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

Tarlac Electric, Incorporated (TEI)

Prepared

by the

ENERGY REGULATORY COMMISSION

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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 it 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 TEI. These forecasts were submitted to the ERC as part of TEI's revenue and performance incentive scheme application (revenue application), on June 15, 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

OPERATIONS AND MAINTENANCE EXPENDITURE (OPEX)

The ERC reviewed the expenditure forecasts submitted by TEI 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 adjusted the 2008 CY audited expenditure to remove abnormal and non-recurring expenditures and tested this adjusted year data for cost efficiency. The resulting adjusted 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, TEI in this particular report.

The model took into account that over the modelling period from 2010 to 2014, TEI's network assets will increase by 6.55% and customer numbers by 19.6%.

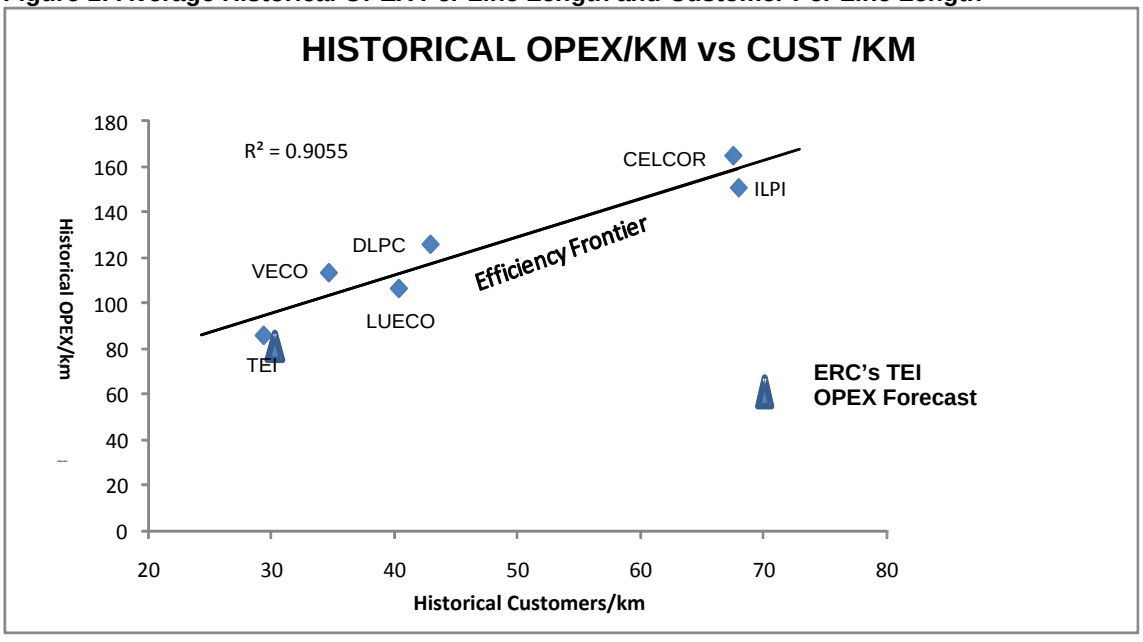
The model also took into account the ERC's capital expenditure forecasts for TEI amounting to PhP248.08 million over the next regulatory period. This is a reduction of 48% over the four years, which has a direct impact on the quantity of new assets requiring operation and maintenance expenditure over the second regulatory period.

The modelling results show TEI OPEX forecasts for the second regulatory period to be on the average 20% 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 5 DUs in the third entry point and ILPI, an entrant DU in the second entry point, given that it has sufficient information to be included in the analysis. (IEEC was omitted from the economic benchmarking as it was considered an outlier. MECO and CLPC were not included given insufficient information to include it in the analysis.)

Figure 1 shows the efficiency frontier based on normalised OPEX/line length vs. customer /line length and the position of the ERC' forecast TEI OPEX relative to the efficiency frontier. It should be noted that the efficiency frontier is based on the average historical data of the six (6) DUs included in the analysis. The object of an efficiency frontier is to fall on or below the frontier to demonstrate relative efficiency. The ERC's TEI base year OPEX is deemed to be relatively efficient as the forecast is below the efficiency frontier.

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



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

- Adjustment of TEI's 2008 base year costs amounting to a total of PhP7.47 million which is equivalent to a 5% reduction in the total actual 2008 audited OPEX

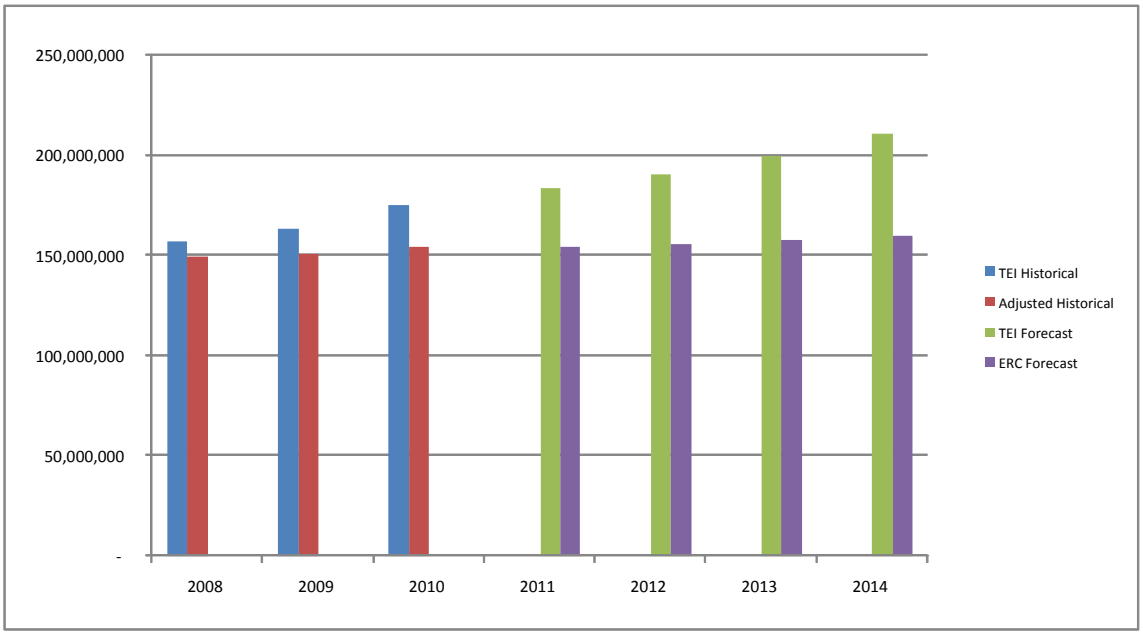
- Reduction in TEI's forecast total OPEX for the second regulatory period of PhP156.92 million, equivalent to a 20% reduction, shown as follows:

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

		RY 2011	RY 2012	RY 2013	RY 2014	Total
TEI Forecast Operating and Maintenance Expenditure						
	Distribution and Connection Services Operating and Maintenance	46.39	47.81	49.40	52.89	196.50
	Administrative and General	69.85	72.40	77.11	82.44	301.80
	Regulated Retail Services	67.20	69.82	72.49	74.78	284.29
TOTAL		183.44	190.03	199.00	210.12	782.59
ERC Adjustments (based on OPEX model)						
	Distribution and Connection Services Operating and Maintenance	-4.10	-5.78	-6.82	-9.93	-26.63
	Administrative and General	-20.66	-23.10	-27.75	-33.05	-104.57
	Regulated Retail Services	-4.76	-5.92	-7.12	-7.93	-25.72
Total Adjustments		-29.52	-34.81	-41.69	-50.90	-156.92
ERC OPEX Forecast		153.92	155.22	157.31	159.22	625.67

