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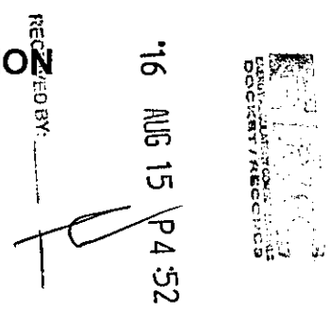
Republic of the Philippines
ENERGY REGULATORY COMMISSION
San Miguel Avenue, Pasig City



IN THE MATTER OF THE APPLICATION FOR APPROVAL OF EMERGENCY AND/OR URGENT MAJOR CAPITAL EXPENDITURE (CAPEX) PROJECTS,

ERC CASE NO. 2016-161 RC

MANILA ELECTRIC COMPANY (MERALCO),
Applicant.
x----------x

APPLICATION

Applicant **MANILA ELECTRIC COMPANY** (**MERALCO**), through the undersigned counsel, and to this Honorable Commission, most respectfully avers that:

1. Applicant MERALCO is a private corporation duly organized and existing under the laws of the Republic of the Philippines, with principal office located at Lopez Building, Ortigas Avenue, Barangay Ugong, Pasig City. It may be served with notices and other processes of this Honorable Commission through its undersigned counsel at the address indicated herein.

2. MERALCO has a legislative franchise to construct, operate and maintain an electric power distribution system for the conveyance of electric power to the end-users in the cities and municipalities of Metro Manila, Bulacan, Cavite and Rizal, and certain cities/municipalities/barangays in Batangas, Laguna, Quezon and Pampanga, pursuant to Republic Act No. 9209.

3. The Application is being filed pursuant to the Honorable Commission's Resolution No. 26, Series of 2009, entitled: "*Resolution Amending the Rules for Approval of Regulated Entities' Capital Expenditure Projects*". Emergency Capital Expenditure projects are those that require immediate implementation during an event that is not a force majeure or fortuitous event in order to maintain safe, reliable, secure and efficient operation of the power system.

4. However, for purposes of recovering the capital cost of the emergency project through the DU's rates, the same will go through the process of evaluation by the Honorable Commission during the regulatory reset of the DU, unless there is basis for a rate-reopening in the current regulatory period, in accordance with the Rules for the Setting of Distribution Wheeling Rates (RDWR) for DUs.

DISCUSSION OF MERALCO'S EMERGENCY CAPEX PROGRAM

5. MERALCO is part of the First Entry Group of distribution utilities that entered Performance Based Regulation ("PBR"). In its Final Determination dated 6 June 2011 in ERC Case No. 2010-069 RC, the Honorable Commission set out its final position on the price control arrangements that would apply to MERALCO for the Third Regulatory Period (3RP) covering the period from 1 July 2011 to 30 June 2015, including its approval of MERALCO's proposed Capital Expenditure (CAPEX) Program, for the said period.

6. The last year of MERALCO's Third Regulatory Period expired on 30 June 2015. The Fourth Regulatory Period (4RP) for the First Entry Group commenced on 1 July 2015 and will end on 30 June 2019. However, the Honorable Commission has not yet issued the relevant rules to govern the reset process and the filing by the DUs of their reset application.

7. As such, on 9 February 2015, MERALCO filed an application for the approval of its CAPEX program for Regulatory Year (RY) 2016. The said application was docketed as ERC Case No. 2015-016 RC.

8. On 10 April 2015, MERALCO filed an Urgent Motion for Issuance of a Provisional Authority ("Urgent Motion") dated 8 April 2015 requesting that it be allowed to immediately implement its priority projects, the list of which was attached to said Urgent Motion.

9. On 15 April 2015, MERALCO filed a Motion of even date attaching a detailed list showing a further breakdown of the projects into business segments especially those that are shared by different business segments.

10. On 11 June 2015, MERALCO filed a Very Urgent Motion for Authority to Commence Implementation of RY 2016 Priority Projects with an attached list of the RY 2016 priority projects ("Very Urgent Motion").

11. On 2 September 2015, MERALCO again filed a Very Urgent Motion to Resolve, emphasizing the urgency to implement its

CAPEX projects to ensure reliability and quality of service and avoid further delays.

12. On 4 February 2016, MERALCO filed a Manifestation, dated 2 February 2016, informing the Honorable Commission that in the interest of complying with its obligation to provide safe, adequate, reliable and efficient electric service to its customers, Applicant has implemented four (4) of its proposed major CAPEX projects for RY 2016.

13. On 1 April 2016, MERALCO filed another Manifestation of even date informing the Honorable Commission that in the pursuit of its obligation to provide safe, reliable and continuous electric service to its customers, MERALCO was constrained to implement additional priority CAPEX projects to address the need for capacity upgrades in order to avert multiple power interruptions to its customers and maintain a robust electric distribution infrastructure.

14. On 15 June 2016, MERALCO received a copy of the Decision dated 12 April 2016 which partially approved MERALCO's CAPEX program for RY 2016. However, the Honorable Commission also deferred the following projects, without prejudice to refilling:

Project Code	Project Title
MER-2	Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)
MER-4	Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer
MER-11	Rebuilding of Portion of Dasmarinas-FCIE 115kV Line
MER-13	Cut-in of Pinagbuhatan Switching Station
MER-14	Replacement of Power Transformer No.2 at Mandaluyong Substation
MER-15	Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation
MER-20	Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex

15. In the light of said decision, Applicant hereby refiles the following as major emergency capital projects, to wit:

Project Title	Cost (in PhP)
Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)	162,580,219.00

Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer	68,161,085.00
Rebuilding of Portion of Dasmarinas-FCIE 115kV Line	75,913,229.00
Replacement of Power Transformer No.2 at Mandaluyong Substation	52,908,466.00

16. We note that these projects, while not emergency at the time of their original filing under ERC Case No. 2015-016 RC, have become critical and had to be immediately implemented as an emergency CAPEX in order to ensure continuous, safe and reliable electric service and compliance with safety and performance standards of the distribution system. More importantly, the immediate implementation of these projects averted emergency conditions or situations, and at the same time, provided the needed capacity intended for the forecasted growth of future electricity demand within MERALCO's franchise area.

17. In addition thereto, MERALCO is also refiling the following major capital projects:

Project Title	Cost (in PhP)
Cut-in of Pinagbuhatan Switching Station	58,635,873.00
Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation	46,443,027.00
Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex	118,478,179.00

These projects are necessary to be acquired immediately in order to readily and quickly address contingencies requiring immediate response. The cut-in of Pinagbuhatan Switching Station project is intended to comply with the N-1 contingency and thus address system constraints and deficiencies. In the case of the spare power transformer, the same is urgently needed in order to have a ready replacement in the event of a failure of MERALCO's commissioned 83MVA power transformers. This will definitely prevent any prolonged and sustained power interruption in the event of a transformer failure. On the other hand, the acquisition of the 115kV line and switchyard at Navotas is urgently needed in order to have full control of such asset that are already part of MERALCO's distribution system.

18. In view of the foregoing, MERALCO is refiling the foregoing projects as Emergency/ Urgent Major CAPEX projects. It must be

emphasized that MERALCO's customers benefitted from the implementation of these projects as the integrity and reliability of the distribution system was maintained.

Copies of the different Project Information Summaries with supporting documents: (a) Technical and Economic Analysis; (b) Cost Estimates; (c) Expenditure Summary; (d) Cost Benefit Analysis Calculation; and (e) Gantt Chart of the projects are attached herewith as **Annexes "A" and series** and made integral parts hereof.

19. In further support of the Application, attached hereto as **Annex "B"** is the Judicial Affidavit of Mr. Froilan J. Savet, Senior Assistant Vice-President and Head of MERALCO's Network Planning and Project Management Office.

PRAYER

WHEREFORE, it is respectfully prayed to this Honorable Commission that the instant Application be **APPROVED** and that the building block components associated with the foregoing Major CAPEX projects from the time the same are put in service and considered use and useful be recognized as a deferred amount to be included in MERALCO's subsequent regulatory reset calculations.

Other relief just and equitable under the premises are likewise prayed for.

Pasig City, 12 August 2016.

MANILA ELECTRIC COMPANY
Applicant
MERALCO Compound
Ortigas Avenue, Pasig City

By:

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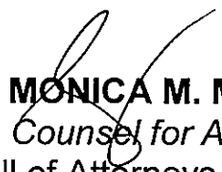

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Republic of the Philippines)
Pasig City) S.S.

VERIFICATION AND CERTIFICATE OF NON-FORUM SHOPPING

I, **JOSE RONALD V. VALLES** , Filipino, of legal age and with office address at 7th Floor, Lopez Building, Ortigas Avenue, Pasig City, after being sworn to in accordance with law, hereby depose and say, that –

1. I am the Vice-President and Head of the Regulatory Affairs Office of Applicant Manila Electric Company;

2. I have been authorized by the Board of Directors of the Applicant to cause the preparation and filing of the instant Application. I have read and understood the allegations contained therein and the same are true and correct based on my personal knowledge and authentic records made available to me in the ordinary course of business of the Applicant;

3. I have been authorized by the Board of Directors to certify that Applicant has not heretofore commenced any other action or proceeding involving the same issues in the Supreme Court, the Court of Appeals, or any other tribunal or agency and to the best of my knowledge, no such action or proceeding is pending in the Supreme Court, the Court of Appeals, or any other tribunal or agency. A copy of the Secretary's Certificate authorizing the undersigned to sign this Verification and Certification is attached as **Annex "C"** of this Application and made integral part hereof;

4. Except for the application for the approval of Applicant's Capital Expenditure Program for Regulatory Year (RY) 2016 docketed as ERC Case No. 2016-015 RC, where a decision was already rendered by the Commission and a Motion for Reconsideration was filed by an Intervenor, there is no other similar action or proceedings involving the same subject matter before the Commission or any other tribunal or agency. If I should hereafter learn that a similar action or proceeding has been filed or is pending before the Supreme Court, the Court of Appeals, or any other tribunal or agency, I undertake to report such fact within five (5) days there from to this Honorable Commission.

IN WITNESS WHEREOF, I have hereunto affixed my signature this 12th day of August 2016 at Pasig City, Philippines.

JOSE RONALD V. VALLES

SUBSCRIBED AND SWORN to before me this 12th day of August 2016, by affiant having exhibited his Social Security System (SSS) ID bearing the number 33-10900088.

Doc. No. 244;
Page No. 50;
Book No. IV;
Series of 2016.

ATTY. CARMEN GRACE S. RAMOS
NOTARY PUBLIC
Pasig, Pateros, Taguig & San Juan
issued on July 13, 2015 at Pasig City
until December 31, 2016
Roll No. 55945; IBP No. 1023723; 01/08/16; RSM Chapter
PTR No. 1473409; 01/21/16; Pasig City
7th Floor, Lopez Bldg . Ortigas Ave., Pasig City

ANNEX "A"

RY2016 CAPEX:
Capital Expenditure Projects

Project Code	Project Title	Commissioning Date	Project Cost
REFILING 1	EXPANSION OF BAGBAGUIN 115 KV-34.5 KV SUBSTATION (2ND BANK)	April 2016	162,580,219

I. Project Background:

This project was filed as part of Meralco's RY2016 Capital Expenditure application last February 9, 2015. As early as CY2013, it has also been part of the regular annual submission of Meralco's 10-Year Distribution Plan (DDP) to the Department of Energy (DOE). As compared to other alternatives, this project always stood out to be the best solution to address the current problems determined in the area specifically capacity deficiency and critical loading of several distribution facilities in Bagbaguin power transformer bank no. 1, Malinta power transformer bank no. 1 and Balintawak power transformer bank no. 6. Because of the urgent need to address the aforementioned problems, we were constrained to implement the project immediately which is the best alternative among all other options to solve the problems identified in the area.

It was foreseen in RY2014 that the facilities in the area, namely Bagbaguin Power Transformer Bank No. 1 and Malinta Power Transformer Bank No. 1 would reach critical loading. Without this project in RY2016, forecasted loadings of affected power transformer banks will worsen and Balintawak Power Transformer Bank No. 6 will also experience critical loading condition due to load growth in the area served by these power transformer banks.

II. Technical Analysis:

Table I shows the 7-year historical loading of affected banks with impact of the said project in RY2016. The project was immediately started and partially completed last April 2016. The bank accommodated some loads of Bagbaguin power transformer bank no. 1 that resulted in normal operation with 63% loading. With the completion of the remaining project works for Bagbaguin power transformer bank no. 2, Malinta power transformer bank no. 1 and Balintawak power transformer bank no. 6 will also operate in normal loading condition. Residential, commercial and industrial customers benefited from this project are: Liberty Paper Inc., ASA Metal Products, Manly Plastic Inc., First Tandem Steel Resources, Atlas Metal Products Manufacturing Co., Gemsteel Inc., and Filspin Incorporated.

Table II shows the 10-year forecasted loading without the project. In 2016, without project, Bagbaguin power transformer bank no. 1, Malinta power transformer bank no. 1, and Balintawak power transformer bank no. 6 will continue to operate in critical loading condition with 83%, 72%, and 71% loading, respectively. Residential, commercial and industrial customers served by the aforementioned power transformer banks will be affected especially during maintenance or contingencies.

Table I: 7-year Historical Loading of Affected Banks with Impact of the Project for RY2016

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2010		RY 2011		RY 2012		RY 2013	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Bagbaguin Bank 1	83	68.81	83%	65.55	79%	64.54	78%	62.13	75%
Malinta Bank 1	83	70.38	85%	65.00	78%	65.80	79%	52.33	63%
Balintawak Bank 6	83	61.55	74%	57.53	69%	54.60	66%	54.05	65%

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2014		RY 2015		RY 2016	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Bagbaguin Bank 1	83	62.41	75%	68.31	82%	52.34	63%
Malinta Bank 1	83	65.23	79%	58.03	70%	60.04	72%
Balintawak Bank 6	83	55.22	67%	57.69	70%	59.89	71%
Bagbaguin Bank 2	83					18.42	22%

Table II: 10- year Forecasted Loading Without Project

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2016		RY 2017		RY 2018		RY 2019		RY 2020	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Bagbaguin Bank 1	83	68.91	83%	69.68	84%	71.07	86%	72.49	87%	74.67	90%
Malinta Bank 1	83	60.04	72%	62.44	75%	64.94	78%	67.54	81%	70.24	85%
Balintawak Bank 6	83	59.89	71%	64.08	77%	67.29	81%	72.67	88%	75.58	91%

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2021		RY 2022		RY 2023		RY 2024		RY 2025	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Bagbaguin Bank 1	83	77.65	94%	77.76	94%	80.87	97%	84.10	101%	87.47	105%
Malinta Bank 1	83	72.35	87%	75.24	91%	78.25	94%	81.38	98%	83.82	101%
Balintawak Bank 6	83	77.84	94%	80.18	97%	83.39	100%	86.72	104%	89.32	108%

With the completion of all four (4) feeders of this project, voltage regulation will improve in some areas of Valenzuela City, Caloocan City and Quezon City. Also, this project will reduce technical loss by as much as 1,440,042 kilowatt-hour per year (kWh/ yr).

III. Project Alternatives

MERALCO considered three (3) alternatives to address the aforementioned banks, Alternative 1 has least cost in terms of total project and nearest to the target load of Valenzuela City, Caloocan City and Quezon City. Alternative 2 will entail the highest total project cost due to the development of a newly substation, construction of new 115 kV lines and longer distribution lines. Also, Alternative 3 is far more distant from the aforementioned target load that will require longer distribution lines that resulted in more expensive project than Alternative 1. Table III shows the summary of three (3) projects that are evaluated.

Table III: Project Alternatives

Problem Description	The project alternatives intended to address the capacity deficiencies in some area of Valenzuela City, Caloocan City and Quezon City.	
Alternative	**Project Name**	**Classification**
1	Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)	Stand-alone
2	Development of Bahay Pare 115 kV-34.5 kV Substation	Stand-alone
3	Installation of 1st 83 MVA Power Transformer at Sitio Gitna 115 kV Switching Station	Stand-alone

The descriptions of the project alternatives are summarized below:

Alternative 1:

This substation is located at G. Molina St. Bagbaguin, Valenzuela City. This project involved the installation of 1-83 MVA power transformer with associated protective equipment as well as appurtenant distribution lines. This project is within the target load center and upon completion of its feedering it will also unload the critical loading of Malinta bank no.1 and Balintawak bank no. 6. This project meets the load requirements of the customers within the area and ensures the flexibility and reliability during contingency problem.

Alternative 2:

This project involves the development of Bahay Pare 115 kV-34.5 kV substation in Bahay Pare, Meycauayan, Bulacan. It involves construction of two (2) 115 kV overhead subtransmission lines to cut-in the Meycauyan-Camarin 115 kV line approximately 350 meters. Also, it includes the installation of 1-83 MVA power transformer with associated protective equipment as well as appurtenant distribution lines. However, it will require longer distribution lines since this substation is far from the target load thus, will result in more expensive project.

Alternative 3:

This switching station is located at No. 8 MGM Industrial Compound, Sitio Gitna Kaybiga, Caloocan City. This project involves the installation of 1-83 MVA power transformer with associated protective equipment as well as appurtenant distribution lines.

Table IV summarizes the comparison of the advantages and disadvantages of the project alternatives, whereas Table V shows the summary of financial evaluations of the project alternatives.

Table IV: Comparison of Project Alternatives

Alternative	Advantages	Disadvantages
Alternative 1: Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)	- This project will unload the intended target load area of Valenzuela City, Caloocan City and Quezon City upon completion of its feedering. - It will unload the critical loading of above power transformers. - This project will provide a reliable service in the area with operational switching flexibility during contingencies. - This project will also improve voltage regulation and reduce system losses in some areas of Valenzuela, Caloocan and Quezon City. - The cost of this project is cheaper compared to the other two alternatives.	- No significant disadvantages.
Alternative 2: Development of Bahay Pare 115 kV-34.5 kV Substation	- This project will provide reliable service in the area, with operational switching flexibility during contingencies.	- It is farther from the target loads resulting in more line losses and voltage drop. Thus, the reliability of new distribution feeders will suffer. -It will involve construction of 350 meters, 115 kV overhead subtransmission lines to cut in the Meycauayan- Camarin 115 kV lines and 34.5 kV distribution lines. - This project will require a higher investment by Meralco compared to alternatives 1 and 3.

		- Developing a new substation will take a longer time to be completed and will have a higher project cost compared to the expansion of an existing substation.
Alternative 3: Installation of 1st 83 MVA Power Transformer at Sitio Gitna 115 kV Switching Station	- This project will provide reliable service in the area, with operational switching flexibility during contingencies.	- It is farther from the target loads resulting in more line losses and voltage drop. - More expensive project compared to alternative 1.

Table V: Financial Evaluation of Project Alternatives

Problem Description	The project alternatives intended to address the capacity deficiencies in some area of Valenzuela City, Caloocan City and Quezon City.				
Alternative	**Project Name**	**Project Cost (P in M)**	**NPV (P in M)**	**IRR**	**B/C**
1	Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)	162.58	1,172.43	30.12%	4.93
2	Development of Bahay Pare 115 kV-34.5 kV Substation	374.93	892.83	22.86%	2.74
3	Installation of 1st 83 MVA Power Transformer at Sitio Gitna 115 kV Switching Station	170.12	1,162.51	29.70%	4.80

IV. Recommendation

Based on the result of technical and financial evaluation, Alternative 1, the Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank), is the best option since it has least cost in terms of total project and nearest to the target load of Valenzuela City, Caloocan City and Quezon City compared to Alternatives 2 and 3. With Alternative 1 project, exposure of existing feeders will minimize thus, will improve the voltage regulation and reduce system loss. This will also provide additional capacity in the affected area to accommodate new load applications.

The expansion of Bagbaguin Substation involved installation of one (1) 83MVA, 110kVY-34.5kVY-13.8kVD three-phase power transformer with OLTC, one (1) 1.2 ohm, 630A, 36kV neutral reactor, four (4) unit three-phase 115kV outdoor-type circuit breaker and eight (8) unit 115kV disconnect switches, one (1) assembly of three-phase 34.5kV outdoor-type metalclad switchgear with six (6) vacuum circuit breakers and one (1) 7.2MVAR outdoor-type capacitor bank, construction of four (4) 34.5 kV new overhead feeders and installation of four (4) new 34.5 kV, 600 A Remote-Controlled Line Reclosers.

V. Urgent Reason for Implementing in CY2015:

To avert possible emergency conditions due to critical loadings of facilities, the project was implemented. In fact, while project construction was on going in CY2015, Bagbaguin power transformer bank no. 1, Malinta power transformer 1 and Balintawak power transformer bank no. 6 were already operating at critical level. If this condition was not addressed immediately, critical loading of these facilities would have continued to persist which could have resulted to widespread power interruption and loss of loads. Without the project, MERALCO would also have difficulty in accommodating new and additional customer load applications in the area because of the high growth rate in the area.

The expansion project was partially completed last April 2016. The project was immediately implemented to solve the capacity deficiencies and avert possible power interruptions in some areas of Valenzuela City, Caloocan City and Quezon City as well as to accommodate new customer applications.

Annex A: Expenditure Summary
Annex B: Cost-Benefit Analysis
Annex C: Project Gantt Chart

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME:

EXPANSION OF BAGBAGUIN 115 KV- 34.5 KV SUBSTATION (2ND BANK)

		CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)			
		Forecast (US$, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	0			
	Structures and Improvements (Distribution Purposes)	0			
	Station Equipment	0			
	Power transformers	1,367,822			
	Switchgear	286,263			
	Protective equipment	16,342			
	Metering & control equipment	39,122			
	Communications equipment	0			
	Other station equipment	77,255			
	Poles, Towers and Fixtures - Distribution	42,403			
	Overhead Conductors and Devices - Distribution	3,604			
	Underground Conduits - Distribution	0			
	Underground Conductors and Devices - Distribution	0			
	Distribution Transformers	0			
	Power Conditioning Equipment	0			
	Meters, Metering Instruments & Metering Transformers - Distributior	0			
	Information technology equipment (distribution)	0			
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	1,832,811	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		1,832,811	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Local Expenditure

MERALCO

PROJECT NAME:

EXPANSION OF BAGBAGUIN 115 KV- 34.5 KV SUBSTATION (2ND BANK)

		CAPITAL EXPENDITURE - MAJOR PROJECTS (LOCAL COMPONENT)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	100,000			
	Structures and Improvements (Distribution Purposes)	1,142,006			
	Station Equipment	0			
	Power transformers	17,329,148			
	Switchgear	23,408,478			
	Protective equipment	4,385,101			
	Metering & control equipment	1,537,613			
	Communications equipment	0			
	Other station equipment	1,679,538			
	Poles, Towers and Fixtures - Distribution	14,437,595			
	Overhead Conductors and Devices - Distribution	16,655,681			
	Underground Conduits - Distribution	0			
	Underground Conductors and Devices - Distribution	0			
	Distribution Transformers	0			
	Power Conditioning Equipment	0			
	Meters, Metering Instruments & Metering Transformers - Distributior	0			
	Information technology equipment (distribution)	1,595,880			
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	82,271,040	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		82,271,040	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Total Expenditure, local and foreign (PhP, real)

MERALCO

PROJECT NAME:
EXPANSION OF BAGBAGUIN 115 KV- 34.5 KV SUBSTATION (2ND BANK)

