribution Utilities Entering Performance Based Regulation (Third Entry Point)*, Energy Regulatory Commission, December 8, 2008.

[2] *Regulatory Reset for the July 2010 to June 2014 Regulatory Period for Privately Owned Distribution Utilities subject to Performance Based Regulation, Position Paper*, Energy Regulatory Commission, December 8, 2008.

2 EXECUTIVE SUMMARY

OPERATING AND MAINTENANCE EXPENDITURE (OPEX)

The ERC reviewed the expenditure forecasts submitted by IEEC as part of its revenue application, as well as the additional information supplied in response to questions put forward during the clarificatory meeting conducted.

In the initial review process, the ERC noted that its historical OPEX increased in 2007 and then abruptly decreased in 2008. During the clarificatory meeting, IEEC stated that the decrease in 2008 was due to a decrease in the number of personnel and cost cutting measures. In order to calculate the forecast OPEX for RY 2011 up to 2014, ERC assessed a reasonable annual OPEX that would represent regular operation of IEEC taking into consideration the hiring of new personnel and the maintenance of its Distribution System. The ERC assessment of a reasonable CY 2008 base year OPEX included the removal of any abnormal and non-recurring expenditures and this base year expenditure was tested for cost efficiency. The resulting normalized CY 2008 served as the base year input to an OPEX Model which generated OPEX forecasts believed to be prudent and efficient for Distribution Utilities, IEEC in this particular report.

It is noted that IEEC has not disaggregated its CAPEX into renewal, growth and refurbishment. GBA determined that its proposed CAPEX is incremental in nature and the bulk of it appears to be renewal related. As the existing network of IEEC has sufficient capacity to meet forecast demand growth, GBA has classified all CAPEX of IEEC as renewal related. In this regard, ERC has adopted GBA's recommendation that all CAPEX are renewal related for OPEX modelling purposes, which means that there is no CAPEX growth included in the OPEX modelling. The model took into account that over the modelling period from 2008-2014, IEEC's customer numbers will increase by 19.2%.

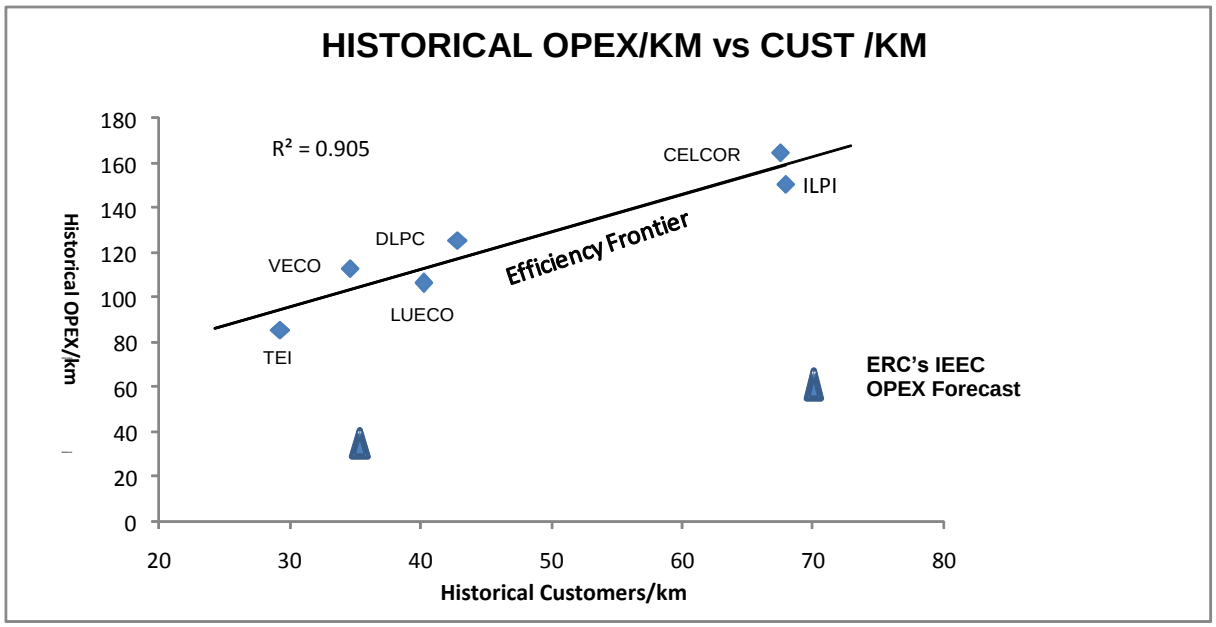
The model also took into account the ERC's capital expenditure forecasts for IEEC amounting to PhP7.97 Million over the second regulatory period. This is a reduction of 17% over the four years which has a direct impact on the quantity of assets scheduled for renewal over the second regulatory period.

The modelling results show IEEC OPEX forecasts for the second regulatory period which are on the average, 13.17% lower than the applicant's.

These resulting forecasts have been benchmarked for cost efficiency using an efficiency frontier developed using the average historical performance of five (5) DUs in the third entry point (IEEC was not included in the benchmarking study as it was considered an outlier) and ILPI, an entrant DU in the second entry point, given that it has sufficient information to be included in the analysis. (MECO and CLPC were not included given insufficient information to include them in the analysis.)

Figure 1 shows the efficiency frontier based on normalised OPEX/line length vs. customer /line length. Even though IEEC was not included in developing the efficiency frontier as it was considered an outlier, the ERC's OPEX has been plotted on the graph and is situated well below the efficiency frontier. Based on this benchmarking and other data supplied by IEEC, the ERC has formed the view that IEEC is underspending on its controllable OPEX, which may not be beneficial to its customers, as this is translating into unreliable service. This is confirmed in the historical network performance analysis shown in Figure 3 below, where IEEC's network performance based on CY 2008 data, is the worst of the six (6) DUs benchmarked which are included in the third entry point.(See related discussion on this in the paragraph after Figure 3.) Nonetheless, based on this consideration, and with the objective of prompting the IEEC to steadily improve its performance, the ERC' has forecast the IEEC OPEX based on an assessed base year rather than the lower CY 2008 actual audited results.

Figure 1 : Average Historical OPEX Per Customer and Customer Per Line Length



In consideration of the above, the ERC made the following adjustments:

- Adjustment of IEEC's 2008 base year costs amounting to a total of PhP3.62 million which is equivalent to 44% increase in the total actual 2008 audited OPEX.
- Reduction in IEEC's forecast total OPEX for the second regulatory period of PhP7.26 million, equivalent to a 13.17% reduction, shown as follows:

Forecast Operating and Maintenance Expenditure (PhP million, real 2009)

	RY 2011	RY2012	RY2013	RY2014	TOTAL
IEEC Forecast Operating and Maintenance Expenditure					
Distribution and Connection Services Operation & Maintenance	5.09	5.36	5.64	5.94	22.03
Administrative and General	4.71	4.92	5.17	5.44	20.25
Regulated Retail Services	2.85	3.00	3.16	3.33	12.34
TOTAL	**12.66**	**13.28**	**13.97**	**14.70**	**54.61**
ERC Adjustments (based on OPEX model)					
Distribution and Connection Services Operation & Maintenance	0.10	-0.19	-0.49	-0.80	-1.38
Administrative and General	0.17	-0.04	-0.30	-0.56	-0.73
Regulated Retail Services	-0.99	-1.09	-1.21	-1.33	-4.62
Total Adjustments	-0.72	-1.33	-1.99	-2.69	-6.73
ERC OPEX Forecast	**11.93**	**11.96**	**11.98**	**12.01**	**47.88**

A comparison between IEEC's actual and forecast OPEX and the ERC' adjusted historical and forecast OPEX over the second regulatory period is shown in the graph below. It should be noted that an assessed base year, which has been discussed above, was included in the graph.