A comparison between TEI's actual and forecast OPEX and the ERC' adjusted historical and forecast OPEX over the second regulatory period is shown in the graph below:

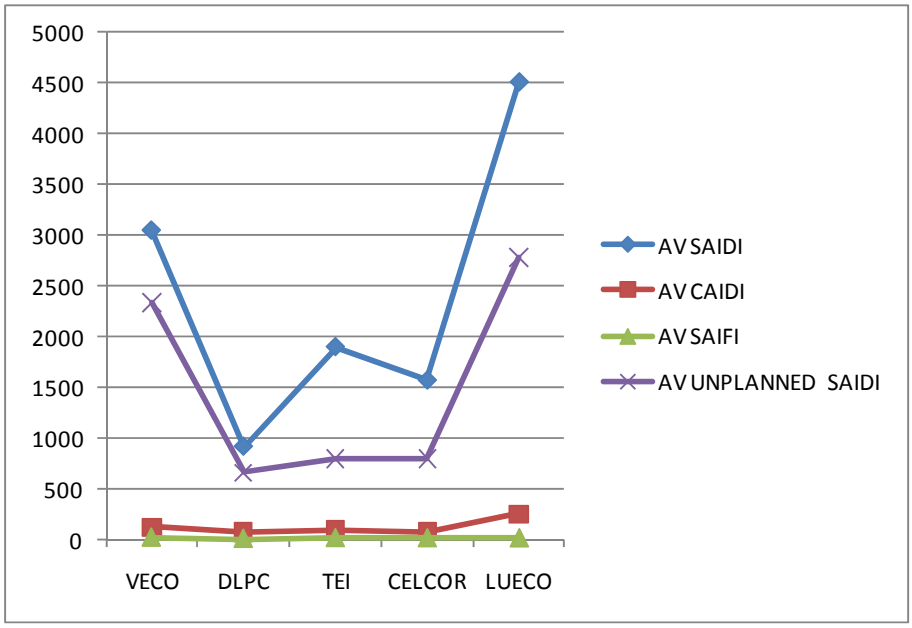
Figure 2. Comparison of ERC's OPEX Forecast with TEI's Proposal (PhP real 2009)



ERC contends that its OPEX forecasts which are based on a "business as usual" approach which incorporates the proposed growth of assets and customer numbers over the second regulatory period are relatively efficient, as demonstrated by the inter business benchmarking.

Figure 3 below shows the relative network performance of TEI over 2006 to 2008. This may not be conclusive as there is need to have more sufficient data and to identify extreme events falling beyond the control of the utilities; thus, the ERC intends to monitor network performance over the next regulatory period.

Figure 3: Historical Network Performance



TAXES, LEVIES AND DUTIES

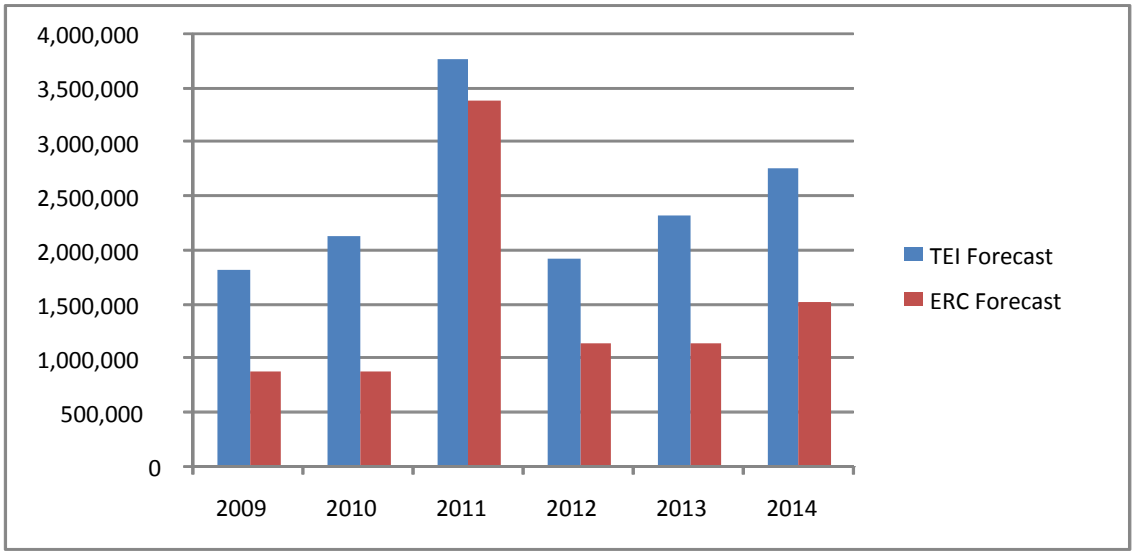
ERC made the following reductions in TEI's proposed provisions for taxes, levies and duties:

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

Year	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Proposed in TEI's Revenue Application						
Taxes, Levies and Duties	**1.81**	**2.12**	**3.76**	**1.92**	**2.32**	**2.75**
ERC Adjustments						
Real Property Tax	-	-0.35	-0.37	-0.76	-1.17	-1.19
Registration of Service Vehicles	-	-	-0.009	-0.021	-0.021	-0.039
Total Adjustments	**-**	**-0.35**	**-0.379**	**-0.781**	**-1.191**	**-1.229**
ERC's Provision for Taxes, Levies and Duties	**1.81**	**1.77**	**3.381**	**1.139**	**1.129**	**1.521**

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

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



The increase in RY2011 entails regulatory reset project costs for the period 2006-2010, which is yet to be recovered by TEI in RY 2011.

It should be noted that on the average, over the four-year regulatory period, the taxes, levies and duties forecast, is only an insignificant 1.3% of the total OPEX forecast.

The key findings on TEI's taxes, levies and duties are as follows:

- The annual provision for real property tax has been adjusted down to the CY 2008 as TEI provided insufficient justification for its forecast increases.
- The component of vehicle registration fees remains constant in real terms. In the event of changes in the imposition of such taxes, RDWR allows relevant tax change events to be recovered.

3. REVIEW OF THE OPERATING AND MAINTENANCE EXPENDITURE

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

3.1.1 Historical Operating and Maintenance Expenditure

TEI's historical total operating and maintenance expenditure in nominal 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 and Connection Services Operation and Maintenance	36.79	32.29	34.04	36.36	37.45	43.49
Regulated Retail Services	74.14	67.33	71.23	77.10	79.42	85.07
Administrative and General	44.89	30.54	34.41	39.99	41.19	52.40
Total Operating & Maintenance Expenditure	**155.82**	**130.16**	**139.68**	**153.46**	**158.06**	**180.96**

Source: Schedule G of TEI's Revenue Application, June 2009
Note 1: The information is budgeted figures and for the 2009 calendar year period.
Note 2: The information is forecasted for the 2010 regulatory year period and beyond.

The historical expenditures reported by TEI 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.