		CAPITAL EXPENDITURE - MAJOR PROJECTS (TOTAL, REAL)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	100,000	0	0	0
	Structures and Improvements (Distribution Purposes)	1,142,006	0	0	0
	Station Equipment	0	0	0	0
	Power transformers	77,263,676	0	0	0
	Switchgear	35,951,804	0	0	0
	Protective equipment	5,101,156	0	0	0
	Metering & control equipment	3,251,836	0	0	0
	Communications equipment	0	0	0	0
	Other station equipment	5,064,644	0	0	0
	Poles, Towers and Fixtures - Distribution	16,295,607	0	0	0
	Overhead Conductors and Devices - Distribution	16,813,610	0	0	0
	Underground Conduits - Distribution	0	0	0	0
	Underground Conductors and Devices - Distribution	0	0	0	0
	Distribution Transformers	0	0	0	0
	Power Conditioning Equipment	0	0	0	0
	Meters, Metering Instruments & Metering Transformers - Distribution	0	0	0	0
	Information technology equipment (distribution)	1,595,880	0	0	0
	Regulated Entity Property on Consumer's Premises	0	0	0	0
	Street Lights and Signal Systems	0	0	0	0
	Submarine Cables	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
Subtrans	Transferred subtransmission assets	0	0	0	0
	Sub-total Regulated Distribution Services	162,580,219	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)	0	0	0	0
	Overhead Conductors and Devices (Customer)	0	0	0	0
	Underground Conduits (Customer)	0	0	0	0
	Underground Conductors and Devices (Customer)	0	0	0	0
	Line Transformers (Customer)	0	0	0	0
	Information Systems Equipment (Connection)	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)	0	0	0	0
	Land and land rights	0	0	0	0
	Structures and improvements	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		162,580,219	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: EXPANSION OF BAGBAGUIN 115KV-34.5KV SUBSTATION (2nd Bank)
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					R E V E N U E						
PER	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER (P/KWH)	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	162,580	-	162,580	6.94	7.60	-											
1	2017		677	677	7.23	8.12	-	8,129	5,419	13,548	0	9.34	-	-	-	-	-	(162,580)
2	2018		-	-	7.52	8.45	-	8,129	5,419	13,548	0	9.72	-	(13,548)	0	(13,548)	(8,129)	(8,806)
3	2019		-	-	7.83	8.79	-	8,129	5,419	13,548	0	10.11	-	(13,548)	0	(13,548)	(8,129)	(8,129)
4	2020		-	-	8.14	9.15	-	8,129	5,419	13,548	0	10.52	-	(13,548)	0	(13,548)	(8,129)	(8,129)
5	2021		-	-	8.47	9.52	-	8,129	5,419	13,548	0	10.95	-	(13,548)	0	(13,548)	(8,129)	(8,129)
6	2022		135	135	8.82	9.91	-	9,755	5,419	15,174	0	11.39	-	(13,548)	0	(13,548)	(8,129)	(8,129)
7	2023		-	-	9.18	10.31	-	9,755	5,419	15,174	0	11.85	-	(15,174)	0	(15,174)	(9,755)	(9,890)
8	2024		50,505	50,505	9.55	10.73	606,060	9,755	5,419	621,234	56,502	12.83	724,741	(15,174)	0	(15,174)	(9,755)	(9,755)
9	2025		57,219	57,219	9.94	11.16	1,292,687	9,755	5,419	1,307,861	115,813	13.35	1,545,571	103,507	31,052	72,455	77,874	27,369
10	2026		63,874	63,874	10.34	11.62	2,059,169	9,755	5,419	2,074,343	177,282	13.89	2,461,595	237,711	71,313	166,397	171,817	114,598
11	2027		71,541	71,541	10.76	12.09	2,916,031	11,381	5,419	2,932,831	241,255	14.45	3,485,344	387,252	116,176	271,076	276,496	212,622
12	2028		79,557	79,557	11.20	12.58	3,870,716	11,381	5,419	3,887,516	307,742	15.03	4,625,661	552,513	165,754	386,759	392,179	320,638
13	2029		88,468	88,468	11.65	13.09	4,932,336	11,381	5,419	4,949,136	376,842	15.64	5,893,376	738,145	221,444	516,702	522,121	442,564
14	2030		98,204	98,204	12.13	13.62	6,110,788	11,381	5,419	6,127,588	448,657	16.27	7,300,251	944,240	283,272	660,968	666,387	577,919
15	2031		61,844	61,844	12.62	14.17	6,852,911	11,381	5,419	6,869,711	483,508	16.93	8,185,493	1,172,663	351,799	820,864	826,283	728,079
16	2032		23,328	23,328	13.13	14.75	7,131,224	13,006	5,419	7,149,650	483,508	17.61	8,516,535	1,315,781	394,734	921,047	926,466	864,623
17	2033		24,135	24,135	13.66	15.35	7,420,839	13,006	5,419	7,439,265	483,508	18.33	8,860,568	1,366,886	410,066	956,820	962,239	938,911
18	2034		25,115	25,115	14.22	15.97	7,722,216	13,006	5,419	7,740,642	483,508	19.07	9,219,331	1,421,703	426,511	995,192	1,000,611	976,477
19	2035		26,135	26,135	14.80	16.62	8,035,833	13,006	5,419	8,054,259	483,508	19.84	9,592,189	1,478,689	443,607	1,035,082	1,040,502	1,015,387
20	2036		27,196	27,196	15.40	17.29	8,362,187	13,006	5,419	8,380,613	483,508	20.64	9,980,128	1,537,930	461,379	1,076,551	1,081,970	1,055,836
21	2037		28,436	28,436	16.02	18.00	8,701,795	14,632	5,419	8,721,846	483,508	21.48	10,383,758	1,599,515	479,855	1,119,661	1,125,080	1,097,884
22	2038		29,450	29,450	16.67	18.73	9,055,194	14,632	5,419	9,075,246	483,508	22.34	10,803,713	1,661,912	498,574	1,163,338	1,168,758	1,140,321
23	2039		30,646	30,646	17.35	19.49	9,422,947	14,632	5,419	9,442,999	483,508	23.25	11,240,655	1,728,467	518,540	1,209,927	1,215,346	1,185,896
24	2040		31,891	31,891	18.05	20.28	9,805,634	14,632	5,419	9,825,686	483,508	24.19	11,695,269	1,797,657	539,297	1,258,360	1,263,779	1,233,133
25	2041		33,186	33,186	18.79	21.10	10,203,863	14,632	5,419	10,223,915	483,508	25.17	12,168,272	1,869,584	560,875	1,308,708	1,314,128	1,282,237
26	2042		34,669	34,669	19.55	21.96	10,618,266	16,258	5,419	10,639,943	483,508	26.18	12,660,406	1,944,357	583,307	1,361,050	1,366,469	1,333,283
27	2043		35,936	35,936	20.34	22.85	11,049,498	16,258	5,419	11,071,175	483,508	27.24	13,172,446	2,020,463	606,139	1,414,324	1,419,743	1,385,074
28	2044		37,395	37,395	21.17	23.78	11,498,243	16,258	5,419	11,519,921	483,508	28.35	13,705,197	2,101,271	630,381	1,470,890	1,476,309	1,440,373
29	2045		38,914	38,914	22.03	24.75	11,965,213	16,258	5,419	11,986,891	483,508	29.49	14,259,496	2,185,276	655,583	1,529,693	1,535,113	1,497,717
30	2046		40,495	40,495	22.92	25.75	12,451,148	16,258	5,419	12,472,825	483,508	30.68	14,836,216	2,363,391	709,017	1,654,374	1,659,793	1,619,298

NPV 1,171,429.44

IRR 30.12

B/C 4.99

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: DEVELOPMENT OF BAHAY PARE 115KV-34.5KV SUBSTATION
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					R E V E N U E						
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER (P/KWH)	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	374,929	-	374,929	6 94	7 60	-							-	-	-	-	(374,929)
1	2017		1,562	1,562	7 23	8 12	-	18,746	12,498	31,244	0	9 34	-	(31,244)	0	(31,244)	(18,746)	(20,309)
2	2018		-	-	7 52	8 45	-	18,746	12,498	31,244	0	10 11	-	(31,244)	0	(31,244)	(18,746)	(18,746)
3	2019		-	-	7 83	8 79	-	18,746	12,498	31,244	0	10 52	-	(31,244)	0	(31,244)	(18,746)	(18,746)
4	2020		-	-	8 14	9 15	-	18,746	12,498	31,244	0	10 95	-	(31,244)	0	(31,244)	(18,746)	(18,746)
5	2021		-	-	8 47	9 52	-	18,746	12,498	31,244	0	11 39	-	(31,244)	0	(31,244)	(18,746)	(18,746)
6	2022		312	312	8 82	9 91	-	22,496	12,498	34,993	0	11 85	-	(34,993)	0	(34,993)	(22,496)	(22,808)
7	2023		-	-	9 18	10 31	-	22,496	12,498	34,993	0	12 33	-	(34,993)	0	(34,993)	(22,496)	(22,496)
8	2024		50,505	50,505	9 55	10 73	606,060	22,496	12,498	641,054	56,502	12 83	724,741	83,687	25,106	58,581	71,079	20,574
9	2025		57,219	57,219	9 94	11 16	1,292,687	22,496	12,498	1,327,680	115,813	13 35	1,545,571	217,891	65,367	152,524	165,022	107,803
10	2026		63,874	63,874	10 34	11 62	2,059,169	22,496	12,498	2,094,162	177,282	13 89	2,461,595	367,433	110,230	257,203	269,701	205,827
11	2027		71,718	71,718	10 76	12 09	2,916,031	26,245	12,498	2,954,773	241,255	14 45	3,485,344	530,570	159,171	371,399	383,897	312,179
12	2028		79,557	88,468	11 20	12 58	3,870,716	26,245	12,498	3,909,459	307,742	15 03	4,625,661	716,202	214,861	501,342	513,839	434,282
13	2029		88,468	98,204	11 65	13 09	4,932,336	26,245	12,498	4,971,079	376,842	15 64	5,893,376	922,297	276,689	645,608	658,106	569,637
14	2030		98,204	61,844	12 13	13 62	6,110,788	26,245	12,498	6,149,531	448,657	16 27	7,300,251	1,150,720	345,216	805,504	818,002	719,798
15	2031		61,844	23,505	12 62	14 17	6,852,911	26,245	12,498	6,891,654	483,508	16 93	8,185,493	1,293,838	388,152	905,687	918,185	856,341
16	2032		23,505	24,135	13 13	14 75	7,131,224	29,994	12,498	7,173,716	483,508	17 61	8,516,535	1,342,820	402,846	939,974	952,471	928,966
17	2033		24,135	25,115	13 66	15 35	7,420,839	29,994	12,498	7,463,331	483,508	18 33	8,860,968	1,397,637	419,291	978,346	990,843	966,709
18	2034		25,115	26,135	14 22	15 97	7,722,216	29,994	12,496	7,764,708	483,508	19 07	9,219,331	1,454,623	436,387	1,018,236	1,030,734	1,005,619
19	2035		26,135	27,196	14 80	16 62	8,035,833	29,994	12,498	8,078,325	483,508	19 84	9,592,189	1,513,864	454,159	1,059,705	1,072,202	1,046,068
20	2036		27,196	28,613	15 40	17 29	8,362,187	29,994	12,498	8,404,678	483,508	20 64	9,980,128	1,575,449	472,635	1,102,814	1,115,312	1,088,116
21	2037		28,613	29,450	16 02	18 00	8,701,795	33,744	12,498	8,748,036	483,508	21 48	10,383,758	1,635,722	490,717	1,145,005	1,157,503	1,128,890
22	2038		29,450	30,646	16 67	18 73	9,055,194	33,744	12,498	9,101,436	483,508	22 34	10,803,713	1,702,278	510,683	1,191,594	1,204,092	1,174,642
23	2039		30,646	31,891	17 35	19 49	9,422,947	33,744	12,498	9,469,188	483,508	23 25	11,240,655	1,771,467	531,440	1,240,027	1,252,524	1,221,878
24	2040		31,891	33,186	18 05	20 28	9,805,634	33,744	12,498	9,851,875	483,508	24 19	11,695,259	1,843,394	553,018	1,290,376	1,302,873	1,270,983
25	2041		33,186	34,846	18 79	21 10	10,203,863	33,744	12,498	10,250,105	483,508	25 17	12,168,272	1,918,167	575,450	1,342,717	1,355,215	1,322,029
26	2042		34,846	35,936	19 55	21 96	10,618,266	37,493	12,498	10,668,256	483,508	26 18	12,660,406	1,992,150	597,645	1,394,505	1,407,002	1,372,156
27	2043		35,936	37,395	20 34	22 85	11,049,498	37,493	12,498	11,099,488	483,508	27 24	13,172,446	2,072,958	621,887	1,451,070	1,463,568	1,427,632
28	2044		37,395	38,914	21 17	23 78	11,498,243	37,493	12,498	11,548,234	483,508	28 35	13,705,197	2,156,963	647,289	1,509,874	1,522,372	1,484,976
29	2045		38,914	40,495	22 03	24 75	11,965,213	37,493	12,498	12,015,204	483,508	29 49	14,259,496	2,244,292	673,288	1,571,005	1,583,502	1,544,588
30	2046		40,495	40,495	22 92	26 75	12,451,148	37,493	12,498	12,501,139	483,508	30 68	14,836,216	2,335,078	700,523	1,634,554	1,647,052	1,606,557
															NPV			990,930.49
															IRR			11.96
															B/C			1.74

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: INSTALLATION OF 1ST 83MVA POWER TRANSFORMER AT SITIO GITNA
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					P E V E N U E						
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	170,116	-	170,116	6 94	7 80	-							-	-	-	-	(170,116)
1	2017		709	709	7 23	8.12	-	8,506	5,671	14,176	0	9 34	-	(14,176)	0	(14,176)	(8,506)	(9,215)
2	2018		-	-	7 52	8 45	-	8,506	5,671	14,176	0	9 72	-	(14,176)	0	(14,176)	(8,506)	(8,506)
3	2019		-	-	7 83	8 79	-	8,506	5,671	14,176	0	10 11	-	(14,176)	0	(14,176)	(8,506)	(8,506)
4	2020		-	-	8 14	9 15	-	8,506	5,671	14,176	0	10 52	-	(14,176)	0	(14,176)	(8,506)	(8,506)
5	2021		-	-	8.47	9 52	-	8,506	5,671	14,176	0	10 95	-	(14,176)	0	(14,176)	(8,506)	(8,506)
6	2022		142	142	8 82	9 91	-	10,207	5,671	15,877	0	11 39	-	(15,877)	0	(15,877)	(10,207)	(10,349)
7	2023		-	-	9 18	10 31	-	10,207	5,671	15,877	0	11 85	-	(15,877)	0	(15,877)	(10,207)	(10,207)
8	2024		50,505	50,505	9 55	10 73	606,060	10,207	5,671	621,938	56,502	12 83	724,741	102,803	30,841	71,962	77,633	27,128
9	2025		57,219	57,219	9 94	11 16	1,292,687	10,207	5,671	1,308,564	115,813	13 35	1,545,571	237,007	71,102	165,905	171,576	114,357
10	2026		63,874	63,874	10 34	11 62	2,059,189	10,207	5,671	2,075,047	177,282	13 89	2,461,595	386,549	115,965	270,584	276,255	212,381
11	2027		71,547	71,547	10 76	12 09	2,916,031	11,903	5,671	2,933,609	241,255	14 45	3,485,344	551,735	165,520	386,214	391,885	320,338
12	2028		79,557	79,557	11 20	12 58	3,870,716	11,903	5,671	3,888,295	307,742	15 03	4,625,661	737,366	221,210	516,156	521,827	442,270
13	2029		88,468	88,468	11 65	13 09	4,932,336	11,903	5,671	4,949,915	376,842	15 64	5,893,376	943,461	283,038	660,423	666,094	577,625
14	2030		98,204	98,204	12 13	13 62	6,110,788	11,903	5,671	6,128,367	448,657	16 27	7,300,251	1,171,884	351,565	820,319	825,990	727,785
15	2031		61,844	61,844	12 62	14 17	6,852,911	11,903	5,671	6,870,490	483,508	16 93	8,185,493	1,315,003	394,501	920,502	926,172	864,329
16	2032		23,334	23,334	13 13	14 75	7,131,224	12,609	5,671	7,150,504	483,508	17 61	8,515,535	1,366,032	409,810	956,222	961,893	938,558
17	2033		24,135	24,135	13 66	15 35	7,420,839	12,609	5,671	7,440,119	483,508	18 33	8,860,968	1,420,849	426,255	994,594	1,000,265	976,130
18	2034		25,115	25,115	14 22	15 97	7,722,216	13,609	5,671	7,741,496	483,508	19 07	9,219,331	1,477,835	443,351	1,034,485	1,040,155	1,015,040
19	2035		26,135	26,135	14 80	16 62	8,035,833	13,609	5,671	8,055,113	483,508	19 84	9,592,189	1,537,076	461,123	1,075,953	1,081,624	1,055,489
20	2036		27,196	27,196	15 40	17 29	8,362,187	13,609	5,671	8,381,467	483,508	20 64	9,980,128	1,598,661	479,598	1,119,063	1,124,733	1,097,537
21	2037		28,442	28,442	16 02	18 00	8,701,795	15,310	5,671	8,722,776	483,508	21 46	10,383,758	1,660,982	498,295	1,162,688	1,168,358	1,139,916
22	2038		29,450	29,450	16 67	18 73	9,055,194	15,310	5,671	9,076,175	483,508	22 34	10,803,713	1,727,538	518,261	1,209,277	1,214,947	1,185,497
23	2039		30,646	30,646	17 35	19 49	9,422,947	15,310	5,671	9,443,928	483,508	23 25	11,240,655	1,796,727	539,018	1,257,709	1,263,380	1,232,734
24	2040		31,891	31,891	18 05	20 28	9,805,634	15,310	5,671	9,826,615	483,508	24 19	11,695,269	1,868,654	560,596	1,308,058	1,313,728	1,281,838
25	2041		33,186	33,186	18 79	21 10	10,203,863	15,310	5,671	10,224,844	483,508	25 17	12,168,272	1,943,427	583,028	1,360,399	1,366,070	1,332,884
26	2042		34,675	34,675	19 55	21 96	10,618,266	17,012	5,671	10,640,948	483,508	26 18	12,660,406	2,019,458	605,837	1,413,621	1,419,291	1,384,616
27	2043		35,936	35,936	20 34	22 85	11,049,498	17,012	5,671	11,072,180	483,508	27 24	13,172,446	2,100,266	630,080	1,470,186	1,475,857	1,439,921
28	2044		37,395	37,395	21 17	23 78	11,498,243	17,012	5,671	11,520,926	483,508	28 35	13,705,197	2,184,271	655,281	1,528,990	1,534,661	1,497,265
29	2045		38,914	38,914	22 03	24 75	11,955,213	17,012	5,671	11,977,895	483,508	29 49	14,259,466	2,271,601	681,480	1,590,121	1,595,791	1,556,877
30	2046		40,495	40,495	22 92	25 75	12,451,148	17,012	5,671	12,473,830	483,508	30 68	14,836,216	2,362,386	708,716	1,653,670	1,659,341	1,618,846
															NPV			1,142,596.76
															IRR			28.79%
															B/C			4.85

ANNEX C: GANTT CHART

Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)
Target Completion: April 2016

Activity	2015												2016			
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Procurement of Materials																
Design																
Construction																

ANNEX "A-1"

RY2016 CAPEX:
Emergency Capital Expenditure Projects

Project Code	Project Title	Commissioning Date	Project Cost
REFILING 2	INSTALLATION OF 34.5 KV METALCLAD SWITCHGEAR AT DASMARIÑAS 83 MVA POWER TRANSFORMER BANK NO. 1	August 2016	68,161,085

I. Project Background:

This project involves the installation of 34.5 kV metalclad switchgear and 34.5 kV 7.2 MVAR capacitor bank in NGCP Dasmariñas Substation as well as construction of two (2) new distribution feeders, control house and telecommunications room. It is worthy to note that this is among the projects filed as part of MERALCO's RY2016 Capital Expenditure application last February 9, 2015 and has also been a part of MERALCO's regular annual submission of its 10- Year Distribution Development Plan (DDP) to the Department of Energy (DOE) since 2014 in order to address the capacity deficiency and critical loading of distribution facilities in the area. Because of the urgent need to address the aforementioned problems however, MERALCO was constrained to implement the project immediately in order to avert multiple power interruptions to its customers in the area and maintain a robust electric distribution infrastructure.

Part of the reason for the immediate implementation of the aforesaid project is the critical loading of the nearby Imus power transformer bank no. 2. Since RY2014, this Imus power transformer bank no. 2 has been operating at critical levels, and this condition worsened when the actual loading of the Imus power transformer bank no. 2 at the beginning of RY2016 registered a 79% loading attributable to the high growth rate in the area at 11.2%. It is submitted that the full capacity of the Dasmariñas 83 MVA power transformer bank no. 1 could have been utilized to help reduce the loading of the Imus power transformer bank no. 2 within the normal level if it had four (4) distribution feeders instead of two (2). The inability to shift a portion of the loads of the Imus power transformer bank no. 2 was aggravated when both of the existing distribution feeders of the Dasmariñas 83 MVA power transformer bank, 42DA and 43DA, lacked sufficient capacity to help unload the aforementioned critically loaded power transformer bank. In addition, the high growth rate of 20.7%, in the area served by the Dasmariñas 83 MVA transformer bank utilized the remaining capacity that could have been used to reduce loading of the Imus power transformer bank.

II. Technical Analysis

Due to the significant increase of the load growth in the areas of Imus and Dasmariñas during the past year, which are mainly due to several residential, commercial and industrial customer applications, the Imus power transformer bank no. 2 registered 79% loading, and is expected to increase by 82% loading in RY2017. If this load growth will continue, especially with the anticipated additional growth from new residential and commercial establishments like Ayala Land Inc.'s Vermosa Project in Dasmariñas City and Imus City as well as Lancaster New City in Gen. Trias, the actual loading of the affected banks would go beyond its forecasted loading. In fact, in RY 2016, the load growth rate at the area served by the Dasmariñas 83 MVA power transformer increased at 20.7%, resulting to the utilization of the most of the transformer bank's remaining available capacity. While the Dasmariñas 83 MVA power transformer still has available capacity to serve help unload the Imus power transformer bank no. 2 and cater to new and additional load applications, MERALCO still had difficulty in transferring the loads from the Imus transformer bank no. 2 to the Dasmariñas 83 MVA power transformer bank since the latter has only two (2) distribution feeders and these feeders both lack sufficient capacity. It should be noted that four (4) distribution feeders are necessary to utilize the full capacity of the Dasmariñas 83 MVA power transformer which could also provide sufficient tying facility with other adjacent banks.

Without sufficient capacity to reduce the loading of the Imus 83 MVA Power Transformer Bank No. 2 to within normal loading levels and lack of sufficient distribution feeders to utilize the remaining capacity of the

Dasmariñas 83 MVA power transformer bank no. 1, the Imus 83 MVA Power Transformer Bank No. 2 operates at above critical loading level.

Further to the above, the Imus power transformer bank no. 1 cannot be used to unload the Imus power transformer bank no. 2 since this has a different voltage level (13.8 kV) and will eventually be converted to the standard 34.5 kV voltage in keeping with MERALCO's plan to gradually convert to 34.5 kV circuits by the year 2019 these 13.8 kV circuits of Imus power transformer bank no. 1.

Table 1 shows the 7- year historical loading while Table 2 shows the 10- year forecasted loading of Imus 83 MVA Power Transformer Bank No. 2 and Dasmariñas 83 MVA power transformer bank no. 1.

Table 1: 7- Year Historical Loading of Affected Power Transformer Banks

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2010		RY 2011		RY 2012		RY 2013	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Imus Bank 2	83	59.61	72%	61.49	74%	66.14	80%	58.98	71%
Dasma Bank	83	26.05	31%	36.65	44%	39.64	48%	38.02	46%

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2014		RY 2015		RY 2016	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Imus Bank 2	83	59.02	71%	59.19	71%	65.81	79%
Dasma Bank	83	37.55	45%	40.66	49%	49.10	59%

Table 2: 10- Year Forecasted Loading of Affected Power Transformer Banks

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2017		RY 2018		RY 2019		RY 2020	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Imus Bank 2	83	67.81	82%	69.26	83%	70.74	85%	72.25	87%
Dasma Bank	83	50.15	60%	51.22	62%	52.32	63%	53.44	64%

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2021		RY 2022		RY 2023		RY 2024	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Imus Bank 2	83	73.80	89%	75.38	91%	76.99	93%	78.64	95%
Dasma Bank	83	54.58	66%	55.75	67%	56.94	69%	58.16	70%

POWER TRANSFORMER	MAX CAPACITY (MVA)	RY 2025		RY 2026	
		LOAD (MVA)	% Ldg.	LOAD (MVA)	% Ldg.
Imus Bank 2	83	80.32	97%	82.04	99%
Dasma Bank	83	59.41	72%	60.68	73%

III. Project Alternatives

In the process of determining the most cost-effective solution to address the identified system deficiencies, MERALCO generated technically feasible alternatives that could satisfy the distribution system requirements in a timely and efficient manner. Table 3 shows the summary of technically feasible projects that are evaluated.

Table 3: Project Alternatives

Problem Description	The project alternatives intended to address the capacity deficiencies in the areas of Imus City and Dasmariñas City in the province of Cavite.	
Alternative	**Project Name**	**Classification**
1	Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer Bank No. 1	Stand-alone
2	Development of Pala-pala 115 kV – 34.5 kV Substation	Stand-alone
3	Expansion of FCIE 115 kV- 34.5 kV Substation (3rd Bank)	Stand-alone

Alternative 1: Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer Bank No. 1

This project involved the: (a) installation of a 34.5 kV metalclad switchgear and 34.5 kV 7.2 MVAR capacitor bank in the NGCP Dasmariñas Substation, (b) construction of two (2) new distribution feeders, (c) installation of thirteen (13) new 34.5 kV, 600 A Remote-Controlled Line Reclosers, (d) transfer of control, metering, protection and communication facilities and equipment of three (3) existing MERALCO 115 kV lines namely FCIE, Imus and Silang 115 kV Lines from NGCP control room to the new MERALCO control house, (e) transfer of metering facilities and equipment from the secondary side of the 83 MVA power transformer to the primary side of the transformer; and (f) construction of a new control house, telecommunications room, guard house, substation gate and concrete road.

Alternative 2: Development of Pala-pala 115 kV- 34.5 kV Substation
This project involves the development of a conventional 115 kV- 34.5 kV substation in Pala-pala, Dasmariñas City, Cavite. It includes the installation of 1- 83 MVA power transformer with associated SCADA, communication and protective equipment as well as construction of approximately 5 km subtransmission lines and appurtenant distribution lines.

Alternative 3: Expansion of FCIE 115 kV- 34.5 kV Substation (3rd Bank)
This project involves the expansion of the existing FCIE 115 kV- 34.5 kV substation in First Cavite Industrial Estate (FCIE), Brgy. Langkaan, Dasmariñas City, Cavite. It includes the installation of 1-83 MVA power transformer with associated SCADA and protective equipment as well as appurtenant distribution lines.

Table 4: Comparison of Project Alternatives

Alternative	Advantages	Disadvantages
Alternative 1 Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer Bank No. 1	- This project, among all options, is the cheapest. - With minimal project cost, this project can lower the loading level of Imus power transformer bank no. 2 to within normal loading level. - The remaining available capacity of Dasmariñas 83 MVA Power Transformer Bank No. 1 will be utilized thru construction of two (2) new distribution feeders. - All scope of the project have been approved already by the NGCP.	- There were additional scope of works introduced to comply with NGCP requirements such as transfer of control, metering, protection and communication facilities and equipment of three (3) existing MERALCO 115 kV lines namely FCIE, Imus and Silang 115 kV Lines from NGCP control room to the new MERALCO control house, transfer of metering facilities and equipment from the secondary side of the 83 MVA power transformer to the primary side of the transformer and construction of new guard

	- Among all options, this project is nearest to the target loads. - Due to urgency of the need to address the critical loading situations mentioned earlier, this project has been started and is expected to be completed within CY2016.	house, substation gate and concrete road.
Alternative 2 Development of Pala-pala 115 kV- 34.5 kV Substation	- Although this project involves the development of a new substation, this will not require acquisition of substation lot since it will utilize a MERALCO- owned lot. - This project will provide larger additional capacity compared to Option 1. - This can provide capacity to other load centers in the area.	- This is the most expensive because this option will require construction of approximately 5 km of 115 kV subtransmission lines. - Compared to Option 1, this project is far from the intended loads to be served.
Alternative 3 Expansion of FCIE 115 kV- 34.5 kV Substation (3rd Bank)	- This project will provide larger additional capacity compared to Option 1. - This can provide capacity to other load centers in the area.	- Compared to Option 1, this project is farther from the intended loads to be served.