Figure 2. Comparison of ERC's OPEX Forecast with IEEC's Proposal (PhP real 2009)

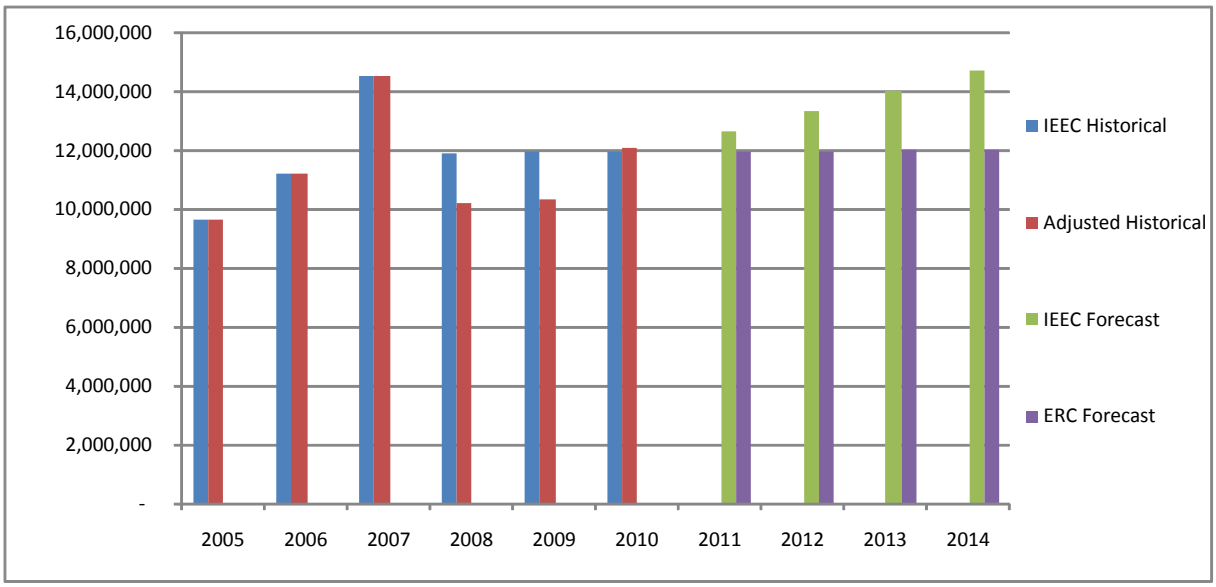


Figure 3 shows the average historical network performance of the six (6) DUs in the third entry point, measured as System Average Interruption Duration Index (SAIDI), Customer Average Interruption Duration Index (CAIDI), and System Average Interruption Frequency Index (SAIFI) and planned average SAIDI, all of which are network reliability indicators.

Figure 3: Historical Network Performance

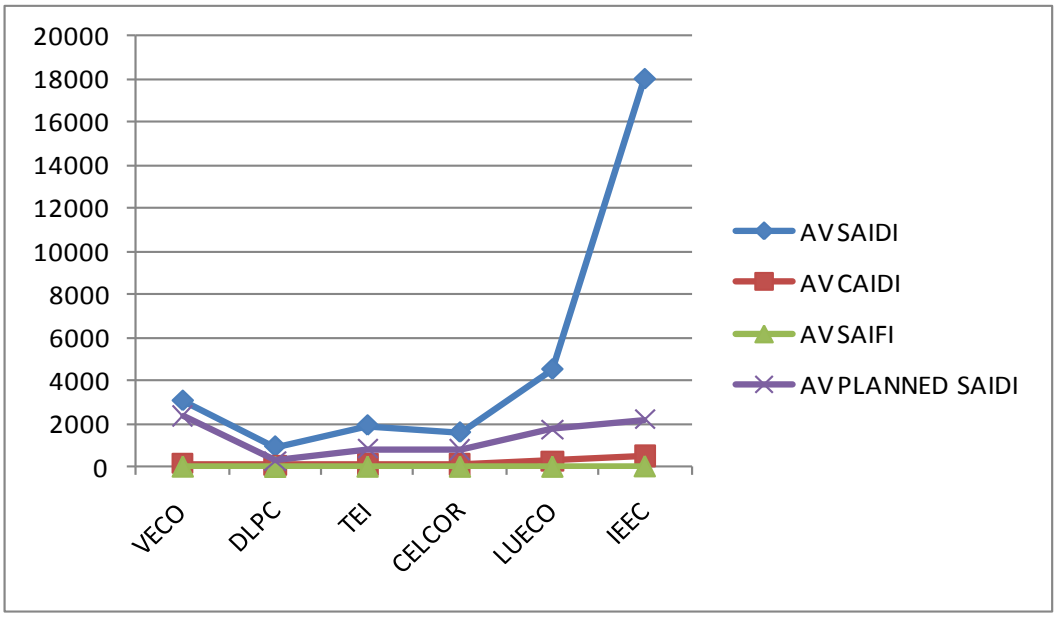


Figure 3 above shows the relative network performance of IEEC. It is noted that data used for IEEC is only for 2008, thus, this is not conclusive as there is need to have more sufficient data and to identify extreme events falling beyond the control of the utilities. The ERC intends to incorporate either network performance benchmarking or performance improvements for the Third Regulatory Period

TAXES, LEVIES AND DUTIES

The ERC adopts IEEC's proposed provisions for taxes, levies and duties. Details submitted by IEEC shows projections of payment for the Regulatory Expert Fee, Business Permit, Community Tax and Real Property Taxes.

Forecast Taxes, Levies and Duties (PhP million, real 2009)

Year	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Levies						
Regulatory Reset Expert Fee	**0.02**	**0.00**	**0.14**	**0.02**	**0.02**	**0.02**
Other Taxes						
Business operation permits	0.01	0.01	0.01	0.01	0.01	0.01
Community tax	0.02	0.03	0.03	0.03	0.03	0.03
Real property tax	0.21	0.19	0.20	0.21	0.22	0.23
Total Other taxes	**0.24**	**0.23**	**0.24**	**0.25**	**0.26**	**0.27**
Total Levies & Taxes	**0.26**	**0.23**	**0.38**	**0.27**	**0.28**	**0.29**

Source: Schedule G3 of IEEC's Revenue Application July 2009

Figure 4. Comparison of ERC's Provision for Taxes, Levies and Duties with IEEC's Proposal (PhP real 2009)

The increase in RY2011 entails regulatory reset project costs for the period 2006-2010, which is yet to be recovered by IEEC. It should be noted that on the average, over the four-year regulatory period, the taxes, levies and duties forecast, is only an insignificant 2.82% of the total OPEX forecast.

3 REVIEW OF THE OPERATING AND MAINTENANCE EXPENDITURE

3.1 IEEC'S HISTORICAL OPERATING AND MAINTENANCE EXPENDITURE AND NETWORK PERFORMANCE

3.1.1 Historical Operating and Maintenance Expenditure

IEEC's historical total operating expenditure in nominal Philippine PhP is shown in Table 3.1.

Table 3.1: Historical Operating and Maintenance Expenditure (PhP million, nominal)

Operating and Maintenance Expenditure Category	2005	2006	2007	2008	2009 [1/]	2010 [2/]
Distribution & Connection Services Operating and Maintenance	2.28	2.79	5.15	3.12	4.26	5.01
Administrative and General	3.75	4.64	5.11	3.42	4.32	4.68
Regulated Retail Services	1.92	2.34	2.80	1.67	2.57	2.73
Total Operating & Maintenance Expenditure	**7.95**	**9.77**	**13.06**	**8.21**	**11.15**	**12.43**

Source: Schedule G of IEEC's Revenue Application, June 2009
Note 1: Budgeted figures for the 2009 calendar year period.
Note 2: Forecasted for the 2010 regulatory year period and beyond.

The historical expenditures reported by IEEC shown in Table 3.1 are expressed in nominal PhP, thus include the impact of inflation. A better assessment of the relative expenditure from year to year can be obtained if historical expenditures are expressed in real 2009 PhP, using historical inflation indicators. Table 3.2 shows historical operating expenditure in real 2009 PhP.

Table 3.2: Historical Operating and Maintenance Expenditure (PhP million, real 2009)

Operating and Maintenance Expenditure Category	2005	2006	2007	2008	2009	2010
Operating and Maintenance	2.76	3.19	5.72	3.17	4.26	4.97
Administrative and General	4.55	5.30	5.68	3.47	4.32	4.73
Regulated Retail Services	2.32	2.68	3.11	1.69	2.57	2.71
Total Operating & Maintenance Expenditure	**9.64**	**11.16**	**14.51**	**8.34**	**11.15**	**12.40**

Source: Schedule G of IEEC's Revenue Application, June 2009
Note 1: Budgeted figures for the 2009 calendar year period.
Note 2: Forecasted for the 2010 regulatory year period and beyond.

This historical operating and maintenance expenditure, expressed in real 2009 PhP, is shown graphically in Figure 3.1.

Figure 3.1: Historical Operating and Maintenance Expenditure (PhP real 2009)

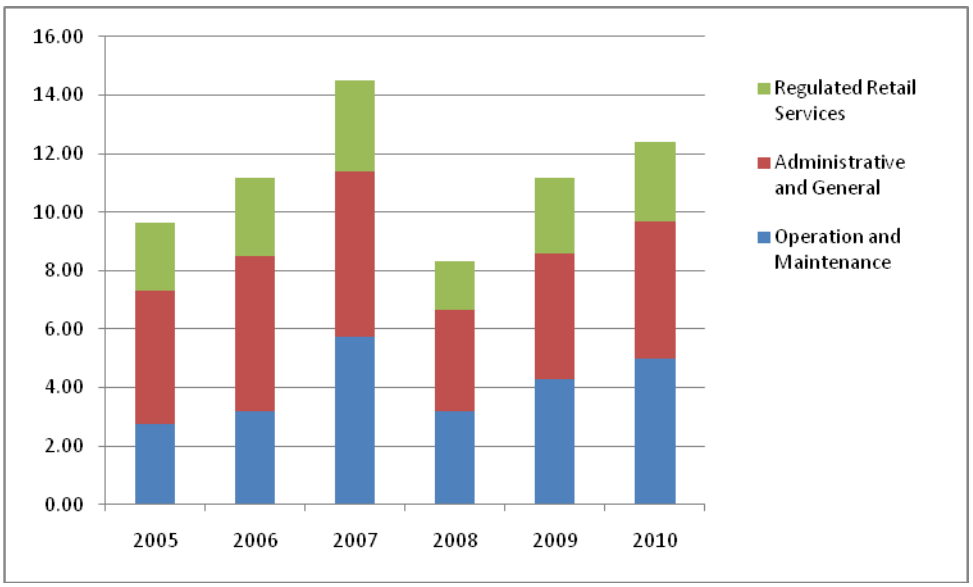


Table 3.2 and Figure 3.1 demonstrate that IEEC's annual historical operating and maintenance expenditure from historical years 2005-2008 has abruptly increased in 2007, due primarily to a significant increase in operation and maintenance expenditure, and abruptly decreased in 2008 due to significant reductions in both operation and maintenance and regulated retail expenditures. Customer numbers increased by an average of 3% per annum over the same period.

