Parsons Brinckerhoff Associates

STANDARD REPLACEMENT COSTS
FOR
DECORP

CONFIDENTIAL

FOR

ERC & DECORP

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EXECUTIVE SUMMARY

BACKGROUND & OBJECTIVES

The ERC Asset Valuation Guidelines provide ERC policy guidance with respect to the valuation of assets by any one of three methods - the Historical Cost Indexation method, the Current Replacement Cost method and the Modern Equivalent Asset (MEA) method.

A requirement common to each of these methods is the need to set efficient replacement costs.

More broadly, the scope of this paper covers selection of the asset valuation method, setting of the replacement costs and identification of Modern Equivalent Assets within each asset sub-category specified under the DRWG.

The proposals contained herein were prepared independently by PB Associates / Asian Appraisals (the Consultant) acting on behalf of the ERC; our objective is to make clear recommendations with regard to the matters covered under the scope of this companion paper.

The Consultant has received and incorporated comments from Decorp with regard to the proposals contained herein.

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APPENDICES:

1. INTRODUCTION

1.1 GENERAL

The electricity regulator in Philippines is proceeding to establish an ODRC valuation methodology in support of the determination of price control and tariff setting.

PB Associates is working on behalf of the ERC to recommend the Asset Valuation parameters required for the valuation of Decorp assets in accordance with the principles espoused in the ERC Asset Valuation Guidelines.

1.2 SCOPE OF REPORT

The scope of this report covers the determination of the following parameters:

- Standard and non-standard asset categories:
- Standard Asset Replacement Costs and Historical Cost Indexes. and

Standard Asset Lives are included in this report for completeness, but are drawn from the ERC Asset Valuation Guidelines.

These parameters are intended to be used for valuation of the assets of Decorp.

The scope of this report includes a summary of the details of the information collected from Decorp, analysis undertaken by PB Associates with reference to technical and regulatory / economic precedents and the details of the consultation conducted with Decorp.

1.3 STRUCTURE OF REPORT

This report comprises four sections:

Section 1 comprises this brief Introduction.

Section 2 explains the methodology adopted by PB Associates in determining standard asset replacement costs to be used in the Philippines (recap on the method outlined in the ERC Asset Valuation Guidelines

Section 3 discusses “efficient” replacement costs

Section 4 derives the Replacement Costs (RCs) and indexation factors by analysing trended costs from the **Decorp** asset register (post verification)

Appendix A provides a summary of replacement costs and annual growth indexes for installed costs for each of the Decorp asset types

2. PB ASSOCIATES METHODOLOGY FOR STANDARD COSTS

2.1 INTRODUCTION

The determination of standard asset replacement costs rests on several considerations:

- A suitable method to benchmark replacement costs as a means of determining efficient costs, and
- A method for determining multipliers such that replacement costs can be based on a single base rate for each asset type modified in accordance with business conditions that are outside the control of the DU.

This companion paper to the ERC Asset Valuation Guidelines makes recommendations on these matters.

2.2 REVIEW OF ERC GUIDING PRINCIPLES

The pertinent guiding principles outlined in the ERC Asset Valuation Guidelines are restated as follows:

- Each of the asset groups and subgroups should be allocated a per unit replacement cost for its modern equivalent, or be assigned a suitable growth index for installed costs;
- Since cost efficiency and consistency of valuation between DUs is an important objective, it is appropriate that efficient standard costs be applied by all DUs. The method for determining standard costs and growth indexes is set out in Appendix B of the ERC Asset Valuation Guidelines. Appendix B includes explanatory notes on how the standard costs and indexes should be used. Standard costs should be applied unless there is good reason to do otherwise. Justifications for all departures from the standard costs should be documented with a clear audit trail;
- The standard costs do not cover every type of construction and site condition, but their use should allow the majority of the assets to be assessed; and.
- There may be considerable variation in the unit costs of lines depending on the region, general topography, diversity of development and accessibility. The costing methodology is expected to make allowance for such variations if the asset register is sufficiently mature to identify assets affected by such factors.

2.3 DETERMINATION OF STANDARD ASSET REPLACEMENT COSTS

The methodology employed by PB Associates followed the process outlined in the ERC Asset Valuation Guidelines:

Step 1 – Classification of Assets (without materiality)

A standard asset categorisation was developed covering all types of assets found in the fixed asset registers of Decorp.

Step 2 – Standard Assets (with materiality)

Once the fixed asset registers were sorted into the standard categories, materiality considerations guided the process of selection of standard and non-standard assets. Standard assets are those assets that have a physical count / value totalling at least 5% for a given subcategory. Assets that fall below this threshold are considered as non-standard and can either be assigned to an adjacent category or valued using indexed historical costs.

As a general principle we included standard asset types within each DWRG subcategory. As an example, standard asset types within the pole subcategory would be found in the steel pole and concrete pole subcategory. While all steel poles could be ignored on the basis of materiality when compared to concrete poles, we retain steel poles as an asset subcategory for purposes of deriving an historical cost trend as the installed cost of steel poles is likely to escalate at a different rate to concrete or wood pole costs.

Step 3 – Value Standard Assets

Step 3a – Current Replacement Costs

Historical cost trending of actual installed costs was used (as described in Step 3) to estimate replacement costs for the valuation date. This served a dual purpose as it also verified the register information, revealing possible outliers that could be the result of data entry errors.

Step 3b - Benchmarking

Since the 'actual' replacement costs reported by a DU may not represent efficient replacement costs, it is necessary to benchmark these costs. This can be done through peer review for each standard asset type but if it is not possible to do so in a robust manner, then it requires a building block method whereby individual cost components are benchmarked to determine whether the actual costs represent efficient costs. The method used differs according to whether the assets have foreign equipment components or locally manufactured components. For imported items, market prices observed outside Philippines can be used to determine an index for market price movements and these can be related to the FOB prices of equipment imported into the Philippines per the corresponding price movements shown by the purchase records of the DU.

For locally manufactured items, the primary evidence is DU records where large quantities have been recorded. In this regard, materials and equipment costs are primarily a function of the effectiveness of the DU procurement processes in obtaining a price as close as possible to the market clearing price. We benchmark the procurement processes of the DU in a qualitatively to determine whether there is scope for procurement efficiencies.

Recent purchase prices of the DU reveal the market clearing price. However, the use of this information is problematic. Firstly under performance-based regulation the price paid for materials and equipment represents a competitive advantage. Secondly, a Regulator must take care to avoid the perception of price fixing by ensuring that price signals are not sent to the market. In South

Africa, a manufacturers association threatened legal action on the basis of a concern that gazetted replacement costs (based on manufacturer's surveys) would create a "market distortion".

The problem of market distortion can be overcome by not revealing the market prices paid for materials and equipment outside of the ERC.

Step 4 – Value Non-Standard Assets

As described in Step 3a, historical cost patterns were examined from Decorp ODRC registers. Historical indexes based on actual costs were determined. A weighted average historical index was struck based on the movement in actual replacement costs for standard assets. This index is used to roll forward the historical costs of all non-standard asset categories, or should a non-standard category be of a similar size to a standard category the index of that category can be used.

2.4 EFFICIENT REPLACEMENT COSTS

There are several methods in use to determine 'efficient' replacement costs.

A common approach is to benchmark replacement costs reported by the DU for each standard asset.

This approach is taken in New Zealand where there are 27 lines companies that report replacement costs. The business conditions faced by the lines companies are similar and this means that replacement costs can be directly compared as the peer group is sufficiently large to establish the 'efficient' replacement cost.

In the Philippines, the initial price determination is only applicable to three DUs. Furthermore the DUs face diverse business conditions. These factors work against the use of 'actual cost' benchmarking to determine efficient replacement costs.

As a result PB Associates has examined the major components of controllable cost that make up replacement costs.

There are two such components[1]:

- Engineering and Design Overheads
- Labour + Materials Costs

The on-costs are those costs that represent a reasonable allocation of the corporate overheads and network management overheads applied to capital expenditure.

Engineering and design overheads costs are the costs that accrue to capital projects.

[1] PB Associates has not benchmarked direct / indirect on-costs. These costs are embedded in the labor rate.

For the purposes of benchmarking, the labour costs can be further broken down into a man-hour rate and the hours (based on standard crews) required for replacement of each asset type. PB Associates has benchmarked each factor separately.

As previously mentioned in Section 2.3, equipment and materials costs are set by the market and the actual prices paid are a function of the effectiveness of the DU procurement policy and practices. PB Associates has examined the procurement processes of the DUs in a qualitative sense to determine if they are robust.

To assist in establishing construction costs, approximately 400 major and minor project costs over recent years were reviewed to determine the percentage engineering design and labor components relative to the materials component. Where appropriate the average engineering cost of 3% and 20% construction labor relative to the materials costs has been used to determine total project costs.

2.5 INFORMATION SOURCES

In summary PB Associates has estimated replacement costs for the Decorp assets using information from the following sources:

- **DU Fixed Asset Registers:** We examined the historical cost data to develop a current replacement cost based on an average cost to construct assets;
- **DU Equipment / Material Purchase Costs:** We sought evidence of volume purchasing efficiencies;
- **DU Procurement Policies & Practices:** We compared the practices of the DUs and looked for evidence of inefficiencies;
- **Previous DU Valuations:** We considered the Reproduction Cost New values used for the 2002 and 2004 Decorp Valuations based on the valuation reports prepared by Asian Appraisals CI on behalf of the DUs;
- **International Prices:** We benchmarked the prices paid for imported goods based on our international database for power equipment; and
- **Multipliers:** We considered the replacement cost multipliers in use in other regulatory jurisdictions.

3. EFFICIENT REPLACEMENT COSTS

3.1 DECORP PROCUREMENT PROCESSES

Best practice in procurement is evidenced by the following practices:

1. Identifying business needs with users and ensuring active participation in the Corporate Strategic Planning process;

2. Conducting market studies for strategic materials and services. This requires active participation of multi-functional teams in the development and design of materials and service requirements and their specifications;

3. Identifying potential suppliers;

4. Use of multi-functional teams in a structured approach to supply planning, specific requirement identification, contract and relationship strategies, supplier qualification and selection, and negotiation;

5. Contract management which involves the administration and resolution of related changes and issues arising during the contract term. It also includes the management of supplier quality and performance, and the monitoring of continuous improvement in the supply chain;

6. For key suppliers that are strategically critical to the business, the establishment of relationship agreements and continuous improvement programmes for the achievement of objectives for performance improvement related to business needs;

7. Maintaining an information database of contract and purchasing records, including past performance record;

8. Developing, maintaining and implementing procurement policies and procedures;

9. Ensuring that all procurement activities are governed by the highest professional and ethical standards regardless of who performs them;

10. Purchasing of inbound transportation for deliveries from overseas suppliers;

11. Identifying risks and opportunities in the Company's supply portfolio;

12. Supplier performance measurement; and

13. Development of strategic, long-term plans for sourcing of all major commodities.

Decorp is a relatively small company and yet PB Associates observed several examples suggesting efficiency in procurement.