Table 5: Financial Evaluation of Project Alternatives

Problem Description	The project alternatives are intended to reduce the loading of the Imus power transformer bank no. 2 to within normal loading levels and to utilize the remaining available capacity of the Dasmariñas 83 MVA power transformer bank no. 1 as well as to provide additional capacity for the new and additional load applications in the area of Imus City and Dasmariñas City in Cavite.				
Alternative	**Project Name**	**Project Cost (P in M)**	**NPV (P in M)**	**IRR**	**B/C**
1	Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer Bank No. 1	68.16	733.82	36.72%	6.34
2	Development of Pala-Pala 115 kV – 34.5 kV Substation	332.10	169.05	17.05%	1.43
3	Expansion of FCIE 115 kV- 34.5 kV Substation (3rd Bank)	160.17	395.43	22.02%	2.79

IV. Recommendation

Based on the technical and financial evaluation of the different alternatives it was deemed that the most economical solution to address the critical loading of the Imus power transformer bank no. 2 is the project 'Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer Bank No. 1'. Upon completion, it will also address the anticipated reliability problems in the areas being served by the Dasmariñas 83 MVA power transformer bank no. 1 due to limited distribution feeders and tying facilities. Furthermore, this project was chosen since it is near the target load center and load growth area to be served by the project. It will require construction of shorter distribution lines, minimize system loss, increase system reliability and improve power quality as the project will reduce technical loss by as much as 642,869 kilowatt-hour per year (kWh/ yr). Moreover, the additional capacity in the area will allow MERALCO to use the remaining available capacity of the 83 MVA power transformer thru its two (2) additional feeders..

The project involved: (a) the installation of one (1) assembly of three-phase 34.5 kV outdoor-type metalclad switchgear with seven (7) vacuum circuit breakers and one (1) 7.2 MVAR outdoor-type capacitor bank; (b) construction of two (2) 34.5 kV new overhead feeders; (c) installation of thirteen (13) new 34.5 kV, 600 A Remote-Controlled Line Reclosers; (d)transfer of control, metering, protection and communication facilities and equipment of three (3) existing MERALCO 115 kV lines namely FCIE, Imus and Silang 115 kV Lines from NGCP control room to the new MERALCO control house; (e) transfer of metering facilities and equipment from the secondary side of the 83 MVA power transformer to the primary side of the transformer; and (f) construction of a new control house, telecommunications room, guard house, substation gate and concrete road.

V. Urgent Reason for Implementing in CY2015

In order to avert possible emergency conditions due to critical loadings of facilities, the project was implemented. In fact, while project construction was on going in early CY2016 the Imus power transformer bank no. 2 was already operating at above critical levels. Meanwhile, two (2) existing distribution feeders of the Dasmariñas 83 MVA power transformer bank, 42DA and43DA, cannot help unload the said critically loaded bank since these distribution feeders do not have sufficient capacity. If this condition would not be addressed immediately, critical loading of these facilities would continue to persist which could result to widespread power interruption and loss of loads. In addition, the increasing growth rate in the area puts MERALCO in a situation where it will have difficulty in accommodating new and additional customer load applications should the loading and capacity problems persist.

As for the additional requirements of this project, MERALCO already sought and secured clearance and approval from NGCP prior to the project's implementation since the project requires coordination and approval from the National Grid Corporation of the Philippines (NGCP) regarding construction, modification and installation of MERALCO substation equipment in an NCGP- owned substation. Our consultation with NGCP for the proposed project 'Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer' started in as early as November 25, 2013. In NGCP's response letters dated January 7 and 23, 2014, NGCP approved the proposed project citing that it is technically feasible and acceptable. On February 17, 2014, MERALCO also sought for the approval of our proposed general arrangement plan related to the project and during a meeting on January 20, 2015, NGCP approved the requested additional space to accommodate all the required equipment related to the project. The design stage of this project started in July 2015 and with several scope revisions, the design was completed in May 2016 while all equipment will be completely delivered in July 2016. The construction of this project started in January 2016 and is expected to be completed within August 2016.

Annex A: Expenditure Summary
Annex B: Cost-Benefit Analysis
Annex C: Project Gantt Chart

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME:
INSTALLATION OF 34.5 KV METALCLAD SWITCHGEAR AT DASMARIÑAS 83 MVA POWER TRANSFORMER BANK NO. 1

CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)

Forecast (US$, real) (Regulatory Year)

Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	0			
	Structures and Improvements (Distribution Purposes)	0			
	Station Equipment	0			
	Power transformers	10,197			
	Switchgear	277,650			
	Protective equipment	727			
	Metering & control equipment	39,122			
	Communications equipment	0			
	Other station equipment	39,879			
	Poles, Towers and Fixtures - Distribution	38,236			
	Overhead Conductors and Devices - Distribution	6,179			
	Underground Conduits - Distribution	0			
	Underground Conductors and Devices - Distribution	0			
	Distribution Transformers	0			
	Power Conditioning Equipment	0			
	Meters, Metering Instruments & Metering Transformers - Distributior	0			
	Information technology equipment (distribution)	0			
	Regulated Entity Property on Consumer's Premises	0			
	Street Lights and Signal Systems	0			
	Submarine Cables	0			
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	411,989	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		411,989	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Local Expenditure

MERALCO

PROJECT NAME:

INSTALLATION OF 34.5 KV METALCLAD SWITCHGEAR AT DASMARIÑAS 83 MVA POWER TRANSFORMER BANK NO. 1

		CAPITAL EXPENDITURE - MAJOR PROJECTS (LOCAL COMPONENT)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	100,000			
	Structures and Improvements (Distribution Purposes)	2,992,592			
	Station Equipment	0			
	Power transformers	1,563,621			
	Switchgear	3,965,412			
	Protective equipment	3,492,495			
	Metering & control equipment	1,315,247			
	Communications equipment	0			
	Other station equipment	849,290			
	Poles, Towers and Fixtures - Distribution	10,151,708			
	Overhead Conductors and Devices - Distribution	23,284,574			
	Underground Conduits - Distribution	0			
	Underground Conductors and Devices - Distribution	0			
	Distribution Transformers	0			
	Power Conditioning Equipment	0			
	Meters, Metering Instruments & Metering Transformers - Distributior	0			
	Information technology equipment (distribution)	2,393,820			
	Regulated Entity Property on Consumer's Premises	0			
	Street Lights and Signal Systems	0			
	Submarine Cables	0			
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	50,108,759	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		50,108,759	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Total Expenditure, local and foreign (PhP, real)

MERALCO

PROJECT NAME:
INSTALLATION OF 34.5 KV METALCLAD SWITCHGEAR AT DASMARIÑAS 83 MVA POWER TRANSFORMER BANK NO. 1

CAPITAL EXPENDITURE - MAJOR PROJECTS (TOTAL, REAL)

Forecast (PhP, real) (Regulatory Year)

Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	100,000	0	0	0
	Structures and Improvements (Distribution Purposes)	2,992,592	0	0	0
	Station Equipment	0	0	0	0
	Power transformers	2,010,434	0	0	0
	Switchgear	16,131,339	0	0	0
	Protective equipment	3,524,348	0	0	0
	Metering & control equipment	3,029,469	0	0	0
	Communications equipment	0	0	0	0
	Other station equipment	2,596,676	0	0	0
	Poles, Towers and Fixtures - Distribution	11,827,097	0	0	0
	Overhead Conductors and Devices - Distribution	23,555,309	0	0	0
	Underground Conduits - Distribution	0	0	0	0
	Underground Conductors and Devices - Distribution	0	0	0	0
	Distribution Transformers	0	0	0	0
	Power Conditioning Equipment	0	0	0	0
	Meters, Metering Instruments & Metering Transformers - Distribution	0	0	0	0
	Information technology equipment (distribution)	2,393,820	0	0	0
	Regulated Entity Property on Consumer's Premises	0	0	0	0
	Street Lights and Signal Systems	0	0	0	0
	Submarine Cables	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
Subtrans	Transferred subtransmission assets	0	0	0	0
	Sub-total Regulated Distribution Services	68,161,085	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)	0	0	0	0
	Overhead Conductors and Devices (Customer)	0	0	0	0
	Underground Conduits (Customer)	0	0	0	0
	Underground Conductors and Devices (Customer)	0	0	0	0
	Line Transformers (Customer)	0	0	0	0
	Information Systems Equipment (Connection)	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)	0	0	0	0
	Land and land rights	0	0	0	0
	Structures and improvements	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		68,161,085	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: INSTALLATION OF 34.5 KV METALCLAD SWITCHGEAR AT DASMARIÑAS 83 MVA POWER TRANSFORMER OWNED BY MEPALCO
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S						P E V E N U E			E A R N I N G S				
PER	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (KWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	68,161	-	68,161	6.94	6.94	-					8.48	-	-	-	-	-	(68,161)
1	2017		302	302	7.23	7.22	214	3,408	2,272	5,894	30	8.62	261	(5,633)	0	(5,633)	(3,361)	(3,662)
2	2018		1	1	7.52	7.51	230	3,408	2,272	5,910	31	9.18	280	(5,629)	0	(5,629)	(3,357)	(3,358)
3	2019		1	1	7.83	7.82	246	3,408	2,272	5,927	32	9.55	301	(5,626)	0	(5,626)	(3,354)	(3,355)
4	2020		2	2	8.14	8.13	265	3,408	2,272	5,945	33	9.93	323	(5,622)	0	(5,622)	(3,350)	(3,351)
5	2021		4,398	4,398	8.47	8.46	53,045	3,408	2,272	58,725	6,267	10.33	64,762	6,037	1,811	4,226	6,498	2,100
6	2022		17,383	17,383	8.82	8.81	260,955	4,090	2,272	267,318	29,628	10.75	318,541	51,223	15,367	35,856	38,128	20,746
7	2023		19,289	19,289	9.18	9.17	492,423	4,090	2,272	498,785	53,726	11.19	600,977	102,192	30,658	71,534	73,806	54,517
8	2024		21,424	21,424	9.55	9.54	749,514	4,090	2,272	755,876	78,585	11.64	914,578	158,702	47,610	111,091	113,363	91,939
9	2025		26,665	26,665	9.94	9.93	1,069,492	4,090	2,272	1,075,853	107,757	12.11	1,304,787	228,933	68,680	160,253	162,525	135,861
10	2026		23,349	23,349	10.34	10.33	1,349,674	4,090	2,272	1,356,036	130,680	12.60	1,646,314	290,278	87,083	203,195	205,467	182,118
11	2027		29,064	29,064	10.76	10.75	1,697,756	4,771	2,272	1,704,799	157,967	13.11	2,070,525	365,726	109,718	256,008	258,280	229,217
12	2028		31,980	31,980	11.20	11.18	2,081,515	4,771	2,272	2,088,558	186,115	13.64	2,538,087	449,529	134,859	314,670	316,942	284,962
13	2029		35,206	35,206	11.65	11.64	2,503,982	4,771	2,272	2,511,025	215,151	14.19	3,052,671	541,645	162,494	379,152	381,424	346,218
14	2030		26,549	26,549	12.13	12.11	2,822,571	4,771	2,272	2,829,614	233,060	14.76	3,440,451	610,837	183,251	427,586	429,858	403,309
15	2031		9,554	9,554	12.62	12.60	2,937,219	4,771	2,272	2,944,263	233,062	15.36	3,579,553	635,291	190,587	444,703	446,975	437,421
16	2032		9,999	9,999	13.13	13.11	3,056,526	5,453	2,272	3,064,251	233,063	15.98	3,724,281	660,030	198,009	462,021	464,293	454,294
17	2033		10,346	10,346	13.66	13.65	3,180,678	5,453	2,272	3,188,403	233,065	16.63	3,874,801	686,458	205,937	480,521	482,793	472,447
18	2034		10,766	10,766	14.22	14.20	3,309,875	5,453	2,272	3,317,600	233,066	17.30	4,031,532	713,932	214,180	499,752	502,024	491,258
19	2035		11,204	11,204	14.80	14.78	3,444,320	5,453	2,272	3,452,045	233,068	18.00	4,194,538	742,493	222,748	519,745	522,017	510,813
20	2036		11,659	11,659	15.40	15.38	3,584,227	5,453	2,272	3,591,952	233,069	18.72	4,364,137	772,185	231,655	540,529	542,801	531,142
21	2037		12,189	12,189	16.02	16.00	3,729,818	6,134	2,272	3,738,224	233,071	19.48	4,540,594	802,370	240,711	561,659	563,931	551,742
22	2038		12,625	12,625	16.67	16.65	3,881,323	6,134	2,272	3,889,730	233,073	20.27	4,724,189	834,459	250,338	584,121	586,393	573,768
23	2039		13,138	13,138	17.35	17.33	4,038,984	6,134	2,272	4,047,390	233,075	21.09	4,915,208	867,818	260,345	607,473	609,745	596,606
24	2040		13,672	13,672	18.05	18.03	4,203,049	6,134	2,272	4,211,456	233,077	21.94	5,113,954	902,498	270,749	631,748	634,020	620,348
25	2041		14,228	14,228	18.79	18.77	4,373,781	6,134	2,272	4,382,187	233,078	22.83	5,320,737	938,550	281,565	656,985	659,257	645,029
26	2042		14,862	14,862	19.55	19.53	4,551,448	6,816	2,272	4,560,537	233,080	23.75	5,535,885	975,348	292,604	682,744	685,016	670,153
27	2043		15,407	15,407	20.34	20.32	4,736,335	6,816	2,272	4,745,423	233,082	24.71	5,759,734	1,014,311	304,293	710,018	712,290	696,883
28	2044		16,033	16,033	21.17	21.15	4,928,732	6,816	2,272	4,937,820	233,085	25.71	5,992,637	1,054,817	316,446	738,372	740,644	724,611
29	2045		16,685	16,685	22.03	22.00	5,128,947	6,816	2,272	5,138,035	233,087	26.75	6,234,961	1,096,926	329,078	767,848	770,120	753,436
30	2046		17,362	17,362	22.92	22.90	5,337,296	6,816	2,272	5,346,385	233,089	27.83	6,487,087	1,140,702	342,211	798,492	800,764	783,401
															NPV			733,928.31
															IRR			36.7%
															B/C			4.34

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: DEVELOPMENT OF PALA-PALA 115 KV- 34.5 KV SUBSTATION
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					R E V E N U E						
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX W/ DEPRECIATION ADDED BACK	FREE CASH FLOW
0	2016	332,096	-	332,096	6.94	6.93	-					8.47	-	-	-	-	-	(332,096)
1	2017		1,402	1,402	7.23	7.21	214	16,605	11,070	27,888	30	8.81	261	(27,627)	0	(27,627)	(16,557)	(17,959)
2	2018		1	1	7.52	7.51	229	16,605	11,070	27,904	31	9.17	280	(27,624)	0	(27,624)	(16,554)	(16,555)
3	2019		1	1	7.83	7.81	246	16,605	11,070	27,921	32	9.54	301	(27,620)	0	(27,620)	(16,550)	(16,552)
4	2020		2	2	8.14	8.13	264	16,605	11,070	27,939	33	9.93	323	(27,616)	0	(27,616)	(16,546)	(16,548)
5	2021		2	2	8.47	8.46	284	16,605	11,070	27,958	34	10.33	347	(27,612)	0	(27,612)	(16,542)	(16,544)
6	2022		278	278	8.82	8.80	305	19,926	11,070	31,300	35	10.74	372	(30,928)	0	(30,928)	(19,858)	(20,137)
7	2023		2	2	9.18	9.16	327	19,926	11,070	31,323	36	11.18	399	(30,923)	0	(30,923)	(19,854)	(19,855)
8	2024		12,056	12,056	9.55	9.53	145,001	19,926	11,070	175,997	15,214	11.63	176,958	961	288	673	11,743	(314)
9	2025		23,746	23,746	9.94	9.92	429,957	19,926	11,070	460,952	43,352	12.10	524,619	63,667	19,100	44,567	55,637	31,891
10	2026		4,754	4,754	10.34	10.32	486,999	19,926	11,070	517,995	47,188	12.59	594,113	76,119	22,836	53,283	64,353	59,600
11	2027		16,913	16,913	10.76	10.74	686,637	23,247	11,070	720,954	63,935	13.10	837,511	116,557	34,967	81,590	92,660	75,746
12	2028		18,413	18,413	11.20	11.18	907,594	23,247	11,070	941,911	81,211	13.63	1,106,818	164,907	49,472	115,435	126,505	108,092
13	2029		20,343	20,343	11.65	11.63	1,151,706	23,247	11,070	1,186,023	99,032	14.18	1,404,262	218,239	65,472	152,767	163,837	143,494
14	2030		22,437	22,437	12.13	12.10	1,420,955	23,247	11,070	1,455,272	117,415	14.75	1,732,241	276,970	83,091	193,879	204,949	182,511
15	2031		24,710	24,710	12.62	12.59	1,717,480	23,247	11,070	1,751,796	136,379	15.35	2,093,349	341,552	102,466	239,086	250,156	225,446
16	2032		27,452	27,452	13.13	13.10	2,043,588	26,568	11,070	2,081,226	155,941	15.97	2,490,378	409,152	122,746	286,406	297,476	270,024
17	2033		29,849	29,849	13.66	13.64	2,401,771	26,568	11,070	2,439,408	176,120	16.62	2,926,344	486,935	146,081	340,855	351,925	322,076
18	2034		32,745	32,745	14.22	14.19	2,794,713	26,568	11,070	2,832,350	198,936	17.29	3,404,497	572,147	171,644	400,503	411,573	378,827
19	2035		44,823	44,823	14.80	14.77	3,332,586	26,568	11,070	3,370,224	225,673	17.99	4,059,002	688,778	206,634	482,145	493,215	448,392
20	2036		30,342	30,342	15.40	15.37	3,696,687	26,568	11,070	3,734,325	240,560	18.71	4,501,660	767,336	230,201	537,135	548,205	517,863
21	2037		43,237	43,237	16.02	15.99	4,212,209	29,339	11,070	4,252,168	263,409	19.47	5,128,522	875,354	262,606	612,748	623,818	580,581
22	2038		46,941	46,941	16.67	16.64	4,775,507	29,339	11,070	4,816,465	286,980	20.26	5,813,317	996,852	299,056	697,796	708,866	661,925
23	2039		51,249	51,249	17.35	17.32	5,390,490	29,339	11,070	5,431,448	311,294	21.08	6,560,775	1,129,326	338,798	790,529	801,598	750,350
24	2040		55,907	55,907	18.05	18.02	6,061,376	29,339	11,070	6,102,334	336,376	21.93	7,375,993	1,273,659	382,098	891,561	902,631	846,724
25	2041		60,944	60,944	18.79	18.75	6,792,705	29,339	11,070	6,833,663	362,250	22.81	8,264,461	1,430,798	429,239	1,001,558	1,012,628	951,684
26	2042		66,666	66,666	19.55	19.51	7,589,371	33,210	11,070	7,633,650	388,939	23.74	9,232,091	1,598,441	479,532	1,118,909	1,129,979	1,063,313
27	2043		72,273	72,273	20.34	20.31	8,456,644	33,210	11,070	8,500,924	416,472	24.70	10,285,253	1,784,330	535,299	1,249,031	1,260,101	1,187,828
28	2044		78,630	78,630	21.17	21.13	9,400,203	33,210	11,070	9,444,482	444,872	25.69	11,430,805	1,986,323	595,897	1,390,426	1,401,496	1,322,866
29	2045		85,969	85,969	22.03	21.99	10,431,829	33,210	11,070	10,476,109	474,427	26.73	12,683,023	2,206,915	662,074	1,544,840	1,555,910	1,469,941
30	2046		52,759	52,759	22.92	22.88	11,064,938	33,210	11,070	11,109,217	483,581	27.81	13,450,366	2,341,149	702,345	1,638,804	1,649,874	1,597,115
															NPV			149,082.63
															IRR			17.05%
															B/C			1.43

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: EXPANSION OF FCIE 115 KV- 34.5 KV SUBSTATION (2PD BANK)
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					R E V E N U E						
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	160,168	-	160,168	6.94	6.93	-					8.47	-	-	-	-	-	(160,168)
1	2017		685	685	7.23	7.21	214	8,008	5,339	13,561	30	8.81	261	(13,300)	0	(13,300)	(7,961)	(8,646)
2	2018		1	1	7.52	7.51	229	8,008	5,339	13,577	31	9.17	280	(13,296)	0	(13,296)	(7,958)	(7,959)
3	2019		1	1	7.83	7.81	245	8,008	5,339	13,594	32	9.54	301	(13,293)	0	(13,293)	(7,954)	(7,955)
4	2020		2	2	8.14	8.13	264	8,008	5,339	13,612	33	9.93	323	(13,289)	0	(13,289)	(7,950)	(7,951)
5	2021		2	2	8.47	8.46	284	8,008	5,339	13,631	34	10.33	347	(13,285)	0	(13,285)	(7,946)	(7,947)
6	2022		135	135	8.82	8.80	305	9,610	5,339	15,254	35	10.74	372	(14,882)	0	(14,882)	(9,543)	(9,678)
7	2023		2	2	9.18	9.16	327	9,610	5,339	15,276	36	11.18	399	(14,877)	0	(14,877)	(9,538)	(9,540)
8	2024		12,056	12,056	9.55	9.53	145,001	9,610	5,339	159,950	15,214	11.63	176,958	17,008	5,102	11,905	17,244	5,188
9	2025		23,746	23,746	9.94	9.92	429,957	9,610	5,339	444,906	43,352	12.10	524,619	79,714	23,914	55,800	61,139	37,392
10	2026		4,754	4,754	10.34	10.32	486,999	9,610	5,339	501,948	47,188	12.59	594,113	92,165	27,650	64,516	69,855	65,101
11	2027		16,770	16,770	10.76	10.74	686,637	11,212	5,339	703,188	63,935	13.10	837,511	134,323	40,297	94,026	99,365	82,595
12	2028		18,413	18,413	11.20	11.18	907,594	11,212	5,339	924,145	81,211	13.63	1,106,818	182,673	54,802	127,871	133,210	114,797
13	2029		20,343	20,343	11.65	11.63	1,151,706	11,212	5,339	1,168,257	99,032	14.18	1,404,262	236,005	70,801	165,203	170,542	150,200
14	2030		22,437	22,437	12.13	12.10	1,420,955	11,212	5,339	1,437,506	117,415	14.75	1,732,241	294,736	88,421	206,315	211,654	189,216
15	2031		24,710	24,710	12.62	12.59	1,717,480	11,212	5,339	1,734,030	136,379	15.35	2,093,349	359,318	107,795	251,523	256,862	232,151
16	2032		27,309	27,309	13.13	13.10	2,043,588	12,813	5,339	2,061,741	155,941	15.97	2,490,378	428,637	128,591	300,046	305,385	278,076
17	2033		29,849	29,849	13.66	13.64	2,401,771	12,813	5,339	2,419,923	176,120	16.62	2,926,344	506,420	151,926	354,494	359,833	329,985
18	2034		32,745	32,745	14.22	14.19	2,794,713	12,813	5,339	2,812,865	196,936	17.29	3,404,497	591,632	177,490	414,142	419,481	386,736
19	2035		44,823	44,823	14.80	14.77	3,332,586	12,813	5,339	3,350,739	225,673	17.99	4,059,002	708,264	212,479	495,784	501,123	456,301
20	2036		30,342	30,342	15.40	15.37	3,696,687	12,813	5,339	3,714,840	240,560	18.71	4,501,660	786,821	236,046	550,775	556,114	525,772
21	2037		43,094	43,094	16.02	15.99	4,212,209	14,415	5,339	4,231,963	263,409	19.47	5,128,522	896,558	268,968	627,591	632,930	589,836
22	2038		46,941	46,941	16.67	16.64	4,775,507	14,415	5,339	4,795,261	286,980	20.26	5,813,317	1,018,056	305,417	712,639	717,978	671,037
23	2039		51,249	51,249	17.35	17.32	5,390,490	14,415	5,339	5,410,244	311,294	21.08	6,560,775	1,150,531	345,159	805,372	810,711	759,462
24	2040		55,907	55,907	18.05	18.02	6,061,376	14,415	5,339	6,081,130	336,376	21.93	7,375,993	1,294,864	388,459	906,404	911,743	855,836
25	2041		60,944	60,944	18.79	18.75	6,792,705	14,416	5,339	6,812,459	362,250	22.81	8,264,461	1,452,002	435,601	1,016,401	1,021,740	960,796
26	2042		66,522	66,522	19.55	19.51	7,589,371	16,017	5,339	7,610,727	388,939	23.74	9,232,091	1,621,365	486,409	1,134,955	1,140,294	1,073,772
27	2043		72,273	72,273	20.34	20.31	8,456,644	16,017	5,339	8,478,000	416,472	24.70	10,285,253	1,807,253	542,176	1,265,077	1,270,416	1,198,143
28	2044		78,630	78,630	21.17	21.13	9,400,203	16,017	5,339	9,421,559	444,872	25.69	11,430,805	2,009,247	602,774	1,406,473	1,411,812	1,333,182
29	2045		85,969	85,969	22.03	21.99	10,431,829	16,017	5,339	10,453,185	474,427	26.73	12,683,023	2,229,839	668,952	1,560,887	1,566,226	1,480,257
30	2046		52,759	52,759	22.92	22.88	11,064,938	16,017	5,339	11,086,293	483,581	27.81	13,450,366	2,364,072	709,222	1,654,851	1,660,190	1,607,431
															NPV			395,429.61
															IRR			11.92%
															B/C			1.78

ANNEX C: GANTT CHART

Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer
Project Gantt Chart
Target Completion: August 2016

Activity	2015												2016											
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Procurement of Materials																								
Design																								
Construction																								

ANNEX "A-2"

RY2016 CAPEX:
Capital Expenditure Projects

Project Code	Project Title	Commissioning Date	Project Cost
REFILING 3	REBUILDING PORTION OF DASMARIÑAS-FCIE 115 KV LINE	December 2015	75,913,229

I. Project Background:

The Dasmariñas-FCIE 115 kV line is one of the main outlets of the Dasmariñas 230kV-115kV delivery point substation in Cavite Sector that supplies bulk power to FCIE, TMC2, Gateway, and Rosario 115kV-34.5kV substations including the customer-owned, SMC 115kV substation. The FCIE, Gateway, and TMC 2 substations are serving the residential, commercial and large industrial customers in the portions of Dasmariñas, Trece Martires City and Gen Trias including locators in First Cavite Industrial Estate and Gateway Business Park, respectively. On the other hand, the Rosario substation is serving the residential, commercial and large industrial customers in Rosario, portions of General Trias, Kawit and Cavite City including the locators in Cavite Economic Zone.

This project involved the rebuilding of the 115 kV line form FCIE substation up to the tapping point along Governor's Drive to uprate the 3.1-kilometer portion of the Dasmariñas-FCIE Line from 1-795 MCM ACSR conductor per phase to 2-795 MCM ACSR conductor per phase. This project was filed as part of MERALCO's RY2016 Capital Expenditure application last February 9, 2015 and has also been a part of MERALCO's regular annual submission of its 10-Year Distribution Development Plan (DDP) to the Department of Energy (DOE) since 2012 in order to address line overloading in the area during N-1 contingency. Because of the urgent need to address the aforementioned problem however, MERALCO was constrained to implement the project immediately in order to avert multiple power interruptions to its customers in the area and maintain a robust electric distribution infrastructure.