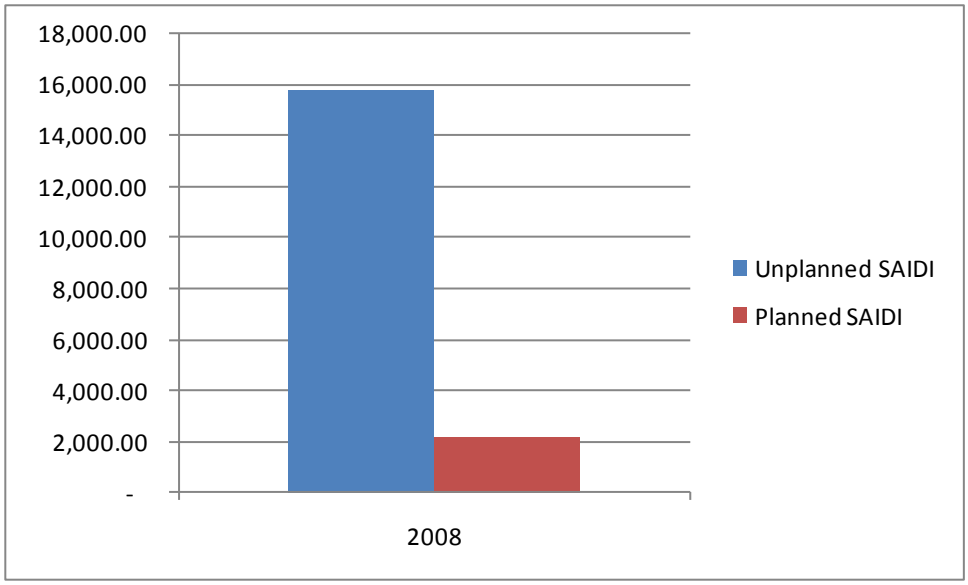
3.1.2 Historical network performance

IEEC was not able to provide historical reports on its total system network performance for years 2005 to 2007, thus only its 2008 system network performance expressed in minutes, is shown in Table 3.3.

Table 3.3 Network Performance (in minutes)

Performance Indicators	**2008**
Unplanned SAIDI	15,827.63
Planned SAIDI	2,189.83
TOTAL SAIDI	**18,017.46**
SAIFI	**38.01**
CAIDI	**474.02**

Figure 3.2 Historical Network Performance



The above graph, covering only CY 2008 as provided by IEEC in its application, is not sufficient to identify any trends in network performance nor to identify factors such as extreme events. This may be used as input to the ERC in conjunction with data obtained by monitoring system performance during the secod regulatory period to set improved targets. The ERC intends to incorporate either network performance benchmarking or performance improvements for the Third Regulatory Period

3.2 IEEC'S FORECASTING METHODOLOGY

As Per Schedule G of its revenue application, IEEC stated that, "*Expenditures are forecasted to increase by 25% for the year 2009 and 2010 and at an average of 3% to 5% within the RY 2010 to 2014."* Further, IEEC, justifying the increases in its forecast OPEX for the second regulatory period indicated that the forecasts reflect its growth in energy conveyed, demand, number of customers, its continuous drive to meet performance standards set by the ERC, purchase of new system software for the continual improvement of its distribution system, and salary related increase due to additional hiring of personnel.

3.2.1 IEEC's Forecast Operating and Maintenance Expenditure

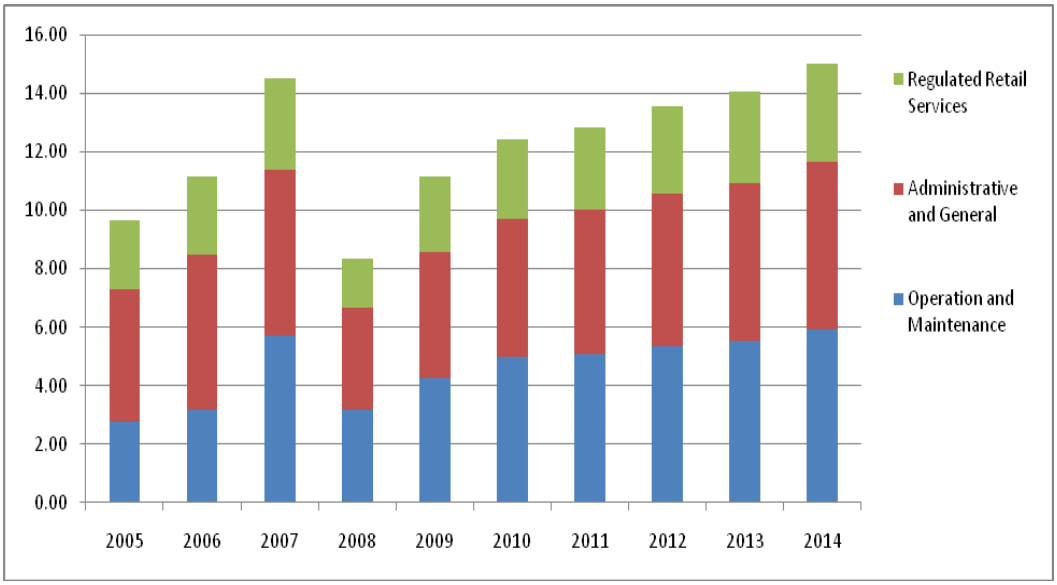
Operating and maintenance expenditure forecasts for the second regulatory period, included in IEEC's revenue application, are shown in the Table 3.4 in real 2009 PhP. These results are also shown graphically in Figure 3.3.

Table 3.4: Forecast Total Operating and Maintenance Expenditure (Real PhP million, 2009)

Operational Expenditure Category	2011	2012	2013	2014
Distribution and Connection Services Operation and Maintenance	5.09	5.36	5.64	5.94
Administrative and General	4.71	4.92	5.17	5.44
Regulated Retail Services	2.85	3.00	3.16	3.33
Total Operational & Maintenance Expenditure	**12.66**	**13.28**	**13.97**	**14.70**

Source: IEEC revenue application June, 2009

Figure 3.3: Total Operating and Maintenance Expenditure (PhP real 2009)



IEEC submitted a revised OPEX forecast in compliance to ERC order dated July 30, 2009 directing them to submit a revised OPEX forecast to tally with the amount stated in their application as shown in Table 3.5. It has been noted that the submitted templates for its historical and forecast OPEX now tallies with its revenue application.

Table 3.5: Revised Forecast Total Operating and Maintenance Expenditure (Real PhP million, 2009)

Operational Expenditure Category	2011	2012	2013	2014	Total
Distribution and Connection Services Operation and Maintenance	5.09	5.36	5.64	5.94	22.03
Administrative and General	4.71	4.92	5.17	5.44	20.25
Regulated Retail Services	2.85	3.00	3.16	3.33	12.34
Total Operational & Maintenance Expenditure	**12.66**	**13.28**	**13.97**	**14.70**	**54.61**

Source: IEEC Submissions September 2009

3.3 REVIEW METHODOLOGY AND ASSUMPTIONS

Table 3.5 above shows that IEEC's forecast operating expenditure in real terms for the second regulatory period is significantly higher than the historical operating expenditure over the period 2005 to 2008. The average annual forecast operating expenditure for the second regulatory period is PhP13.653 million, compared to an average annual expenditure of PhP11.970 million over the four year historical period. IEEC did not provide an operating expenditure model which could facilitate the review of the underlying assumptions and inputs incorporated into it's OPEX forecasting.

Hence in order to assess the reasonableness of the IEEC forecasts, the ERC used the OPEX forecasting model[3] to predict a reasonable level of operating and maintenance expenditure, based on industry standards and a "business as usual" expenditure pattern. The forecasts calculated from the ERC model were then compared with the expenditure forecast provided by IEEC in its revenue application.

[3] This was originally developed by PB Associates and provided to the ERC under Group A and B expenditure reviews.