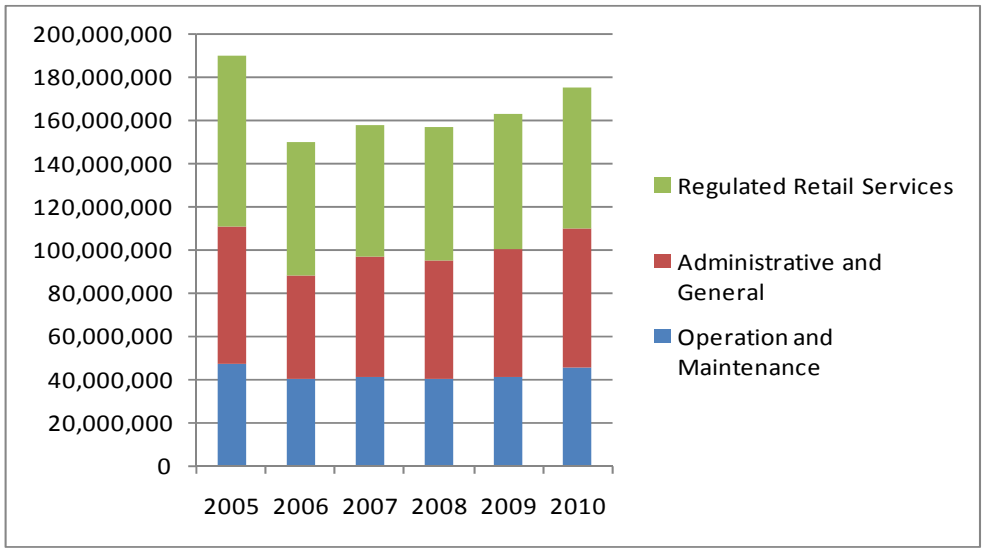
Table 3.2: Historical Operating and Maintenance Expenditure (PhP million, real 2009)

Operating and Maintenance Expenditure Category	2005	2006	2007	2008	2009[1]	2010[2]
Distribution and Connection Services Operating and Maintenance	44.58	36.89	37.84	36.95	37.45	43.08
Regulated Retail Services	89.86	76.93	79.19	78.34	79.42	84.28
Administrative and General	54.41	34.89	38.25	40.63	41.19	51.91
Total Operating & Maintenance Expenditure	**188.85**	**148.72**	**155.28**	**155.92**	**158.06**	**179.27**

Source: Schedule G of TEI's Revenue Application, June 2009
Note 1: The information is budgeted figures and for the 2009 calendar year period.
Note 2: The information is 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)



In addition to the information given in Table 3.2 and Figure 3.1, customer numbers increased by an average 3.3% per annum over the period 2005 to 2008.

3.1.2 Historical network performance

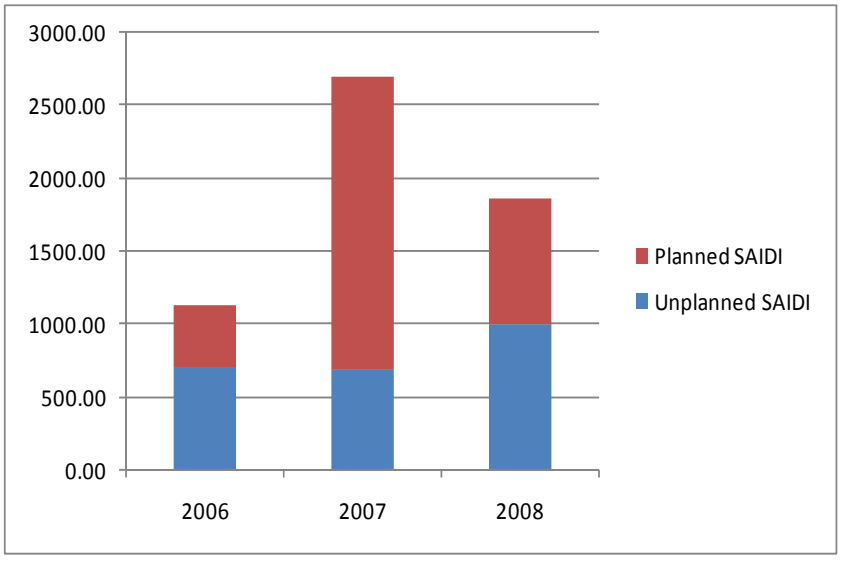
TEI's historical total system network performance, expressed in minutes, is detailed in Table 3.3.

Table 3.3 Historical Network Performance (in minutes)

Performance Indicators	2006	2007	2008
Unplanned SAIDI	709.86	686.22	1,005.65
Planned SAIDI	425.27	2,009.20	859.61
TOTAL SAIDI	**1,135.33**	**2,695.42**	**1,865.26**

The historical total system network performance expressed graphically is shown in Figure 3.2, to wit:

Figure 3.2 Historical Network Performance (SAIDI minutes)



The above graph, covering only a three (3) year period from 2006 to 2008 as provided by TEI in its application, may not be conclusive on the performance trend, as more data is needed and factors such as extreme events should be identified; however, this can serve as an early warning signal to the utilities to monitor its performance. Similar benchmarking analysis against the performance of other utilities may be used as input by the ERC during the Third Regulatory Period to set improvement targets for under-performing utilities. This will allow the Commission to provide incentives for utilities to improve their network reliability performance, within the allowed expenditures.

3.2 TEI'S FORECASTING METHODOLOGY

As per Schedule G1.4 of its application, TEI applied a constant annual rate of increase from 2008 figures. The factor used is primarily based on the average load growth forecast, i.e. 3% per annum. The reason being, the historical trend of the company's expenses is not reflective of the normal operating and maintenance expenses due to financial constraints which resulted from the under recovery in transmission cost in 2006 and distribution operating losses in 2007 and 2008. TEI included estimates of incidental operating and maintenance expenses that are directly related to its forecasted capital expenditures such as, property insurances, additional maintenance expenses, fuel cost and taxes.

TEI also considered the need for additional salaries and benefits arising from additional plantilla positions necessary to continuously provide efficient and reliable service to its customers.

3.2.1 TEI's Forecast Operating and Maintenance Expenditure

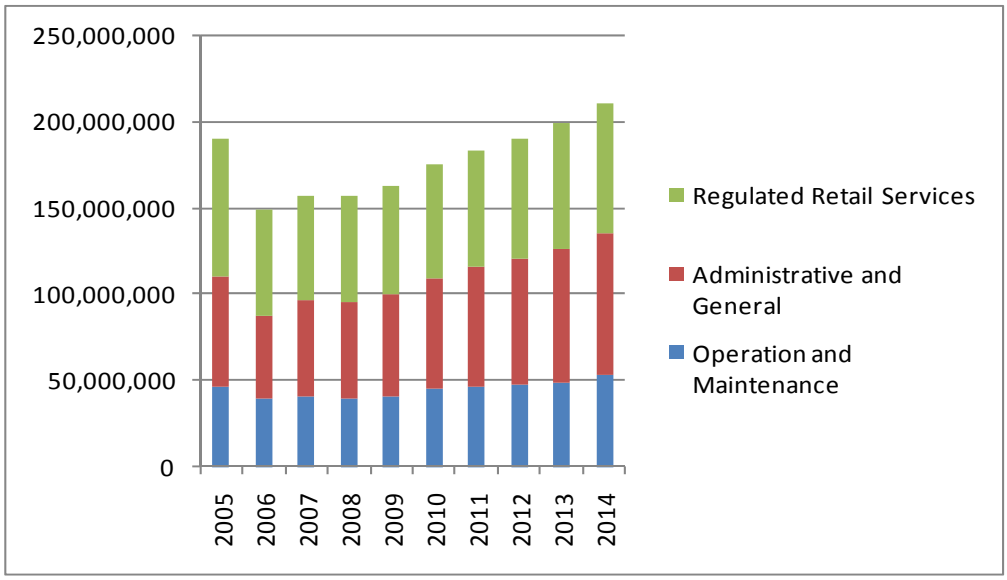
Operating and maintenance expenditure forecasts for the second regulatory period, included in TEI's revenue application, are shown in the Table 3.4 in real 2009 PhP. These results are also shown graphically in Figure 3.3.