The ERC's deferral of this project was based on the pending resolution of the case elevated by MERALCO to the Court of Appeals (CA) regarding the Dasmariñas-Rosario 115 kV line. MERALCO's implementation of this project was based on the urgent need of the system. Regardless of the pending CA ruling on the classification of the facilities involved, this project was implemented since the N-1 problem at Dasmariñas-FCIE 115 kV line is a technical issue and is unrelated or irrelevant to the said case. Likewise, even with the CA ruling disapproving the sale of the Dasmarinas-Abubot-Rosario 115 kV line to MERALCO, MERALCO still has the responsibility to maintain the Dasmarinas-FCIE 115 kV line since it is part of the Cavite 115 kV Sector linking all other substations serving the MERALCO loads. More importantly, the instant project will not be affected by the case concerning the reclassification of the Dasmarinas-Rosario 115 kV line as the scope only involves the uprating of line facilities the location of which is approximately two (2) kilometres away from the Dasmarinas substation.

II. Technical Analysis

During N-1 contingencies in the Cavite Sector, specifically the outage of either the Dasmariñas-Abubot-Rosario 115 kV line, the Amadeo-Gateway-FCIE 115 kV line or the Amadeo 300 MVA power transformer, the Dasmariñas–FCIE 115 kV line will be overloaded at a maximum of 106%. The overloading, if not corrected. Would have lead to widespread power interruptions in the Cavite area affecting major customers in First Cavite Industrial Estate (FCIE), Gateway Business Park, Cavite Export Zone (CEZ), and San Miguel Corporation with a total load at risk of 220 MVA. Due to rapid development in the area, the number of loads that will be affected will continue to increase. (Please refer to Tables 1 & 2 below for the performance measures with and without project)

By rebuilding a portion of the Dasmariñas-FCIE 115 kV Line, it addressed the N-1 requirement of the distribution line and strengthened the sub-transmission backbone in the area. The project also provided adequate capacity to meet the increasing power demand and accommodate new customer applications as well as future prospective large customers. Likewise, this project improved the reliability of the sub-transmission system in the Cavite Sector as well as contributed to the reduction of the system loss by an estimated 1,936,302 kWh annually.

Without this project, the Cavite Sector will not meet the N-1 redundancy requirement.

This project addressed the technical issues and provided urgent solution to the precarious condition in the area and complied with the N-1 redundancy for sub-transmission system to avoid breaching the sub-transmission planning criteria that states *"sub-transmission lines shall not be loaded beyond 90% of its rated capacity during N-*

1 contingency". The single outage contingency or N-1 redundancy for sub-transmission system is approved by the Energy Regulatory Commission (ERC) in the Second Regulatory Period and is prescribed in the Investor-owned Electric Distribution Utility Planning Manual. Thus, it is emphasized that it is imperative for MERALCO to implement the project because it will impact the reliability of system and cause widespread interruptions in the area.

Moreover, the circuit breakers associated on the termination of this line at Dasmariñas 115 kV switchyard is owned and operated by MERALCO (see Figure 1). Thus, it is MERALCO's responsibility to correct critical and overloading problems of this line since MERALCO customers will be affected. Furthermore, outage of any of the NGCP-owned circuit breakers at Dasmariñas 115kV switchyard will not affect the project. And lastly, the rebuilt portion of the project is 1.2 km. away from Dasmariñas substation, and the project has no substation or line equipment works involved inside the substation, which is the subject of the said CA case.

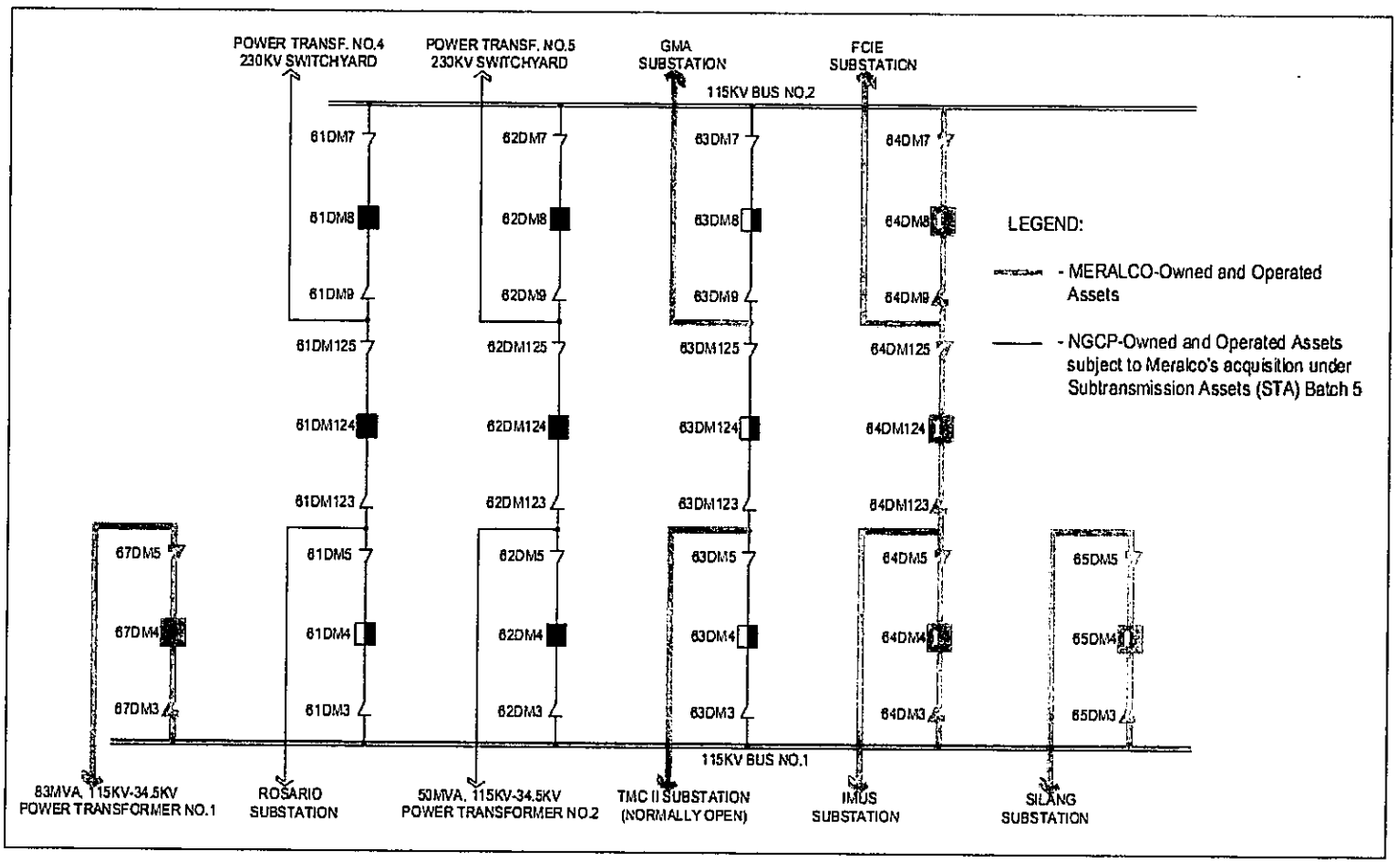


Figure 1 – Dasmariñas 115 kV Switchyard

Table 1: Performance Measures Without the Project during N-1 Contingency

PARAMETERS UNDER CONSIDERATION			PERCENT LOADING OF DASMARIÑAS-FCIE LINE DURINGN-1 CONTINGENCY				
OUTAGE OF BANK/LINE DURING N-1 CONTINGENCY	AFFECTED SUB-TRANSMISSION FACILITY DURING N-1 CONTINGENCY		RY2015	RY2016	RY2017	RY2018	RY2019
	LINE	CAPACITY (MVA)					
Dasmariñas-Abubot-Rosario Line	Dasmariñas-FCIE Line	171.5	93%	98%	102%	107%	111%
Amadeo-Gateway-FCIE Line			87%	92%	96%	100%	104%

Amadeo 300 MVA Bank			99%	106%	110%	115%	120%

Table 2: Performance Measures With Project during N-1 Contingency

PARAMETERS UNDER CONSIDERATION			PERCENT LOADING OF DASMARIÑAS-FCIE LINE DURING N-1 CONTINGENCY				
OUTAGE OF BANK/LINE DURING N-1 CONTINGENCY	AFFECTED SUB-TRANSMISSION FACILITY DURING N-1 CONTINGENCY		RY2015	RY2016	RY2017	RY2018	RY2019
	LINE	CAPACITY (MVA)					
Dasmariñas-Abubot-Rosario Line	Dasmariñas-FCIE Line	342.9	93%	53%	55%	57%	59%
Amadeo-Gateway-FCIE Line			87%	47%	49%	51%	53%
Amadeo 300 MVA Bank			99%	60%	63%	65%	68%

III. Project Alternatives

In the process of determining the most cost-effective solution to address the identified system deficiencies, MERALCO generated technically feasible alternatives that could satisfy the distribution system requirements in a timely and efficient manner. Table 3 shows the summary of technically feasible projects that were evaluated.

Table 3: Problem and project alternatives

Problem Description	N-1 contingency problem involving the Dasmariñas-FCIE 115 kV line	
Alternative	**Project Name**	**Classification**
1	Rebuilding Portion of Dasmariñas-FCIE 115 kV Line	Stand-alone
2	Construction of New Dasmariñas-FCIE 115 kV Line	Stand-alone
3	Construction of New Amadeo-FCIE 115 kV Line	Stand-alone

Alternative 1: Rebuilding Portion of Dasmariñas-FCIE 115 kV Line

This project involves rebuilding the 115 kV line from FCIE substation up to the tapping point along Governor's Drive to uprate the 3.1-kilometer portion of Dasmariñas-FCIE Line from 1-795 MCM ACSR conductor per phase to 2-795 MCM ACSR conductor per phase (refer to Figure 2).

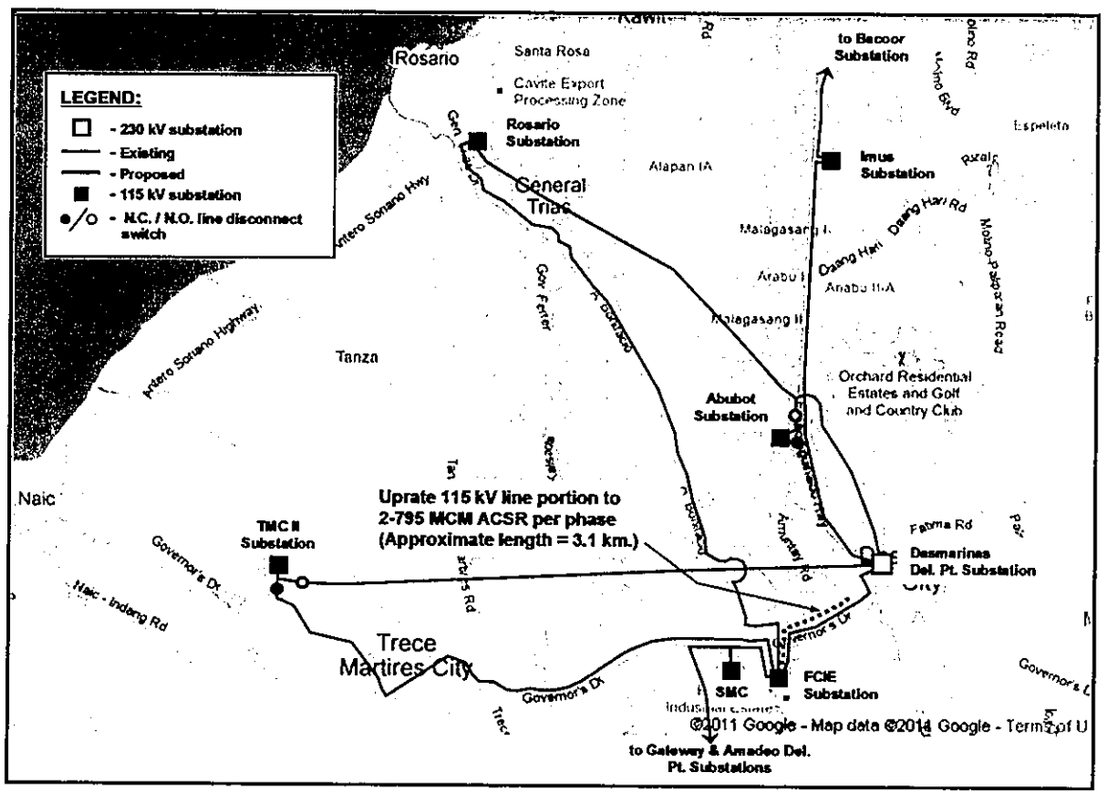


Figure 2 – Proposed Rebuilding Portion of Dasmariñas-FCIE 115 kV Line (Alternative 1)

Alternative 2: Construction of New Dasmariñas-FCIE 115 kV Line

This project involves the construction of around 4.9-kilometers of 115 kV line using 2-795 MCM ACSR conductor per phase. The new line will be built along the Aguinaldo Highway and Governor's Drive from Dasmariñas substation up to FCIE substation. This project also includes the installation of 115 kV power circuit breakers and associated equipment and structures including protection/control equipment at Dasmariñas and FCIE substations for the termination of the proposed line (refer to Figure 3).

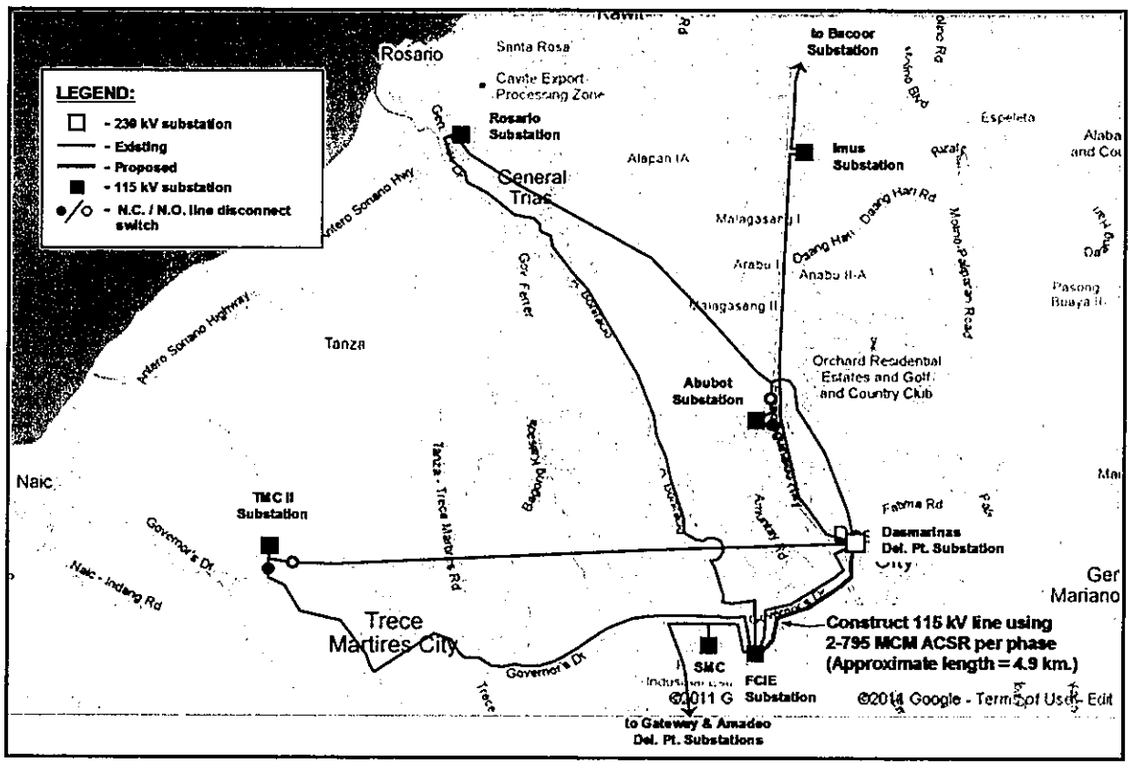


Figure 3 – Proposed Construction of New Dasmariñas-FCIE 115 kV Line (Alternative 2)

Alternative 3: Construction of New Amadeo-FCIE 115 kV Line

This project involves the construction of around 15.1-kilometer of 115 kV line using 2-795 MCM ACSR conductor per phase. The new line will be built along the road from Amadeo substation up to FCIE substation. This project also includes the installation of 115 kV power circuit breakers and associated equipment and structures including protection/control equipment at Amadeo and FCIE substations for the termination of the proposed line (refer to Figure 4).

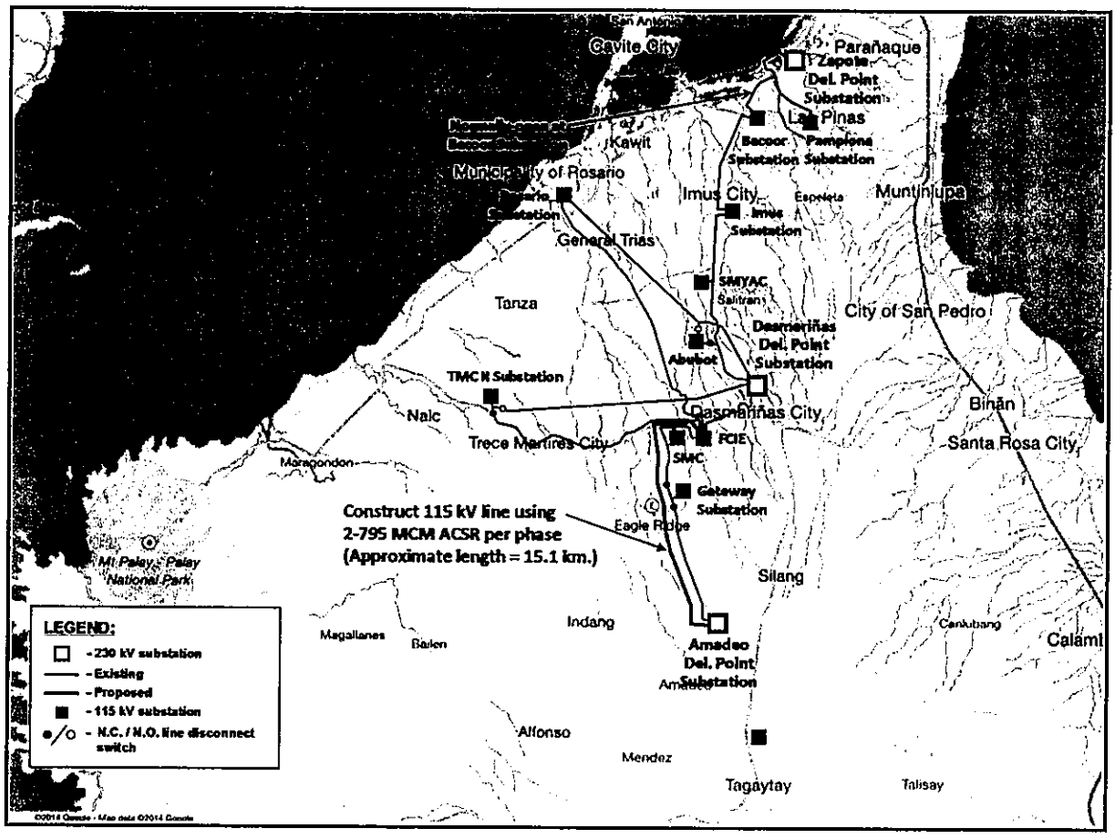


Figure 4 – Proposed Construction of New Amadeo-FCIE 115 kV Line (Alternative 3)

Table 4: Comparison of Project Alternatives

Alternative	Advantages	Disadvantages
Alternative 1 Rebuilding Portion of Dasmariñas-FCIE 115 kV Line	- Aside from addressing the N-1 contingency problem, this project can be completed faster and is the most economical among the alternatives because it will reuse existing Right-of-Way (ROW) and requires minimal reinforcement to carry the bundled conductors.	- This project will require interruptions of Dasmariñas-FCIE Line during construction period.
Alternative 2 Construction of New Dasmariñas-FCIE 115 kV Line	- This project will provide an additional corridor to Dasmariñas Delivery Point substation to supply bulk power to Cavite Sector, thus enabling the	- This project involves the construction of a new and longer sub-transmission line than Alternative 1 and requires the installation of protection and control equipment at Dasmariñas and FCIE

	system to accommodate higher load growth in the area.	substations, hence, requires a longer time to complete. It also requires acquisition of permits and ROW for the 4.9-kilometer line, making it more expensive than Alternative 1.
Alternative 3 Construction of New Amadeo-FCIE 115 kV Line	- This project will provide an additional corridor to Amadeo Delivery Point substation to supply bulk power to Cavite Sector, thus enabling the system to accommodate higher load growth in the area.	- This project involves the construction of a new and longer sub-transmission line than Alternatives 1 and 2 and installation of protection and control equipment at Amadeo and FCIE substations, and also, requires acquisition of permits and ROW for the 15.1-kilometer line. Hence, it will: (1) take a longer time to complete; and (2) increase the cost of implementing the.

Table 5: Financial Evaluation of Project Alternatives

Problem Description	N-1 contingency problem involving the Dasmariñas-FCIE 115 kV line				
Alternative	**Project Name**	**Project Cost (P in M)**	**NPV (P in M)**	**IRR**	**B/C**
1	Rebuilding Portion of Dasmariñas-FCIE 115 kV Line	75.91	440.40	64.67%	4.46
2	Construction of New Dasmariñas-FCIE 115 kV Line	138.20	366.20	40.32%	2.93
3	Construction of New Amadeo-FCIE 115 kV Line	351.42	129.06	20.10%	1.32

IV. Recommendation

Based on the technical and financial evaluation of the different alternatives it was deemed that the most economical solution to address the line overloading in the area during N-1 contingency is to implement the project 'Rebuilding Portion of Dasmariñas-FCIE 115 kV Line'. Upon completion, it also: (1) strengthened the sub-transmission backbone in the area; (2) provided adequate capacity to meet the increasing power demand; (3) and enabled MERLCO to accommodate new customer applications as well as future prospective large customers. In the same manner, this project improved the reliability of the sub-transmission system in the Cavite Sector as well as contributed on the system loss reduction program of MERALCO by an estimated 1,936,302 kWh annually.

V. Urgent Reason for Implementing in CY2015

In order to avert any loss of load in the Cavite Sector during N-1 contingency and improve the reliability of the sub-transmission system, the project was implemented immediately. In 2016, the worst case scenario would be the outage of Amadeo 1-300 MVA power transformer which would lead to 106% overloading of the Dasmariñas – FCIE 115 kV line. Said overloading would lead to cascaded trippings of adjacent 115 kV facilities and possible system blackout in the area. This would affect numerous customers including the 115 kV direct connect customer, San Miguel Corporation (SMC), and other large industrial customers connected to FCIE, TMC2, Gateway, and Rosario substations with a total load at risk of 220 MVA. Said load at risk would continue to increase due to the rapid load growth in the area if this condition would not be addressed immediately.