The OPEX model forecasts specific cost categories by escalating the base year values by the correlated cost drivers. For example operation and maintenance expenditures are correlated to the growth in assets under management, which is closely aligned to the proposed capital expenditures; while regulated retail services expenditures are closely aligned to the growth in customer numbers.

The audited OPEX in the base year is used to forecast future OPEX. The base year expenditures have to be tested for cost efficiency and any "one off or non business as usual" expenditures have to be removed prior to modelling.

This modelling assumes that there are no new or significant "one off" changes to OPEX costs from the base year through to the end of the next regulatory period. Any additional expenditures, not included in the base year forecast, need to be reviewed and modelled independently and then added to the base case expenditures to determine the total forecast annual expenditures.

Hence the overall process the ERC used to assess IEEC's efficient and prudent annual operating and maintenance expenditure forecasts included the following steps:

- Determine the base year operating and maintenance expenditures on a cost category basis;
- Assess each component of the base year for any additional or extraordinary expenditures;
- Confirm that the base year operating and maintenance expenditures are efficient;
- Identify operating and maintenance expenditure cost drivers and the impact of efficiency initiatives;
- Project the base year operating and maintenance expenditure forward for each year of the regulatory period, taking into account projected changes in the cost drivers and the impact of any efficiency initiatives;
- Determine total OPEX forecasts and test for cost efficiency; and
- Compare OPEX forecasts to the applicant's OPEX forecasts and determine the annual adjustments.

The specific processes performed in the aforementioned steps are discussed in more detail in the following sections.

3.3.1 Determination of Efficient Base Year Operating Expenditure

The following were done to assess the efficiency of the base year OPEX:

- The itemized CY 2008 OPEX was reviewed to identify line items that appeared abnormally high or low. Identified line items were reviewed in more detail and adjusted as necessary to ensure that each line item represented efficient use of funds and was consistent with expected recurring expenditure levels for that line item; and
- IEEC's adjusted OPEX was benchmarked using an efficiency frontier methodology based on the average historical data of five (5) of the DUs in the third entry point (IEEC was not included as it was considered to be an outlier). This also includes the three (3) DUs in the second entry point given sufficient information to include them in the analysis. OPEX per line length and customers per line lengths were used.

This approach results in establishing the relative cost efficiency of the adjusted base year expenditures which are then used in the OPEX modelling to forecast future OPEX expenditures.

3.3.1.1 Review of OPEX Line Items

IEEC used the 2008 calendar year as its base year for determining forecast OPEX. Based on the application IEEC projected 30% more than the 2008 figures as the basis for the 2009 budget. IEEC did not provide an explanation as to the projection methodology they used.

Being the latest, actual, full-year data available, the ERC has used CY2008 figures for Group C utilities, as the base year input to the OPEX Model to forecast OPEX for regulatory years 2011 to 2014. However, in the case of IEEC, it has been observed that IEEC's CY2008 figures are much lower than that of CY2007 and even lower than the earlier calendar years 2005 and 2006. Using the abnormally low CY2008 figures as the base year in an OPEX model might not be beneficial to the IEEC customers as the utility's continued underspending particularly in operation, maintenance and customer services, would lead to continued poor network performance and unreliable service. Based on the variability of the historical expenditures submitted by IEEC, the ERC proposed a more reasonable base year data to use for OPEX modelling purposes which is the average of calendar years 2007 and 2008 plus an allowance for an additional technical employee. However for consistency, ERC also reviewed the details of the 2008 audited expenditure of IEEC and removed abnormal and non-recurring expenditures from the average OPEX used as base year.

Distribution System Maintenance – Line Transformers

IEEC projected annual budget expenditure for Distribution System Maintenance - Line Transformers in 2009 amounting to PhP353,000, which IEEC mentioned during the clarificatory meeting were actually incurred in CY 2009, thus ERC deemed it proper to include said expenditure in the base year calculation in the OPEX forecasting model. The magnitude of the resulting upward adjustment is PhP1.415 million for the RY 2011 to 2014.

Administrative and General Expenditures – Employee Pension and Benefits

During the clarificatory meeting, IEEC was asked to provide details of its employee pension and benefits expenses for CY2008. The ERC contends that additional benefits like rice subsidy given to IEEC employees should not be recovered from its consumer rates. If IEEC wishes to provide additional benefits to its employees, the ERC believes that these additional benefits constitute a management prerogative, thus, should not be funded from the regulated revenue. The disallowances of the additional benefits, however, do not preclude IEEC from providing these to its employees provided that the cost or associated expenses are not passed on to its customers. The impact of this adjustment on the base year OPEX is a reduction by PhP55,282.

Regulated Retail – Bad Debts Expense

IEEC included the amount of PhP0.808 million as uncollectible accounts expense. The policy of the Commission for reasonable uncollectible accounts is to adopt the lowest of the actual accounts written-off for the test year; or the last 5 years average of accounts written-off; or 1% of outstanding trade accounts receivable for the test year.

IEEC's 2008 Audited Financial Statement stated the accounts written-off amounted to PhP0.808 million and Accounts Receivable-Trade (AR) amounted to PhP15.541 million. 1% of outstanding trade accounts receivable is PhP0.155 million and hence this is the amount that ERC has allowed for bad debt expense in the base year, consistent with the Commission's Decision under ERC Case No. 2009-024RC. The reduction in the proposed amount of bad debts is by PhP0.724 million.

The ERC base year expenditures resulting from its review compared to the audited CY 2008 results are shown in Table 3.6. The adjusted base year OPEX has been used in the OPEX model to forecast future expenditures:

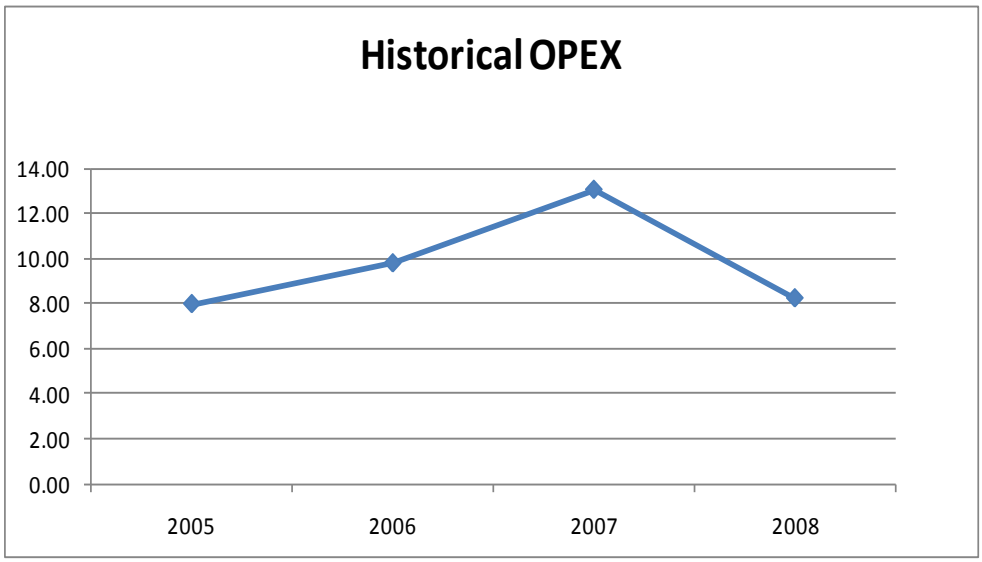
Table 3.6: Adjusted Base Year 2008 Operating and Maintenance Expenditure (PhP million, real 2009)

Operating and Maintenance Category	CY 2008	ERC Base Year OPEX (Average of CY2007-2008)
Operation	1.01	2.11
Maintenance	2.16	3.12
Administrative and General	3.42	4.89
Regulated Retail Services	1.69	1.79
TOTAL Operating and Maintenance Expenditure	**8.28**	**11.90**

3.3.1.2 Confirmation that the Base Year Cost Data is Efficient

To better understand the historical operating expenditure pattern, the ERC redrafted these historical expenditures in real peso such that variations in the expenditure trend are clearly visible. This is shown in Figure 3.4.

Figure 3.4 Historical Operating and Maintenance Expenditures (Real PhP)



As shown in the above graph, the total OPEX varies each historical year and abruptly increased in CY 2007.

In its analysis, the ERC has determined that 14% of the total OPEX of the historical year 2008 is the regulated retail costs. Figure 3.5 below shows a comparison among the six (6) DUs in terms of its base year retail costs per number of customers.