Observations by PBA Associates:

1. Procurement of concrete poles from a local manufacturer is a cost effective decision that recognizes the strategic importance of a low cost supply of a major item;
2. Decorp maintains records of contract and procurement outcomes;
3. Decorp formally evaluates tender bids and negotiates on price; and
4. Decorp tracks asset performance and works with suppliers to solve emerging problems as part of a continuous improvement program.
5. An annual competitive tendering programme is in place for the procurement of normal service materials that are expected to be installed over the coming year. Bids are sort from all known suppliers. Technical and price evaluation is undertaken by the engineering group, with award being made to the lowest conforming tender.
6. Design build option for substation development is used and tenders called for competitive construction of new installations. Evidence was tabled by Decorp showing that where tendered costs were higher than expected, alternative in-house construction options were used to keep costs as low as possible.

This procurement process is fair and reasonable in achieving the most economical cost for new equipment and materials.

Overall, PB Associates finds that Decorp procurement processes are sufficiently robust to ensure that efficient market prices are captured for items of high value.

3.2 IN-HOUSE VERSUS CONTRACT LABOUR

Decorp uses a mixture of in-house and contract labour.

Currently Decorp use their in-house staff for the administration and design of the majority of new projects. Maintenance and construction work is undertaken using their in-house staff if there are sufficient resources available.

For large capital works projects like substation construction competitive design build tendering of the project work is performed where Decorp have insufficient resources to meet their construction programme. For these larger projects, typically three or four pre-selected contractors would be invited to submit a tender. In one recent example where design build bids where higher than expected, Decorp have undertaken to do the work in-house. PB Associates understands that direct contract labour rates are approximately equal to that of Decorp's in-house labor rate.

In setting replacement costs under an ODRC valuation, the labour rate should be that enjoyed when replacing significant parts of the distribution network. Given that the contract and in-house labour rates are similar, PB Associates has benchmarked replacement costs on a common rate and / or a percentage of material cost after evaluating the average installation costs from several projects.

3.3 IMPACT OF COMMODITY PRICES

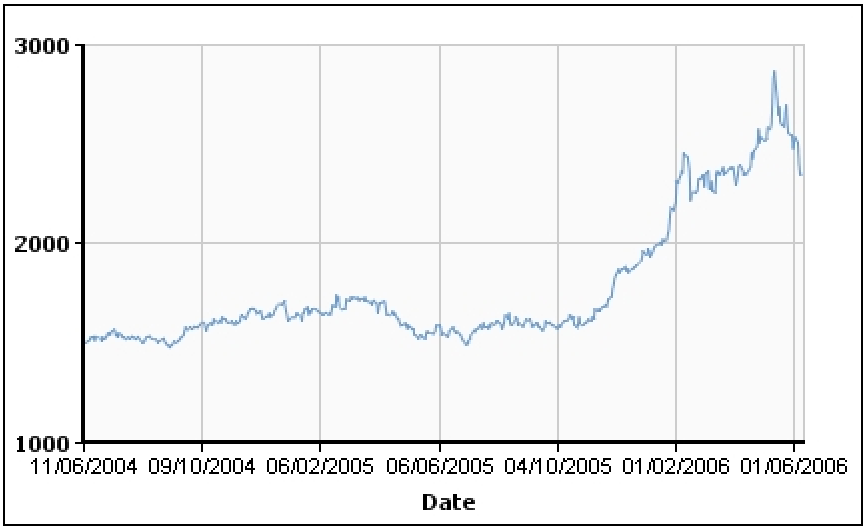
In forward expenditure forecasting it is not uncommon for utilities to model material costs to increase in line with inflation over future regulatory periods.

For example, ETSA Utilities factored material costs to increase in line with CPI, refer to page 143 of PB Associates, South Australian Electricity Distribution Price Review prepared for the Essential Services Commission of South Australia, and energyAustralia have forecast all non labour costs to increase in line with CPI in their last Submission to the Australian Competition and Consumer Commission, Transmission Revenue Reset 2004 – 2009 refer to page 21 of Attachment 5.

PB Associates has researched recent prices on the London Metal Exchange (LME) for non ferrous base metals and note significant volatility over the past two years. However this volatility may indicate that current prices are at or near the maximum for the current cycle. In addition forward prices, particularly for copper, now indicate sharp declines from their recent highs. For example the LME official prices for 23 June 2006 quoted a cash buyer price for copper a USD 6,710 per tonne and a 27 months forward contract buyer price of USD 4,965 per tonne.

Figure (i) and Figure (ii) taken from the historical data section of the LME website indicate that the current price increases are a relatively recent phenomenon which is supported by price history information over a longer period. Both graphs indicate a recent significant downturn in prices. In addition the price history for zinc, used for galvanising, displays a similar recent price increase but historical prices are relatively stable.

Figure (i): LME Aluminium Alloy Price Chart (USD/tonne)



Source: London Metal Exchange

Figure (ii): LME Copper Price Chart (USD/tonne)

Source: London Metal Exchange

In Australia, the Federal Government's current budget incorporates an assumption that commodity prices will fall significantly in the next two to three years, and some economists believe that the fall in commodity prices could be sharper than the Treasury has allowed for. In a recent report, the OECD notes that "the major uncertainty about the outlook for the Australian economy concerns the timing and the extent of the eventual downturn in commodity prices"[2].

On balance we consider that by the time the next regulatory period commences in July 2007 the current high prices for both base materials and manufactured equipment could well have fallen in line with historical cost trends and that future price increases would be more likely to escalate in line with CPI movements.

In this report, we have benchmarked Decorp material cost estimates for substation equipment using an international database of ex-works prices. The ex-works prices are based on detailed analysis performed in 2002 with subsequent price escalation by CPI. These prices do not recognise the significant commodity price increases during the last 12 months. We added overhead costs, such as taxes and labour rates, at current efficient rates. Accordingly the substation equipment replacement costs recommended by PB Associates are based on historical cost trends and do not fully capture short term transient increases in commodity prices.

For the case of the repetitive assets, we obtained manufacturers quotes for wire and transformers and found significant increases in the cost of materials since 2004, again reflecting the increase in commodity metals prices. We compared manufacturer costs with material costs proposed by Decorp and determined that Decorp costs are long term averages and are generally lower than current material prices. Again, we added overhead costs at current efficient rates. The repetitive asset replacement costs recommended by PB Associates are effectively based on historical cost trends i.e. they do not reflect short term transient increases in commodity prices.

[2] Refer Australian Financial Review article May 27, 2006 titled "The Economy".

A further consideration in support of this approach is that the hike in commodity prices is to some extent buffered by manufacturing stocks and helps to smooth out extreme price increases of short duration.

In summary, PB Associates has determined replacement costs on the basis that material costs should not exceed 2004 costs escalated at CPI (the average CPI from 2004 to mid-2006 has been 8% per annum). This principle has been applied in developing recommendations for replacement costs for the Decorp ODRC valuation.

4. DECORP REPLACEMENT COSTS

In this Section we determine the valuation method most suited to a given asset sub-category, and proceed to establish efficient replacement costs and indexes. In those cases where MEA valuation is warranted we propose a suitable MEA and replacement cost.

A1 – LAND AND LAND RIGHTS

AACI has valued land using fair market value.

A2 – STRUCTURES AND IMPROVEMENTS

Decorp has 33 structures, amongst which are buildings, perimeter fences and guard houses. AACI has valued these structures and improvements using fair market value.

A3 – STATION EQUIPMENT

A3A – Power Transformers

Decorp has 5 power transformers as shown in Table 1. The power transformers have been valued using a Replacement Cost Method.

Table 1: Assets In Use

Power Transformers	Count	Year installed	RCN[3] 2004 per Item (Php)
Power Transformer, 69/13.8 kV, 5 MVA, Off Load Tap Changer	1	1989	2,828,432
Power Transformer, 69/13.8 kV, 10 MVA, Off Load Tap Changer	1	1993	4,956,645
Power Transformer, 69/13.8 kV, 15/20 MVA, Off Load Tap Changer	1	1997	8,815,653
	1	1998	8,815,653
Power Transformer, 69/13.8 kV, 20/27/33 MVA, Off Load Tap Changer	1	2003	14,400,575

Building Block Verification of Replacement Costs

The following table is taken from PB Associates international replacement cost database:

Table 2: International Ex-Works Cost for Power Transformers

The costs shown here are for transformers that are assumed to have forced cooling.

[3] RCN – Reproduction Cost New

Rated Voltage (kV)	Rating (MVA)	Cost Ex-works £
72.5/36	60	265,000
	45	289,000
	30	188,000
72.5/24	30/60	195,000
	20/40	162,000
	16/32	140,000
	12/24	113,000
	10	95,000
	7.5	84,000
72.5/12	20/40	196,000
	16/32	154,000
	12/24	123,000
	10	115,000
	7.5	110,000
36/24	4	91,200
36/12	38	308,000
	24	210,000
	20/40	184,000
	15	150,000
	12/24	128,000
	10	112,000
	7.5	100,000

Using these tables, PB Associates has determined the ex-works costs of Decorp power transformers (using the nearest possible match and interpolation) to be as follows:

Table 3: International Prices Ex-Works

Power Transformers	PBA Cost Ex-Works £	Php @ 96 Php per £
Power Transformer, 69/13.8 kV, 5 MVA, Off Load Tap Changer	86,900	8,339,230
Power Transformer, 69/13.8 kV, 10 MVA, Off Load Tap Changer	120,900	11,606,150
Power Transformer, 69/13.8 kV, 15/20 MVA, Off Load Tap Changer	179,000	17,190,600
Power Transformer, 69/13.8 kV, 33 MVA, Off Load Tap Changer	197,640	18,970,000

Summary of Proposed Valuation Approach

PB Associates propose to value Power Transformers using the current replacement cost method.

PB Associates has taken an ex-works cost from our international database of equipment costs and applied a fixed overhead of 17%. This overhead includes 12% VAT and 5% installation component.

The analysis in the preceding section suggests the following RCs for Decorp Power Transformers.

Table 4: RC for Power Transformers

Power Transformers	RCN 2004 per Item (Php)	PBA Ex-Works Cost Jun 06	Installation Overhead + VAT 12%	RC at Jun 2006 (Php)
Power Transformer, 69/13.8 kV, 5 MVA, Off Load Tap Changer	2,828,432	8,339,230	1.17	9,753,900
Power Transformer, 69/13.8 kV, 10 MVA, Off Load Tap Changer	4,956,645	11,606,150	1.17	13,579,200
Power Transformer, 69/13.8 kV, 15/20 MVA, Off Load Tap Changer	8,815,653	17,190,600	1.17	20,113,000
Power Transformer, 69/13.8 kV, 33 MVA, Off Load Tap Changer	14,400,575	18,970,000	1.17	22,199,000

PB Associates is of the opinion that some of the 2004 Reproduction Cost, New costs were lower than international prices.

A3B – Switchgear

Decorp has a total of 8 circuit breakers and 71 disconnectors in use.

(i) Circuit Breakers

Circuit breakers have been valued using the current replacement cost method.