Annex A: Expenditure Summary
Annex B: Cost-Benefit Analysis
Annex C: Project Gantt Chart

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME:

Rebuilding Portion of Dasmariñas-FCIE 115 kV Line

		CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)			
		Forecast (US$, real) (Regulatory Year)			
Category		**2016**	**2017**	**2018**	**2019**
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers				
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution	941,720			
	Overhead Conductors and Devices - Distribution	4,175			
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	945,894	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		945,894	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME:

Rebuilding Portion of Dasmariñas-FCIE 115 kV Line

		CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)			
		Forecast (US$, real) (Regulatory Year)			
Category		**2016**	**2017**	**2018**	**2019**
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers				
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution	941,720			
	Overhead Conductors and Devices - Distribution	4,175			
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	945,894	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		945,894	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Local Expenditure

MERALCO

PROJECT NAME:

Rebuilding Portion of Dasmariñas-FCIE 115 kV Line

		CAPITAL EXPENDITURE - MAJOR PROJECTS (LOCAL COMPONENT)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers				
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution	21,816,794			
	Overhead Conductors and Devices - Distribution	12,649,703			
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	34,466,497	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		34,466,497	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Total Expenditure, local and foreign (PhP, real)

MERALCO

PROJECT NAME:

Rebuilding Portion of Dasmariñas-FCIE 115 kV Line

		CAPITAL EXPENDITURE - MAJOR PROJECTS (TOTAL, REAL)			
		Forecast (PhP, real) (Regulatory Year)			
Category		**2016**	**2017**	**2018**	**2019**
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	0	0	0	0
	Structures and Improvements (Distribution Purposes)	0	0	0	0
	Station Equipment	0	0	0	0
	Power transformers	0	0	0	0
	Switchgear	0	0	0	0
	Protective equipment	0	0	0	0
	Metering & control equipment	0	0	0	0
	Communications equipment	0	0	0	0
	Other station equipment	0	0	0	0
	Poles, Towers and Fixtures - Distribution	63,080,596	0	0	0
	Overhead Conductors and Devices - Distribution	12,832,633	0	0	0
	Underground Conduits - Distribution	0	0	0	0
	Underground Conductors and Devices - Distribution	0	0	0	0
	Distribution Transformers	0	0	0	0
	Power Conditioning Equipment	0	0	0	0
	Meters, Metering Instruments & Metering Transformers - Distribution	0	0	0	0
	Information technology equipment (distribution)	0	0	0	0
	Regulated Entity Property on Consumer's Premises	0	0	0	0
	Street Lights and Signal Systems	0	0	0	0
	Submarine Cables	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
Subtrans	Transferred subtransmission assets	0	0	0	0
	Sub-total Regulated Distribution Services	75,913,229	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)	0	0	0	0
	Overhead Conductors and Devices (Customer)	0	0	0	0
	Underground Conduits (Customer)	0	0	0	0
	Underground Conductors and Devices (Customer)	0	0	0	0
	Line Transformers (Customer)	0	0	0	0
	Information Systems Equipment (Connection)	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)	0	0	0	0
	Land and land rights	0	0	0	0
	Structures and improvements	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		75,913,229	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: Rebuilding Portion of Dasmarinas-FCIE 115 kV Line (Alternative 1)
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					R E V E N U E							
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (KWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	75,913	-	75,913	6.94	7.69	-					9.23	-	-	-	-	-	(75,913)
1	2017		35,897	35,897	7.23	8.00	426,966	3,796	2,530	433,292	53,354	9.60	512,375	79,083	23,725	55,358	57,888	21,992
2	2018		2,458	2,458	7.52	8.33	456,463	3,796	2,530	462,789	54,814	9.99	547,681	84,892	25,468	59,424	61,955	59,497
3	2019		2,628	2,628	7.83	8.67	487,998	3,796	2,530	494,324	56,314	10.40	585,420	91,096	27,329	63,767	66,298	63,670
4	2020		2,809	2,809	8.14	9.02	521,711	3,796	2,530	528,037	57,855	10.82	625,760	97,722	29,317	68,406	70,936	68,127
5	2021		3,004	3,004	8.47	9.38	557,754	3,796	2,530	564,080	59,438	11.25	668,879	104,799	31,440	73,359	75,890	72,886
6	2022		3,274	3,274	8.82	9.76	596,287	4,555	2,530	603,372	61,064	11.71	714,970	111,598	33,479	78,119	80,649	77,375
7	2023		3,433	3,433	9.18	10.16	637,482	4,555	2,530	644,567	62,735	12.18	764,237	119,670	35,901	83,769	86,300	82,867
8	2024		3,670	3,670	9.55	10.57	681,523	4,555	2,530	688,608	64,451	12.67	816,900	128,292	38,488	89,804	92,335	88,665
9	2025		3,924	3,924	9.94	11.00	728,606	4,555	2,530	735,691	66,215	13.19	873,191	137,499	41,250	96,250	98,780	94,856
10	2026		4,195	4,195	10.34	11.45	778,942	4,555	2,530	786,027	68,027	13.72	933,361	147,333	44,200	103,133	105,664	101,469
11	2027		4,548	4,548	10.76	11.92	832,756	5,314	2,530	840,600	69,888	14.28	997,677	157,077	47,123	109,954	112,484	107,937
12	2028		4,794	4,794	11.20	12.40	890,287	5,314	2,530	898,132	71,800	14.85	1,066,426	168,294	50,488	117,806	120,336	115,542
13	2029		5,126	5,126	11.65	12.90	951,793	5,314	2,530	959,638	73,765	15.45	1,139,912	180,274	54,082	126,192	128,722	123,597
14	2030		5,480	5,480	12.13	13.43	1,017,549	5,314	2,530	1,025,393	75,783	16.08	1,218,462	193,069	57,921	135,148	137,679	132,199
15	2031		5,858	5,858	12.62	13.97	1,087,847	5,314	2,530	1,095,691	77,857	16.73	1,302,425	206,734	62,020	144,714	147,244	141,386
16	2032		6,326	6,326	13.13	14.54	1,163,001	6,073	2,530	1,171,605	79,987	17.40	1,392,174	220,570	66,171	154,399	156,929	150,603
17	2033		6,696	6,696	13.66	15.13	1,243,348	6,073	2,530	1,251,951	82,176	18.11	1,488,108	236,157	70,847	165,310	167,840	161,145
18	2034		7,158	7,158	14.22	15.74	1,329,245	6,073	2,530	1,337,849	84,424	18.84	1,590,653	252,804	75,841	176,963	179,493	172,335
19	2035		7,653	7,653	14.80	16.38	1,421,077	6,073	2,530	1,429,680	86,734	19.60	1,700,264	270,584	81,175	189,409	191,939	184,286
20	2036		8,181	8,181	15.40	17.05	1,519,253	6,073	2,530	1,527,856	89,107	20.40	1,817,429	289,573	86,872	202,701	205,231	197,050
21	2037		8,810	8,810	16.02	17.74	1,624,211	6,832	2,530	1,633,574	91,546	21.22	1,942,668	309,094	92,728	216,366	218,896	210,086
22	2038		9,351	9,351	16.67	18.46	1,736,421	6,832	2,530	1,745,784	94,051	22.08	2,076,537	330,754	99,226	231,528	234,058	224,707
23	2039		9,997	9,997	17.35	19.21	1,856,383	6,832	2,530	1,865,745	96,624	22.97	2,219,632	353,887	106,166	247,721	250,251	240,254
24	2040		10,687	10,687	18.05	19.99	1,984,632	6,832	2,530	1,993,995	99,268	23.90	2,372,588	378,593	113,578	265,015	267,546	256,858
25	2041		11,426	11,426	18.79	20.80	2,121,741	6,832	2,530	2,131,104	101,984	24.87	2,536,084	404,980	121,494	283,486	286,016	274,591
26	2042		12,278	12,278	19.55	21.65	2,268,323	7,591	2,530	2,278,445	104,774	25.87	2,710,847	432,402	129,721	302,682	305,212	292,934
27	2043		13,059	13,059	20.34	22.53	2,425,032	7,591	2,530	2,435,154	107,641	26.92	2,897,654	462,501	138,750	323,750	326,281	313,222
28	2044		13,961	13,961	21.17	23.44	2,592,567	7,591	2,530	2,602,689	110,587	28.01	3,097,334	494,646	148,394	346,252	348,783	334,821
29	2045		14,926	14,926	22.03	24.40	2,771,676	7,591	2,530	2,781,797	113,612	29.14	3,310,775	528,978	158,693	370,284	372,815	357,889
30	2046		15,957	15,957	22.92	25.39	2,963,159	7,591	2,530	2,973,280	116,721	30.32	3,538,925	565,645	169,693	395,951	398,482	382,525
															NPV			440,491.21
															IRR			64.67
															B/C			4.46

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: Construction of New Dasmarinas-FCIE 115 kV Line (Alternative 2)
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					P E V E N U E							
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPPECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	138,202	-	138,202	6.94	7.69	-											(138,202)
1	2017		36,156	36,156	7.23	8.00	426,966	6,910	4,607	438,482	53,354	9.23 9.60	- 512,375	-	-	-	-	- 20,175
2	2018		2,458	2,458	7.52	8.33	456,463	6,910	4,607	467,980	54,814	9.99	547,681	73,892 79,701	22,168 23,910	51,724 55,791	56,331 60,398	57,939
3	2019		2,628	2,628	7.83	8.67	487,998	6,910	4,607	499,515	56,314	10.40	585,420	85,905	25,772	60,134	64,741	62,113
4	2020		2,809	2,809	8.14	9.02	521,711	6,910	4,607	533,228	57,855	10.82	625,760	92,532	27,759	64,772	69,379	66,569
5	2021		3,004	3,004	8.47	9.38	557,754	6,910	4,607	569,271	59,438	11.25	668,879	99,608	29,883	69,726	74,333	71,329
6	2022		3,326	3,326	8.82	9.76	596,287	8,292	4,607	609,186	61,064	11.71	714,970	105,786	31,736	74,049	78,656	75,330
7	2023		3,433	3,433	9.18	10.16	637,482	8,292	4,607	650,381	62,735	12.18	764,237	113,857	34,157	79,700	84,307	80,874
8	2024		3,670	3,670	9.55	10.57	681,523	8,292	4,607	694,421	64,451	12.67	816,900	122,478	36,743	85,735	90,341	86,671
9	2025		3,924	3,924	9.94	11.00	728,606	8,292	4,607	741,505	66,215	13.19	873,191	131,686	39,506	92,180	96,787	92,863
10	2026		4,195	4,195	10.34	11.45	778,942	8,292	4,607	791,841	68,027	13.72	933,361	141,520	42,456	99,064	103,671	99,476
11	2027		4,600	4,600	10.76	11.92	832,756	9,674	4,607	847,037	69,888	14.28	997,677	150,640	45,192	105,448	110,055	105,455
12	2028		4,794	4,794	11.20	12.40	890,287	9,674	4,607	904,568	71,800	14.85	1,066,426	161,858	48,557	113,300	117,907	113,113
13	2029		5,126	5,126	11.65	12.90	951,793	9,674	4,607	966,074	73,765	15.45	1,139,912	173,838	52,151	121,686	126,293	121,168
14	2030		5,480	5,480	12.13	13.43	1,017,549	9,674	4,607	1,031,829	75,783	16.08	1,218,462	186,632	55,990	130,643	135,249	129,770
15	2031		5,858	5,858	12.62	13.97	1,087,847	9,674	4,607	1,102,127	77,857	16.73	1,302,425	200,298	60,089	140,208	144,815	138,957
16	2032		6,378	6,378	13.13	14.54	1,163,001	11,056	4,607	1,178,664	79,987	17.40	1,392,174	213,510	64,053	149,457	154,064	147,686
17	2033		6,696	6,696	13.66	15.13	1,243,348	11,056	4,607	1,259,011	82,176	18.11	1,488,108	229,097	68,729	160,368	164,975	158,279
18	2034		7,158	7,158	14.22	15.74	1,329,245	11,056	4,607	1,344,908	84,424	18.84	1,590,653	245,745	73,723	172,021	176,628	169,470
19	2035		7,653	7,653	14.80	16.38	1,421,077	11,056	4,607	1,436,740	86,734	19.60	1,700,264	263,524	79,057	184,467	189,074	181,421
20	2036		8,181	8,181	15.40	17.05	1,519,253	11,056	4,607	1,534,916	89,107	20.40	1,817,429	282,513	84,754	197,759	202,365	194,185
21	2037		8,862	8,862	16.02	17.74	1,624,211	12,438	4,607	1,641,256	91,546	21.22	1,942,668	301,412	90,423	210,988	215,595	206,733
22	2038		9,351	9,351	16.67	18.46	1,736,421	12,438	4,607	1,753,466	94,051	22.08	2,076,537	323,071	96,921	226,150	230,757	221,406
23	2039		9,997	9,997	17.35	19.21	1,856,383	12,438	4,607	1,873,428	96,624	22.97	2,219,632	346,204	103,861	242,343	246,950	236,953
24	2040		10,687	10,687	18.05	19.99	1,984,632	12,438	4,607	2,001,677	99,268	23.90	2,372,588	370,911	111,273	259,638	264,244	253,557
25	2041		11,426	11,426	18.79	20.80	2,121,741	12,438	4,607	2,138,786	101,984	24.87	2,536,084	397,298	119,189	278,108	282,715	271,289
26	2042		12,330	12,330	19.55	21.65	2,268,323	13,820	4,607	2,286,750	104,774	25.87	2,710,847	424,097	127,229	296,868	301,475	289,144
27	2043		13,059	13,059	20.34	22.53	2,425,032	13,820	4,607	2,443,459	107,641	26.92	2,897,654	454,195	136,259	317,937	322,544	309,484
28	2044		13,961	13,961	21.17	23.44	2,592,567	13,820	4,607	2,610,994	110,587	28.01	3,097,334	486,341	145,902	340,439	345,045	331,084
29	2045		14,926	14,926	22.03	24.40	2,771,676	13,820	4,607	2,790,103	113,612	29.14	3,310,775	520,673	156,202	364,471	369,078	354,152
30	2046		15,957	15,957	22.92	25.39	2,963,159	13,820	4,607	2,981,586	116,721	30.32	3,538,925	557,339	167,202	390,138	394,744	378,787
															NPV			366,200.38
															IRR			41.30
															B/C			2.93

ANNEX B: COST-BENEFIT ANALYSIS

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: Construction of New Amadeo-FCIE 115 kV Line (Alternative 3)
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S					R E V E N U E						
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (KWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	351,420	-	351,420	6.94	7.69	-					9.23	-	-	-	-	-	(351,420)
1	2017		38,174	38,174	7.23	8.00	440,520	17,571	11,714	469,805	55,048	9.60	528,640	58,835	17,651	41,185	52,899	14,725
2	2018		2,536	2,536	7.52	8.33	470,954	17,571	11,714	500,239	56,554	9.99	565,067	64,829	19,449	45,380	57,094	54,558
3	2019		2,711	2,711	7.83	8.67	503,490	17,571	11,714	532,775	58,101	10.40	604,005	71,230	21,369	49,861	61,575	58,864
4	2020		2,899	2,899	8.14	9.02	538,274	17,571	11,714	567,559	59,691	10.82	645,525	78,067	23,420	54,647	66,361	63,462
5	2021		3,099	3,099	8.47	9.38	575,461	17,571	11,714	604,746	61,324	11.25	690,114	85,368	25,610	59,758	71,472	68,373
6	2022		3,606	3,606	8.82	9.76	615,217	21,085	11,714	648,016	63,002	11.71	737,668	89,652	26,896	62,756	74,470	70,865
7	2023		3,542	3,542	9.18	10.16	657,719	21,085	11,714	690,518	64,726	12.18	788,499	97,981	29,394	68,586	80,300	76,758
8	2024		3,787	3,787	9.55	10.57	703,158	21,085	11,714	735,957	66,497	12.67	842,833	106,875	32,063	74,813	86,527	82,740
9	2025		4,048	4,048	9.94	11.00	751,736	21,085	11,714	784,535	68,317	13.19	900,911	116,375	34,913	81,463	93,177	89,129
10	2026		4,328	4,328	10.34	11.45	803,670	21,085	11,714	836,470	70,186	13.72	962,991	126,522	37,956	88,565	100,279	95,951
11	2027		4,920	4,920	10.76	11.92	859,193	24,599	11,714	895,506	72,107	14.28	1,029,349	133,844	40,153	93,691	105,404	100,485
12	2028		4,946	4,946	11.20	12.40	918,550	24,599	11,714	954,864	74,080	14.85	1,100,281	145,417	43,625	101,792	113,506	108,559
13	2029		5,288	5,288	11.65	12.90	982,009	24,599	11,714	1,018,322	76,107	15.45	1,176,100	157,777	47,333	110,444	122,158	116,870
14	2030		5,654	5,654	12.13	13.43	1,049,852	24,599	11,714	1,086,165	78,189	16.08	1,257,143	170,978	51,293	119,685	131,399	125,745
15	2031		6,044	6,044	12.62	13.97	1,122,381	24,599	11,714	1,158,695	80,328	16.73	1,343,772	185,077	55,523	129,554	141,268	135,224
16	2032		6,755	6,755	13.13	14.54	1,199,922	28,114	11,714	1,239,749	82,525	17.40	1,436,370	196,621	58,986	137,635	149,349	142,594
17	2033		6,908	6,908	13.66	15.13	1,282,819	28,114	11,714	1,322,647	84,784	18.11	1,535,349	212,703	63,811	148,892	160,606	153,698
18	2034		7,385	7,385	14.22	15.74	1,371,443	29,114	11,714	1,411,271	87,104	18.84	1,641,150	229,879	68,964	160,915	172,629	165,244
19	2035		7,896	7,896	14.80	16.38	1,466,190	28,114	11,714	1,506,018	89,488	19.60	1,754,241	248,223	74,467	173,756	185,470	177,574
20	2036		8,441	8,441	15.40	17.05	1,567,483	28,114	11,714	1,607,311	91,936	20.40	1,875,125	267,815	80,344	187,470	199,184	190,743
21	2037		9,317	9,317	16.02	17.74	1,675,774	31,628	11,714	1,719,115	94,452	21.22	2,004,340	285,225	85,567	199,657	211,371	202,054
22	2038		9,648	9,648	16.67	18.46	1,791,545	31,628	11,714	1,834,887	97,036	22.08	2,142,459	307,572	92,272	215,300	227,014	217,367
23	2039		10,314	10,314	17.35	19.21	1,915,315	31,628	11,714	1,958,657	99,691	22.97	2,290,097	331,439	99,432	232,008	243,722	233,407
24	2040		11,027	11,027	18.05	19.99	2,047,636	31,629	11,714	2,090,978	102,419	23.90	2,447,908	356,930	107,079	249,851	261,565	250,538
25	2041		11,789	11,789	18.79	20.80	2,189,098	31,629	11,714	2,232,440	105,222	24.87	2,616,595	384,155	115,246	268,908	280,622	268,834
26	2042		12,896	12,896	19.55	21.65	2,340,334	35,142	11,714	2,387,189	108,101	25.87	2,796,906	409,717	122,915	286,802	298,516	285,620
27	2043		13,474	13,474	20.34	22.53	2,502,017	35,142	11,714	2,548,873	111,058	26.92	2,989,543	440,770	132,231	308,539	320,253	306,780
28	2044		14,404	14,404	21.17	23.44	2,674,870	35,142	11,714	2,721,726	114,097	28.01	3,195,662	473,936	142,181	331,755	343,469	329,065
29	2045		15,400	15,400	22.03	24.40	2,859,665	35,142	11,714	2,906,521	117,219	29.14	3,415,879	509,358	152,807	356,551	368,265	352,865
30	2046		16,463	16,463	22.92	25.39	3,057,227	35,142	11,714	3,104,083	120,427	30.32	3,651,272	547,189	164,157	383,032	394,746	378,283
															NPV			139,063.99
															IRR			20.1%
															B/C			1.32

ANNEX C: GANTT CHART

Rebuilding Portion of Dasmariñas-FCIE 115 kV Line
Project Gantt Chart
Target Completion: December 2015

Activity	2015												2016					
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Procurement of Materials																		
Design																		
Construction																		

RY2016 CAPEX:
Capital Expenditure Projects

ANNEX "A-3"

Project Code	Project Title	Commissioning Date	Project Cost
REFILING 4	REPLACEMENT OF POWER TRANSFORMER NO. 2 AT MANDALUYONG SUBSTATION	December 18, 2015	52,908,466

I. Project Background:

Due to its old age, the 22-year old power transformer # 2 (NLTC – No Load Tap Changer) at the Mandaluyong substation has not been delivering the regulated voltage quality to the customers it serves. Furthermore, it is likewise not being utilized to meet its optimal capacity to accommodate the additional load applications in the Mandaluyong and Pasig commercial area. At present, the voltage regulation of transformer # 2 cannot be automatically controlled and therefore needs human intervention. This entails frequent manual switching of the secondary and bus tie breakers during off-peak when needed in order to shift the loads normally carried by transformer # 2 to transformer # 1. This operation is only a stop gap measure to remedy the high voltage problem and cater to customer needs. However, even with this stop gap measure, there are still customer complaints of voltage quality problems.

The loads in the Pasig and Mandaluyong areas are served by feeders from SM-Shangri-la, Rockwell and Mandaluyong substations. All the power transformers in SM-Shangri-la substation, Rockwell substation and bank # 1 in the Mandaluyong substation are with On-Load Tap Changers (OLTCs) and as such, the voltage quality of the feeders carried by these transformers are regulated automatically. Since the Mandaluyong transformer # 2 has no OLTC, its flexibility of tying and carrying the feeder loads, which are normally served by the Mandaluyong power transformer # 1, Shangri-la and Rockwell power transformers, are diminished and will result in voltage regulation problems if load shifting is undertaken at any given time. In addition, the N -1 contingency function of transformer # 2 to carry the loads of transformer # 1 is not utilized. Moreover, there is also the constraint of load distribution balancing in the Mandaluyong and Pasig areas, which are served by SM-Shangri-la, Rockwell, and Mandaluyong substations.

From the foregoing, the replacement of the Mandaluyong power transformer # 2 with a new 83 MVA power transformer with OLTC resulted in the delivery of quality voltage regulation to customers. Further, the project provided the flexibility in tying the configuration of its feeders and load balancing in the Mandaluyong and Pasig areas sourcing its energy from the power transformers in SM-Shangri-la, Rockwell, and Mandaluyong (transformer # 1) substations.

II. Technical Analysis

Table I shows the voltage quality complaints by major customers normally served by Mandaluyong power transformer # 2. During off peak periods, the loads of transformer # 2 are shifted to transformer # 1 – the system operator regularly monitors the voltage and manually operates transformer # 2 secondary breaker and closes the bus tie breaker. These manual operations are corrective measures for voltage regulation since transformer # 1 has OLTC and automatically regulates the voltage. Transformer # 1 carries all the loads of the Mandaluyong substation (one bank operation) during off peak periods.

Table I: List of Voltage Quality Complaints of Major Customers

No.	Complainant	SIN	TLN	Circuit	Nature of Complaint
1	Primex Printers Inc.	310032080101	128343	54VD	High Voltage
2	HTCG Premium Food Concepts Inc.	310073170101	378034	53VD	High Voltage
3	JELP Real Estate Development Corp.	100158320101	992271	53VD	Low Voltage

4	Paragon Plaza	100043500101	093974	52VD	Fluctuating Voltage
5	Linkem Trading Corp.	160483401	022169	53VD	Low Voltage

Additionally, Table II shows the major customers in Mandaluyong and Pasig City, served by feeders from SM-Shangri-la, Rockwell and Mandaluyong substations, applying for additional loads. At present, the initial load of 8 MVA is served by the Mandaluyong transformer #1, Rockwell transformer #4 and SM-Shangri-la transformer #1. Normally, Mandaluyong transformer #2 is at 34% loading but it will be 0% during peak load since its loads will be carried by transformer #1.

Furthermore, because of the expected additional loads and realization of all customer applications in the area (total of 32.16 MVA), there will be a capacity deficiency of 24.16 MVA and the transformers (Mandaluyong #1, Rockwell #4, and SM-Shangri-la #2) will be critically loaded as high as 82%. The constraint of realizing the additional loads and load balancing among the said substation transformers is the absence of automatic voltage regulation of Mandaluyong transformer #2.

Table II: Large customer Applications in Mandaluyong and Pasig Area

Customers	Ultimate Load (MVA)	Present Load (MVA)	Remarks	Energization Date
St. Francis BSA Twin Towers	4.00	1.00	Currently served by SM-Shangri-la 44VR to be shifted to Mandaluyong 43VD	Energized 2011 but not in full capacity
Harmony Homes Inc.	2.10	1.00	Currently served by Mandaluyong 53VD	Energized 2011 but not in full capacity
SMDC Light Residences	10.56	2.00	Currently served by New Rockwell 445VV to be unloaded by Mandaluyong 54VD	Energized 2011 but not in full capacity
Robinsons Land Corporation (Cyberscape Alpha)	6.5	1.00	Currently served by Mandaluyong 44VD	Energized 2014 but not in full capacity
Podium and BDO Ortigas Tower	9.00	3.00	Currently served by SM-Shangri-la 44VR to be shifted to Mandaluyong 44VD	Existing Podium and additional load in 2015-2016
Total	**32.16**	**8.00**		
Additional Capacity Needed	**24.16**			

III. Project Alternatives

In the process of determining the most cost-effective solution to address the identified deficiencies, MERALCO generated technically feasible alternatives that could satisfy the distribution system requirements in a timely and efficient manner. Table III shows the summary of technically feasible projects that were evaluated.

Table III: Project Alternatives

Problem Description	Voltage quality complaints of major customers, as well as, the expected capacity deficiency due to the realization of additional load applications in the area.	
Alternative	**Project Name**	**Classification**
1	Replacement of Power Transformer No. 2 at Mandaluyong Substation	Stand-alone
2	Development of Wack-Wack 115kV-34.5kV GIS Substation	Stand-alone
3	Operate and Maintain the Power Transformer	Stand-alone

The descriptions of the project alternatives are summarized below:

Alternative 1:

This project alternative is the replacement of the 83MVA power transformer no.2 (NLTC) with a new 83 MVA power transformer with OLTC. This will address the voltage quality problem experienced by customers since the OLTC will automatically regulate voltage at the desired level. The project will also optimize the transformers load capacity in Mandaluyong since there will be flexibility of load shifting and balancing of feeder loads carried by the Mandaluyong transformers, SM-Shangri-la and Rockwell substation transformers.

Alternative 2:

The project is the development of a new 115kV-34.5kV GIS substation at Wack-Wack area located within a kilometer radius from the existing Mandaluyong substation. The project will resolve the voltage quality problem and can cater additional load applications at Pasig and Mandaluyong areas.

Alternative 3:

The use and continuous operation of the existing power transformer no. 2 (NLTC) will result to continuous voltage quality problem experienced by customers. The manual intervention of Meralco system operator to correct the voltage problem of customer through monitoring and shifting loads of Mandaluyong bank 2 (with OLTC) is a stop gap solution. The transformer #2 secondary breaker and bus tie breaker will be frequently operated, however, this is not the normal practice in the electric industry. Also, there are still customer voltage complaints even with the shifting of loads correction.

Also with this alternative, the transformer load capacity is not optimized and the voltage quality output to customers will remain a problem.

MERALCO also considered other alternatives, such as the installation of automatic voltage regulators (AVRs) at the 3 feeders of Mandaluyong power transformer # 2. However, installation of AVRs cannot technically resolve the capacity problems and flexibility of load shifting with other power transformers with OLTC. Besides the main reason mentioned, installation of AVRs inside the substation and along the Pasig and Mandaluyong commercial areas are not also feasible due to unavailability of space and safety clearances and the perennial right of way permit problems along the commercial area.

Table IV summarizes the comparison of the advantages and disadvantages of the project alternatives with respect to Operate and Maintain (no project), whereas Table V shows the summary of financial evaluations of the project alternatives.

Table IV: Comparison of Project Alternatives

Alternative	**Advantages**	**Disadvantages**
Alternative 1: Replacement of Power Transformer No. 2 at Mandaluyong Substation	- Since voltage regulation is automatically controlled, customers voltage quality will be resolved - Flexible load shifting contingencies - Flexible load balancing of feeders sourced from Mandaluyong, SM-Shangri-la and Rockwell	-no significant disadvantages

	- Optimize Mandaluyong transformer #2 load capacity.	
Alternative 2: Development of Wack-Wack 115kV-34.5kV GIS Substation	- Since voltage regulation is automatically controlled, customers voltage quality will be resolved - All additional loads can be accommodated - Flexible load shifting contingencies	-high initial capital expenditure or investment compared to alternative 1
Alternative 3: Operate and Maintain the Power Transformer	- No significant advantages	- customer voltage problem - impractical and frequent manual switching operations of bus tie breaker which can cause premature mechanical breakdown of the breakers - will require frequent maintenance of the breakers due to frequent operations

Table V: Financial Evaluation of Project Alternatives

Alternative	Project Name	Project Cost (PhP)	NPV (PhP)	FIRR	B/C Ratio
1	Replacement of Power Transformer No. 2 at Mandaluyong Substation	52,908,466	4,016,096	16.73%	1.08
2	Development of Wack-Wack 115kV-34.5kV GIS Substation	448,130,899	3,547,294	15%	1.01
3	Operate and Maintain the Power Transformer	3,610,449.56	136,393	11.31%	0.13

IV. Recommendation

Based on the technical and financial evaluation of the different alternatives it was deemed that the most economical solution to address the capacity deficiency and voltage problem in the area is to implement Alternative # 1, the Replacement of Power Transformer No. 2 at Mandaluyong Substation with a new 83 MVA power transformer with OLTC, considering the needed higher cost of investment of Alternative # 2. By implementing the project, the new power transformer will deliver quality voltage regulation to customers due to its OLTC automatic control. The project will likewise provide flexible tying configuration of its feeders and load balancing in the the Mandaluyong and Pasig areas which are sourced from power transformers in SM-Shangri-la, Rockwell, and Mandaluyong (transformer #1) substations. In addition, this project will optimize the load capacity of the Mandaluyong substation transformers and improve the reliability and quality of service to customers in the Pasig and Mandaluyong areas. The replaced power transformer can be used for other projects.