Figure 3.5: Base Year Regulated Retail Costs per Customer

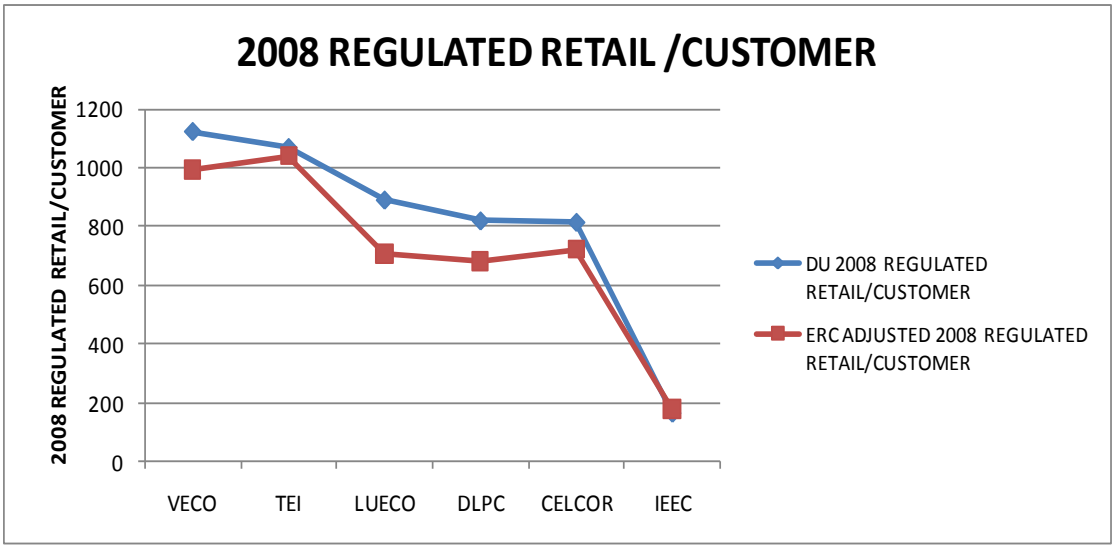


Figure 3.5 above illustrates that IEEC is the lowest in terms of its 2008 base year retail costs per customer. The previously discussed adjustment in the IEEC base year, includes an adjustment in the regulated retail costs amounting to PhP3.56 million, equivalent to a 43% increase. This adjustment is included in the base year figure shown in Table 3.6 above.

Figure 3.6 below shows a linear regression analysis showing the efficiency frontier using the average historical OPEX of the 6 DUs (IEEC, DLPC, TEI, CELCOR, LUECO and ILPI[4]).

Figure 2.6: Average Historical OPEX Per Customer vs Customer Per Line Length

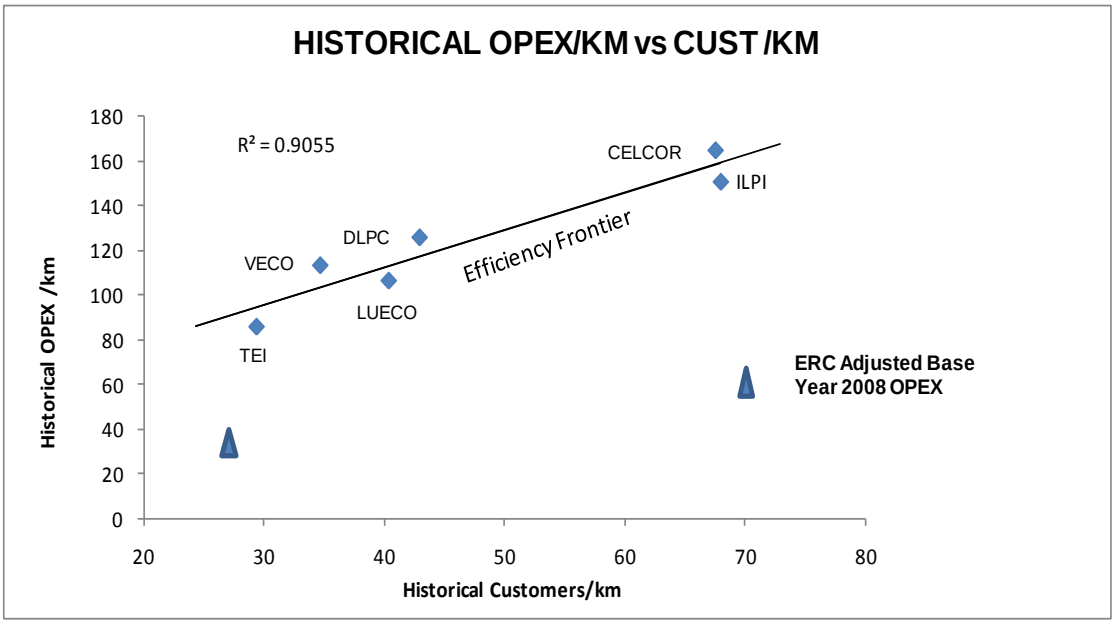


Figure 3.6 illustrates that IEEC's average historical OPEX is significantly below the efficiency frontier, indicating that IEEC is probably underspending on system operation and maintenance, a view further supported by the 2008 network performance. The ERC' adjusted

[4] ILPI, an entrant DU in the second entry point, is included in the analysis given sufficient information while MECO and CLPC were not included because of insufficient information to be able to plot in the graph.

base year OPEX which is plotted on the graph still positions the IEEC well below the efficiency frontier.

Hence, the ERC concluded that the adjusted base year 2008 operating expenditure is efficient but still probably below sustainable OPEX levels.

3.3.2 Identification of Cost Drivers and Impact of Efficiency Initiatives

ERC used the following cost drivers in its OPEX model:

- *Size of the Regulatory Asset Base (RAB)*

  The replacement cost of the RAB is used as a surrogate for asset size and is adjusted going forward to compensate for the impact of refurbishment and renewal CAPEX on future OPEX. The replacement cost of the RAB is increased to compensate for the growth in assets under management; renewal and refurbishment capital expenditures are considered to replace existing assets at or near the end of their service lives and therefore reduces the OPEX required to maintain these assets.

  Also efficiency factors are incorporated in forecasting distribution and connection services, operation and maintenance, and administrative & general expenditures. These efficiency factors arise from the ability of an established business to manage and operate additional assets more efficiently.

  These efficiencies of scale and scope are derived from experience gained from performing similar expenditure reviews for a significant number of distribution utilities. Experience indicates that the efficiencies of scale and scope are remarkably similar for both rural and city-based distribution businesses as well as for businesses of various sizes. Any differences usually relate to the methods used within each business to achieve these efficiencies. Larger businesses tend to rely heavily on technological innovation whilst smaller businesses tend to concentrate on resource innovation such as cross skilling and flexibility. The efficiency factors also reflect the efficiencies that a DU is required to demonstrate under clause 4.13.3 of the RDWR.

  It is believed that the commissioning of new assets results in lower forecast OPEX as these new assets generally require minimal defect-rectification based maintenance during the regulatory period in which they are commissioned. Consistent with the previous expenditure reviews, the savings in forecast OPEX resulting from the commissioning of new assets or the replacement of aged assets averages 20% and this efficiency factor has been incorporated into the ERC operating expenditure model.

  In addition, numerous studies undertaken by experts, including in the Philippines, indicate that, on the average, the variable component of the administrative & general expenditure is 10%. Only this variable component of administrative and general has been escalated in the ERC operating expenditure model.

  In determining the replacement cost of the RAB for 2008 and each year of the second regulatory period, the ERC reductions in CAPEX described in the CAPEX report undertaken by GBA has been taken into account.

- *Customer Numbers*

  The OPEX model accounts for the impact of increasing customer numbers on the regulated retail services expenditures as there is a well accepted correlation between regulated retail service expenditures and customer numbers.

  Based on the customer numbers forecast by the utilities, the ERC has modelled a 5% efficiency gain in regulated retail services to compensate for the economies of scale.

- *Staff Numbers*

The OPEX Model accounts for the correlation between water and electricity consumption and the number of employees/staff.

The OPEX Model escalators are based on the staff numbers forecast by IEEC.

- *Prices of Materials*

The OPEX model allows real growth inflators input for both material and labor costs.

Copper and aluminium prices the cost of materials. Referring to Figures 3.7 and 3.8, it is clear that copper and aluminium prices have not changed significantly over the past three years. Other major cost drivers that may influence cost of materials include exchange rates as well as the market conditions for electrical equipment. It is difficult to predict exchange rate changes and market conditions for electrical equipment; thus, it has been assumed that these factors will remain relatively constant over the regulatory period. Consequently, equipment costs are assumed to remain constant in real terms. This means that nominal material costs will increase over the regulatory period in line with the forecast CPI.

Furthermore, OPEX materials generally consist of lower cost, high quantity items that are generally purchased on term contracts, where the prices are linked to CPI. Historically the cost of maintenance materials, therefore rises in line with inflation, that is, it remains constant in real terms.

Figure 3.7: Aluminium Prices over a Three-Year Period (Philippine Peso/Pound)

Source: www.infomine.com

Figure 3.8: Copper Prices over a Three-Year Period (Philippine Peso/Pound)

Source: www.infomine.com

The model further assumes that cost of materials comprise 25% of total costs for office based functions such as administrative and general, 20% for operations and 30% for maintenance.