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

Operating and Maintenance Expenditure Category	2011	2012	2013	2014
Distribution and Connection Services Operation and Maintenance	47.96	52.82	57.78	64.10
Regulated Retail Services	90.43	97.63	105.02	112.09
Administrative and General	58.70	64.74	71.20	78.87
Total Operating & Maintenance Expenditure	**197.09**	**215.18**	**234.01**	**255.96**

Source: TEI Revenue Application June, 2009

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



As per submission dated September 2, 2009, TEI on its Formal Offer of Exhibits and Compliance, submitted a revised Annex "G" OPEX Template, citing the following reasons in revising the O & M as initially submitted:

1. The difference in the historical figures pertains to supervision and regulatory fee per book of accounts;
2. The allocation of the related increase in salaries and benefits between load dispatch and substation operations and maintenance;
3. The failure of TEI to consider in the initial forecast the cost savings relative to the implementation of the SCADA system;
4. The revisions in the forecasted additional O & M which are directly related to TEI's proposed CAPEX, such as insurance, maintenance and fuel cost; and
5. As the nature and allocation of O & M were being reviewed, necessary revisions and corrections were noted and made to properly align the allocation of the TEI's O & M.

TEI's revised historical and forecast OPEX is shown in Table 3.5 and 3.6. It is noted that the revised OPEX was not part of its original submission but has only been submitted through compliance after the clarificatory meeting.

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

Operating and Maintenance Expenditure Category	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Distribution and Connection Services Operation and Maintenance	46.86	39.73	41.01	40.33	40.88	45.43
Regulated Retail Services	79.15	61.66	60.31	61.44	62.37	64.98
Administrative and General	63.51	47.93	55.89	54.89	59.45	64.08
Total Operating & Maintenance Expenditure	**189.51**	**149.32**	**157.21**	**156.66**	**162.70**	**174.49**

Source: TEI's Submissions, September 2009

Table 3.6: Revised Forecast Operating and Maintenance Expenditure (Real PhP million, 2009)

Operating and Maintenance Expenditure Category	2011	2012	2013	2014
Distribution and Connection Services Operation and Maintenance	46.39	47.81	49.40	52.89
Regulated Retail Services	67.20	69.82	72.49	74.78
Administrative and General	69.85	72.40	77.11	82.44
Total Operating & Maintenance Expenditure	**183.44**	**190.03**	**199.00**	**210.12**

Source: TEI Submissions September 2009

3.3 REVIEW METHODOLOGY AND ASSUMPTIONS

Table 3.6 above shows that TEI'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 in real terms. The average annual forecast operating expenditure for the second regulatory period is PhP 195.65 million, compared to an average annual expenditure of PhP163.17 million over the four year historical period. The ERC does not concur with methodology used by TEI to escalate expenditures i.e. percentage increase in load growth, as ERC considers the key cost drivers for distribution operating expenses are network assets under management and customer numbers.

Hence in order to assess the reasonableness of the TEI forecasts, the ERC used its OPEX forecasting model[3] to predict an efficient 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 TEI in its revenue application.

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

The modelling assumes that there is 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, needs 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 ERC used to assess TEI's efficient and prudent annual operating expenditure forecasts included the following steps:

- Determine the base year operating and maintenance expenditures on a cost category basis;
- Assess each component of base year expenditure for any additional or extraordinary expenditures;
- Confirm that the base year operating and maintenance expenditures are efficient;

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

- 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 by the aforementioned steps are discussed in more detail in the following sections.

3.3.1 Determination of Efficient Base Year Operating and Maintenance Expenditure

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

- Review the itemized CY 2008 OPEX 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 the line item represented efficient use of funds and was consistent with expected recurring expenditure levels for that line item; and.

- Benchmarked TEI's adjusted OPEX using an efficiency frontier methodology based on the average historical data of 5 of the DUs in the third entry point, IEEC was omitted as it was considered 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 lengths and the average number of customers per line lengths were used.

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

3.3.1.1 Review of OPEX Line Items

TEI used the 2008 calendar year as its base year for determining forecast OPEX. From the application it is apparent that TEI used the 2008 figures as the basis for the 2009 budget. ERC also used the 2008 figures as the base year since this is the latest actual full-year expenditure data available.

Administrative & General Expenditures– Representation expenses

TEI indicated in its submissions that it included representation expenses as part of its 2008 base year costs. Representation costs are part of management prerogatives, thus should not be included in the revenue requirement. However, this does not preclude TEI from spending representation costs provided that these costs are not passed on to its customers. The impact of this adjustment is a decrease of PhP2.04 million.

Fringe Benefits

ERC disallowed provision for fringe benefits paid by TEI to its employees given insufficient information to identify reasonableness of such costs. The impact of this adjustment is a decrease of PhP0.11 million.

Miscellaneous Expenses

TEI included some miscellaneous expenses incurred which will not redound to the benefit of the consumer thus, should not be recovered in the rates. Among those miscellaneous expenses are donations and contributions, recreation expenses and violation of contract

expenses. The impact of this adjustment on the base year OPEX is a decrease of PhP 0.45 million.

Outside Services

TEI included outsourced services in the amount of PhP3.4 million which pertains to Consultancy/Professional Fees of non-recurring services like draft and compensation review, actuarial services, review and revision of various contracts, etc. Said expenses have been consistently disallowed for rate making purposes.

Regulated Retail – Bad Debts Expense

TEI included the amount of PhP2.98 million pertaining to uncollectible accounts. 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.

TEI's 2008 Audited Financial Statement stated that the accounts written-off amounted to PhP2.98 million and Accounts Receivable-Trade (AR) amounted to PhP146.43 million. 1% of outstanding trade accounts receivable is PhP1.46 million and hence this is the amount that ERC has allowed for bad debt expenses in the base year. Consistent with the Commission's Decision under ERC Case No. 2009-022RC, ERC reduced the proposed amount of bad debts by PhP1.51 million.

The resulting 2008 base year operating expenditures, after the ERC adjustments amounting to PhP7.5 million are as shown in Table 3.7. This has been used in the OPEX model to forecast future expenditures.

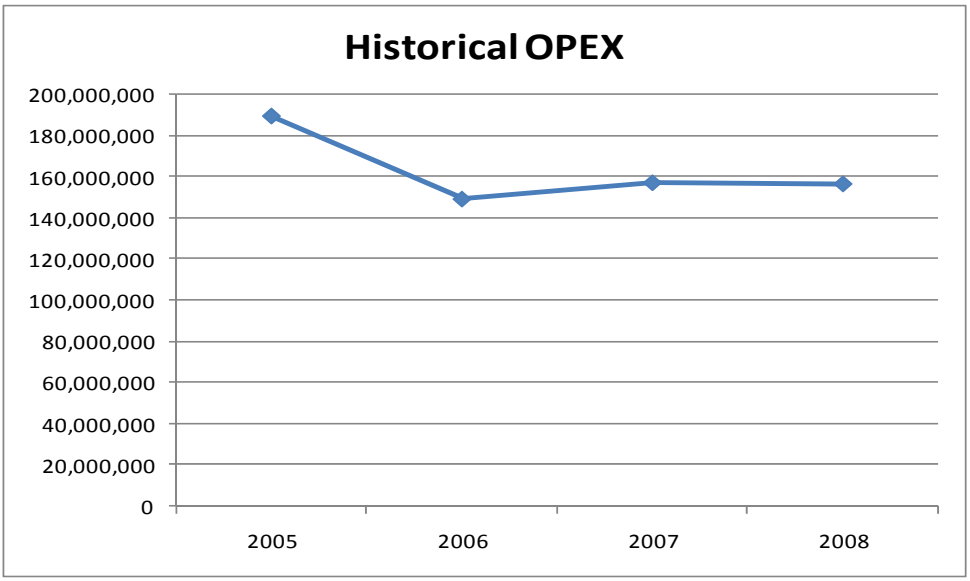
Table 3.7: Adjusted Base Year 2008 Operating and Maintenance Expenditure (PhP million, real 2009)

Operating and Maintenance Expenditure Category	2008
Operation	18.95
Maintenance	21.36
Administration and General	48.93
Regulated Retail Services	59.84
Total Operating & Maintenance Expenditure	**149.07**

3.3.1.2 Confirmation that the Base Year Costs are Efficient

To better understand the historical operating and maintenance expenditure pattern, the ERC has redrafted these historical expenditures in real peso such that variations in the expenditure trend are clearly visible. The result shows a visible significant reduction in OPEX in 2006 which has then remained relatively constant over the remaining historical years. This is shown in Figure 3.4.