V. Urgent Reason for Implementing in CY2015:

The project was implemented as a solution to resolve the capacity deficiency and voltage quality complaints by major customers normally served by Mandaluyong power transformer # 2 (NLTC).

Even before the filing of the project with the ERC on February 2015, MERALCO received voltage quality complaints from major customers served by the Mandaluyong power transformer # 2. Meralco tried to address the same by filing the project to ERC with a target implementation of December 2016. However, by August 2015, apart from the voltage complaints, MERALCO was experiencing capacity deficiency in high density urban areas of Mandaluyong and nearby Pasig commercial areas being served by Mandaluyong substation, Rockwell Bank No. 4 and SM-Shangri-la Bank No. 1 due to the large customer applications in the area. Considering the realization of ultimate loads of large developments in the area ahead of schedule, the affected power transformer banks would have been critically loaded to as high as 87% due to the constraint in the load

balancing among the said substation transformers with the absence of an OLTC of the Mandaluyong power transformer # 2, if the project was not implemented.

The replacement project was implemented in CY 2015 and the new Mandaluyong power transformer # 2 with OLTC was energized in December 18 of the same year. The project was immediately implemented so as not to jeopardize the quality and reliability of service in the affected areas.

Annex A: Expenditure Summary
Annex B: Cost-Benefit Analysis
Annex C: Project Gantt Chart.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
Local Expenditure

MERALCO

PROJECT NAME: REPLACEMENT OF POWER TRANSFORMER NO. 2 AT MANDALUYONG SUBSTATION		CAPITAL EXPENDITURE - MAJOR PROJECTS (LOCAL COMPONENT)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers	2,722,996			
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution				
	Overhead Conductors and Devices - Distribution				
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	2,722,996	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		2,722,996	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME: REPLACEMENT OF POWER TRANSFORMER NO. 2 AT MANDALUYONG SUBSTATION		CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)			
		Forecast (US$, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers	1,145,329			
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution				
	Overhead Conductors and Devices - Distribution				
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	1,145,329	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		1,145,329	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
Total Expenditure, local and foreign (PhP, real)

MERALCO

PROJECT NAME: REPLACEMENT OF POWER TRANSFORMER NO. 2 AT MANDALUYONG SUBSTATION		CAPITAL EXPENDITURE - MAJOR PROJECTS (TOTAL, REAL)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	0	0	0	0
	Structures and Improvements (Distribution Purposes)	0	0	0	0
	Station Equipment				
	Power transformers	52,908,466	0	0	0
	Switchgear	0	0	0	0
	Protective equipment	0	0	0	0
	Metering & control equipment	0	0	0	0
	Communications equipment	0	0	0	0
	Other station equipment	0	0	0	0
	Poles, Towers and Fixtures - Distribution	0	0	0	0
	Overhead Conductors and Devices - Distribution	0	0	0	0
	Underground Conduits - Distribution	0	0	0	0
	Underground Conductors and Devices - Distribution	0	0	0	0
	Distribution Transformers	0	0	0	0
	Power Conditioning Equipment	0	0	0	0
	Meters, Metering Instruments & Metering Transformers - Distribution	0	0	0	0
	Information technology equipment (distribution)	0	0	0	0
	Regulated Entity Property on Consumer's Premises	0	0	0	0
	Street Lights and Signal Systems	0	0	0	0
	Submarine Cables	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
Subtrans	Transferred subtransmission assets	0	0	0	0
	Sub-total Regulated Distribution Services	52,908,466	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)	0	0	0	0
	Overhead Conductors and Devices (Customer)	0	0	0	0
	Underground Conduits (Customer)	0	0	0	0
	Underground Conductors and Devices (Customer)	0	0	0	0
	Line Transformers (Customer)	0	0	0	0
	Information Systems Equipment (Connection)	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)	0	0	0	0
	Land and land rights	0	0	0	0
	Structures and improvements	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		52,908,466	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX B: COST-BENEFIT ANALYSIS

Project Name: Replacement of Power Transformer No. 2 at Mandaluyong Substation

Year	Investment	Savings in Purch. Power Cost (Including System Loss)	Savings In O&M	Savings In Unserved Energy	Total Revenue	Net Cash Flow
0	(52,908,466.33)				2,645,423.32	(52,908,466)
1		2,863,610	2,911,397	3,613,162	9,388,169	9,388,169
2		2,978,155	2,940,511	3,757,689	9,676,354	9,676,354
3		3,097,281	2,969,916	3,907,996	9,975,193	9,975,193
4		3,221,172	2,999,615	4,064,316	10,285,103	10,285,103
5		3,350,019	3,029,611	4,226,889	10,606,519	10,606,519
6		3,484,020	3,059,907	4,395,964	10,939,891	10,939,891
7		3,623,381	3,090,506	4,571,803	11,285,690	11,285,690
8		3,768,316	3,121,411	4,754,675	11,644,402	11,644,402
9		3,919,048	3,152,625	4,944,862	12,016,536	12,016,536
10		4,075,810	3,184,152	5,142,657	12,402,619	12,402,619
11		4,111,697	3,215,993	5,187,937	12,515,628	12,515,628
12		4,111,697	3,248,153	5,187,937	12,547,787	12,547,787
13		4,111,697	3,280,635	5,187,937	12,580,269	12,580,269
14		(1,027,924)	(383,341)	(1,296,984)	(2,708,250)	(2,708,250)
15		(1,027,924)	(387,174)	(1,296,984)	(2,712,083)	(2,712,083)
16		(1,027,924)	(391,046)	(1,296,984)	(2,715,955)	(2,715,955)
17		(1,027,924)	(394,957)	(1,296,984)	(2,719,865)	(2,719,865)
18		(1,027,924)	(398,906)	(1,296,984)	(2,723,815)	(2,723,815)
19		(1,027,924)	(402,895)	(1,296,984)	(2,727,804)	(2,727,804)
20		(1,027,924)	(406,924)	(1,296,984)	(2,731,833)	(2,731,833)
21		(1,027,924)	(410,993)	(1,296,984)	(2,735,902)	(2,735,902)
22		(1,027,924)	(415,103)	(1,296,984)	(2,740,012)	(2,740,012)
23		(1,027,924)	(419,254)	(1,296,984)	(2,744,163)	(2,744,163)
24		(1,027,924)	(423,447)	(1,296,984)	(2,748,356)	(2,748,356)
25		(1,027,924)	(427,681)	(1,296,984)	(2,752,590)	(2,752,590)
26		(1,027,924)	(431,958)	(1,296,984)	(2,756,867)	(2,756,867)
27		(1,027,924)	(436,278)	(1,296,984)	(2,761,186)	(2,761,186)
28		(1,027,924)	(440,641)	(1,296,984)	(2,765,549)	(2,765,549)
29		(1,027,924)	(445,047)	(1,296,984)	(2,769,956)	(2,769,956)
30		(1,027,924)	(449,498)	(1,296,984)	(2,774,406)	(2,774,406)

WACC	14.97%

NPV	**4,016,096**
FIRR	**16.73%**
B/C Ratio	**1.08**

FINANCIAL ANALYSIS

[illegible]

[illegible] LEVELIZATION OF [illegible]

PAGE [illegible]

YEAR	LOAD	CAPITAL EXPENDITURES	CHANGE IN WORKING CAPITAL	TOTAL EXPENDITURES	PEAKING POWER COST	PEAKING POWER COST	LEVELIZED COST	[illegible]	DEPRECIATION	[illegible]	TAXABLE INCOME	DEFERRED TAXES	TOTAL REVENUE	DISCOUNT FACTOR	PRESENT VALUE	[illegible]	[illegible]	[illegible]
	[illegible]																	
	[illegible]		448 131	448 131	6.94	7.15												
1	[illegible]		1 870	1 870	7.43	7.64	32	[illegible]	[illegible]	[illegible]	4	9.65	9.65	35	(37 337)			(448 131)
2	[illegible]		0	0	7.80	7.79	35	[illegible]	[illegible]	[illegible]	5	9.41	9.41	43	(37 337)	(37 337)	(22 460)	(24 269)
3	[illegible]		0	0	7.93	8.09	38	[illegible]	[illegible]	[illegible]	5	9.79	9.79	46	(37 337)	(37 337)	(22 399)	(22 399)
4	[illegible]		0	0	8.14	8.39	41	[illegible]	[illegible]	[illegible]	6	10.19	10.19	53	(37 335)	(37 335)	(22 399)	(22 399)
5	[illegible]		0	0	8.47	8.73	44	[illegible]	[illegible]	[illegible]	6	10.60	10.60	58	(37 335)	(37 335)	(22 399)	(22 399)
6	[illegible]		374	374	8.82	9.08	48	[illegible]	[illegible]	[illegible]	6	11.03	11.03	59	(41 815)	(41 815)	(25 878)	(25 878)
7	[illegible]		0	0	9.18	9.45	52	[illegible]	[illegible]	[illegible]	6	11.47	11.47	63	(41 814)	(41 814)	(25 877)	(25 877)
8	[illegible]		0	0	9.55	9.84	56	[illegible]	[illegible]	[illegible]	6	11.94	11.94	67	(41 814)	(41 814)	(25 876)	(25 876)
9	[illegible]		35	35	9.94	10.24	462	[illegible]	[illegible]	[illegible]	48	12.42	12.42	597	(41 721)	(41 721)	(25 783)	(25 819)
10	[illegible]		(26)	(26)	10.24	13.05	66	[illegible]	[illegible]	[illegible]	6	12.92	12.92	79	(41 811)	(41 811)	(25 874)	(25 838)
11	[illegible]		374	374	10.70	11.03	71	[illegible]	[illegible]	[illegible]	6	13.44	13.44	87	(46 292)	(46 292)	(31 354)	(31 729)
12	[illegible]		0	0	11.29	11.64	77	[illegible]	[illegible]	[illegible]	7	13.99	13.99	94	(46 290)	(46 290)	(31 352)	(31 353)
13	[illegible]		1	1	11.95	12.32	84	[illegible]	[illegible]	[illegible]	7	14.56	14.56	101	(46 289)	(46 289)	(31 351)	(31 352)
14	[illegible]		1	1	12.13	12.41	91	[illegible]	[illegible]	[illegible]	7	15.14	15.14	110	(46 288)	(46 288)	(31 350)	(31 351)
15	[illegible]	50 430	50 430	12.62	13.06	605 974	[illegible]	[illegible]	[illegible]	[illegible]	46 619	15.75	724 453	82 177		57 524	72 462	21 972
		91 728	91 728	13.13	13.59	1 702 229	[illegible]	[illegible]	[illegible]	[illegible]	125 845	16.38	2 062 706	309 778		216 841	231 779	(40 051)
		102 403	102 403	13.66	14.13	2 931 124	[illegible]	[illegible]	[illegible]	[illegible]	208 240	17.05	3 551 376	569 454		398 618	413 566	311 147
	8	114 516	114 516	14.22	14.68	4 305 323	[illegible]	[illegible]	[illegible]	[illegible]	293 931	17.74	5 216 478	859 327		601 529	616 467	501 961
		127 797	127 797	14.80	15.24	5 838 891	[illegible]	[illegible]	[illegible]	[illegible]	383 072	18.46	7 071 955	1 182 276		827 592	842 531	714 784
		142 237	142 237	15.40	15.84	7 545 734	[illegible]	[illegible]	[illegible]	[illegible]	475 733	19.21	9 137 656	1 641 124		1 078 784	1 093 731	961 494
		35 618	35 618	16.02	16.47	7 930 631	[illegible]	[illegible]	[illegible]	[illegible]	483 518	19.98	9 662 677	1 628 727		1 138 709	1 153 647	1 117 023
		27 010	27 010	16.67	17.13	8 304 901	[illegible]	[illegible]	[illegible]	[illegible]	483 518	20.78	10 050 356	1 660 205		1 105 300	1 200 237	1 173 227
		28 107	28 107	17.35	17.83	8 642 035	[illegible]	[illegible]	[illegible]	[illegible]	483 519	21.61	10 450 832	1 762 477		1 233 734	1 243 672	1 220 566
		29 249	29 249	18.05	18.55	8 993 069	[illegible]	[illegible]	[illegible]	[illegible]	483 519	22.51	10 868 745	1 924 403		1 284 035	1 299 023	1 269 774
		30 426	30 426	18.78	19.30	9 358 305	[illegible]	[illegible]	[illegible]	[illegible]	483 519	23.41	11 302 795	1 909 104		1 300 422	1 251 057	1 320 930
		32 046	32 046	19.55	20.10	9 733 376	[illegible]	[illegible]	[illegible]	[illegible]	483 520	24.37	11 755 807	1 982 438		1 337 797	1 402 646	1 379 699
		32 959	32 959	20.34	20.91	10 133 934	[illegible]	[illegible]	[illegible]	[illegible]	483 520	25.37	12 226 039	2 063 250		1 444 276	1 456 243	1 426 254
		34 293	34 293	21.17	21.76	10 545 455	[illegible]	[illegible]	[illegible]	[illegible]	483 521	26.42	12 715 081	2 147 269		1 503 092	1 518 020	1 488 722
		35 691	35 691	22.02	22.65	10 973 741	[illegible]	[illegible]	[illegible]	[illegible]	483 521	27.49	13 223 684	2 234 634		1 564 245	1 578 184	1 549 462
		37 140	37 140	22.91	23.56	11 419 422	[illegible]	[illegible]	[illegible]	[illegible]	483 522	28.59	13 752 631	2 325 354		1 627 749	1 642 707	1 609 897

ANNEX B: COST-BENEFIT ANALYSIS

Project Description: Operate and Maintain the Power Transformer

Year	Investment	Savings in Purch. Power Cost (Including System Loss)	Savings In O&M	Savings In Unserved Energy	Total Revenue	Net Cash Flow
0						
1	-	1,073,854	(2,420,899)	1,354,936	7,891	0
2	(2,042,089.91)	1,116,808	(2,445,108)	1,409,133	80,833	7,891
3	-	1,161,480	(2,469,559)	1,465,499	157,420	(1,961,257)
4	-	1,207,940	(2,494,255)	1,524,119	237,803	157,420
5	(784,179.82)	1,256,257	(2,519,197)	1,585,083	322,143	237,803
6	-	1,306,507	(2,544,389)	1,648,487	410,605	(462,037)
7	-	1,358,768	(2,569,833)	1,714,426	503,361	410,605
8	(784,179.82)	1,413,118	(2,595,532)	1,783,003	600,590	503,361
9	-	1,469,643	(2,621,487)	1,854,323	702,480	(183,590)
10	-	1,528,429	(2,647,702)	1,928,496	809,223	702,480
11	-	1,541,887	(2,674,179)	1,945,476	813,184	809,223
12	-	1,541,887	(2,700,921)	1,945,476	786,442	813,184
13	-	1,541,887	(2,727,930)	1,945,476	759,433	786,442
14		-	-	-	154,703	759,433
						154,703

WACC	14.97%

NPV	**136,393**
FIRR	**11.31%**
B/C Ratio	**0.13**

ANNEX C: GANTT CHART

Name of Project: REPLACEMENT OF POWER TRANSFORMER NO. 2 AT MANDALUYONG SUBSTATION
Target Completion:

Activity	2015											
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Movement of Existing PXF												
Civil Works												
New PXF Assembly												
PSP Works												
Substation Works												
Pre Commissioning Check												
Energization												

ANNEX "A-4"

RY2016 CAPEX:
Capital Expenditure Projects

Project Code	Project Title	Commissioning Date	Project Cost
REFILING 5	CUT-IN OF PINAGBUHATAN SWITCHING STATION	November 2016	58,635,873

I. Project Background:

This project involves the construction of overhead 115 kV line with an approximate length of 0.7 kilometer using 2-795 MCM ACSR conductor per phase to cut-in SM Shangri-La-Dolores 115 kV line to the proposed Pinagbuhatan 115 kV Switching Station. This project also includes the construction of 115 kV bus and the installation of 115 kV breaker and associated disconnect switches, installation of control and protection equipment and construction of control house.

This project was originally filed as part of MERALCO's RY2016 Capital Expenditure application last February 9, 2015 and was included in the ten-year (10-year) Distribution Development Plan (DDP) of MERALCO that was previously submitted to the Department of Energy (DOE).

While the project at the time of the original filing was intended to address the load growth in the area, it came to a point that MERALCO was constrained to immediately implement the same as an emergency CAPEX to avert system deficiencies that will result in widespread power interruptions affecting customers in Taytay, Cainta, Pasig and portions of Marikina, Mandaluyong and Quezon City.

As a background, the main outlets of Dolores 230 kV-115 kV delivery point substation in MERALCO Sector 2 are the SM Shangri-La-Dolores 115 kV line, Dolores-Marikina Line, Dolores-Masinag Line, Marikina-Cubao Line, and Dolores-Cainta Line. The SM Shangri-La-Dolores 115 kV line carries bulk power from the Dolores delivery point substation and transport it to SM Shangri-La 115 kV-34.5 kV substation to cater to the residential, commercial and large industrial customers in portions of Pasig, Quezon City, and Mandaluyong such as Medical City, SM Megamall, EDSA Shangri-La Hotel, Energy Regulatory Commission and Pag-asa Steel Works, Inc. (PSWI).[1]

MERALCO has to ensure at all times the reliability and security of the main outlets of Sector 2, including all lines/facilities connected thereto. Thus, MERALCO finds means to address all system constraints and deficiencies for the main corridors of Sector 2 such as the tapping configuration of the PSWI at SM Shangri La Dolores 115 kV line. With such set-up, SM Shangri La-Dolores line will be out of service when maintenance works are conducted at PSWI substation or when there has been fault/trouble thereat. The said customer substation will be isolated from the 115 kV grid by de-energizing the SM Shangri-La-Dolores line. During such condition, an outage of any of the Dolores-Cainta, Dolores-Masinag, Dolores-Marikina, Marikina-Cubao and Cubao-Hillcrest 115 kV lines will cause critical loading/overloading of the other 115 kV lines in Sector 2. This will result in widespread power interruption affecting customers in Taytay, Cainta, Pasig and portions of Marikina, Mandaluyong and Quezon City.

Thus, there is a need to develop the 115 kV Pinagbuhatan switching station in order to address such system constraints and deficiencies. The cut-in connection will protect MERALCO's 115 kV system from cascaded tripping of its 115 kV lines. As above-mentioned, such tripping of 115 kV lines will emanate from outage of SM Shangri-La-Dolores line caused by the trouble at customer's substation and one of Dolores delivery point substation's 115 kV outlets.

This project will also provide N-1 contingency for SM Shangri-La-Dolores line and will therefore enhance/strengthen the reliability of the 115 kV system in Sector 2. The implementation of the project will not expose the SM Shangri-La-Dolores line to risks of interruptions.

[1] PSWI will be connected by MERALCO's distribution system in the last quarter of 2016.

With the switching station in place, in case there is a fault on either line leg, PSWI will be isolated from and would not affect MERALCO's distribution system. Restoration works of the faulted leg may be conducted independently and without affecting the normal operations of the 115 kV system.

MERALCO will also have a freehand to operate, maintain, and rehabilitate the SM Shangri-La-Dolores line without constraints on the continuity of distribution service to PSWI.

II. Technical Analysis

In planning the expansion of its distribution system, MERALCO adheres to the following policies and criteria:

2.1 Subtransmission Planning Policies

a. Subtransmission lines and delivery point substation power transformers shall comply with the N-1 provision
b. Adequate subtransission feeds shall be provided to all substations to ensure reliability of power supply;
c. Subtransmission development plans should be aligned with relevant NGCP, NPC, IPP and Government Projects
d. Delivery Point substation and subtransmssion line projects should be financially viable.

2.2 Subtransmission Planning Criteria

a. Subtransmission lines shall not be loaded beyond 90% of its rated capacity during N-1 contingency.
b. Delivery point power transformers shall not be loaded beyond 100% of its FA2 rating during N-1 contingency.
c. Bus voltage regulation shall be within ±5% of nominal voltage during normal condition and within ±10% during N-1 condition.
d. Bus fault duty should not exceed 90% of the equipment interrupting rating.
e. There should be no loss of load during N-1 contingency.

MERALCO exerts its best effort to address all possible concerns/problems with its sub-transmission lines. This includes ensuring that all connections are properly maintained and secured. It is for these reasons that MERALCO deems it necessary to develop a new switching station to facilitate disconnection of a customer from the grid during fault condition or trouble in said customer's substation to protect its 115 kV system from cascaded tripping of its 115 kV lines due to outage of SM Shangri-La-Dolores line emanating from trouble at customer's substation and outage of one of Dolores delivery point substation's 115 kV outlets. MERALCO's ownership of the switching station will also ensure that it will have freedom to operate, maintain, and rehabilitate the SM Shangri-La-Dolores line without constraints with regard to the continuity of service to PSWI.

In 2016, in case SM Shangri-La-Dolores line is out-of-service due to fault of PSWI substation, and at the same time there is an outage of any of Dolores-Cainta, Dolores-Masinag, Dolores-Marikina, Marikina-Cubao and Cubao-Hillcrest 115 kV lines, such system conditions will definitely cause critical loading/overloading of several 115 kV lines in Sector 2 at a maximum of 111%. This incident will consequently result in power interruption affecting major customers in Taytay, Cainta, Pasig and portions of Marikina, Mandaluyong and Quezon City. **The maximum load at risk is around 398 MVA and will continue to increase if this project is not implemented.**

Without the project, the specific planning criteria that will be breached during outage of SM Shangri-La –Dolores 115 kV line and one of Dolores delivery point substation's 115 kV outlets are :

a. Subtransmission lines shall not be loaded beyond 90% of its rated capacity during N-1 contingency;
b. There should be no loss of load during N-1 contingency.

The forecasted load in case SM Shangri-La-Dolores 115 kV Line out-of-service due to trouble at PSWI customer substation with and without the project are provided in the tables below.

Table 1: 5- Year Forecasted Load Without Project (SM Shangri-La-Dolores **115 kV Line out-of-service due to trouble at PSWI customer substation)**

PARAMETERS UNDER CONSIDERATION			PERCENT LOADING OF AFFECTED LINE DURING N-1 CONTINGENCY				
OUTAGE OF LINE DURING N-1 CONTINGENCY	AFFECTED SUBTRANSMISSION LINE DURING N-1 CONTINGENCY		RY2016	RY2017	RY2018	RY2019	RY2020
	LINE	CAPACITY (MVA)					
Dolores-Cainta Line	Dolores-Marikina Line	342.9	98%	101%	104%	107%	109%
	Dolores-Masinag Line		87%	90%	93%	96%	98%
	Marikina-Cubao Line		98%	101%	104%	107%	109%
Dolores-Masinag Line	Dolores-Cainta Line		98%	101%	104%	107%	109%
	Dolores-Marikina Line		111%	114%	117%	120%	122%
Dolores-Marikina Line	Dolores-Cainta Line		96%	99%	102%	105%	107%
	Dolores-Masinag Line		97%	100%	103%	106%	108%
Marikina-Cubao Line	Dolores-Cainta Line		105%	108%	111%	114%	116%
Cubao-Hillcrest Line	Dolores-Cainta Line		86%	89%	92%	95%	97%

Table 2: 5- Year Forecasted Load With Project (SM Shangri-La-Dolores 115 kV Line out-of-service due to trouble at PSWI customer substation)

PARAMETERS UNDER CONSIDERATION			PERCENT LOADING OF AFFECTED LINE DURING N-1 CONTINGENCY				
OUTAGE OF LINE DURING N-1 CONTINGENCY	AFFECTED SUBTRANSMISSION LINE DURING N-1 CONTINGENCY		RY2016	RY2017	RY2018	RY2019	RY2020
	LINE	CAPACITY (MVA)					
Dolores-Cainta Line	Dolores-Marikina Line		77%	80%	83%	86%	88%

	Dolores-Masinag Line	342.9	71%	74%	77%	80%	82%
	Marikina-Cubao Line		64%	67%	70%	73%	75%
Dolores-Masinag Line	Dolores-Cainta Line		76%	79%	82%	85%	87%
	Dolores-Marikina Line		79%	82%	85%	88%	90%
Dolores-Marikina Line	Dolores-Cainta Line		78%	81%	84%	87%	89%
	Dolores-Masinag Line		79%	82%	85%	88%	90%
Marikina-Cubao Line	Dolores-Cainta Line		78%	81%	84%	87%	89%
Cubao-Hillcrest Line	Dolores-Cainta Line		75%	78%	81%	84%	86%

III. Project Alternatives

In the process of determining the most cost-effective solution to address the identified system deficiencies, MERALCO generated technically feasible alternatives that could satisfy the distribution system requirements in a timely and efficient manner. In its evaluation and due to the immediate need to pursue the appropriate solution to address the system deficiencies, MERALCO was constrained to immediately pursue the first alternative. Table 3 shows the summary of technically feasible projects that are evaluated.

Table 3: Project Alternatives

Problem Description	The project alternatives intended to address the N-1 contingency problem involving several 115 kV lines in Sector 2 during planned maintenance or fault condition at PSWI customer substation.	
Alternative	**Project Name**	**Classification**
1	Cut-in of Pinagbuhatan Switching Station	Stand-alone
2	Construction of SM Shangri-La-Dolores 115 kV Line 2	Stand-alone
3	Construction of SM Shangri-La-Pinagbuhatan and Pinagbuhatan-Dolores 115 kV Lines	Stand-alone

Note: Applicant considered as an option maintaining the current set up where there is no switching station. However, the same will not address the above-mentioned N-1 contingency problem.

Alternative 1: Cut-in of Pinagbuhatan Switching Station

The proposed Pinagbuhatan 115 kV Switching Station is comprised of three (3) 115 kV power circuit breakers, six (6) 115 kV disconnect switches, two (2) 115 kV busses, protection and control equipment, construction of control house, and construction of 115 kV line with an approximate length of 700 meters using 2-795 MCM ACSR per phase conductor to cut-in SM Shangri-La-Dolores 115 kV line to Pinagbuhatan Switching Station (refer to Figure 1).