- *Labor Costs*

  Labor costs form a significant proportion of operating and maintenance costs; hence the model allows this variable to be altered to reflect any expected real increase in labor costs. It is recognised that it is always difficult to select an appropriate real escalator for future labor rates; the modelling was carried out with the real labor escalator set to zero. This assumes labor costs to increase at the rate of inflation. This is believed to be reasonable since labor cost is a major driver of inflation and economic theory indicates that increases above the rate of inflation cannot be sustained over time, unless there are real increases in productivity throughout the economy. No evidence has been provided that labor costs for electricity distribution workers will escalate at a rate that is materially different from labor costs in other sectors of the economy.

  It is also noted that labor costs form a significant component of the distribution wheeling rate and all utilities must carefully manage their labor costs if electricity prices are to be contained. Utilities have more control over the cost of labor than over the cost of materials. For this reason, regulators are very reluctant to incorporate real increases in labor costs, unless there is a compelling reason to do so. It is noted that controlling labor costs is not simply a matter of limiting wage rates. Other tools that are potentially available include improving labour efficiency and productivity, business process improvement, rebalancing staffing requirements, and increasing the level of outsourcing and multi-tasking.

3.3.3 Forecast Future Expenditures using the OPEX Model

As noted above, the OPEX model is based on the assumption of "business as usual" in forecasting future OPEX, and any known changes in future expenditure patterns need to be modelled independently. In addition any "one off" or "non business as usual" expenditures included in the base year costs need to be identified and backed out of the base year costs prior to modelling. Hence IEEC has been requested to provide information with regards to any known changes in future expenditure patterns or any "one off expenditures" included in the base year costs which do not represent "business as usual" expenditures.

During the clarificatory meeting, IEEC indicated a "one off" expenditure in 2007 that entailed increase in salaries of one (1) technical personnel who left IEEC services in 2008 and maintenance of its distribution system. However, ERC deem it proper to include said expenditure in forecasting the OPEX for the Regulatory period 2011 to 2014 since IEEC intends to hire additional technical staff and acquire one (1) SYNERGEE Module for the continual improvement of its distribution system.. The ERC is providing an allowance for the hiring of additional technical personnel on the basis that IEEC ensures that a competent electrical engineer will assist them to improve its distribution system and quality of supply to its consumers.

3.4 BASE OPEX FORECASTS GENERATED BY THE MODEL

Based on the analysis discussed in this section, the OPEX Model has produced the OPEX forecast as shown in Table 3.7.

Table 3.7: ERC's Base OPEX Forecasts

Operating and Maintenance Expenditure Category	**2011**	**2012**	**2013**	**2014**
Distribution and Connection Services Operating and Maintenance	5.19	5.17	5.15	5.14
Administrative and General	4.88	4.88	4.88	4.88
Regulated Retail Services	1.86	1.91	1.95	2.00
Total Operating & Maintenance Expenditure	**11.93**	**11.96**	**11.98**	**12.01**

3.4.1 Additional Operating and Maintenance Expenditure

Additional OPEX is expenditure above and beyond expenses incurred in a "business as usual" environment or expenditure on new initiatives where costs were not incurred in the base year and hence have not been included in the OPEX model.

IEEC proposed to include an additional OPEX forecast cost amounting to PhP353,000 representing maintenance of Line Transformers to ensure reliable electric services to its consumers. Likewise, provision for the hiring of additional technical staff was included in the OPEX forecast made for regulatory year 2011 to 2014.

3.5 ERC'S OPERATING AND MAINTENANCE EXPENDITURES

As discussed above, the ERC used the OPEX Model to forecast future base operating expenditures with both the real labour and real material inflators set at 0%. With these inputs, the model produced the forecast base operating expenditures shown in Table 3.7.

The ERC adopts IEEC OPEX forecasts indicated in the aforesaid Table 3.7.

Table 3.8 also compares, for each major operating and maintenance expenditure category, the ERC's annual forecast operating and maintenance expenditure with the forecast operating and maintenance expenditure which IEEC included in its revenue application.

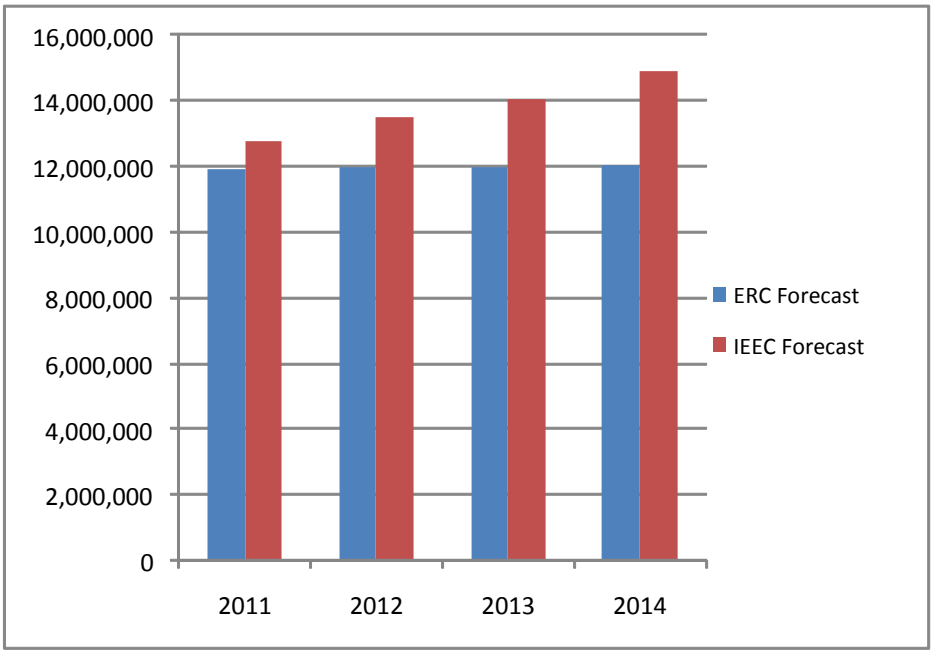
Table 3.8: Comparison of IEEC and ERC' Forecast Operating and Maintenance Expenditure (PhP million, real 2009)

Operating and Maintenance Expenditure Category	2010	2011	2012	2013	2014	Total[1]
Distribution and Connection Services Operating and Maintenance						
IEEC Forecast	4.97	5.09	5.36	5.54	5.94	26.90
ERC Forecast	5.21	5.19	5.17	5.15	5.14	25.85
Difference	0.24	0.10	-0.19	-0.39	-0.80	-1.05
Administrative and General						
IEEC Forecast	4.63	4.81	5.11	5.36	5.62	25.53
ERC Forecast	4.88	4.88	4.88	4.88	4.88	24.40
Difference	0.25	-0.07	-0.22	-0.48	-0.74	-1.12
Regulated Retail Services						
IEEC Forecast	2.71	2.83	3.00	3.16	3.33	15.03
ERC Forecast	1.83	1.86	1.91	1.95	2.00	9.55
Difference	-0.88	-0.97	-1.09	-1.21	-1.33	-5.48
Total Operating and Maintenance Expenditure						
IEEC Forecast	12.31	12.74	13.46	14.06	14.88	67.45
ERC Forecast	11.92	11.93	11.96	11.98	12.01	59.80
Difference	-0.39	-0.80	-1.51	-2.08	-2.87	-7.64
ERC Adjustment	**-0.39**	**-0.90**	**-1.51**	**-2.08**	**-2.99**	**-7.64**

It includes RY2010 plus the Second Regulatory Period which comprises a four-year regulatory period

A graphical comparison between IEEC's and the ERC's forecast OPEX is shown in Figure 3.9. The ERC recommendation entails a reduction of 13.17% in the operating expenditures applied for by IEEC amounting to PhP7.26 million over the 4 year regulatory period.

Figure 3.9: Comparison between IEEC and ERC Forecast Operating Expenditure Forecast (PhP real 2009)



3.6 BENCHMARKING WITH OTHER GROUP C UTILITIES

3.6.1 Inter Business Benchmarking

In order to determine if the ERC adjusted OPEX forecasts were efficient, the ERC relied on two (2) inter business benchmarking studies. The first is a simple OPEX vs. RAB study and the second is a study normalised by line length of OPEX/km vs. customers/ km. In both studies, ERC used the historical data of five (5) of the DUs in the third entry point to develop an efficiency frontier; the IEEC data has not been included as it is considered an outlier, which would distort the results of the studies. The ERC adjusted forecasts have been compared to these frontiers to test for relative efficiency

Figure 3 shows the study of OPEX vs. RAB with the average IROS adjusted IEEC forecasts plotted on the graph. This study includes two (2) DUs in the second entry point (CLPC and ILPI) and four (4) DUs in the third entry point (IEEC, TEI, LUECO & CELCOR) given available data used in the analysis (VECO & DLPC were excluded since both are considerably larger than the DUs in this group). The average ERC IEEC OPEX forecasts are well below the efficiency frontier indicating relative efficiency. It should be noted that the coefficient of determination (R squared) for this study is 0.8924 indicating a strong correlation between the dependent and independent variables.