Table 5: Assets In Use

Circuit Breakers	Count	Year installed	RCN 2004 per Item (Php)
Switchgear: SF6 Dead Tank Circuit Breaker, 69 KV Outdoor, 3-pole, 1200 A, 31.2 KA	1	1992	2,586,118
	1	2003	
Switchgear: SF6 Live Tank Circuit Switcher, 69 KV Outdoor, 3-pole, 1200 A, 64 KA	1	1997	1,488,052
	1	1998	
	1	1999	
Switchgear: Vacuum Circuit Breaker, 13.8 KV Outdoor, 1200 A, 25 KA	1	1997	541,782
	1	1998	
Metalclad Switchgear: Vacuum Circuit Breaker, 13.8 KV Outdoor, 2 x 2000 A and 4 x 1250 A, 25 KA	1	2003	5,716,040

Building Block Verification of Replacement Costs

Table 6: International Ex-Works Cost for Circuit Breakers

Rated Voltage (kV)	Normal Current Rating (A)	Short Circuit Current (kA)	Cost Ex-works £
Outdoor Dead Tank CBs			
72.5	3150	40	35,250

Rated Voltage (kV)	Normal Current Rating (A)	Short Circuit Current (kA)	Cost Ex-works £
	3150	31.5	32,250
	2500	25	28,800
	2000	25	28,600
36	2500	25	32,000
	1250, Vacuum	25	22,150
	1250	25	18,100
	800	25	15,500
Indoor			
12	Transformer incomer panel	2000	23,500
	Feeder panel	2000	20,500
	Bus section panel	2000	20,000
	Transformer incomer panel	1250	16,500
	Feeder panel	1250	14,500
	Bus section panel	1250	12,600

Using these tables, PB Associates has determined the ex-works costs of Decorp circuit breakers (using the nearest possible match and interpolation) to be as follows:

Table 7: International Prices Ex-Works

Circuit Breakers	PBA Cost Ex-Works £	Php @ 96 Php per £
Switchgear: SF6 Dead Tank Circuit Breaker, 69 KV Outdoor, 3-pole, 1200 A, 31.2 KA	30,280	2,906,580
Switchgear: SF6 Live Tank Circuit Switcher, 69 KV Outdoor, 3-pole, 1200 A, 64 KA	24,180	2,321,230
Switchgear: Vacuum Circuit Breaker, 13.8 KV Outdoor, 1200 A, 25 KA	7,950	763,230
Metalclad Switchgear: Vacuum Circuit Breaker, 13.8 KV Outdoor, 2 x 2000 A and 4 x 1250 A, 25 KA	47,560	4,565,810

Summary of Proposed Valuation Approach

PB Associates propose to value Circuit Breakers using the current replacement cost method. A sanity check was made with regard to historical costs, and particularly where recent installation costs were available.

The analysis suggests the following RCs for Decorp Circuit Breakers:

Table 8: RC for Circuit Breakers

Circuit Breakers	RCN 2004 per Item (Php)	PBA Ex-Works Cost Jun 06	Installation Overhead + VAT 12%	RC at Jun 2006 (Php)
Switchgear: SF6 Dead Tank Circuit Breaker, 69 KV Outdoor, 3-pole, 1200 A, 31.2 KA	2,586,118	2,906,580	1.17	3,400,700
Switchgear: SF6 Live Tank Circuit Switcher,	1,488,052	2,321,230	1.17	2,715,840

Circuit Breakers	RCN 2004 per Item (Php)	PBA Ex-Works Cost Jun 06	Installation Overhead + VAT 12%	RC at Jun 2006 (Php)
69 KV Outdoor, 3-pole, 1200 A, 64 KA				
Switchgear: Vacuum Circuit Breaker, 13.8 KV Outdoor, 1200 A, 25 KA	541,782	763,230	1.17	892,980
Metalclad Switchgear: Vacuum Circuit Breaker, 17.5 KV Outdoor, 2 x 2000 A and 4 x 1250 A, 25 KA	5,716,040	4,565,810	1.17	5,342,000

(ii) Disconnectors

Table 9: Assets In Use

Disconnectors	Count	Year installed	RCN 2004 per Item (Php)
Disconnector, 13.8 kV, 800 A, mounted on bus structure supports, motorised	5	2003	179,674
	15	2003	
Disconnector, 13.8 kV, 1200 A, mounted on bus structure supports	18	1997	74,200
	15	1998	
	18	1998	

Building Block Verification of Replacement Costs

Table 10: International Prices Ex-Works

Disconnectors	PBA Cost Ex-Works £	Php @ 96 Php per £
Disconnector, 13.8 kV, 800 A, mounted on bus structure supports, motorised	2,500	288,000
Disconnector, 13.8 kV, 1200 A, mounted on bus structure supports	2,500	288,000

Summary of Proposed Valuation Approach

PB Associates propose to value Disconnectors using current replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp Disconnectors:

Table 11: RC for Disconnectors

Disconnectors	RCN 2004 per Item (Php)	PBA Cost Ex-Works Pesos	Installation Overhead + VAT 12%	RC at Jun 2006 (Php)
Disconnector, 13.8 kV, 800 A, mounted on bus structure supports, motorised	179,674	288,000	1.20	345,600
Disconnector, 13.8 kV, 1200 A, mounted on bus structure supports	74,200	288,000	1.20	345,600

A3C – Protective Equipment

(i) Current Transformers

Decorp has 6 Current Transformers (CTs) in use.

Table 12: Assets In Use

Current Transformers	Count	Year installed	RCN 2004 per Item (Php)
Protective Equipment: Current Transformer, 69KV, 350:5 A, Outdoor	3	1998	219,300
	3	1999	

Building Block Verification of Replacement Costs

Table 13: International Prices Ex-Works

Potential Transformers	PBA Cost Ex-Works £	Php @ 96 Php per £
Protective Equipment: Current Transformer, 69KV, 350:5 A, Outdoor	3,800	364,800

Summary of Proposed Valuation Approach

PB Associates propose to value CTs using current replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp CTs:

Table 14: RC for CTs

CTs	PBA Cost Ex-Works Pesos	Installation Overhead VAT 12%	RC at Jun 2006 (Php)
Current Transformer, 69 kV, Outdoor, 2 Cores, 1200/600:5	364,800	1.20	437,760

(ii) Potential Transformers

Decorp has 56 Potential Transformers in use.

Table 15: Assets In Use

PTs	Count	Year installed	RCN 2004 per Item 2004 (Php)
Potential Transformers, 13.8 kV, Outdoor, 120/70:1	12	1997	72,293
	12	1998	
	3	1998	
	3	1999	
	12	2003	
	2	1997	
	2	1998	

PTs	Count	Year installed	RCN 2004 per Item 2004 (Php)
	2	1998	
	2	1999	
Potential Transformers, 69 kV, Outdoor, 600/350:1	3	1999	186,719
	3	2005	

Building Block Verification of Replacement Costs

Table 16: International Prices Ex-Works

Potential Transformers	PBA Cost Ex-Works £	Php @ 96 Php per £
Potential Transformer, 13.8 kV, Outdoor, 120/70:1	1,740	166,800
Potential Transformer, 69 kV, Outdoor, 600/350:1	2,520	242,360

Summary of Proposed Valuation Approach

PB Associates propose to value PTs using current replacement cost method. The analysis in the preceding section suggests the following RCs:

Table 17: RC for PTs

Potential Transformers	PBA Cost Ex-Works Pesos	Installation Overhead + VAT 12%	RC at Jun 2006 (Php)
Potential Transformer, 13.8 kV, Outdoor, 120/70:1	166,800	1.22	203,500
Potential Transformer, 69 kV, Outdoor, 600/350:1	242,360	1.22	295,680

(iii) Lightning Arresters

Decorp has 111 Lightning Arresters comprising Distribution and Station Classes.

Table 18: Assets In Use

Lightning Arresters	Count	Year installed	RCN 2004 per Item (Php)
Lightning Arrester, 12 kV, Distribution Class (13.8 kV system voltage)	12	2003	3,024
Lightning Arrester, 15 kV, Distribution Class (13.8 kV system voltage)	12	1997	2,679
	3	1998	
	3	1998	
	3	1999	
Lightning Arrester, 15 kV, Station Class (13.8 kV system voltage)	30	1997	21,897
	15	1998	
	6	1998	

Lightning Arresters	Count	Year installed	RCN 2004 per Item (Php)
	6	1999	
Lightning Arrester, 60 kV, Station Class (69 kV system voltage)	3	2003	59,956
Lightning Arrester, 72 kV, Station Class (69 kV system voltage)	3	1997	81,766
	6	1998	
	3	1998	
	6	1999	

Building Block Verification of Replacement Costs

Table 19: International Prices Ex-Works

Lightning Arresters	PBA Cost Ex-Works £	Php @ 96 Php per £
Lightning Arrester, 12 kV, Distribution Class (13.8 kV system voltage)	31	3,012
Lightning Arrester, 15 kV, Distribution Class (13.8 kV system voltage)	31	3,012
Lightning Arrester, 15 kV, Station Class (13.8 kV system voltage)	258	24,787
Lightning Arrester, 60 kV, Station Class (69 kV system voltage)	667	64,000
Lightning Arrester, 72 kV, Station Class (69 kV system voltage)	789	75,758

Summary of Proposed Valuation Approach

PB Associates propose to value LA's using current replacement cost method. The analysis in the preceding section suggests the following RCs:

Table 20: RCs for LA's

Lightning Arresters	RCN 2004 per Item (Php)	PBA Cost Ex-Works Pesos	Install Cost Pesos	RC at Jun 2006 (Php)
Lightning Arrester, 12 kV, Distribution Class (13.8 kV system voltage)	3,024	3,012	1.22	3,675
Lightning Arrester, 15 kV, Distribution Class (13.8 kV system voltage)	2,679	3,012	1.22	3,675
Lightning Arrester, 15kV, Station Class (13.8 kV system voltage)	21,897	24,787	1.22	30,240
Lightning Arrester, 60 kV, Station Class (69 kV system voltage)	59,956	64,000	1.32	84,480
Lightning Arrester, 72 kV, Station Class (69 kV system voltage)	81,766	75,758	1.32	100,000

(iv) Protection Schemes & Relays

Decorp has several kinds of protection schemes and relays:

Table 21: Assets In Use

Protection Schemes & Relays	Count	Year installed	RCN 2004 per Item (Php)
230/115/69 kV Transformer Differential Protection Scheme (1 panel per transformer)	4	2003	222,274
Over / Underfrequency Relays	3	2003	64,067
34.5 kV (and below Feeder Protection (3 Feeders per Protection Panel)	22	2003	154,611

Building Block Verification of Replacement Costs

Table 22: International Prices Ex-Works

Protection Schemes & Relays	PBA Cost Ex-Works £	Php @ 96 Php per £
Over / Under frequency Relays (1 only)	1,700	112,000
230/115/69 kV Transformer Differential Protection Scheme (1 panel per transformer)	5,000	324,000
34.5 kV (and below Feeder Protection (3 Feeders per Protection Panel)	8,700	234,000

Summary of Proposed Valuation Approach

PB Associates propose to value protection schemes and relays using current replacement cost method. The analysis in the preceding section suggests the following RCs:

Table 23: RCs for Protective Equipment

Protective Equipment	RCN 2004 per Item (Php)	PBA Cost Ex-Works Pesos	Installation Cost Pesos	RC at Jun 2006 (Php)
Over / Under frequency Relays	222,273	112,000	388,000	500,000
230/115/69 kV Transformer Differential Protection Scheme (1 panel per transformer)	64,067	324,000	541,000	775,000
34.5 kV (and below Feeder Protection (3 Feeders per Protection Panel)	154,610	234,000	490,000	814,000

A3D – Metering & Control

The Decorp Fixed Asset Register contains no Metering & Control Equipment in use.