Figure 3.4 Historical Operating and Maintenance Expenditures (Real PhP)



In its analysis, the ERC has determined that 40% of the total OPEX of the historical year 2008 is the regulated retail costs. Figure 3.5 below shows a comparison among the five (5) DUs in terms of its base year retail costs per number of customers.

Figure 3.5: Base Year Regulated Retail Costs Per Customer

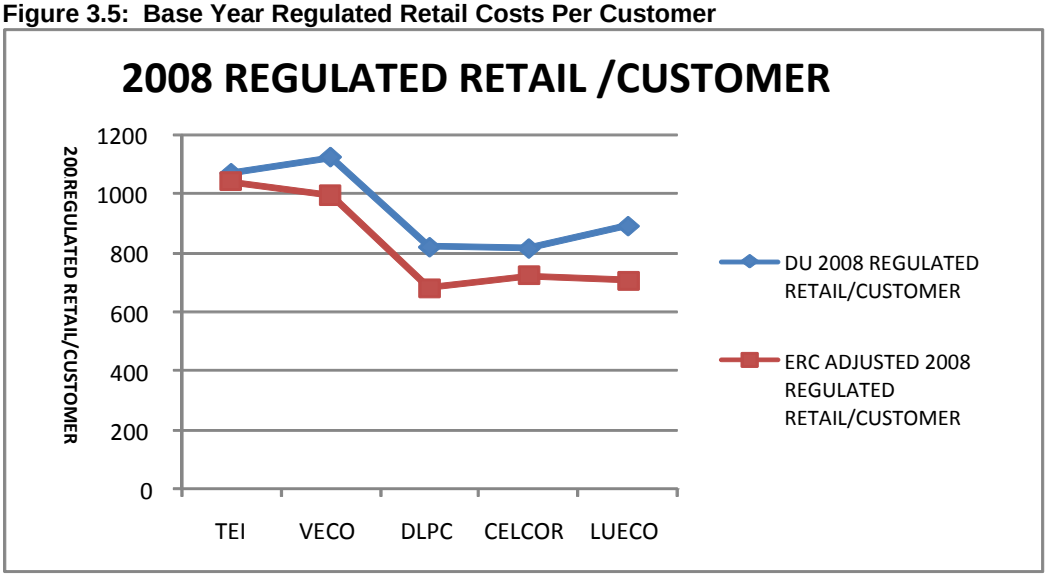


Figure 3.5 above illustrates that TEI is second highest in terms of its 2008 base year retail costs per customer. This re-enforces the ERC adjustment from its 2008 regulated retail cost amounting to PhP1.58 million, equivalent to a 3% reduction. This adjustment is included in the base year figure shown in Table 3.7 above.

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

[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.

Figure 3.6: Average Historical OPEX Per Line Length vs Customer Per Line Length

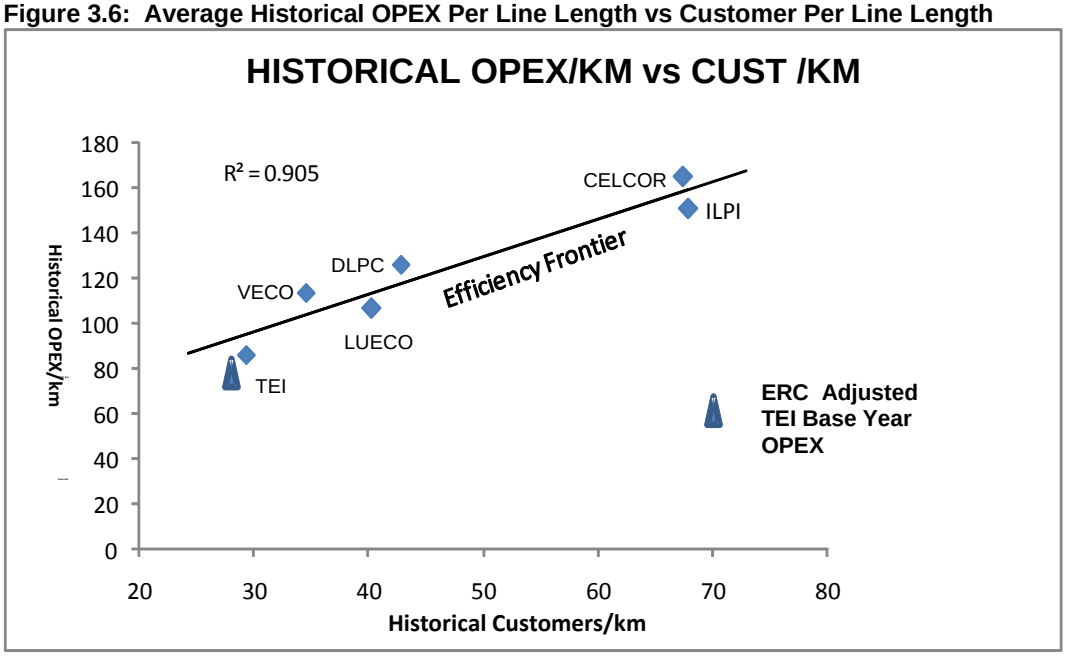


Figure 3.6 above shows the efficiency frontier based on normalised OPEX/line length vs. customer /line length and the position of the ERC' adjusted TEI Base Year OPEX relative to the efficiency frontier. It should be noted that the efficiency frontier is based on the average historical data of the six (6) DUs included in the analysis. The object of an efficiency frontier is to fall on or below the frontier to demonstrate relative efficiency. The ERC's TEI base year OPEX is deemed to be relatively efficient as it falls below the efficiency frontier.

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 as of December 31, 2008 as detailed in the TEI valuation report is used as a surrogate for asset size and is adjusted going forward to compensate for the impact of growth, 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 current 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 all the evaluated utilities, the ERC has modelled a 5% efficiency gain in regulated retail services to compensate for the economies of scale and scope.

- *Prices of Materials*

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

Copper and aluminium prices influence the cost of distribution maintenance 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 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.

o *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 allow prices that reflect 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, TEI 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, TEI indicated a "one off" expenditure related to its proposed additional staffing costs to support the full implementation of the new SCADA system in RY2010.

3.4 BASE OPEX FORECASTS GENERATED BY THE MODEL

Based on the analysis discussed in this section, the OPEX modelling has produced the OPEX forecast as shown in Table 3.8.

Table 3.8: ERC's Base OPEX Forecasts

Operating and Maintenance Expenditure Category	2011	2012	2013	2014
Distribution and Connection Services Operating and Maintenance	42.29	42.03	42.58	42.97
Regulated Retail Services	49.18	49.29	49.35	49.39
Administrative and General	62.44	63.90	65.37	66.86
Total Operating & Maintenance Expenditure	153.92	155.22	157.31	159.22

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 ERC OPEX model.