Figure 3. Average Historical OPEX Per RAB

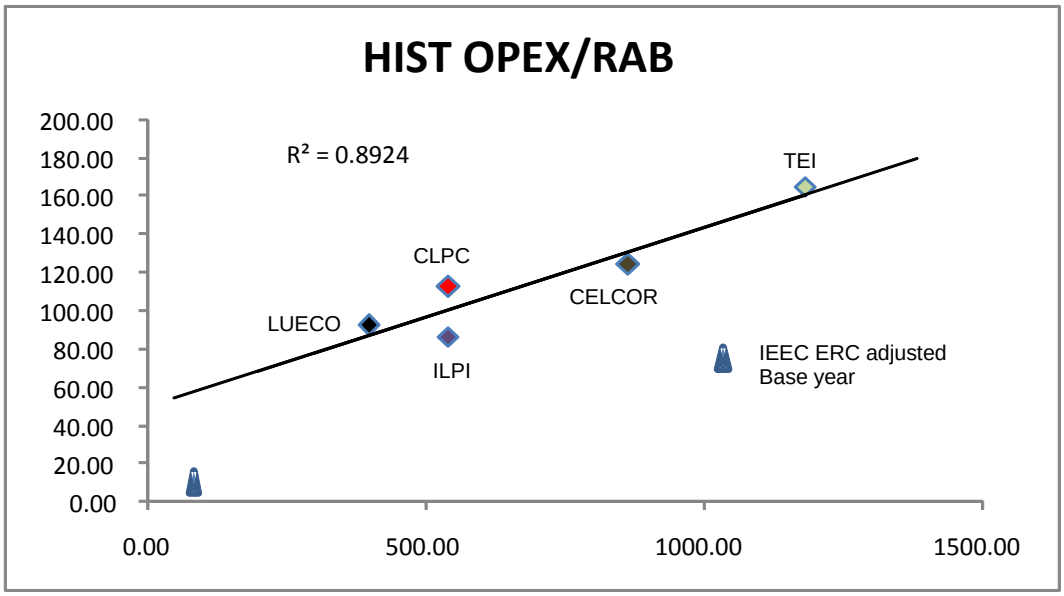
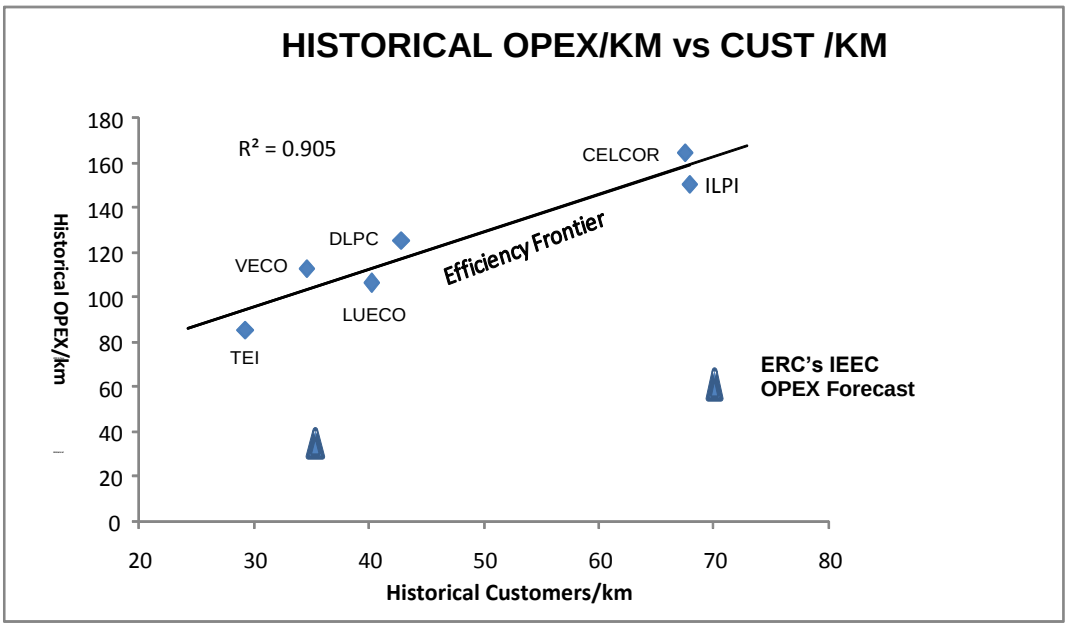


Figure 3.1 shows the normalised benchmarking study of OPEX/km vs. customers/km with the average ERC adjusted IEEC OPEX forecasts plotted on the graph. In this study, ERC included Iligan Light and Power, Inc. (ILPI), an entrant DU in the second entry point, given sufficient information to include it in this analysis. MECO and CLPC were not included given insufficient information to be included. The ERC adjusted OPEX forecasts for IEEC is well below the efficiency frontier indicating that the IEEC is underspending in CY2008 on operation and maintenance.

It should be noted that the coefficient of determination (R squared) for this study is 0.8924 indicating a strong correlation between the dependent and independent variables.

Figure 3.1: Average Historical OPEX Per Line Length and Customer Per Line Length

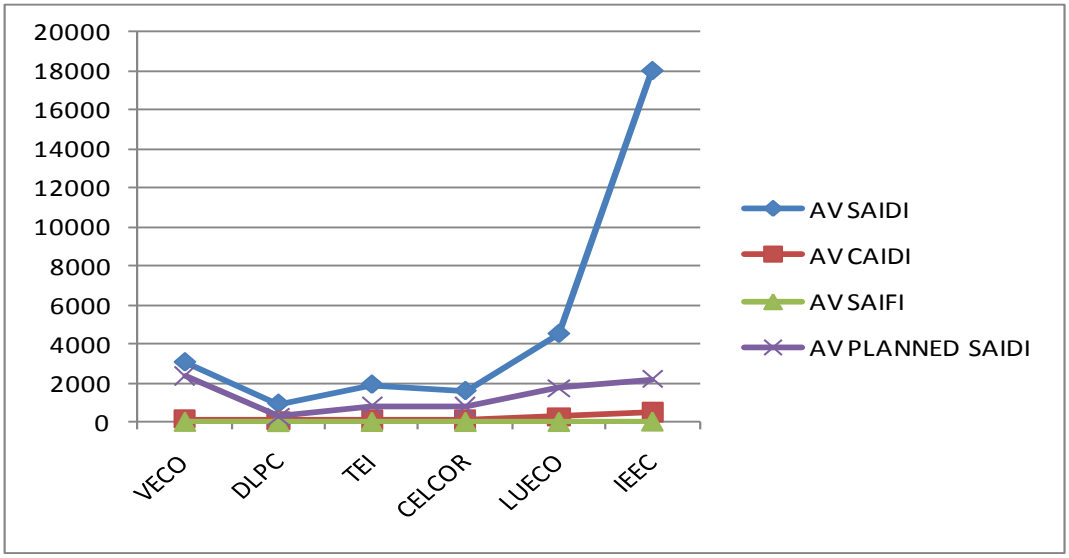


Based on these two benchmarking studies, ERC contends that its adjusted OPEX forecasts are relatively efficient. The ERC adjusted OPEX forecasts for IEEC is way below the efficiency frontier indicating that the IEEC has underspending on the operation and maintenance of its distribution system.

3.6.2 OPEX vs. Performance/Efficiency Benchmarking

The ERC has benchmarked the historical network performance of six (6) DUs entering PBR at the third entry point. The results of this analysis are shown graphically in Figure 3.2.

Figure 3.2 Group C DUs Average Historical Network Performance



The above graph uses CY2006 to CY2008 data submitted by the utilities except for IEEC where only 2008 data is available. The ERC is very much aware that there are no sufficient data-points to draw firm conclusions on the relative performance of one (1) utility vis a vis the other four (4). The ERC intends to commence monitoring network performance over the second regulatory period and use the data collected and the historical data to assist in determining standards or targets for the third regulatory period. The ERC intends to

incorporate either network performance benchmarking or performance improvements for the Third Regulatory Period in order to enhance network performance

4 REVIEW OF TAXES, LEVIES AND DUTIES

4.1 HISTORICAL AND FORECAST TAXES, LEVIES AND DUTIES

4.1.1 Historical Taxes, Levies and Duties Expenditure

IEEC's historical expenditure on taxes, levies and duties over the 2005-2008 calendar years is shown in Table 4.1. The average annual expenditure over this period is approximately PhP0.24 million in nominal terms.

Table 4.1: Historical Taxes, Levies and Duties (PhP million, nominal)

YEAR	CY 2005	CY 2006	CY 2007	CY 2008
Total Levies & Taxes	0.20	0.19	0.20	0.26

Source: Schedule G3 of IEEC's Revenue Application, June 2009

To obtain a better assessment of the relative expenditure, the actual historical expenditures were inflated to real 2009 PhP using actual historical inflation indicators. The table below shows the actual historical taxes, levies and duties expenditure in real 2009 PhP.