A3E – Communications Equipment

The Decorp Fixed Asset Register contains a SCADA system. The 2004 RCN was Php 1,353,157. These assets have been valued using historical cost indexation at a rate of 4.5% per annum.

A3F – Other Station Equipment

(i) Battery / Chargers

Decorp has several kinds of battery banks and battery chargers

Table 24: Assets In Use

Protection Schemes & Relays	Count	Year installed	RCN 2004 per Item (Php)
Storage Batteries, Lead Acid 92 Ah, 4 - 12V Cells; 48V DC	8	2003	25,428
Storage Batteries, Lead Acid 800 Ah; 2V Cells; 48 V DC	24	2003	36,853
Battery Charger 100 A, 48V DC	1	2003	882,510
Battery Charger 40 A, 48V DC	1	2003	353,004

PB Associates propose that these assets be valued using historical cost indexation at a rate of 4.5% per annum.

(ii) Distribution Boxes

The Decorp Fixed Asset Register contains no Distribution Boxes in use.

(iii) Gantries / Buswork

Decorp has several kinds of gantries and buswork structures in use.

Table 25: Assets In Use

Buswork / Gantries	Count	% by Count	RCN 2004 per Item (Php)
Buswork, Bare ACSR, 795 MCM	340	14.73%	918
Buswork, Bare Copper, 1000 MCM	60	2.60%	1,339
Buswork, Bare Copper, 4/0 AWG	400	17.33%	1,174
Buswork, Bare Copper, 4/0 AWG	315	13.65%	367
Buswork, Bare Copper, 4/0 AWG	400	17.33%	902
Buswork, Bare Copper, 4/0 AWG	70	3.03%	1,981
Buswork, Bare Copper, 4/0 AWG	400	17.33%	156
Buswork, Bare Copper, 800 MCM	45	1.95%	1,004
Buswork, Post Insulator, 15.5 KV	266	11.53%	1,810
Buswork, TRXLPE Power Cable, 1 x 500 MCM	1	0.04%	2,317,068
Gantry, 13.8 KV Steel Structure	1	0.04%	1,530,352
Gantry, 13.8 KV Steel Structure	1	0.04%	513,574
Gantry, 13.8 KV Steel Structure	1	0.04%	1,353,983
Gantry, 13.8 KV Steel Structure	1	0.04%	524,377
Gantry, 13.8 KV Steel Structure	1	0.04%	824,111
Gantry, 69 KV Steel Structure	2	0.09%	146,045
Gantry, 69 KV Steel Structure	2	0.09%	306,157
Gantry, 69 KV Steel Structure	1	0.04%	398,004
Gantry, 69 KV Steel Structure	1	0.04%	612,314

Summary of Proposed Valuation Approach

PB Associates propose that these assets be valued using historical cost indexation at a rate of 4.5% per annum.

A4 & A5 – TOWERS, POLES & FIXTURES (DISTRIBUTION)

Decorp has 28,217 distribution poles comprising 12,908 concrete (68.6%), 11,393 wood (40.4%), and 3,916 steel / GI poles (13.8%).

Table 26: Assets In Use

Pole Type	Count	% by Count
Concrete Pole, 25 ft	83	0.29%
Concrete Pole, 25 ft Class 10A	2894	10.26%
Concrete Pole, 25 ft Class 5	18	0.06%
Concrete Pole, 25 ft Class 7A	2417	8.57%
Concrete Pole, 30 ft	15	0.05%
Concrete Pole, 30 ft Class 10A	1	0.00%
Concrete Pole, 30 ft Class 5	3	0.01%
Concrete Pole, 30 ft Class 7A	1892	6.71%
Concrete Pole, 35 ft Class 5	859	3.04%
Concrete Pole, 35 ft Class 7A	2583	9.15%
Concrete Pole, 40 ft Class 5	1327	4.70%
Concrete Pole, 40 ft Class 7A	5	0.02%
Concrete Pole, 45 ft Class 5	436	1.55%
Concrete Pole, 50 ft Class 5	286	1.01%
Concrete Pole, 55 ft Class 5	81	0.29%
Concrete Pole, 60 ft Class 5	8	0.03%
Creosoted Wood Pole, 25 ft	5	0.02%
Creosoted Wood Pole, 25 ft Class 3	358	1.27%
Creosoted Wood Pole, 25 ft Class 5	6366	22.56%
Creosoted Wood Pole, 25 ft Class 7A	1	0.00%
Creosoted Wood Pole, 30 ft Class 1	72	0.26%
Creosoted Wood Pole, 30 ft Class 3	2205	7.81%
Creosoted Wood Pole, 35 ft Class 1	218	0.77%
Creosoted Wood Pole, 35 ft Class 3	1140	4.04%
Creosoted Wood Pole, 35 ft Class 5	2	0.01%
Creosoted Wood Pole, 40 ft Class 1	19	0.07%
Creosoted Wood Pole, 40 ft Class 3	229	0.81%
Creosoted Wood Pole, 40 ft Class 5	2	0.01%
Creosoted Wood Pole, 45 ft Class 3	63	0.22%
Creosoted Wood Pole, 45 ft Class 5	1	0.00%
Creosoted Wood Pole, 50 ft Class 3	18	0.06%
Creosoted Wood Pole, 50 ft Class 5	2	0.01%
Creosoted Wood Pole, 55 ft Class 3	10	0.04%
Creosoted Wood Pole, 60 ft	2	0.01%
Creosoted Wood Pole, 60 ft Class 3	11	0.04%
Galvanized Iron Pole, 15 ft	110	0.39%
Galvanized Iron Pole, 20 ft	3120	11.06%
Galvanized Iron Pole, 25 ft	84	0.30%
Galvanized Iron Pole, 30 ft	149	0.53%

Pole Type	Count	% by Count
Galvanized Iron Pole, 35 ft	1	0.00%
Steel Pole, 25 ft	366	1.30%
Steel Pole, 30 ft	24	0.09%
Steel Pole, 30 ft Class 7A	1	0.00%
Steel Pole, 35 ft	60	0.21%
Steel Pole, 45 ft	1	0.00%
Wolmanized Wood Pole, 25 ft	5	0.02%
Wolmanized Wood Pole, 25 ft Class 3	1	0.00%
Wolmanized Wood Pole, 25 ft Class 5	544	1.93%
Wolmanized Wood Pole, 30 ft Class 3	67	0.24%
Wolmanized Wood Pole, 35 ft Class 3	9	0.03%
Wolmanized Wood Pole, 35 ft Class 5	1	0.00%
Wolmanized Wood Pole, 40 ft Class 3	1	0.00%
Wolmanized Wood Pole, 50 ft Class 3	1	0.00%
Wood Pole, 25 ft	40	0.14%

The shaded rows – the most common asset types – account for **89.8%** of the count.

(i) Standard Concrete Poles

Table 27: Assets In Use

Concrete Poles	Count	% by Count	RCN 2004 per Item (Php)	RCN 2006 @ 650 Php per annum
Concrete Pole, 25 ft	2518	19.51%	3,602	4,902
Concrete Pole, 25 ft Class 10A	2894	22.42%	4,271	5,571
Concrete Pole, 30 ft	1908	14.78%	7,165	8,465
Concrete Pole, 30 ft Class 5	3	0.02%	11,574	12,874
Concrete Pole, 35 ft Class 5	859	6.65%	11,574	12,874
Concrete Pole, 35 ft Class 7A	2583	20.01%	9,369	10,669
Concrete Pole, 40 ft	1332	10.32%	13,090	14,390
Concrete Pole, 45 ft Class 5	436	3.38%	17,775	19,075
Concrete Pole, 50 ft Class 5	286	2.22%	16,645	17,945
Concrete Pole, 55 ft Class 5	81	0.63%	19,758	21,058
Concrete Pole, 60 ft Class 5	8	0.06%	28,695	29,995

Building Block Verification of Replacement Costs

PB Associates has used a building block model to estimate the replacement cost of concrete poles. **These replacement cost estimates are based on conditions at a 'brownfield' site.**

Building block costs include materials, engineering and labour cost components.

The material cost includes a cost for guying. An overhead of 5% of raw material cost was applied to the pole category. This overhead cost included all design, procurement and transportation costs.

The labour cost for poles were based on a 7- man crew + vehicles (total daily rate of Php9,000). The installation times were set as per the following table:

Table 28 Efficient Installation Hours for Concrete Poles

Pole size	Installation Time
< 30ft	3 hours
40 ft	4 hours
45 ft	4 hours

Table 29: RCN's Versus Building Block Costs

Pole Type	RCN 2004 Escalated to 2006 (Php/m)	Building Block Cost at Jun 2006 (Php)	
Concrete Pole, 25 ft Class 10A		Material	3,514
		Installation Cost	3,375
	4,900	TOTAL	**6,889**
Concrete Pole, 30 ft		Material	6,989
		Installation Cost	3,375
	8,465	TOTAL	**10,364**
Concrete Pole, 35 ft Class 5		Material	9,139
		Installation Cost	3,375
	12,874	TOTAL	**12,514**
Concrete Pole, 35 ft Class 7A		Material	11,290
		Installation Cost	3,750
	10,669	TOTAL	**15,040**
Concrete Pole, 40 ft Class 5		Material	11,850
		Installation Cost	600
	14,330	TOTAL	**12,500**

Summary of Proposed Valuation Approach

PB Associates propose to value the common concrete poles using current replacement cost method. We consider that some of the escalated 2004 RCN's are too low.

The analysis in the preceding section suggests the following RCs for Decorp concrete poles are as follows:

Table 30: RC for Concrete Poles

Concrete Poles	RC at Jun 2006 (Php)
Concrete Pole, 25 ft	6,889
Concrete Pole, 30 ft	10,364
Concrete Pole, 35 ft Class 7A	15,040
Concrete Pole, 35 ft Class 5	12,514

Concrete Poles	RC at Jun 2006 (Php)
Concrete Pole, 40 ft	15,367
Concrete Pole, 45 ft	17,268
Concrete Pole, 50 ft	20,736
Concrete Pole, 55 ft	24,897
Concrete Pole, 60 ft	33,614

(ii) Standard Wood Poles

PB Associates has analysed the replacement costs of wood. The following Table contains the average replacement cost at June 2006 for some common wood pole sizes.