Project Cost (Php): 58,635,872.82

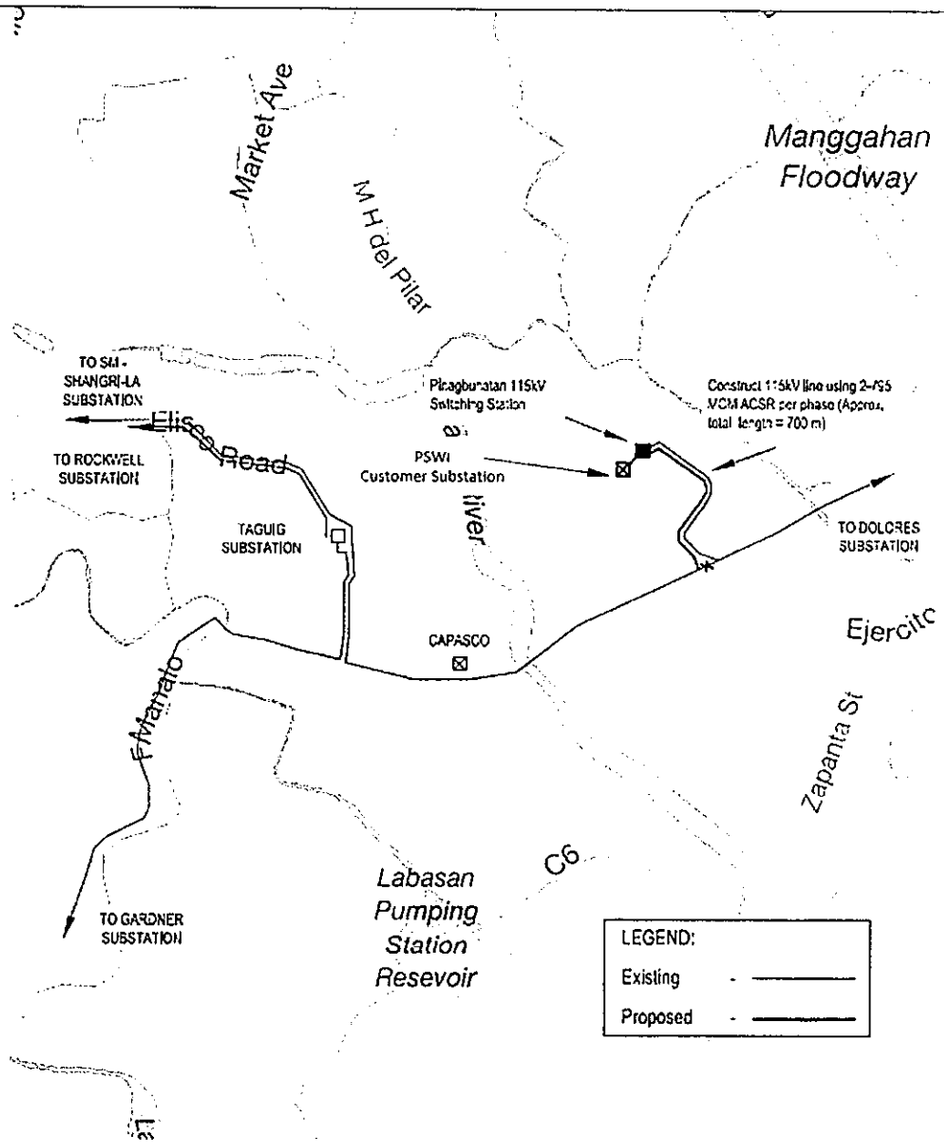


Figure 1 – Proposed Cut-in of Pinagbuhatan Switching Station (Alternative 1)

Alternative 2: Construction of SM Shangri-La-Dolores 115 kV Line 2

This project involves the installation of two (2) 115 kV power circuit breakers, four (4) 115 kV disconnect switches, and protection and control equipment at Dolores delivery point substation; installation of one (1) 115 kV GIS power circuit breaker and associated disconnect switches at SM Shangri-La substation; and construction of around 18.1 kilometers of overhead 115 kV line using 2-795 MCM ACSR conductor phase (refer to Figure 2).

Project Cost (Php): 405,338,149.64

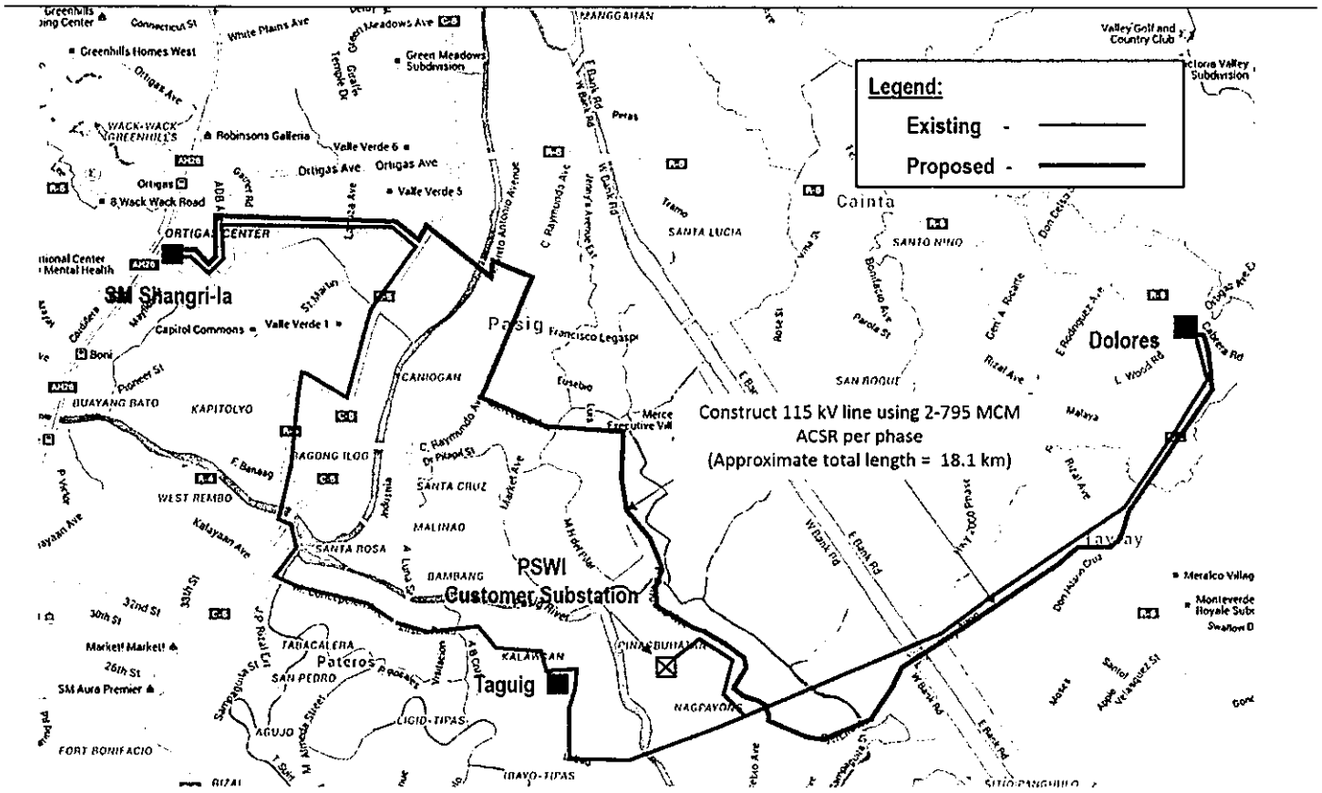


Figure 2 – Proposed Construction of SM Shangri-La-Dolores 115 kV Line 2 (Alternative 2)

Alternative 3: Construction of SM Shangri-La-Pinagbuhatan and Pinagbuhatan-Dolores 115 kV Lines

This project involves the development of a 115 kV switching station comprised of: three (3) 115 kV power circuit breakers, six (6) 115 kV disconnect switches, two (2) 115 kV busses, protection and control equipment, construction of control house. This project also involves the installation of two (2) 115 kV power circuit breakers, four (4) 115 kV disconnect switches, and protection and control equipment at Dolores delivery point substation; installation of one (1) 115 kV GIS power circuit breaker and associated disconnect switches at SM Shangri-La substation; and construction of around 16.5 kilometers of overhead 115 kV line using 2-795 MCM ACSR conductor per phase (refer to Figure 3).

Project Cost (Php): 426,090,959.37

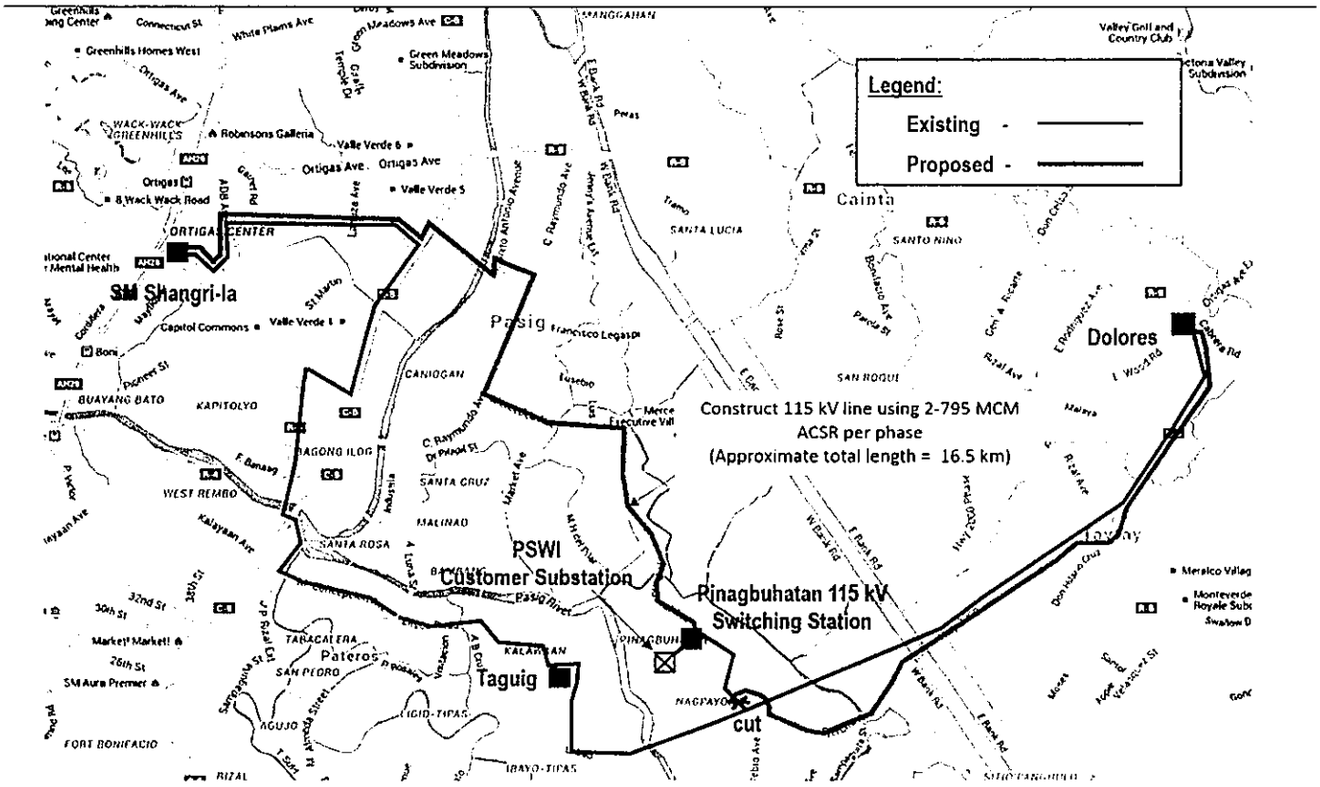


Figure 3 – Proposed Construction of SM Shangri-La-Pinagbuhatan and Pinagbuhatan-Dolores 115 kV Lines (Alternative 3)

Table 3: Comparison of Project Alternatives

Alternative	Advantages	Disadvantages
Alternative 1 Cut-in of Pinagbuhatan Switching Station	This project will solve all of the above-mentioned system constraints and deficiencies. • The cut-in connection will protect MERALCO's 115 kV system from cascaded tripping of its 115 kV lines. As above-mentioned, such tripping of 115 kV lines will emanate from outage of SM Shangri-La-Dolores line caused by the trouble at customer's substation and one of Dolores delivery point substation's 115 kV outlets. • The tap connection of PSWI will be converted to cut-in connection. Hence, any trouble/fault within PSWI substation will not impact/affect the Dolores-SM Shangri-La 115 kV line. Thus, this project will ensure a reliable 115 kV system in Sector 2;	• There is no significant disadvantage.

	• This project will also provide N-1 contingency for SM Shangri-La-Dolores line; • Likewise, this alternative will give MERALCO the full control of Dolores-SM-Shangri-La 115 kV corridor since MERALCO can perform maintenance, upgrading, or rehabilitation works on said line without having to secure permission from the customer. Thus, MERALCO can immediately address any constraints/problems that will be brought by the PSWI to the distribution system; • This project involves the shortest line route at around 700 meters, thus it will have the least exposure to risks of interrupting the existing SM Shangri-La Dolores line; • This project, among all options, is the most economical since it entails the least cost among project alternatives; . • Minimal permit and ROW acquisition will be required for this alternative. Accordingly, the project will be completed earlier as compared to other project alternatives.	
Alternative 2 Construction of SM Shangri-La-Dolores 115 kV Line 2	• This will also provide an alternate feed/line in case of outage of the existing Shangri -La Dolores line due to fault/trouble in the PSWI substation.	• This alternative will require construction of a longer line than Alternatives 1 ; • Alternative 2 is more expensive than Alternative 1 and likewise takes longer time to complete because unlike Alternative 1, Alternative 2 will require installation of protection and control equipment at Dolores delivery point substation and SM Shangri-La substation; • Likewise, the length that SM Shangri-La-Dolores

		• 115 kV Line 2 will traverse substantially increases the risk of interrupting said line; the outage of existing Dolores-SM Shangri-La 115 kV line will still result in the outage of PSWI.
Alternative 3 Construction of SM Shangri-La-Pinagbuhatan and Pinagbuhatan-Dolores 115 kV Lines	• This alternative will give MERALCO the full control of Dolores-SM Shangri-La 115 kV corridorThus, MERALCO can independently conduct maintenance works on said assets; • This will also provide two 115 kV feeds to Pinagbuhatan switching station.	• Alternative 3 would not only require construction of a longer subtransmission line than Alternative 1 but also installation of protection and control equipment at Dolores delivery point substation and Pinagbuhatan switching station. Hence, the implementation of this alternative will take longer than alternatives 1 and 2; • The same is more expensive than the other alternatives; • The length that SM Shangri-La-Pinagbuhatan and Pinagbuhatan-Dolores 115 kV Lines will traverse substantially increases the risk of interrupting said line. • This project also requires construction of a switching station which requires acquisition of lot that involves legal process and may take some time to complete.

Table 5: Financial Evaluation of Project Alternatives

Problem Description	The project alternatives are intended to improve the reliability of the 115 kV system in Sector 2.				
Alternative	**Project Name**	**Project Cost (P in M)**	**NPV (P in M)**	**FIRR**	**B/C Ratio**
1	Cut-in of Pinagbuhatan Switching Station	58.64	1,632.11	222.89%	9.07
2	Construction of SM Shangri-La-Dolores 115 kV Line 2	405.34	235.91	19.89%	1.50
3	Construction of SM Shangri-La-Pinagbuhatan and Pinagbuhatan-Dolores 115 kV Lines	426.09	210.79	19.20%	1.43

	and Pinagbuhatan-Dolores 115 kV Lines				

IV. Recommendation

Based on the result of technical and financial evaluation, Alternative 1 or the 'Cut-in of Pinagbuhatan Switching Station' was implemented by MERALCO as the same addresses the above-mentioned system constraints and deficiencies without exposing the SM Sharing-la Dolores Line to risks of interrupting said line. The cutting-in of said switching station likewise will improve the reliability of the 115 kV system in Sector 2 and even the 115 kV service of PSI substation, since the project provided an alternate feed to PSWI substation. This project will also provide MERALCO full control of the SM Shangri-La-Dolores Line. If this project was not immediately initiated, the SM Shangrila-La-Dolores 115 kV line will remain at risk of outages caused by Pag-asa Steel. Consequently, the security of outlets of Dolores 230 kV-115 kV delivery point substation will be overloaded during N-1 condition which could result in cascaded trippings and widespread outages in Sector 2 of MERALCO 115 kV system.

Annex A: Expenditure Summary
Annex B: Cost-Benefit Analysis
Annex C: Project Gantt Chart

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME:
Cut-in of Pinagbuhatan Switching Station

		CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)			
		Forecast (US$, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers				
	Switchgear	21,289			
	Protective equipment	41,956			
	Metering & control equipment				
	Communications equipment				
	Other station equipment	17,488			
	Poles, Towers and Fixtures - Distribution	38,810			
	Overhead Conductors and Devices - Distribution				
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	119,543	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and Improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		119,543	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Local Expenditure

MERALCO

PROJECT NAME:

Cut-in of Pinagbuhatan Switching Station

		CAPITAL EXPENDITURE - MAJOR PROJECTS (LOCAL COMPONENT)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	600,000			
	Structures and Improvements (Distribution Purposes)	13,008,872			
	Station Equipment				
	Power transformers				
	Switchgear	15,677,276			
	Protective equipment	9,612,492			
	Metering & control equipment	5,632,329			
	Communications equipment				
	Other station equipment	5,998,177			
	Poles, Towers and Fixtures - Distribution	734,999			
	Overhead Conductors and Devices - Distribution	2,133,652			
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	53,397,797	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and Improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		53,397,797	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY

Capital Expenditure - Major Projects

Total Expenditure, local and foreign (PhP, real)

MERALCO

PROJECT NAME:

Cut-in of Pinagbuhatan Switching Station

		CAPITAL EXPENDITURE - MAJOR PROJECTS (TOTAL, REAL)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	600,000	0	0	0
	Structures and Improvements (Distribution Purposes)	13,008,872	0	0	0
	Station Equipment	0	0	0	0
	Power transformers	0	0	0	0
	Switchgear	16,610,121	0	0	0
	Protective equipment	11,450,904	0	0	0
	Metering & control equipment	5,632,329	0	0	0
	Communications equipment	0	0	0	0
	Other station equipment	6,764,456	0	0	0
	Poles, Towers and Fixtures - Distribution	2,435,539	0	0	0
	Overhead Conductors and Devices - Distribution	2,133,652	0	0	0
	Underground Conduits - Distribution	0	0	0	0
	Underground Conductors and Devices - Distribution	0	0	0	0
	Distribution Transformers	0	0	0	0
	Power Conditioning Equipment	0	0	0	0
	Meters, Metering Instruments & Metering Transformers - Distribution	0	0	0	0
	Information technology equipment (distribution)	0	0	0	0
	Regulated Entity Property on Consumer's Premises	0	0	0	0
	Street Lights and Signal Systems	0	0	0	0
	Submarine Cables	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
Subtrans	Transferred subtransmission assets	0	0	0	0
	Sub-total Regulated Distribution Services	58,635,873	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)	0	0	0	0
	Overhead Conductors and Devices (Customer)	0	0	0	0
	Underground Conduits (Customer)	0	0	0	0
	Underground Conductors and Devices (Customer)	0	0	0	0
	Line Transformers (Customer)	0	0	0	0
	Information Systems Equipment (Connection)	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)	0	0	0	0
	Land and land rights	0	0	0	0
	Structures and improvements	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		58,635,873	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX B: COST BENEFIT ANALYSIS
FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: Cut-in of Pinagbuhatan Switching Station
YEAR : 2016

		INVESTMENTS			EXPENSES						REVENUE							
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2016	58,636	-	58,337	6.94	7.39	-					8.93	-	-	-	-	-	(58,337)
1	2017		122,542	122,542	7.23	7.69	1,467,587	2,917	1,945	1,472,449	190,778	9.29	1,772,984	300,535	90,160	210,374	212,319	89,777
2	2018		4,967	4,967	7.52	8.01	1,527,190	2,917	1,945	1,532,051	190,778	9.67	1,844,671	312,620	93,786	218,834	220,778	215,811
3	2019		5,169	5,169	7.83	8.33	1,589,212	2,917	1,945	1,594,074	190,778	10.06	1,919,256	325,182	97,555	227,628	229,572	224,404
4	2020		5,378	5,378	8.14	8.67	1,653,754	2,917	1,945	1,658,615	190,778	10.47	1,996,857	338,242	101,473	236,770	238,714	233,336
5	2021		5,597	5,597	8.47	9.02	1,720,917	2,917	1,945	1,725,778	190,778	10.89	2,077,597	351,819	105,546	246,273	248,218	242,621
6	2022		5,873	5,873	8.82	9.39	1,790,807	3,500	1,945	1,796,252	190,778	11.33	2,161,601	365,349	109,605	255,745	257,689	251,816
7	2023		6,061	6,061	9.18	9.77	1,863,536	3,500	1,945	1,868,980	190,778	11.79	2,249,002	380,022	114,007	266,015	267,960	261,899
8	2024		6,307	6,307	9.55	10.16	1,939,218	3,500	1,945	1,944,663	190,778	12.27	2,339,938	395,275	118,582	276,692	278,637	272,330
9	2025		6,563	6,563	9.94	10.58	2,017,974	3,500	1,945	2,023,419	190,778	12.76	2,434,550	411,131	123,339	287,792	289,736	283,173
10	2026		6,830	6,830	10.34	11.01	2,099,929	3,500	1,945	2,105,374	190,778	13.28	2,532,989	427,615	128,285	299,331	301,275	294,446
11	2027		7,156	7,156	10.76	11.45	2,185,212	4,084	1,945	2,191,240	190,778	13.81	2,635,408	444,168	133,250	310,918	312,862	305,707
12	2028		7,396	7,396	11.20	11.92	2,273,958	4,084	1,945	2,279,986	190,778	14.37	2,741,969	461,983	138,595	323,388	325,332	317,937
13	2029		7,696	7,696	11.65	12.40	2,366,309	4,084	1,945	2,372,337	190,778	14.95	2,852,839	480,502	144,151	336,351	338,296	330,600
14	2030		8,008	8,008	12.13	12.91	2,462,410	4,084	1,945	2,468,438	190,778	15.56	2,968,192	499,754	149,926	349,828	351,772	343,764
15	2031		8,334	8,334	12.62	13.43	2,562,414	4,084	1,945	2,568,442	190,778	16.19	3,088,210	519,768	155,930	363,837	365,782	357,448
16	2032		8,721	8,721	13.13	13.98	2,666,480	4,667	1,945	2,673,091	190,778	16.84	3,213,081	539,990	161,997	377,993	379,938	371,217
17	2033		9,024	9,024	13.66	14.54	2,774,772	4,667	1,945	2,781,383	190,778	17.52	3,343,002	561,619	168,486	393,134	395,078	386,054
18	2034		9,391	9,391	14.22	15.14	2,887,461	4,667	1,945	2,894,073	190,778	18.23	3,478,177	584,104	175,231	408,873	410,818	401,427
19	2035		9,772	9,772	14.80	15.75	3,004,728	4,667	1,945	3,011,339	190,778	18.97	3,618,818	607,479	182,244	425,235	427,180	417,408
20	2036		10,169	10,169	15.40	16.39	3,126,757	4,667	1,945	3,133,368	190,778	19.74	3,765,147	631,779	189,534	442,245	444,190	434,021
21	2037		10,631	10,631	16.02	17.06	3,253,741	5,250	1,945	3,260,936	190,778	20.53	3,917,393	656,457	196,937	459,520	461,464	450,833
22	2038		11,012	11,012	16.67	17.75	3,385,883	5,250	1,945	3,393,078	190,778	21.36	4,075,796	682,717	204,815	477,902	479,847	468,835
23	2039		11,459	11,459	17.35	18.47	3,523,392	5,250	1,945	3,530,587	190,778	22.23	4,240,604	710,017	213,005	497,012	498,957	487,498
24	2040		11,924	11,924	18.05	19.22	3,666,485	5,250	1,945	3,673,680	190,778	23.13	4,412,077	738,397	221,519	516,878	518,823	506,898
25	2041		12,409	12,409	18.79	20.00	3,815,389	5,250	1,945	3,822,584	190,778	24.06	4,590,485	767,901	230,370	537,530	539,475	527,066
26	2042		12,961	12,961	19.55	20.81	3,970,341	5,834	1,945	3,978,119	190,778	25.03	4,776,107	797,988	239,396	558,592	560,536	547,575
27	2043		13,437	13,437	20.34	21.66	4,131,586	5,834	1,945	4,139,364	190,778	26.05	4,969,236	829,872	248,962	580,911	582,855	569,418
28	2044		13,983	13,983	21.17	22.54	4,299,379	5,834	1,945	4,307,157	190,778	27.10	5,170,175	863,018	258,905	604,113	606,057	592,075
29	2045		14,551	14,551	22.03	23.45	4,473,986	5,834	1,945	4,481,765	190,778	28.20	5,379,240	897,476	269,243	628,233	630,178	615,627
30	2046		15,142	15,142	22.92	24.40	4,655,685	5,834	1,945	4,663,463	190,778	29.34	5,596,760	933,297	279,989	653,308	655,252	640,111
															NPV			1,632,112
															IRR			222.89%
															B/C			9.07

ANNEX B: COST BENEFIT ANALYSIS
FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: CONSTRUCTION OF SM SHANGRI-LA-DOLORES 115 KV LINE 2
YEAR : 2016