Table 4.2: Historical Taxes, Levies and Duties (PhP million, real 2009)

YEAR	CY 2005	CY 2006	CY 2007	CY 2008
Total Levies & Taxes	0.24	0.22	0.22	0.27

Source: Schedule G3 of IEEC's Revenue Application, June 2009

The average annual expenditure over this period in real terms is approximately PhP0.24 million.

4.1.2 Forecast Taxes, Levies and Duties Expenditure

IEEC's forecast taxes, levies and duties are shown in Table 4.3.

Table 4.3: Forecast Taxes, Levies and Duties (PhP million, real 2009)

YEAR	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Total Levies & Taxes	0.22	0.22	0.38	0.27	0.28	0.29

Source: Schedule G3 of IEEC's Revenue Application, June 2009

The average annual taxes, levies and duties expenditure forecast for the second regulatory period, which excludes CY 2009 and RY 2010, is approximately PhP0.31 million. The main components contributing to the significant differences for each year of the second regulatory period when compared to the 2009 budget calendar year and 2010 forecast regulatory year are the regulatory reset expert fees and the real property taxes. The explanation for these costs is provided in Section 4.3 below.

4.2 TAXES, LEVIES AND DUTIES BREAKDOWN

4.2.1 Historical Taxes, Levies and Duties Expenditure Breakdown

A breakdown of IEEC's taxes, levies and duties over the 2005-2008 calendar years is presented in Table 4.4 below. Real property tax , business tax and community tax comprise, on average, 93% of the total annual taxes, levies and duties expenditure across the period.

Table 4.4

Table 4.4: Disaggregated Historical Taxes, Levies and Duties (PhP million, real 2009)

Year	CY 2005	CY 2006	CY 2007	CY 2008
Levies				
Regulatory Reset Expert Fee	**0.00**	**0.00**	**0.00**	**0.06**
Other Taxes				
Business operation permits	0.01	0.01	0.01	0.01
Community tax	0.02	0.02	0.02	0.02
Real property tax	0.21	0.19	0.19	0.17
Total Other taxes	**0.24**	**0.22**	**0.22**	**0.20**
Total Levies & Taxes	**0.24**	**0.22**	**0.22**	**0.27**

Source: Schedule G3 of IEEC's Revenue Application June 2009

4.2.2 Forecast Taxes, Levies and Duties Expenditure Breakdown

IEEC's forecast expenditure on taxes, levies and duties can be disaggregated into the components shown in Table 4.5 below. It can be seen that regulatory reset expert fees and custom duties comprise, on average, 83% of the total annual taxes, levies and duties expenditure across the second regulatory period.

Table 4.5: Disaggregated Forecast Taxes, Levies and Duties (PhP million, real 2009)

Year	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Levies						
Regulatory Reset Expert Fee	**0.02**	**0.00**	**0.14**	**0.02**	**0.02**	**0.02**
Other Taxes						
Business operation permits	0.01	0.01	0.01	0.01	0.01	0.01
Community tax	0.02	0.03	0.03	0.03	0.03	0.03
Real property tax	0.21	0.19	0.20	0.21	0.22	0.23
Total Other taxes	**0.24**	**0.23**	**0.24**	**0.25**	**0.26**	**0.27**
Total Levies & Taxes	**0.26**	**0.23**	**0.38**	**0.27**	**0.28**	**0.29**

Source: Schedule G3 of IEEC's Revenue Application June 2009

4.3 COMMENTARY

The main difference in the forecast levels of taxes, levies and duties compared to historical figures arises from expenditures for regulatory reset expert fees and business and community taxes and increase in real property taxes. These are discussed further in the sections below.

The taxes, levies and duties in IEEC's application cover expenditure relating to the distribution business.

4.3.1 Regulatory Reset Expert Fees

As stated in Section 2.3.3 of the ERC Position Paper dated December 8, 2008 for the third entry point into PBR, the costs for the Regulatory Reset Experts during the Second Regulatory Period are considered to be a levy and will therefore be recoverable under the "levies, duties or taxes other than corporate income tax" building block. Furthermore, the position paper states that ERC will provide the Regulated Entities the forecasts costs to be included in their Revenue Applications.

As part of its application, IEEC has included the following amounts which consist of the costs for the engagement of experts to undertake the asset valuation, review the expenditure forecasts, prepare the Issues Paper and Position Paper, and assist the ERC with financial modelling and project management:

Table 4.6: Forecast Regulatory Reset Expert Fees (PhP million, real 2009)

YEAR	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Regulatory Reset Expert fees	0.02	0.00	0.14	0.02	0.02	0.02

Source: Schedule G3 of IEEC's Revenue Application June 2009

IEEC's provision for regulatory reset expert fees is consistent with the requirements of the Position Paper and the amounts advised by ERC.

4.3.2 Real Property Taxes

Table 3.7 below provides the real property taxes that IEEC has included in its application:

Table 3.7: Forecast Real Property Taxes (PhP million, real 2008)

YEAR	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Real property tax	0.17	0.19	0.20	0.21	0.22	0.23

Source: Schedule G3 of IEEC's Revenue Application June 2009

The real property tax component includes taxes imposed by the local government on all of IEEC's real properties. IEEC submitted copies of real property tax payment receipts and Local Government tax ordinances on the real property of previous year 2007. As to the forecasted figures on the real property tax, IEEC assumed an increase of 25% average increase for the four year regulatory period.

4.4 ERC'S PROVISION FOR TAXES, LEVIES AND DUTIES

Upon the detailed review of each line item of the taxes, levies and duties expenditure application of IEEC, ERC adopts provision for the taxes, levies and duties as proposed in its application.

Consequently, the ERC allowed the following provisions for taxes, levies and duties (Table 3.9 below):

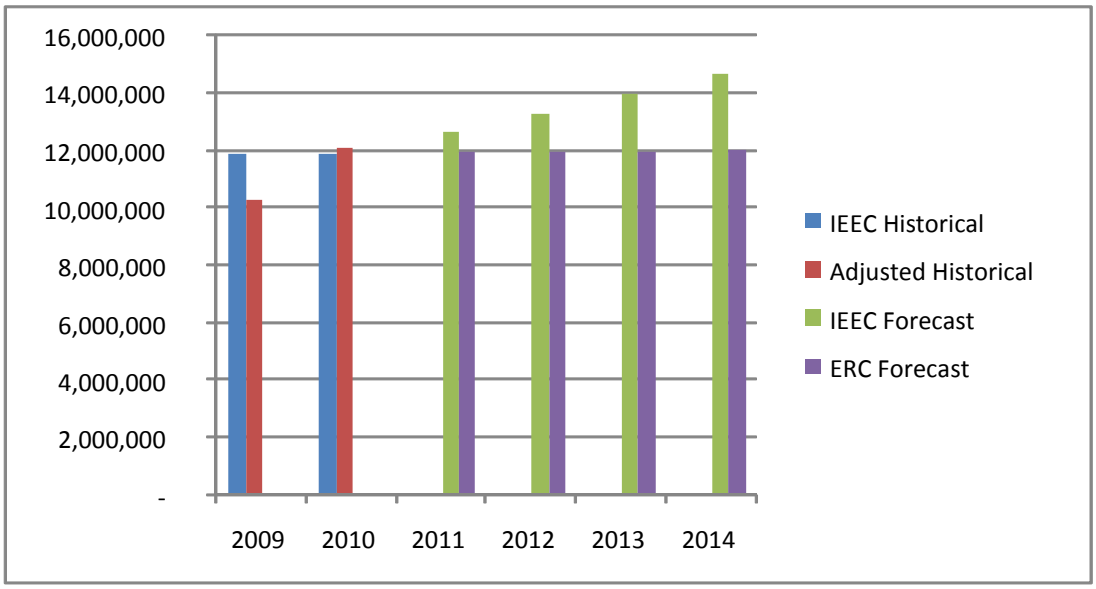
Table 4.9: ERC's Provision for Taxes, Levies and Duties (PhP million, real 2008)

Year	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Levies						
Regulatory Reset Expert Fee	**0.02**	**0.00**	**0.14**	**0.02**	**0.02**	**0.02**
Other Taxes						
Business operation permits	0.01	0.01	0.01	0.01	0.01	0.01
Community tax	0.02	0.03	0.03	0.03	0.03	0.03
Real property tax	0.21	0.19	0.20	0.21	0.22	0.23
Total Other taxes	**0.24**	**0.23**	**0.24**	**0.25**	**0.26**	**0.27**
Total Levies & Taxes	**0.26**	**0.23**	**0.38**	**0.27**	**0.28**	**0.29**

A graphical comparison between IEEC's forecasts and the ERC forecast for taxes, duties is shown in

Figure 4.3.

Figure 4.3: Comparison between IEEC's Forecast and ERC's Forecast (PhP real 2009)



The increase in RY2011 entails regulatory reset project costs for the period 2006 – 2010, which can only be recovered by IEEC in the first regulatory year. It should be noted that on the average, over the four year regulatory period, the taxes, levies and duties forecast is only an insignificant 2.82% of the total OPEX forecast.

The graph shows no difference between IEEC's forecast and ERC forecast over regulatory years 2011 to 2014.