The 2004 installed cost of wood poles for Decorp are as follows:

Table 31: Standard Wood Poles

Wood Poles	RCN 2004 per Item (Php)
Creosoted Wood Pole, 25 ft	3,752
Creosoted Wood Pole, 25 ft Class 3	3,752
Creosoted Wood Pole, 25 ft Class 5	3,752
Creosoted Wood Pole, 25 ft Class 7A	3,752
Creosoted Wood Pole, 30 ft Class 1	14,456
Creosoted Wood Pole, 30 ft Class 3	14,456
Creosoted Wood Pole, 35 ft Class 1	14,456
Creosoted Wood Pole, 35 ft Class 3	14,456
Creosoted Wood Pole, 35 ft Class 5	14,456
Creosoted Wood Pole, 40 ft Class 1	18,461
Creosoted Wood Pole, 40 ft Class 3	18,461
Creosoted Wood Pole, 40 ft Class 5	18,461
Creosoted Wood Pole, 45 ft Class 3	21,591
Creosoted Wood Pole, 45 ft Class 5	21,591
Creosoted Wood Pole, 50 ft Class 3	24,175
Creosoted Wood Pole, 50 ft Class 5	24,175
Creosoted Wood Pole, 55 ft Class 3	26,451
Creosoted Wood Pole, 60 ft	27,497
Creosoted Wood Pole, 60 ft Class 3	27,497

Comparing the installed cost of the 40 ft wood pole (18,461 PHp) with a concrete pole (13,090 PHp) it is apparent that a Decorp decision to employ concrete poles only is economically sound.

Accordingly, the modern equivalent asset (MEA) valuation method is suitable for valuing wood poles, whereby a wood pole is valued at the replacement cost of a concrete pole of equivalent size.

It is noted that depreciation is based on the age of the wood pole, but the replacement cost is that of an equivalent concrete pole.

(iii) Standard Steel Poles / Galvanised Iron (GI)

The count of steel pole types is significant at 13.8% of the total pole population.

The cost of steel and GI poles for Decorp are as follows:

Table 32: Steel & GI Poles

Steel & GI Poles	RCN 2004 per Item (Php)
Galvanized Iron Pole, 15 ft	461
Galvanized Iron Pole, 20 ft	492
Galvanized Iron Pole, 25 ft	553
Galvanized Iron Pole, 30 ft	615
Galvanized Iron Pole, 35 ft	676
Steel Pole, 25 ft	9,757
Steel Pole, 30 ft	14,242
Steel Pole, 35 ft	14,242
Steel Pole, 45 ft	15,367

Building Block Verification of Replacement Costs

Table 33: Replacement Cost Comparison

Pole Type	RCN 2004 Escalated to 2006 (Php/m)	Building Block Cost at Jun 2006 (Php)	
Steel Pole, 25ft		Material	6,682
		Installation Cost	3,375
	7,570	TOTAL	**9,757**
Steel Pole, 30ft		Material	10,867
		Installation Cost	3,375
	12,030	TOTAL	**14,242**
Steel Pole, 35 ft		Material	10,867
		Installation Cost	3,375
	12,030	TOTAL	**9,250**
Steel Pole, 45 ft		Material	10,867
		Installation Cost	3,375
	12,030	TOTAL	**11,900**

Where the RCN cost appears to be too high, the building block cost has been adopted. In such instances, further analysis was carried out to check that the building block cost met with the 'interpolated' cost when compared to other pole sizes.

Summary of Proposed Valuation Approach

PB Associates propose to value steel and GI poles using current replacement cost method.

The analysis in the preceding section suggests the following RCs for Decorp concrete poles are as follows:

Table 34: RC for Steel / GI Poles

Steel / GI Poles	RC at Jun 2006 (Php)
Galvanized Iron Pole, 15 ft	500
Galvanized Iron Pole, 20 ft	540
Galvanized Iron Pole, 25 ft	600
Galvanized Iron Pole, 30 ft	665
Galvanized Iron Pole, 35 ft	730
Steel Pole, 25 ft	7,570
Steel Pole, 30 ft	8,000
Steel Pole, 30 ft Class 7A	8,000
Steel Pole, 35 ft	9,250
Steel Pole, 45 ft	12,030

(v) Pole Top Hardware

Decorp has 41,657 pole tops compared to 28,217 distribution poles. This means there are approximately 2 x-arms for every 3 poles.

Table 35: Assets In Use

Pole Tops	RCN 2004 per Item (Php)
13.8KV Pole Top Hardware - 3 phase	3,633
13.8KV Pole Top Hardware - 2 phase	3,171
220 V Pole Top Hardware - 3 phase	711
220 V Pole Top Hardware - 2 phase	654

Building Block Verification of Replacement Costs

PB Associates has examined Decorp estimates for pole top costs based on cost allocation for typical construction projects. The estimates were related to 2004 RCN's for poles.

To escalate from the 2004 RCN of pole tops, we use a rate of 4% (150 Php per annum for 13.8kV pole tops and 28 Php per annum for 220V pole tops).

Summary of Proposed Valuation Approach

PB Associates propose to value the pole tops using current replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp pole tops are as follows:

Table 36: RC for Pole Tops

Pole Tops	RC at Jun 2006 (Php)
13.8KV Pole Top Hardware - 3 phase	3,933
13.8KV Pole Top Hardware - 2 phase	3,471
220 V Pole Top Hardware - 3 phase	894
220 V Pole Top Hardware - 2 phase	710

A6 & A7 – OVERHEAD CONDUCTORS & DEVICES (DISTRIBUTION)

(i) Overhead Conductors

The total meterage of 15kV overhead conductors is 1,330,670.

Table 37: Assets In Use

Overhead Conductor	Sq mm	Count (km)	% by Count	RCN 2004 per Metre (Php)
336.4 MCM BARE ACSR CONDUCTOR	170	156,600	4.61%	85
#2 AWG BARE ACSR CONDUCTOR	33.5	318,552	9.39%	16.5
#2/0 AWG BARE ACSR CONDUCTOR	67	122,652	3.61%	31.6
#4 AWG BARE ACSR CONDUCTOR	21.5	181,532	5.35%	10.3
#4/0 AWG BARE ACSR CONDUCTOR	106	360,056	10.61%	50.1
350 MCM BARE COPPER CONDUCTOR	181	8	0.00%	-
#2 AWG BARE COPPER CONDUCTOR	33.5	15,093	0.44%	56.4
#2/0 AWG BARE COPPER CONDUCTOR	67	33,591	0.99%	112.1
#4 AWG BARE COPPER CONDUCTOR	21.5	43,697	1.29%	39
#4/0 AWG BARE COPPER CONDUCTOR	106	2,441	0.07%	177.1
#6 AWG BARE COPPER CONDUCTOR	13.3	56,810	1.67%	21
PE AAC, No. 6 AWG, 600 V	13.3	398	0.01%	10
PE ACSR, 336.4 MCM, 15kV	170	440	0.01%	147
PE ACSR, 336.4 MCM, 600 V	170	54	0.00%	147
PE ACSR, 350 MCM, 600 V	181	4	0.00%	147
PE ACSR, No. 2 AWG, 600 V	33.5	785,501	23.14%	24.3
PE ACSR, No. 2/0 AWG, 600 V	67	402,206	11.85%	31.6
PE ACSR, No. 4 AWG, 15 kV	21.5	610	0.02%	15
PE ACSR, No. 4 AWG, 600 V	21.5	304,154	8.96%	15

Overhead Conductor	Sq mm	Count (km)	% by Count	RCN 2004 per Metre (Php)
PE ACSR, No. 4 AWG, 15 kV	21.5	4,865	0.14%	15
PE ACSR, No. 4/0 AWG, 600 V	106	156,443	4.61%	68.3
PE ACSR, No. 6 AWG, 600 V	13.3	4	0.00%	10
PE Copper, No.2 AWG, 600 V	33.5	512	0.02%	76.1
PE Copper, No. 2/0 AWG, 15kV	67	320	0.01%	132.8
PE Copper, No. 4 AWG, 15kV	21.5	742	0.02%	51.2
PE Copper, No. 4/0 AWG, 15kV	106	32	0.00%	202.2
PE Copper, No. 6 AWG, 15kV	13.3	9,590	0.28%	34.6
THW Copper, 1000 MCM, 600 V	490	109	0.00%	945.5
THW Copper, 336.4 MCM, 600 V	170	103	0.00%	-
THW Copper, 350 MCM, 600 V	181	189	0.01%	-
THW Copper, 500 MCM, 600 V	253	577	0.02%	473.2
THW Copper, No.1/0 AWG, 600 V	54	4	0.00%	107.9
THW Copper, No. 2 AWG, 600 V	33.5	1,285	0.04%	76.1
THW Copper, No. 2/0 AWG, 600 V	67	7,644	0.23%	132.8
THW Copper, No. 4 AWG, 600 V	21.5	451	0.01%	51.2
THW Copper, No. 4/0 AWG, 600 V	106	4,629	0.14%	202.2
THW Copper, No. 6 AWG, 600 V	13.3	422,170	12.44%	35

The shaded rows – the most common asset types – account for **94.6%** of the count.

Market Commodity Price Escalation

Analysis of recent market price information provided by Decorp showed a significant increase in material costs which is reflected in our comments in section 3.3 - Impact of Commodity Prices. As a result of this PB Associates has escalated the 2004 valuation at the rate of 8% pa to determine the replacement cost for overhead conductors.

Table 38: Escalated 2004 RCN to July 2006 RCN

Overhead Conductor	RCN 2004 per Metre (Php	Escala tion at 8%+8 %+4%	RCN 2006 per Metre (Php)
336.4 MCM BARE ACSR CONDUCTOR	85	20%	102
#2 AWG BARE ACSR CONDUCTOR	16.5	20%	20
#2/0 AWG BARE ACSR CONDUCTOR	31.6	20%	38
#4 AWG BARE ACSR CONDUCTOR	10.3	20%	12
#4/0 AWG BARE ACSR CONDUCTOR	50.1	20%	60
350 MCM BARE COPPER CONDUCTOR	-	20%	-
#2 AWG BARE COPPER CONDUCTOR	56.4	20%	68
#2/0 AWG BARE COPPER CONDUCTOR	112.1	20%	135
#4 AWG BARE COPPER CONDUCTOR	39	20%	47
#4/0 AWG BARE COPPER CONDUCTOR	177.1	20%	213
#6 AWG BARE COPPER CONDUCTOR	21	20%	25
PE AAC, No. 6 AWG, 600 V	10	20%	12
PE ACSR, 336.4 MCM, 15kV	147	20%	177
PE ACSR, 336.4 MCM, 600 V	147	20%	177
PE ACSR, No. 2 AWG, 600 V	24.3	20%	29