TEI proposed to include an additional OPEX forecast costs amounting to PhP18.59 million pertaining to a 3% annual increase in the operating and maintenance expenses due to additional CAPEX and PhP10 million for the additional employees' salaries and benefits and for the SCADA system and improvement of customer service and output of work.

Considering that GBA recommends an allowance for the full implementation of TEI's SCADA system and the OPEX model also accounts for corresponding OPEX costs incidental to the growth in CAPEX, ERC believes that the initial implementation of the new SCADA system will require additional personnel to operate, plan and maintain it. TEI proposed additional salaries and wages amounting to PhP1.8 million in RY2010, to account for TEI's intention to hire 6 additional electrical engineers for the initial implementation of the SCADA system. However, the project will decrease over time the need for employees currently manually operating substations. TEI indicated that it will have cost savings from the full implementation of the SCADA system beginning RY2011 as a result of removing 9 from its existing employees, amounting to PhP5.6 million. In this regard, the ERC allowed a provision for the additional employees' salaries and benefits for RY2010 amounting to PhP1.9 million and a reduction over the second regulatory period amounting to PhP5.6 million. It is noted that these adjustments are already reflected in Table 3.8 above.

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 3.8.

The ERC adopts the adjusted TEI OPEX forecasts indicated in the aforesaid Table 3.8.

Table 3.9 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 TEI included in its revenue application.

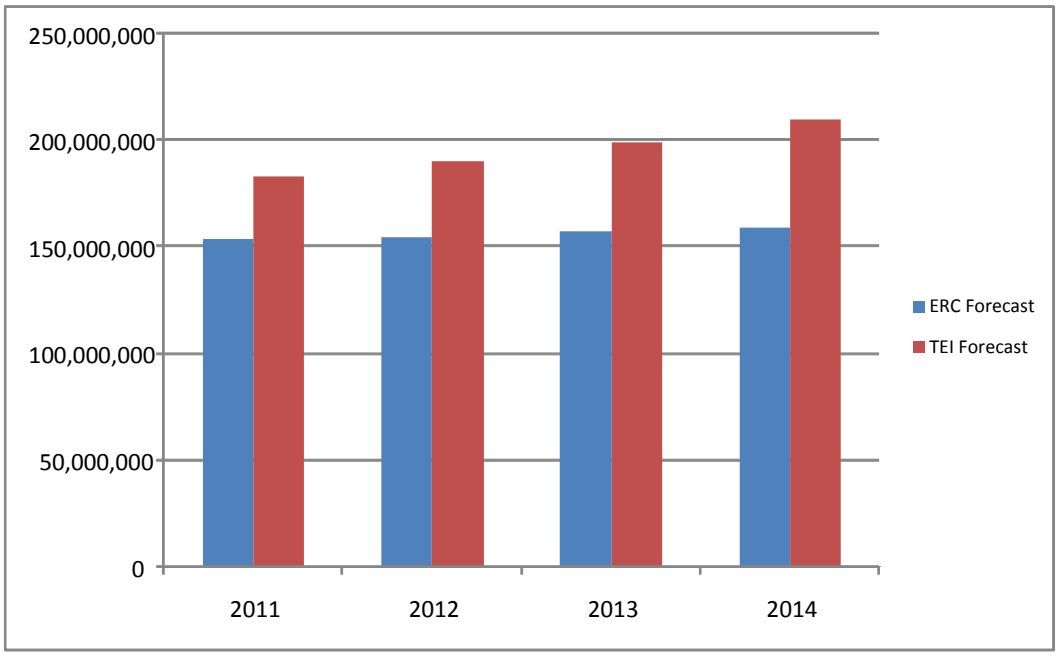
Table 3.9: Comparison of TEI and ERC Forecast Operating and Maintenance Expenditure (PhP million, real 2009)

Operating and Maintenance Expenditure Category	2010	2011	2012	2013	2014	Total[1]
Distribution and Connection Services Operating and Maintenance						
TEI Forecast	45.43	46.39	47.81	49.40	52.89	241.93
ERC Forecast	43.80	42.29	42.03	42.58	42.97	213.66
Difference	-1.63	-4.10	-5.78	-6.82	-9.93	-28.27
Administrative and General						
TEI Forecast	64.08	69.85	72.40	77.11	82.44	365.88
ERC Forecast	49.07	49.18	49.29	49.35	49.39	246.30
Difference	-15.01	-20.66	-23.10	-27.75	-33.05	-119.58
Regulated Retail Services						
TEI Forecast	64.98	67.20	69.82	72.49	74.78	349.27
ERC Forecast	61.36	62.44	63.90	65.37	66.86	319.94
Difference	-3.61	-4.76	-5.92	-7.12	-7.93	-29.33
Total Operating and Maintenance Expenditure						
TEI Forecast	174.49	183.44	190.03	199.00	210.12	957.07
ERC Forecast	154.23	153.92	155.22	157.31	159.22	779.90
Difference	-20.26	-29.52	-34.81	-41.69	-50.90	-177.18
ERC Adjustment	**-20.26**	**-29.52**	**-34.81**	**-41.69**	**-50.90**	**-177.18**

[1] It includes RY2010 plus the Second Regulatory Period comprise of a four-year regulatory period

A graphical comparison between TEI's and the ERC's forecast OPEX is shown in Figure 3.9. The ERC recommendation entails a reduction of 20% in the operating expenditures applied for by TEI amounting to PhP156.92 million over the 4 year regulatory period.

Figure 3.9: Comparison between TEI and ERC Forecast Operating and Maintenance Expenditure Forecast (PhP million, 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 has 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 has 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 studies. The ERC adjusted forecasts have been compared to these frontiers to test for relative efficiency.

Figure 4 shows the study of OPEX vs. RAB with the average ERC adjusted forecasts plotted on the graph. The study includes three (3) DUs in the second entry point (MECO, CLPC and ILPI) given available data used in the analysis. The average ERC OPEX forecasts are just below the efficiency frontier indicating relative efficiency. It should be noted that the coefficient of determination (R squared) for this study is 0.95 indicating a strong correlation between the dependent and independent variables.

Figure 4: Average Historical OPEX Per RAB

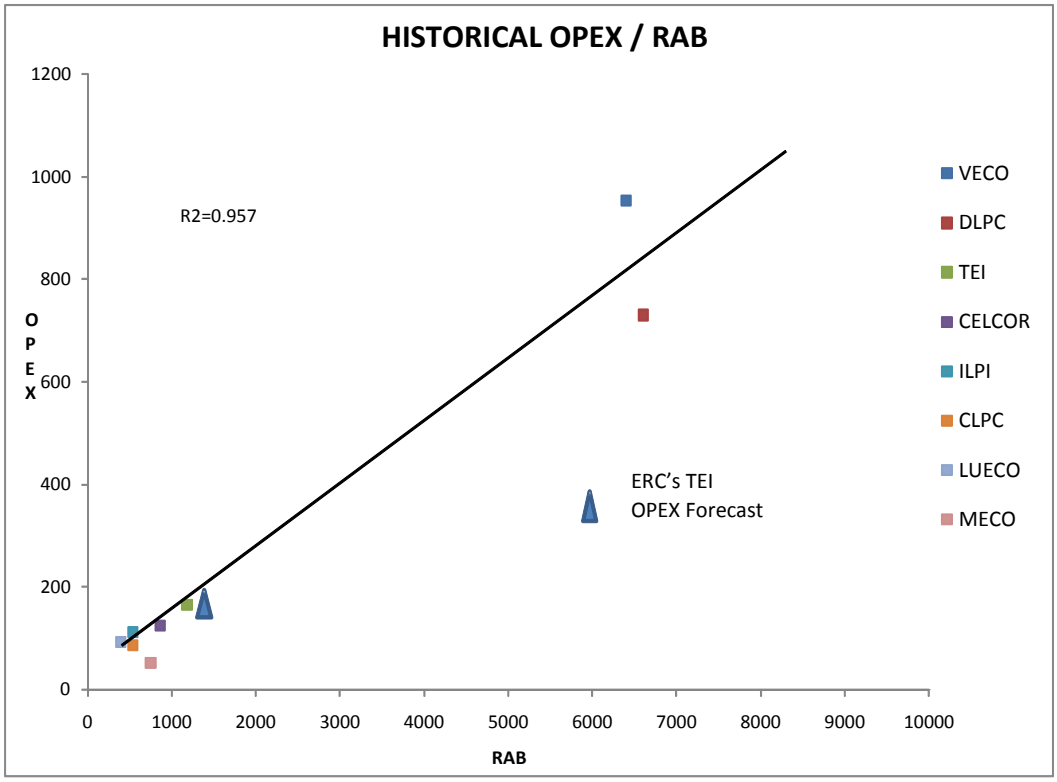
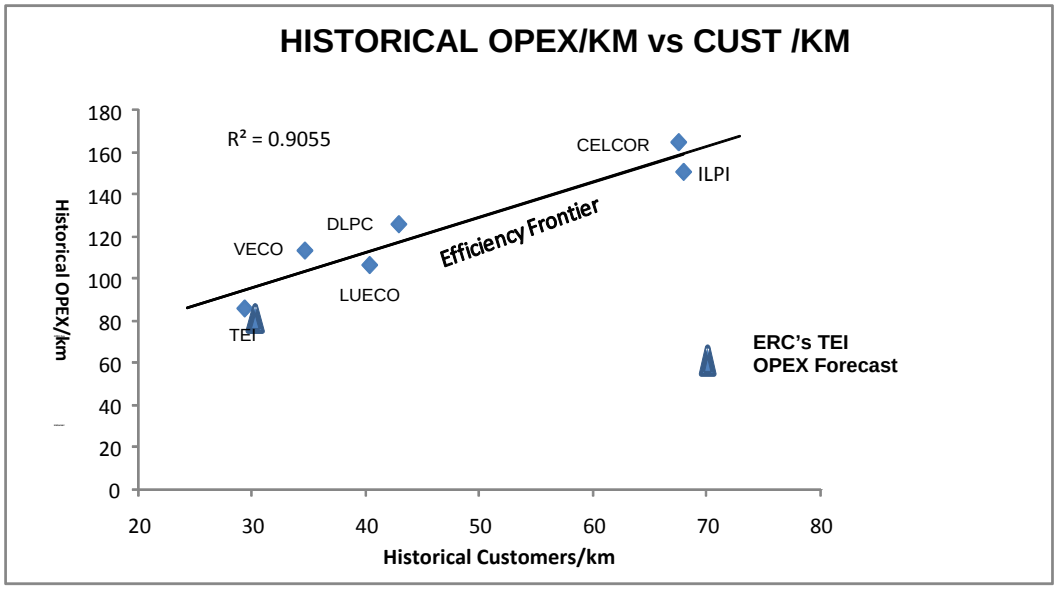


Figure 4.1 shows the normalised benchmarking study of OPEX/km vs. customers/km with the average ERC adjusted OPEX forecasts plotted on the graph. In this study, ERC included Iligan Light and Power, Inc. (ILPI), an entrant DU in the second entry point, given sufficient information to include it in this analysis. MECO and CLPC were not included given insufficient information for them to be included. The ERC adjusted OPEX forecasts are below the efficiency frontier and hence are considered to be relatively efficient.

It should be noted that the coefficient of determination (R squared) for this study is 0.92 indicating a strong correlation between the dependent and independent variables.

Figure 4.1: Average Historical OPEX Per Line Length and Customer Per Line Length

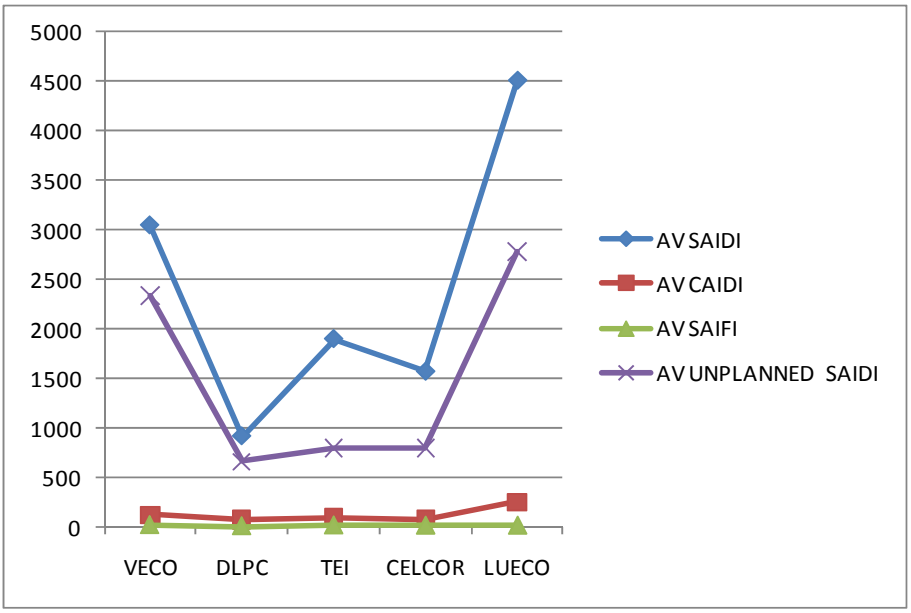


Based on these two benchmarking studies, ERC contends that its adjusted OPEX forecasts are relatively efficient.

3.6.2 OPEX vs. Performance/Efficiency Benchmarking

The ERC has benchmarked the historical network performance of five (5) of the six (6) DUs entering PBR at the third entry point, IEEC was excluded due to limited data available. The results of this analysis are shown graphically in Figure 4.2.

Figure 4.2 Group C DUs (except IEEC) Average Historical Network Performance



Note: IEEC data has not been included as only one year's data is available and it is considered an outlier.

The above graph uses CY2006 to CY2008 data submitted by the utilities. The ERC is very much aware that there are no sufficient data-points to draw firm conclusions on the relative performance of one (1) utiltity vis a vis the other four (4). However, the ERC has shown the above graph at this early stage, to give an early warning signal to the utilities included in the graph that network performance will be monitored during the second regulatory period and that the the ERC intends to conduct full performance benchmarking for the Third Regulatory Period, the results of which may be used in setting performance targets.

4 TAXES, LEVIES AND DUTIES

4.1 HISTORICAL AND FORECAST TAXES, LEVIES AND DUTIES

4.1.1 Historical Taxes, Levies and Duties Expenditure

TEI'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 PhP 0.94 million in nominal terms including the comparatively higher spend in CY 2008[5].

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

Year	CY 2005	CY 2006	CY 2007	CY 2008
Taxes, Levies and Duties	1.03	0.42	0.59	1.74

Source: Schedule G3 of TEI'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
Taxes, Levies and Duties	1.25	0.48	0.66	1.76

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

The average annual expenditure over this period in real terms is approximately PhP 1.04 million.

4.1.2 Forecast Taxes, Levies and Duties Expenditure

TEI'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
Taxes, Levies and Duties	1.81	2.12	3.75	1.91	2.31	2.75

Source: Schedule G3 of TEI'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 PhP 2.57 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 TEI's taxes, levies and duties over the 2005-2008 calendar years is presented in Table 4.4 below. Real property tax and registration fees comprise, on average, 57% of the total annual taxes, levies and duties expenditure across the period.