Overhead Conductor	RCN 2004 per Metre (Php	Escala tion at 8%+8 %+4%	RCN 2006 per Metre (Php)
PE ACSR, No. 2/0 AWG, 600 V	31.6	20%	56
PE ACSR, No. 4 AWG, 15 kV	15	20%	18
PE ACSR, No. 4 AWG, 600 V	15	20%	18
PE ACSR, No. 4 AWG, 15 kV	15	20%	18
PE ACSR, No. 4/0 AWG, 600 V	68.3	20%	82
PE ACSR, No. 6 AWG, 600 V	10	20%	12
PE Copper, No.2 AWG, 600 V	76.1	20%	91
PE Copper, No. 2/0 AWG, 15kV	132.8	20%	159
PE Copper, No. 4 AWG, 15kV	51.2	20%	61
PE Copper, No. 4/0 AWG, 15kV	202.2	20%	243
PE Copper, No. 6 AWG, 15kV	34.6	20%	42
THW Copper, 1000 MCM, 600 V	945.5	20%	1135
THW Copper, 500 MCM, 600 V	473.2	20%	568
THW Copper, No.1/0 AWG, 600 V	107.9	20%	129
THW Copper, No. 2 AWG, 600 V	76.1	20%	91
THW Copper, No. 2/0 AWG, 600 V	132.8	20%	159
THW Copper, No. 4 AWG, 600 V	51.2	20%	61
THW Copper, No. 4/0 AWG, 600 V	202.2	20%	243
THW Copper, No. 6 AWG, 600 V	35	20%	42

(ii) Fuses

Decorp has 7,890 Cut-out Fuses rated at 13.8 kV

Table 39: Assets In Use

Overhead Conductor	Count	RCN 2004 per Item (Php)
Cut-out Fuse,Distribution Type,Rated 13.8 kV	7,890	3,691

Building Block Verification of Replacement Costs

The international ex-works cost for this item is £35 or Php3,360. Adding building block components of 35% (12% VAT and 23% installation cost), the replacement cost of a 13.8kV cut-out fuse is Php4,536.

Summary of Proposed Valuation Approach

PB Associates propose to value fuses using current replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp High Voltage fuses.

Table 40: RC for Fuses

Fuses	RC for Jun 06 (Php)
Cut-out Fuse,Distribution Type,Rated 13.8 kV	4,536

(iii) Line Switches

Decorp has 22 Line Switches.

Table 41: Assets In Use

Line Switches	Count	RCN 2004 per Item (Php)
SWITCH, LOAD INTERRUPTER,13.8 KV, 400 A, MANUAL	22	214,453

Building Block Verification of Replacement Costs

The international ex-works cost for this item is ₤825 or Php79,200. Adding building block components of 35% (12% VAT and 23% installation cost), the replacement cost of a 13.8kV air-insulated load break switch is Php106,920.

Summary of Proposed Valuation Approach

PB Associates propose to value Line Switches using current replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp Line Switches.

Table 42: RC for Line Switches

Circuit Reclosers	RC for Jun 06 (Php)
SWITCH, LOAD INTERRUPTER,13.8 KV, 400 A, MANUAL	106,920

(iv) Circuit Reclosers

Decorp has 18 circuit reclosers.

Table 43: Assets In Use

Circuit Reclosers	Count	RCN 2004 per Item (Php)
CIRCUIT RECLOSER, 13.8KV, 400AMP, 3-PHASE	18	571,265

Building Block Verification of Replacement Costs

The range of escalated RCs can be correlated with current equipment prices observed in the market recently.

PB Associates has obtained an indicative market price for a 13.8kV 560A 3-Ph Recloser of 760,000 Php. Adding a 23% overhead cost (VAT 12% + installation), the RC for Decorp would be 934,000 Php. The RC of a 13.8kV 400A 3-Ph Recloser would be ~700,000 Php.

Summary of Proposed Valuation Approach

PB Associates propose to value Circuit Reclosers using current replacement cost method.

The analysis in the preceding section suggests the following RCs for Decorp Circuit Reclosers.

Table 44: RC for Circuit Reclosers

Circuit Reclosers	RC for Jun 06 (Php)
CIRCUIT RECLOSER, 13.8KV; 400AMP; 3-PHASE	700,000

A8 & A9 – UNDERGROUND CONDUITS

Decorp does not have any underground conduits in their asset base.

A10 & A11 – UNDERGROUND CONDUCTORS AND DEVICES

Decorp does not have any underground conductors or devices in their asset base.

A12 & A13 – LINE TRANSFORMERS

Decorp has 2,158 pole mounted distribution line transformers. All are rated at 15kV.

Table 45: Assets In Use

Line Transformers (Pole Mounted)	Count	% by Count	RCN 2004 per Item (Php)
DT,10KVA,7.62KV-240/120V,1PH	29	1.34%	32,377
DT,100KVA,7.62KV-240/120V,1PH	277	12.84%	152,332
DT,15KVA,7.62KV-240/120V,1PH	176	8.16%	44,988
DT,167KVA,7.62KV-240/480V,1PH	38	1.76%	203,758
DT,250KVA,7.62KV-240/120V,1PH	2	0.09%	239,683
DT,25KVA,7.62KV-240/120V,1PH	621	28.78%	52,677
DT,250KVA,7.62KV-240/120V,1PH	2	0.09%	253,216
DT,37.5KVA,7.62KV-240/120V,1PH	277	12.84%	67,093
DT,50KVA,7.62KV-240/120V,1PH	507	23.49%	85,895
DT,75KVA,7.62KV-240/120V,1PH	229	10.61%	120,959

The shaded rows – the most common asset types – account for **96.7%** of the count.

Building Block Verification of Replacement Costs

PB Associates has determined that the weighted average annual RC growth index for conductors varies according to material type as follows:

Table 46: Weighted Indexes for Line Transformers

Weighted Index	RC growth (Php per annum)
Up to 37.5kVA	1,100
> 37.5kVA to 50kVA	2,600
> 50kVA to 100kVA	3,700
> 100kVA	9,700

The 2004 RCN's were escalated accordingly for comparison purposes.

PB Associates has used a building block model to estimate the replacement cost of line transformers. As discussed in Section 3.3, the material costs have been adjusted to remove the sharp increase in commodity prices of metals since mid-2005. The building block material costs were determined using information from recent purchase orders.

Building block costs include materials, engineering and labour cost components. An overhead of 5% of raw material cost was applied to the line transformer category. This overhead covers all design and procurement costs.

The labour cost for DTs was based on a 7-man crew + vehicles (daily rate of Php9,000) and the time spent in the following table:

Table 47: Efficient Installation Times for Line Transformers

DT size	Efficient Installation Time
Less than or equal to 25kVA	5 hours
25kV – 50kVA	6 hours
75kVA – 100kVA	7 hours
> 100kVA	12 hours

Table 48: Escalated 2004 RCN's Versus Building Block Costs

Conductor Type	RCN 2004 Escalated to 2006 (Php/m)	Building Block Cost at Jun 2006 (Php/m)	
DT,100KVA,13.8KV-240/120V,1PH		Material	148,210
		Installation Cost	7,875
	158,722	TOTAL	**156,085**
DT,15KVA,13.8KV-240/120V,1PH		Material	37,080
		Installation Cost	5,625
	47,188	TOTAL	**42,705**
DT,25KVA,13.8KV-240/120V,1PH		Material	48,300
		Installation Cost	5,625
	54,877	TOTAL	**55,735**
DT,37.5KVA,13.8KV-240/120V,1PH	**69,293**	Material	63,400
		Installation Cost	6,750

Conductor Type	RCN 2004 Escalated to 2006 (Php/m)	Building Block Cost at Jun 2006 (Php/m)	
		TOTAL	**65,200**
DT,50KVA,13.8KV-240/120V,1PH		Material	76,090
		Installation Cost	6,750
	91,295	TOTAL	**78,260**
DT,75KVA,13.8KV-240/120V,1PH		Material	111,420
		Installation Cost	7,875
	128,359	TOTAL	**119,295**

The building block replacement costs vary above and below the escalated RCNs. PB Associates considers that the escalated costs take into account varying construction conditions within Decorp's service area.

Summary of Proposed Valuation Approach

PB Associates propose to value Line Transformers using current replacement cost method. The analysis in the preceding section and interpolation suggests the following RCs for Decorp Line Transformers are as follows:

Table 49: RC for Line Transformers

Line Transformers (Pole Mounted)	RC at Jun 2006 (Php)
DT,10KVA,13.8KV-240/120V,1PH	25,660
DT,15KVA, 13.8KV-240/120V,1PH	47,200
DT,25KVA, 13.8KV-240/120V,1PH	54,880
DT,37.5KVA, 13.8KV-240/120V,1PH	69,290
DT,50KVA, 13.8KV-240/120V,1PH	78,260
DT,75KVA, 13.8KV-240/120V,1PH	116,400
DT,100KVA, 13.8KV-240/120V,1PH	158,700
DT,167KVA, 13.8KV-240/480V,1PH	177,100
DT,250KVA, 13.8KV-240/120V,1PH	225,670

A14 – POWER CONDITIONING EQUIPMENT

(i) Regulators

Decorp has 34 automatic voltage regulators.

Table 50: Assets In Use

Automatic Voltage Regulators	Count	RCN 2004 per Item (Php)
Regulator, Voltage; 200A; 288 kVA & Below, 1 Phase; With SCADA	5	239,889
Regulator, Voltage; 300A; 432 kVA, 1 Phase; With SCADA	29	901,602

Building Block Verification of Replacement Costs

The international ex-works cost for a 400kVA single phase AVR is estimated to be ₤8,000 or Php768,000. Adding building block components of 35% (12% VAT and 23% installation cost), the replacement cost of a 13.8kV single-phase regulator is Php1,036,800.

Summary of Proposed Valuation Approach

PB Associates propose to value Automatic Voltage Regulators using current replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp AVRs.

Table 51: RC for AVRs

Automatic Voltage Regulator	RC for Jun 06 (Php)
Regulator, Voltage; 200A; 288 kVA & Below, 1 Phase; With SCADA	684,200
Regulator, Voltage; 300A; 432 kVA, 1 Phase; With SCADA	1,036,800

(ii) Line Capacitors

Decorp has 129 distribution line capacitors.

Table 52: Assets In Use

Line Capacitors	Count	RCN 2004 per Item (Php)
Capacitor Unit, Line, 100KVAR, 1PH, 4.8KV or 7.96KV	74	20,546
Capacitor Unit, Line, 200KVAR, 1PH, 19.92KV	9	22,760
Capacitor Unit, Line, 50kVAR,1PH,3.6KV or 4.8KV	46	6,643

Building Block Verification of Replacement Costs

The international ex-works cost for a 19.92kV 100kVA single phase Line Capacitor unit is estimated to be Php160,000. Adding building block components of 35% (12% VAT and 23% installation cost), the replacement cost is Php216,000. This valuation is too high and is out of step with current market trends in the Philippines.

Summary of Proposed Valuation Approach

PB Associates propose to value Line Capacitors using the 2004 RCN plus the CPI at 4.5% pa.

Table 53: RC for Line Capacitors

Line Capacitors	RC for Jun 06 (Php)
Capacitor Unit, Line, 100KVAR, 1PH, 4.8KV or 7.96KV	22,310
Capacitor Unit, Line, 200KVAR, 1PH, 19.92KV	24,720

Line Capacitors	RC for Jun 06 (Php)
Capacitor Unit, Line, 50kVAR,1PH,3.6KV or 4.8KV	7,210

A15 – SERVICES

The total meterage of 220V (600 V rating) overhead conductors is 3,825,152.