[5] The significant increase in the 2008 amounts can be attributed to the high expenditure on other taxes.

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

Year	CY 2005	CY 2006	CY 2007	CY 2008
Taxes				
Business Operation Permit	-	-	-	-
Community Tax	0.01	0.01	0.01	0.01
Real Property Tax	0.28	0.26	0.26	0.23
Admin/Regulatory Fee	-	-	-	-
Registration Fees	0.36	0.14	0.14	0.35
Other Documentary Stamp Tax	0.60	0.06	0.11	0.28
Sub-Total Taxes	**1.25**	**0.48**	**0.51**	**0.88**
Levies				
Regulatory Reset Expert Fees	-	-	0.14	0.88
Taxes, Levies and Duties	**1.25**	**0.48**	**0.66**	**1.76**

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

4.2.2 Forecast Taxes, Levies and Duties Expenditure Breakdown

TEI's forecast expenditure on taxes, levies and duties can be disaggregated into the components shown in Table 4.5 below.

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
Taxes						
Business Operation Permit	-	-	-	-	-	-
Community Tax	0.01	0.01	0.01	0.01	0.01	0.01
Real Property Tax	0.27	0.28	0.67	0.28	0.28	0.67
Admin/Regulatory Fee	-	-	-	-	-	-
Registration Fees	0.35	0.35	0.36	0.37	0.37	0.39
Other Documentary Stamp Tax	0.28	0.58	0.60	0.99	1.40	1.43
Sub-Total Taxes	**0.91**	**1.22**	**1.65**	**1.65**	**2.06**	**2.50**
Levies						
Regulatory Reset Expert Fees	0.90	0.90	2.11	0.26	0.26	0.25
Taxes, Levies and Duties	**1.81**	**2.12**	**3.76**	**1.92**	**2.32**	**2.75**

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

4.3 COMMENTARY

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

The taxes, levies and duties in TEI'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, TEI 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	0.90	0.90	2.11	0.26	0.26	.25

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

In its application, TEI included regulatory reset costs for CY2009 and RY2010. ERC determined that TEI should only be allowed to recover these costs starting RY2011, as advised by ERC. In this regard, ERC excluded these costs in CY2009 and RY2010.

It should be noted that the increase in RY2011 amount entails regulatory reset project costs for the period 2006-2010 which TEI can only recover in the first regulatory year.

4.3.2 Real Property Tax

As part of its application, TEI has included the following forecast amounts for real property tax:

Table 4.7: Forecast Real Property Tax (PhP million, real 2009)

Year	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Real Property Tax	0.27	0.58	0.60	0.99	1.40	1.43

Source: TEI's Submissions 2009

This component pertains to real property taxes for land and buildings and taxes imposed by the local government on all of TEI's real properties as well as the provision for real property taxes on power station equipment and the proposed construction of building (main office load dispatch building, warehouse/open stockyard motor pool). It should be noted, however, that TEI did not provide sufficient information to clearly explain its liability for the payment of real property taxes on power station equipment nor how the provision for real property tax on the proposed construction of building was determined.

4.3.3 Registration Fees

Table 4.8 below provides the forecast registration fees that TEI has included in its revenue application:

Table 4.8: Forecast Registration Fees (PhP million, real 2009)

Year	CY 2009	RY 2010	RY 2011	RY 2012	RY 2013	RY 2014
Registration Fees	0.35	0.35	0.36	0.37	0.37	0.39

Source: Schedule G3 of TEI's Revenue Application

This component pertains to registration fees including the provision for vehicle registration for the second regulatory period. It should be noted, however, that TEI did not provide an explanation on the basis for such increase.

4.4 ERC'S PROVISION FOR TAXES, LEVIES AND DUTIES

Upon detailed review of each line item of the taxes, levies and duties expenditure application of TEI, ERC made the following adjustments:

- The annual provision for real property tax should be adjusted down to CY 2008 value. Taxes for which TEI's liability has not been confirmed should not be included. In the event of the future imposition of additional real property taxes or should TEI become liable for taxes that are not included in the annual revenue requirement, Article IX of the RDWR allows for unexpected tax liabilities imposed during the Second Regulatory Period by means of a "Tax Event Pass Through";

- TEI proposed an average increase of 25% over the second regulatory period on vehicle registration fees. TEI provided information that the basis for this increase was based on an estimate of PhP3,000 per annum per vehicle. Given the uncertainty of such increase in registration fee, ERC ensures that the component of vehicle registration fees remain constant in 2009 real terms. In the event of changes in the imposition of such taxes, RDWR allows relevant tax change events to be recovered.

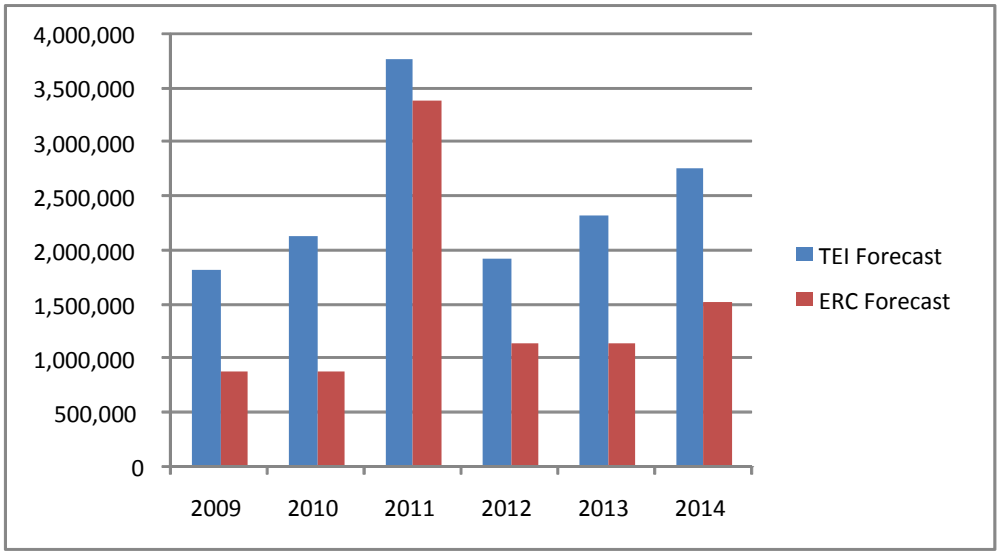
Consequently, ERC's provision for taxes, levies and duties is provided in Table 4.9 below:

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
Proposed in TEI's Revenue Application						
Taxes, Levies and Duties	**1.81**	**2.12**	**3.76**	**1.92**	**2.32**	**2.75**
ERC Adjustments						
Real Property Tax	-	-0.35	-0.37	-0.76	-1.17	-1.19
Registration of Service Vehicles	-	-	-0.009	-0.021	-0.021	-0.039
Total Adjustments	**-**	**-0.35**	**-0.379**	**-0.781**	**-1.191**	**-1.229**
ERC's Provision for Taxes, Levies and Duties	**1.81**	**1.77**	**3.381**	**1.139**	**1.129**	**1.521**

A graphical comparison between TEI's forecasts and our forecast for taxes, levies and duties is shown in 4.1.

Figure 4.1: Comparison between TEI's Forecast and ERC' Forecast (PhP million, real 2009)



The increase in RY2011 entails regulatory reset project costs for the period 2006-2010, which can only be recovered by TEI in the first regulatory year. It should be noted that, on average, over the four-year regulatory period, the taxes, levies and duties forecast is only an insignificant 1.3% of the total OPEX forecast.

The graph shows an average difference between TEI's forecast and ERC forecast of 47% from regulatory years 2011 to 2014.