The standard service conductors (600V) are shown in Table 54:

Table 54: Assets In Use

Overhead Services	Count (m)	% by Count	RCN 2004 per Item (Php)
PE AAC, No. 6 AWG, 600 V	1,962,416	96.04%	10
PE ACSR, 336.4 MCM, 600 V	18	0.00%	147
PE ACSR, 500 MCM, 600 V	36	0.00%	473
PE ACSR, No. 2 AWG, 600 V	18,137	0.89%	24.3
PE ACSR, No. 2/0 AWG, 600 V	11,594	0.57%	47
PE ACSR, No. 4 AWG, 600 V	20,414	1.00%	15
PE ACSR, No. 4/0 AWG, 600 V	1,526	0.07%	68
THW Copper, 1000 MCM, 600 V	24	0.00%	946
THW Copper, 500 MCM, 600 V	207	0.01%	473
THW Copper, No. 2 AWG, 600 V	309	0.02%	76
THW Copper, No. 2/0 AWG, 600 V	154	0.01%	133
THW Copper, No. 4 AWG, 600 V	12	0.00%	51
THW Copper, No. 4/0 AWG, 600 V	53	0.00%	202
THW Copper, No. 6 AWG, 600 V	28,409	1.39%	35

The shaded row – the most common asset type – accounts for **97.4%** of the count.

Market Commodity Price Escalation

PB Associates considers that Service conductors be valued in the same manner as overhead conductors, described in section A6. CPI escalation of the 2004 valuation to July 2006 is summarised in Table 55 below.

Table 55: Escalated Service Wire 2004 RCN to 2006 RCN

Overhead Conductor	RCN 2004 per Metre (Php	Escalation at 8%+8%+4%	RCN 2006 per Metre (Php)
PE AAC, No. 6 AWG, 600 V	10	20%	12
PE ACSR, 336.4 MCM, 600 V	147	20%	177
PE ACSR, 500 MCM, 600 V	473	20%	568
PE ACSR, No. 2 AWG, 600 V	24.3	20%	29
PE ACSR, No. 2/0 AWG, 600 V	47	20%	56
PE ACSR, No. 4 AWG, 600 V	15	20%	18
PE ACSR, No. 4/0 AWG, 600 V	68.3	20%	82
THW Copper, 1000 MCM, 600 V	946	20%	1135
THW Copper, 500 MCM, 600 V	473	20%	568

Overhead Conductor	RCN 2004 per Metre (Php	Escalation at 8%+8%+4%	RCN 2006 per Metre (Php)
THW Copper, No. 2 AWG, 600 V	76	20%	91
THW Copper, No. 2/0 AWG, 600 V	133	20%	159
THW Copper, No. 4 AWG, 600 V	51	20%	61
THW Copper, No. 4/0 AWG, 600 V	202	20%	243
THW Copper, No. 6 AWG, 600 V	35	20%	42

A16 & A17 – METERS, INSTRUMENTS & METERING TRANSFORMERS

Decorp has 76,326 metering assets.

Table 56: Residential Meters In Use

Meter Type	Count	RCN	Total Value	% by Value
AB1 l	16	843.10	13,490	0.01%
CS-5	29	843.10	24,450	0.02%
D2S	4	843.10	3,372	0.00%
D4A2	5	3,848.10	19,241	0.01%
D4AS	7	3,848.10	26,937	0.02%
D4S	547	1,643.10	898,776	0.67%
D5S	44	1,643.10	72,296	0.05%
E-16-Z	45	843.10	37,940	0.03%
E17GR	71	843.10	59,860	0.04%
EG-16-Z	11	843.10	9,274	0.01%
F-72	35,542	1,843.10	65,507,460	48.91%
FA33ER	1,711	1,093.10	1,870,294	1.40%
I-14	9	743.10	6,688	0.00%
I-16	16	743.10	11,890	0.01%
1-20-A	335	743.10	248,939	0.19%
I-130-A	1,142	743.10	848,620	0.63%
I-50-A	55	843.10	46,371	0.03%
I-60-S	13	843.10	10,960	0.01%
I-70-S	29,274	2,178.10	63,761,699	47.60%
J4S	77	1,593.10	122,669	0.09%
JA	152	1,593.10	242,151	0.18%
JS	2	1,593.10	3,186	0.00%
MS	6	1,593.10	9,559	0.01%
OA	54	743.10	40,127	0.03%
OB	39	743.10	28,981	0.02%
OC	9	743.10	6,688	0.00%
P2OS	6	1,593.10	9,559	0.01%
Y-5	3	743.10	2,229	0.00%
Grand Total	69,224		133,943,704	100.00%

The F-72 and I-70-S are the standard residential meters, making up **96.5%** of this population of assets. The average 2004 replacement cost per meter is Php1,934.

Table 57: Low Voltage Secondary Meters (Direct Connected) In Use

Meter Type	Count	RCN	Total Value	% by Value
48A	42	79,723.13	3,348,371	26.88%
4S	20	65,023.13	1,300,463	10.44%
IM-50-A	4	45,223.13	180,893	1.45%
IM-70-S	11	45,223.13	497,454	3.99%
S3A	14	37,823.69	529,532	4.25%
S3DA	8	38,444.13	307,553	2.47%
V-63-A	12	50,023.13	600,278	4.82%
VM-63-A	91	57,396.63	5,223,093	41.94%
VM-66-A	10	46,723.13	467,231	3.75%
Grand Total	212		12,454,868	100.00%

The 48A and VM-63-A are the most common low voltage secondary meters. The average 2004 replacement cost per meter is Php58,749.

Table 58: Self Contained LV Meters In Use

Meter Type	Count	RCN	Total Value	% by Value
16S	33	36,160	1,193,268	2.81%
AB1	46	4,560	209,743	0.49%
D2S	2	4,560	9,119	0.02%
D4A2	8	7,565	60,517	0.14%
D4A-2M	2	7,983	15,966	0.04%
D4AS	4	7,565	30,259	0.07%
D4S	125	5,360	669,954	1.58%
D4S-2	4	7,565	30,259	0.07%
D5S	52	5,360	278,701	0.66%
E-16-Z	7	4,560	31,917	0.08%
E17GR	3	4,560	13,679	0.03%
F-72	1,363	5,560	7,577,776	17.85%
FA33ER	39	4,810	187,576	0.44%
FD13GR	5	6,966	34,828	0.08%
I-16	3	4,460	13,379	0.03%
1-20-A	12	4,460	53,516	0.13%
I-130-A	96	4,460	428,124	1.01%
I-50-A	18	4,560	82,073	0.19%
I-60-S	5	4,560	22,798	0.05%
I-70-S	4,816	5,895	28,388,538	66.86%
J4S	25	5,310	132,741	0.31%
JA	9	5,310	47,787	0.11%
OB	1	4,460	4,460	0.01%
P2OS	1	5,310	5,310	0.01%
S2DS	3	6,126	18,377	0.04%
S2S	50	8,110	405,482	0.95%
S3A	10	5,910	59,102	0.14%
S3DS	5	6,531	32,653	0.08%
S3S	1	5,910	5,910	0.01%
V-62-S	36	14,890	536,027	1.26%
V-63-A	4	18,110	72,439	0.17%
V-66-S	1	13,985	13,985	0.03%

Meter Type	Count	RCN	Total Value	% by Value
VM-62-S	73	19,888	1,451,833	3.42%
VM-63-A	14	20,650	289,095	0.68%
VM-66-S	4	13,310	53,239	0.13%
Grand Total	6,880		42,460,426	100.00%

The F72 and I-70-S are the most common self-contained meters, making up **96.5%** of this population of assets. The average 2004 replacement cost per meter is Php6,171.

Table 59: High Voltage Primary Meters In Use

Meter Type	Count	RCN	Total Value	% by Value
48A	7	79,723	558,062	78.72%
VM-63-A	1	57,396	57,397	8.10%
VM-64-S	2	46,723	93,446	13.18%
Grand Total	10		708,904	100.00%

There are only three meter types in use in the HV primary metering class. The average 2004 replacement cost per meter is Php70,890.

Building Block Verification of Replacement Costs

PB Associates considers that efficient manhours, appropriate materials and labour cost for the replacement of meters are as follows:

Table 60: PB Associates Building Block Costs

Metering	Efficient Installation Time	Materials	Labour	Total Cost
Single-Phase, Plain Residential Metering	3 hours	2,080	390	2,470
Low Voltage Self-Contained Metering	4 hours	4,046	390	4,436
Low Voltage Secondary Metering	12.5 hours	58,543	1,625	60,168
Instrument Transformer Rated Meter for Primary Metering	15 hours	74,157	1,950	76,107

Summary of Proposed Valuation Approach

PB Associates propose to value meters using current replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp:

Table 61: RCs for Meters

Meters	Average 2004 Meter RC (Php)	Building Block RC for Jun 06 (Php)
Single-Phase, Plain Residential Metering (1 ph, 15A or Cl100)	1,934	2,470
Low Voltage Self-Contained Metering (3 ph, 2.5A	58,749	60,168

Meters	Average 2004 Meter RC (Php)	Building Block RC for Jun 06 (Php)
Instrument Rated)		
Low Voltage Self-Contained Metering	6,171	4,436
HV Primary Metering	70,890	76,107

A18 – INFORMATION TECHNOLOGY

Decorp has no information technology dedicated for distribution purpose.

A19 – REGULATED ENTITY PROPERTY ON CONSUMER PREMISES

Decorp has no regulated entity property on consumer premises in use.

A20 – STREET LIGHTS & SIGNAL SYSTEMS

Decorp has 3,815 streetlights.

A full breakdown is provided in Table 62.

Table 62: Assets In Use

Streetlights	Count	RCN 2004 per Item (Php)
LUMINAIRE,150 WATTS HPS W/ MAST ARM ONLY	3,752	1,750
LUMINAIRE,250 WATTS HPS W/ MAST ARM ONLY	63	2,160

Building Block Verification of Replacement Costs

PB Associates has determined from historical cost analysis that luminaire replacement costs escalate at 5.2%.

This escalation has been applied to the 2004 RCN.

Summary of Proposed Valuation Approach

PB Associates propose to value luminaires using replacement cost method. The analysis in the preceding section suggests the following RCs for Decorp luminaries are as follows:

Table 63: RC for Streetlights

Line Transformers (Pole Mounted)	RC at Jun 2006 (Php)
LUMINAIRE,150 WATTS HPS W/ MAST ARM ONLY	1,854
LUMINAIRE,250 WATTS HPS W/ MAST ARM ONLY	2,272

A21 – SUBMARINE CABLES

Decorp does not own submarine cables at the time of this valuation.

APPENDIX A
SUMMARY ASSET REPLACEMENT COSTS

Standard Replacement Costs / Indexes

DWRG Cat'y	Asset Category/Sub-Category/Type	Unit	Decorp Standard RC or Index (Php k or Php per annum)
A1	**LAND & LAND RIGHTS (DISTRIBUTION PURPOSE)**		
	To be valued using market comparison as highlighted in Section 5 of these Guidelines		
A2	**STRUCTURES & IMPROVEMENTS (DISTRIBUTION PURPOSE)**		
	To be valued using indexed historical costs as explained in Section 5 of these Guidelines		
A3	**STATION EQUIPMENT**		
A3A	**POWER TRANSFORMERS**		
	Refer to Table 3 below		
A3B	**SWITCHGEAR**		
A3B	**Circuit Breakers**		
A3B	SF_6 Dead Tank Circuit Breaker, 69 kV Outdoor, 3-pole, 1200 A, 25 kA	no.	3,400,700
A3B	SF_6 Dead Tank Circuit Breaker, 69 kV Outdoor, 3-pole, 1200 A, 31.5 kA	no.	3,400,700
A3B	SF_6 Dead Tank Circuit Breaker, 69 kV Outdoor, 3-pole, 1200 A, 40 kA	no.	3,400,700
A3B	SF_6 Dead Tank Circuit Breaker, 13.8 kV Outdoor, 1200 A, 25 kA	no.	2,100,000
A3B	Metalclad Switchgear 13.8 kV, 6 Vacuum Circuit Breakers (1 Incomer, 5 Feeder)	no.	5,342,000
A3B	***Disconnectors***		
A3B	Disconnector, 69 kV, 1200 A, ground mounted with support structure	no.	406,000
A3B	Disconnector, 69 kV, 1200 A, mounted on bus structure supports	no.	300,000
A3B	Disconnector, 13.8 kV, 800 A, mounted on bus structure supports, motorised	no.	345,600
A3B	Disconnector, 13.8 kV, 1200 A, ground mounted with support structure	no.	239,000
A3B	Disconnector, 13.8 kV, 1200 A, mounted on bus structure supports	no.	196,000
A3C	**PROTECTIVE EQUIPMENT**		
A3C	***Current Transformers***		
A3C	Current Transformer 69 kV, 2 cores, 1200/600:5	no.	437,760
A3C	***Potential Transformers***		
A3C	Potential Transformers, 69 kV, Outdoor, 600/350:1	no.	295,680
A3C	Potential Transformers, 13.8 kV, Outdoor, 120/70:1	no.	203,500

DWRG Cat'y	Asset Category/Sub-Category/Type	Unit	Decorp Standard RC or Index (Php k or Php per annum)
A3C	***Lightning Arresters***		
A3C	Lightning Arrester, 72 kV, Station Class (69 kV system voltage)	no.	100,000
A3C	Lightning Arrester, 60 kV, Station Class (69 kV system voltage)	no.	84,480
A3C	Lightning Arrester, 15 kV, Station Class (13.8 kV system voltage)	no.	30,240
A3C	Lightning Arrester, 15 kV, Distribution Class (13.8 kV system voltage)	no.	3,675
A3C	Lightning Arrester, 12 kV, Distribution Class (13.8 kV system voltage)	no.	3,675
A3C	***Protection Schemes/Relays***		
A3C	230/115/69 kV Transformer Differential Protection Scheme (1 panel per transformer)	no.	775,000
A3C	34.5 kV (and below) Feeder Protection (3 feeders per protection panel)		814,000
A3C	Over & Under Frequency Relays / Per Unit Cost	no.	500,000
A4	**TOWERS, POLES & FIXTURES (DISTRIBUTION)**		
A4	***Wood Poles***		
A4	Pole, Wood; 7.5 M (25 FT)	no.	6,889
A4	Pole, Wood; 9.0 M (30 FT)	no.	10,364
A4	Pole, Wood; 10.5 M (35 FT)	no.	12,514
A4	Pole, Wood; 12.0 M (40 FT)	no.	15,367
A4	Pole, Wood; 13.5 M (45 FT)	no.	17,268
A4	Pole, Wood; 15.0 M (50 FT)	no.	20,736
A4	Pole, Wood; 16.5 M (55 FT)	no.	24,897
A4	Pole, Wood; 18.0 M (60 FT)	no.	33,614
A4	***Concrete Poles***		
A4	Pole, Concrete, 7.5 M (25 FT)	no.	6,889
A4	Pole, Concrete, 9.0 M (30 FT)	no.	10,364
A4	Pole, Concrete, 10.5 M (35 FT) Class 5	no.	15,040
A4	Pole, Concrete, 10.5 M (35 FT) Class 7A	no.	12,514
A4	Pole, Concrete, 12.0 M (40 FT)	no.	15,367
A4	Pole, Concrete, 13.5 M (45 FT)	no.	17,268
A4	Pole, Concrete, 15.0 M (50 FT)	no.	20,736
A4	Pole, Concrete, 16.5 M (55 FT)	no.	24,897
A4	Pole, Concrete, 18M (60 FT)	no.	33,614
A4	***Steel Poles***		
A4	Pole, Steel; 7.5 M (25 FT)	no.	9,757
A4	Pole, Steel, 9.0 M (30 FT)	no.	14,242
A4	Pole, Steel, 10.5 M (35 FT)	no.	14,242
A4	Pole, Steel, 13.5 M (45 FT)	no.	15,367
A4	***Pole Top Hardware***		
A4	13.8 kV Pole Top Hardware - 3 phase	No	3,933
A4	13.8 kV Pole Top Hardware - 2 phase	No	3,471

DWRG Cat'y	Asset Category/Sub-Category/Type	Unit	Decorp Standard RC or Index (Php k or Php per annum)
A4	220 V Pole Top Hardware - 3 phase	No	894
A4	220 V Pole Top Hardware - 2 phase	No	710
A5	**TOWERS, POLES & FIXTURES (CUSTOMER)**		
A6	**OVERHEAD CONDUCTORS & DEVICES (DISTRIBUTION)**		
A6	***Overhead Conductors***		
A6	336.4 MCM Bare ACSR Conductor	m	102
A6	#4/0 AWG Bare ACSR Conductor	m	60
A6	#2/0 AWG Bare ACSR Conductor	m	38
A6	#1/0 AWG Bare ACSR Conductor	m	37
A6	#2 AWG Bare ACSR Conductor	m	20
A6	#4 AWG Bare ACSR Conductor	m	12
A6	#6 AWG Bare ACSR Conductor	m	11
A6	#4/0 AWG Bare Copper Conductor	m	213
A6	#2/0 AWG Bare Copper Conductor	m	135
A6	#2 AWG Bare Copper Conductor	m	68
A6	#4 AWG Bare Copper Conductor	m	47
A6	#6 AWG Bare Copper Conductor	m	25
A6	336.4MCM, insulated ACSR	m	177
A6	#4/0 AWG, insulated ACSR	m	82
A6	#3/0 AWG, insulated ACSR	m	95
A6	#2/0 AWG, insulated ACSR	m	56
A6	#2 AWG, insulated ACSR	m	29
A6	#4 AWG, insulated ACSR	m	18
A6	#1000 MCM, insulated Copper	m	1135
A6	#500 MCM, insulated Copper	m	568
A6	#4/0 AWG, insulated Copper	m	243
A6	#2/0 AWG, insulated Copper	m	159
A6	#1/0 AWG, insulated Copper I	m	129
A6	#2 AWG, insulated Copper	m	31
A6	#4 AWG, insulated Copper	m	61
A6	#6 AWG, insulated Copper	m	42
A6	#6 AWG, insulated AAC, Conductor	m	12
A6	***Overhead Distribution Devices***		
A6	***Fuses***		
A6	Cut-out Fuse, Distribution Type, Rated 15 kV	no.	4,536
A6	Power Fuse, 200 E AMP; 34.5KV;SMD-20	no.	5,900
A6	***Switches***		
A6	Switch, Load Interrupter, 13.8 KV, 400 A, MANUAL	no.	106,920
A6	***Circuit Reclosers***		
A6	Circuit Recloser, 13.8KV; 560AMP; 3-Phase	no.	934,000
A6	Circuit Recloser, 13.8KV; 400AMP; 3-Phase	no.	700,000
A6	Circuit Recloser, 13.8KV; 200AMP; 3-Phase	no.	700,000

DWRG Cat'y	Asset Category/Sub-Category/Type	Unit	Decorp Standard RC or Index (Php k or Php per annum)
A12	**LINE TRANSFORMERS (DISTRIBUTION)**		
A12	DT, 10KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	25,660
A12	DT, 15KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	47,200
A12	DT, 25KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	54,880
A12	DT, 37.5KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	69,290
A12	DT, 50KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	78,260
A12	DT, 75KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	116,400
A12	DT, 100KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	158,700
A12	DT, 167KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	177,100
A12	DT, 250KVA; 7.62KV-240/120V; 1PH; Pole Mounted	no.	225,670
A14	***Line Capacitors***		
A14	CAPACITOR UNIT, LINE; 50 kVAR, 1PH - 3.6 or 4.8 kV	no.	7,210
A14	CAPACITOR UNIT, LINE; 100 kVAR, 1PH - 4.8 or 7.96 kV	no.	22,310
A14	CAPACITOR UNIT, LINE; 200 kVAR, 1PH - 19.92 kV	no.	24,720
A14	***Voltage Regulators***		
A14	Regulator Voltage, 300A, 432KVA, 1 phase	no.	1,036,800
A14	Regulator Voltage, 200A, 288KVA & below 1 phase	no.	684,200
A15	**SERVICES**		
A15	Single 1000MCM Copper Cable, 600V	m	1,135
A15	Single 500MCM Copper Cable, 600V	m	568
A15	Single #4/0 AWG Copper Cable, 600V	m	202
A15	Single #2/0 AWG Copper Cable, 600V	m	159
A15	Single #2 AWG Copper Cable, 600V	m	91
A15	Single #4 AWG Copper Cable, 600V	m	61
A15	Single #6 AWG Copper Cable, 600V	m	42
A15	Single #2 AWG AAC Cable, 600V	m	12
A15	Wire, CU, #6 AWG, WP	m	42
A15	Wire, ACSR, #4/0 AWG, WP	m	82
A15	Wire, ACSR, #2/0 AWG, WP	m	56
A15	Wire, ACSR, #2 AWG, WP	m	29
A16	**METERS, INSTRUMENTS & METERING TRANSFORMERS (DISTRIBUTION)**		
A16	Single-Phase, Plain Residential Metering	no.	2,470
A16	Low Voltage Self-Contained Metering (3 ph)	no.	4,336
A16	Low Voltage Self-Contained Metering (3 ph, instrument rated)	no.	60,168
A16	High Voltage Primary Metering (3 ph,	no.	76,107

DWRG Cat'y	Asset Category/Sub-Category/Type	Unit	Decorp Standard RC or Index (Php k or Php per annum)
	instrument rated)		
A20	**STREET LIGHTS & SIGNAL SYSTEMS**		
A20	Luminaire, 150 Watts HPS W/ Mast Arm Only	no.	1,854
A20	Luminaire, 250 Watts HPS W/ Mast Arm Only	no.	2,272