		I N V E S T M E N T S			E X P E N S E S						R E V E N U E							
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER (P/KWH)	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2017	405,338	-	405,338	7.23	7.57	-					9.17	-	-	-	-	-	(405,338)
1	2018		36,581	36,581	7.52	7.87	418,701	20,267	13,511	452,479	53,172	9.54	507,188	54,708	16,413	38,296	51,807	15,226
2	2019		3,009	3,009	7.83	8.19	454,810	20,267	13,511	488,588	55,504	9.92	550,832	62,243	18,673	43,570	57,082	54,072
3	2020		3,269	3,269	8.14	8.53	494,033	20,267	13,511	527,812	57,938	10.33	598,231	70,420	21,126	49,294	62,805	59,537
4	2021		3,550	3,550	8.47	8.87	536,639	20,267	13,511	570,418	60,478	10.74	649,710	79,293	23,788	55,505	69,016	65,466
5	2022		3,857	3,857	8.82	9.23	582,920	20,267	13,511	616,698	63,130	11.18	705,619	88,921	26,676	62,245	75,756	71,899
6	2023		4,527	4,527	9.18	9.61	633,191	24,320	13,511	671,023	65,898	11.63	766,338	95,316	28,595	66,721	80,232	75,705
7	2024		4,551	4,551	9.55	10.00	687,798	24,320	13,511	725,630	68,788	12.10	832,283	106,654	31,996	74,658	88,169	83,618
8	2025		4,943	4,943	9.94	10.40	747,114	24,320	13,511	784,946	71,804	12.59	903,903	118,957	35,687	83,270	96,781	91,838
9	2026		5,369	5,369	10.34	10.83	811,546	24,320	13,511	849,378	74,952	13.10	981,686	132,308	39,692	92,616	106,127	100,758
10	2027		5,832	5,832	10.76	11.27	881,535	24,320	13,511	919,366	78,239	13.63	1,066,162	146,796	44,039	102,757	116,268	110,436
11	2028		6,673	6,673	11.20	11.72	957,559	28,374	13,511	999,444	81,669	14.18	1,157,908	158,464	47,539	110,925	124,436	117,763
12	2029		6,882	6,882	11.65	12.20	1,040,140	28,374	13,511	1,082,025	85,250	14.75	1,257,550	175,524	52,657	122,867	136,378	129,497
13	2030		7,475	7,475	12.13	12.70	1,129,843	28,374	13,511	1,171,728	88,988	15.35	1,365,765	194,038	58,211	135,826	149,338	141,862
14	2031		8,120	8,120	12.62	13.21	1,227,281	28,374	13,511	1,269,166	92,890	15.97	1,483,294	214,127	64,238	149,889	163,400	155,280
15	2032		8,820	8,820	13.13	13.75	1,333,123	28,374	13,511	1,375,008	96,963	16.61	1,610,936	235,927	70,778	165,149	178,660	169,840
16	2033		9,919	9,919	13.66	14.31	1,448,093	32,427	13,511	1,494,031	101,215	17.29	1,749,562	255,531	76,659	178,871	192,383	182,464
17	2034		10,407	10,407	14.22	14.89	1,572,978	32,427	13,511	1,618,916	105,653	17.98	1,900,118	281,202	84,360	196,841	210,352	199,945
18	2035		11,305	11,305	14.80	15.49	1,708,633	32,427	13,511	1,754,572	110,286	18.71	2,063,630	309,059	92,718	216,341	229,852	218,548
19	2036		12,280	12,280	15.40	16.12	1,855,987	32,427	13,511	1,901,926	115,122	19.47	2,241,213	339,288	101,786	237,501	251,013	238,733
20	2037		13,339	13,339	16.02	16.78	2,016,049	32,427	13,511	2,061,988	120,169	20.26	2,434,079	372,091	111,627	260,464	273,975	260,636
21	2038		14,827	14,827	16.67	17.46	2,189,915	36,480	13,511	2,239,907	125,439	21.07	2,643,541	403,634	121,090	282,544	296,055	281,228
22	2039		15,738	15,738	17.35	18.17	2,378,776	36,480	13,511	2,428,767	130,939	21.93	2,871,029	442,262	132,678	309,583	323,094	307,356
23	2040		17,096	17,096	18.05	18.90	2,583,924	36,480	13,511	2,633,915	136,680	22.81	3,118,094	484,179	145,254	338,925	352,436	335,341
24	2041		18,570	18,570	18.79	19.67	2,806,764	36,480	13,511	2,856,755	142,673	23.74	3,386,420	529,665	158,899	370,765	384,277	365,707
25	2042		20,171	20,171	19.55	20.47	3,048,822	36,480	13,511	3,098,813	148,929	24.70	3,677,838	579,024	173,707	405,317	418,828	398,657
26	2043		22,249	22,249	20.34	21.30	3,311,755	40,534	13,511	3,365,800	155,459	25.69	3,994,334	628,534	188,560	439,974	453,485	431,236
27	2044		23,801	23,801	21.17	22.17	3,597,364	40,534	13,511	3,651,409	162,276	26.73	4,338,066	686,657	205,997	480,660	494,171	470,371
28	2045		25,853	25,853	22.03	23.07	3,907,604	40,534	13,511	3,961,649	169,392	27.81	4,711,379	749,730	224,919	524,811	538,323	512,469
29	2046		28,083	28,083	22.92	24.01	4,244,599	40,534	13,511	4,298,644	176,819	28.94	5,116,819	818,174	245,452	572,722	586,233	558,150
30	2047		30,505	30,505	23.86	24.98	4,610,657	40,534	13,511	4,664,702	184,572	30.11	5,557,149	892,447	267,734	624,713	638,224	607,719
															NPV			235,905
															IRR			19.89%
															B/C			1.50

ANNEX B: COST BENEFIT ANALYSIS
FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: CONSTRUCTION OF SM SHANGRI-LA-PINAGBUHATAN AND PINAGBUHATAN-DOLORES 115 KV LINES
YEAR 2016

		I N V E S T M E N T S			E X P E N S E S						R E V E N U E						
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH) W/ LOSS	PURCH. POWER (P/KWH)	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX (W/ DEPRECIATION ADDED BACK)	FREE CASH FLOW
0	2017	426,091	-	426,091	7.23	7.57	-					9.17	-	-	-	-	-	(426,091)
1	2018		36,667	36,667	7.52	7.87	418,701	21,305	14,203	454,209	53,172	9.54	507,188	52,979	15,894	37,085	51,288	14,621
2	2019		3,009	3,009	7.83	8.19	454,810	21,305	14,203	490,318	55,504	9.92	550,832	60,514	18,154	42,360	56,563	53,554
3	2020		3,269	3,269	8.14	8.53	494,033	21,305	14,203	529,541	57,938	10.33	598,231	68,690	20,607	48,083	62,286	59,018
4	2021		3,550	3,550	8.47	8.87	536,639	21,305	14,203	572,147	60,478	10.74	649,710	77,563	23,269	54,294	68,497	64,947
5	2022		3,857	3,857	8.82	9.23	582,920	21,305	14,203	618,427	63,130	11.18	705,619	87,191	26,157	61,034	75,237	71,380
6	2023		4,544	4,544	9.18	9.61	633,191	25,565	14,203	672,960	65,898	11.63	766,338	93,379	28,014	65,365	79,568	75,024
7	2024		4,551	4,551	9.55	10.00	687,798	25,565	14,203	727,567	68,788	12.10	832,283	104,717	31,415	73,302	87,505	82,954
8	2025		4,943	4,943	9.94	10.40	747,114	25,565	14,203	786,883	71,804	12.59	903,903	117,020	35,106	81,914	96,117	91,174
9	2026		5,369	5,369	10.34	10.83	811,546	25,565	14,203	851,315	74,952	13.10	981,686	130,371	39,111	91,260	105,463	100,093
10	2027		5,832	5,832	10.76	11.27	881,535	25,565	14,203	921,303	78,239	13.63	1,066,162	144,859	43,458	101,401	115,604	109,772
11	2028		6,690	6,690	11.20	11.72	957,559	29,826	14,203	1,001,589	81,669	14.18	1,157,908	156,320	46,896	109,424	123,627	116,936
12	2029		6,882	6,882	11.65	12.20	1,040,140	29,826	14,203	1,084,169	85,250	14.75	1,257,550	173,380	52,014	121,366	135,569	128,687
13	2030		7,475	7,475	12.13	12.70	1,129,843	29,826	14,203	1,173,872	88,988	15.35	1,365,765	191,893	57,568	134,325	148,528	141,053
14	2031		8,120	8,120	12.62	13.21	1,227,281	29,826	14,203	1,271,311	92,890	15.97	1,483,294	211,983	63,595	148,388	162,591	154,471
15	2032		8,820	8,820	13.13	13.75	1,333,123	29,826	14,203	1,377,153	96,963	16.61	1,610,936	233,783	70,135	163,648	177,851	169,031
16	2033		9,936	9,936	13.66	14.31	1,448,093	34,087	14,203	1,496,383	101,215	17.29	1,749,562	253,179	75,954	177,225	191,428	181,492
17	2034		10,407	10,407	14.22	14.89	1,572,978	34,087	14,203	1,621,268	105,653	17.98	1,900,118	278,850	83,655	195,195	209,398	198,991
18	2035		11,305	11,305	14.80	15.49	1,708,633	34,087	14,203	1,756,924	110,286	18.71	2,063,630	306,707	92,012	214,695	228,898	217,593
19	2036		12,280	12,280	15.40	16.12	1,855,987	34,087	14,203	1,904,278	115,122	19.47	2,241,213	336,936	101,081	235,855	250,058	237,778
20	2037		13,339	13,339	16.02	16.78	2,016,049	34,087	14,203	2,064,340	120,169	20.26	2,434,079	369,739	110,922	258,817	273,020	259,682
21	2038		14,844	14,844	16.67	17.46	2,189,915	38,348	14,203	2,242,467	125,439	21.07	2,643,541	401,074	120,322	280,752	294,955	280,111
22	2039		15,738	15,738	17.35	18.17	2,378,776	38,348	14,203	2,431,327	130,939	21.93	2,871,029	439,702	131,911	307,791	321,994	306,256
23	2040		17,096	17,096	18.05	18.90	2,583,924	38,348	14,203	2,636,475	136,680	22.81	3,118,094	481,619	144,486	337,133	351,336	334,241
24	2041		18,570	18,570	18.79	19.67	2,806,764	38,348	14,203	2,859,315	142,673	23.74	3,386,420	527,105	158,132	368,974	383,177	364,607
25	2042		20,171	20,171	19.55	20.47	3,048,822	38,348	14,203	3,101,373	148,929	24.70	3,677,838	576,465	172,939	403,525	417,728	397,557
26	2043		22,266	22,266	20.34	21.30	3,311,755	42,609	14,203	3,368,567	155,459	25.69	3,994,334	625,767	187,730	438,037	452,240	429,973
27	2044		23,801	23,801	21.17	22.17	3,597,364	42,609	14,203	3,654,176	162,276	26.73	4,338,066	683,890	205,167	478,723	492,926	469,126
28	2045		25,853	25,853	22.03	23.07	3,907,604	42,609	14,203	3,964,416	169,392	27.81	4,711,379	746,963	224,089	522,874	537,077	511,224
29	2046		28,083	28,083	22.92	24.01	4,244,599	42,609	14,203	4,301,411	176,819	28.94	5,116,819	815,407	244,622	570,785	584,988	556,905
30	2047		30,505	30,505	23.86	24.98	4,610,657	42,609	14,203	4,667,470	184,572	30.11	5,557,149	889,680	266,904	622,776	636,979	606,474
															NPV			210,791
															IRR			19.20%
															B/C			1.43

ANNEX C: GANTT CHART

Cut-in of Pinagbuhatan Switching Station
Project Gantt Chart
Target Completion: November 2016

Activity	2015							2016										
	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Procurement of Materials																		
Design																		
Construction																		

ANNEX "A-5"

RY2016 CAPEX:
Capital Expenditure Projects

Project Code	Project Title	Commissioning Date	Project Cost
REFILING 6	SPARE 83MVA 110kV-34.5kV-13.8kV POWER TRANSFORMER WITH OLTC for GIS Substation	May 2017 (Arrival Date)	46,443,027

I. Project Description:

As of May 2016, MERALCO has one hundred twenty three (123) units of 83 MVA 110kV-34.5kV-13.8kV power transformers installed in various substations. Fifty two (52) power transformers are designed for use in GIS substations and seventy one (71) power transformers are designed for use in conventional substations. Each transformer serves 46.68 MVA of demand on the average. Twenty three (23%) percent, or about twenty eight (28) units, have been in continuous service for fifteen (15) years or more.

Unfortunately, MERALCO does not have a spare 83 MVA 110kV-34.5kV-13.8kV power transformer for GIS substations. As such, any failure of any of the installed 83 MVA GIS transformers cannot be sufficiently and speedily addressed. While load-shifting will temporarily address the problem during transformer breakdowns, such solution will not address any further contingencies. Thus, transformer breakdown would result in sustained power interruption to the detriment of MERALCO's customers, commerce and vital public service.

In this regard, it is imperative that MERALCO purchase a spare 83 MVA 110kV-34.5kV-13.8kV GIS power transformer with OLTC to readily resolve cases of breakdown and failure of transformers.

II. Reason for Implementing in CY2015:

The need to have an available spare of at least one (1) unit of 83 MVA 110kV-34.5kV-13.8kV power transformer for a GIS substation at any given time is imperative in order to facilitate the quick replacement of any commissioned 83MVA power transformer that breaks down. It should be noted that the acquisition of a power transformer may usually take 15 months from the initiation of purchase until arrival of the equipment. Considering this lead time, there is an urgent need for the approval of the acquisition of a spare GIS power transformer. Additionally, the availability of a spare unit will not expose the adjacent transformers which carry the shifted loads to critical loading.

If the project was not implemented, any breakdown of a commissioned 83 MVA power transformer cannot be addressed readily thereby exhausting the critical loading of adjacent transformers which can temporarily carry the load. At this condition, any further breakdown of the adjacent transformers would result to prolonged and widespread power interruptions. The increased exposure of the affected 34.5kV distribution lines due to emergency load shifting would result in higher line losses and possibly more power interruptions.

III. Risk Analysis

Alternative 1: Provide a Spare 83 MVA 110kV-34.5kV-13.8kV GIS power transformer with OLTC
In order to readily resolve GIS power transformer breakdown / failure at any given time.

Alternative 2: Continue operation by shifting the loads to adjacent power transformers
Continue to shift the loads of adjacent transformers that breaks down to the other adjacent transformer banks, which can temporarily carry the load. The said transformers will run the risk of operating above the critical level. Also, there will be higher system loss as a result.

At this condition, an outage of any of these transformers and those in adjacent substations would result in prolonged and widespread power interruptions. Furthermore, MERALCO would have difficulty accommodating the load applications of large customers due to inadequate capacity. Likewise, there will be increased exposure of the affected 34.5kV distribution lines due to emergency load shifting thus resulting to higher line losses and possibly more frequent interruptions which would burden the consumers.

The conventional spare power transformer to be used to replace the power transformer of GIS was also considered. However, due to the design of GIS substations, it will not be feasible to use conventional spare power transformers due to the limited space inside GIS substations. In cases where there are space availability, the construction to modify the configuration of the substation may pose safety clearance problems and thus necessitate more time to construct the modifications and purchase the necessary materials. Accordingly, possible power interruptions may occur due to lack of power supply.

Comparison of Alternatives

Alternative	Advantages	Disadvantages
Alternative 1: Provide a Spare in case of GIS Power Transformer Breakdown/Failure	- minimal interruption - loading of adjacent existing transformers is within the normal loading condition - lower system loss	-no significant disadvantages
Alternative 2: Continue operation by shifting the loads to adjacent power transformers until a GIS transformer will be purchased	- no significant advantages	- widespread and frequent interruption - loading of adjacent existing transformers is above the critical loading condition - higher system loss

IV. Analysis of Options

The financial analysis includes and assumes the system losses and the maintenance costs of the project.

IV.A. Cost Estimate

ASSET CATEGORY	LABOR COST	MATERIAL COST	OTHER COST	TOTAL
Power transformers		46,443,027		46,443,027
TOTAL		46,443,027		46,443,027

The cost estimate includes the purchase of a new 83MVA 110kV-34.5kV-13.8kV GIS power transformer only. The cost includes delivery cost, taxes and duties.

IV.B. Financial Analysis

The table below shows the summary of financial evaluations of the project alternatives.

Financial Evaluation of Project Alternatives

Alternative	Project Name	Project Cost (PhP)	NPV (PhP)	FIRR	B/C Ratio
1	Provide a Spare in case of GIS Power Transformer Breakdown/Failure	46,443,027	11,891,418	19.44%	1.24
2	Continue operation by shifting the loads to adjacent power transformers until a GIS transformer will be purchased	47,371,888	1,109,819	15.33%	1.07

Conclusion

From the foregoing, it is imperative that MERALCO must have an available spare unit of an 83 MVA 110kV-34.5kV-13.8kV power transformer for a GIS substation at any given time. With the spare 83MVA GIS power transformer on hand, MERALCO will be able to quickly replace any commissioned 83MVA power transformer that breaks down at GIS substations. Furthermore, it is worthy to note that with this project, adjacent transformers will not be exposed to critical loading because of the temporary load shifting that has to be undertaken in cases when there are breakdown/failures of GIS transformers.

Annex A: Expenditure Summary
Annex B: Cost-Benefit Analysis
Annex C: Project Gantt Chart

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
Local Expenditure

MERALCO

PROJECT NAME:
SPARE 83MVA 110kV-34.5kV-13.8kV POWER TRANSFORMER WITH OLTC for GIS Substation

Category		CAPITAL EXPENDITURE - MAJOR PROJECTS (LOCAL COMPONENT) Forecast (PhP, real) (Regulatory Year) 2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers				
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution				
	Overhead Conductors and Devices - Distribution				
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	0	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		0	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME: SPARE 83MVA 110kV-34.5kV-13.8kV POWER TRANSFORMER WITH OLTC for GIS Substation		CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)			
		Forecast (US$, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers	1,059,920			
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution				
	Overhead Conductors and Devices - Distribution				
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	1,059,920	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		1,059,920	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
Total Expenditure, local and foreign (PhP, real)

MERALCO

PROJECT NAME: SPARE 83MVA 110kV-34.5kV-13.8kV POWER TRANSFORMER WITH OLTC for GIS Substation		CAPITAL EXPENDITURE - MAJOR PROJECTS (TOTAL, REAL)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	0	0	0	0
	Structures and Improvements (Distribution Purposes)	0	0	0	0
	Station Equipment				
	Power transformers	46,443,027	0	0	0
	Switchgear	0	0	0	0
	Protective equipment	0	0	0	0
	Metering & control equipment	0	0	0	0
	Communications equipment	0	0	0	0
	Other station equipment	0	0	0	0
	Poles, Towers and Fixtures - Distribution	0	0	0	0
	Overhead Conductors and Devices - Distribution	0	0	0	0
	Underground Conduits - Distribution	0	0	0	0
	Underground Conductors and Devices - Distribution	0	0	0	0
	Distribution Transformers	0	0	0	0
	Power Conditioning Equipment	0	0	0	0
	Meters, Metering Instruments & Metering Transformers - Distribution	0	0	0	0
	Information technology equipment (distribution)	0	0	0	0
	Regulated Entity Property on Consumer's Premises	0	0	0	0
	Street Lights and Signal Systems	0	0	0	0
	Submarine Cables	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
Subtrans	Transferred subtransmission assets	0	0	0	0
	Sub-total Regulated Distribution Services	46,443,027	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)	0	0	0	0
	Overhead Conductors and Devices (Customer)	0	0	0	0
	Underground Conduits (Customer)	0	0	0	0
	Underground Conductors and Devices (Customer)	0	0	0	0
	Line Transformers (Customer)	0	0	0	0
	Information Systems Equipment (Connection)	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)	0	0	0	0
	Land and land rights	0	0	0	0
	Structures and improvements	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		46,443,027	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX B: COST-BENEFIT ANALYSIS

Project Name: Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation

Year	Investment	Savings in Purch. Power Cost (Including System Loss)	Savings In O&M	Savings In Unserved Energy	Total Revenue	Net Cash Flow
0	(46,443,027.00)				2,322,151.35	(46,443,027)
1		2,863,610	2,135,214	3,613,162	8,611,986	8,611,986
2		2,978,155	2,156,566	3,757,689	8,892,410	8,892,410
3		3,097,281	2,178,132	3,907,996	9,183,409	9,183,409
4		3,221,172	2,199,913	4,064,316	9,485,401	9,485,401
5		3,289,358	2,221,912	4,150,350	9,661,620	9,661,620
6		3,289,358	2,244,131	4,150,350	9,683,839	9,683,839
7		3,289,358	2,266,573	4,150,350	9,706,280	9,706,280
8		3,289,358	2,289,238	4,150,350	9,728,946	9,728,946
9		3,289,358	2,312,131	4,150,350	9,751,838	9,751,838
10		3,289,358	2,335,252	4,150,350	9,774,959	9,774,959
11		3,289,358	2,358,604	4,150,350	9,798,312	9,798,312
12		3,289,358	2,382,190	4,150,350	9,821,898	9,821,898
13		3,289,358	2,406,012	4,150,350	9,845,720	9,845,720
14		3,289,358	2,430,073	4,150,350	9,869,780	9,869,780
15		3,289,358	2,454,373	4,150,350	9,894,081	9,894,081
16		3,289,358	2,478,917	4,150,350	9,918,625	9,918,625
17		3,289,358	2,503,706	4,150,350	9,943,414	9,943,414
18		3,289,358	2,528,743	4,150,350	9,968,451	9,968,451
19		3,289,358	2,554,031	4,150,350	9,993,738	9,993,738
20		3,289,358	2,579,571	4,150,350	10,019,279	10,019,279
21		(822,339)	(410,993)	(1,037,587)	(2,270,920)	(2,270,920)
22		(822,339)	(415,103)	(1,037,587)	(2,275,030)	(2,275,030)
23		(822,339)	(419,254)	(1,037,587)	(2,279,181)	(2,279,181)
24		(822,339)	(423,447)	(1,037,587)	(2,283,374)	(2,283,374)
25		(822,339)	(427,681)	(1,037,587)	(2,287,608)	(2,287,608)
26		(822,339)	(431,958)	(1,037,587)	(2,291,885)	(2,291,885)
27		(822,339)	(436,278)	(1,037,587)	(2,296,205)	(2,296,205)
28		(822,339)	(440,641)	(1,037,587)	(2,300,568)	(2,300,568)
29		(822,339)	(445,047)	(1,037,587)	(2,304,974)	(2,304,974)
30		(822,339)	(449,498)	(1,037,587)	(2,309,424)	(2,309,424)

WACC	14.97%

NPV	**11,891,418**
FIRR	**19.44%**
B/C Ratio	**1.24**

ANNEX B: COST-BENEFIT ANALYSIS

Project Name: Continue operation by shifting the loads to adjacent power transformers until a GIS transformer will be purchased

Year	Investment	Savings in Purch. Power Cost (Including System Loss)	Savings In O&M	Savings In Unserved Energy	Total Revenue	Others (Losses)	Net Cash Flow
0							
1		-	-	-	-	10,568,007.08	(10,568,007)
2	(47,371,887.54)	-	-	-	947,438	2,729,141.53	(50,101,029.07)
3		3,097,281	2,178,132	3,907,996	9,183,409		9,183,409
4		3,221,172	2,199,913	4,064,316	9,485,401		9,485,401
5		3,289,358	2,221,912	4,150,350	9,661,620		9,661,620
6		3,289,358	2,244,131	4,150,350	9,683,839		9,683,839
7		3,289,358	2,266,573	4,150,350	9,706,280		9,706,280
8		3,289,358	2,289,238	4,150,350	9,728,946		9,728,946
9		3,289,358	2,312,131	4,150,350	9,751,838		9,751,838
10		3,289,358	2,335,252	4,150,350	9,774,959		9,774,959
11		3,289,358	2,358,604	4,150,350	9,798,312		9,798,312
12		3,289,358	2,382,190	4,150,350	9,821,898		9,821,898
13		3,289,358	2,406,012	4,150,350	9,845,720		9,845,720
14		3,289,358	2,430,073	4,150,350	9,869,780		9,869,780
15		3,289,358	2,454,373	4,150,350	9,894,081		9,894,081
16		3,289,358	2,478,917	4,150,350	9,918,625		9,918,625
17		3,289,358	2,503,706	4,150,350	9,943,414		9,943,414
18		3,289,358	2,528,743	4,150,350	9,968,451		9,968,451
19		3,289,358	2,554,031	4,150,350	9,993,738		9,993,738
20		3,289,358	2,579,571	4,150,350	10,019,279		10,019,279
21		3,289,358	2,605,367	4,150,350	10,045,074		10,045,074
22		3,289,358	2,631,420	4,150,350	10,071,128		10,071,128
23		3,289,358	2,657,735	4,150,350	10,097,442		10,097,442
24		3,289,358	2,684,312	4,150,350	10,124,019		10,124,019
25		3,289,358	2,711,155	4,150,350	10,150,863		10,150,863
26		3,289,358	2,738,267	4,150,350	10,177,974		10,177,974
27		3,289,358	2,765,649	4,150,350	10,205,357		10,205,357
28		3,289,358	2,793,306	4,150,350	10,233,013		10,233,013
29		3,289,358	2,821,239	4,150,350	10,260,946		10,260,946
30		3,289,358	2,849,451	4,150,350	10,289,159		10,289,159
31		3,289,358	2,877,946	4,150,350	10,317,653		10,317,653
32		3,289,358	2,906,725	4,150,350	10,346,433		10,346,433

WACC	14.97%

NPV	**1,109,819**
FIRR	**15.33%**
B/C Ratio	**1.07**

ANNEX C: GANTT CHART

Name of Project: SPARE 83MVA 110kV-34.5kV-13.8kV POWER TRANSFORMER WITH OLTC for GIS Substation
Target Completion:

Activity	2016												2017				
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Initiate the Purchase of Spare Power Transformer																	
Delivery Lead Time																	
Arrival																	

ANNEX "A-6"

RY2016 CAPEX:
Capital Expenditure Projects

Project Code	Project Title	Commissioning Date	Project Cost
REFILING 7	ACQUISITION OF 115 KV LINE AND 115 KV SWITCHYARD AT THE NAVOTAS FISHPORT COMPLEX	October 2016	118,478,179

I. Project Background

The project involves acquisition of four 115 kV, 2000 A power circuit breakers, eight 115 kV, 2000 A disconnect switches, two 115 kV busses, teleprotection and radio links equipment, synchronism check relay, import-export billing meter and 115 kV line with 2-795 MCM ACSR conductor per phase with a length of 428 meters.

This Project was filed as part of Meralco's RY2016 Capital Expenditure application last February 09, 2015 and included in MERALCO's 2014-2023 Distribution Development Plan (DDP).

This project is treated as an emergency/urgent CAPEX considering the dire need for MERALCO to have full operational and maintenance control at the Navotas Fishport Switching Station so as to address the system constraints and deficiencies that currently affect the reliability of MERALCO's 115 kV System in Sector 1.

As a background, the Thermal Mobile Inc. (TMO) is the owner of a 242 MW diesel fired power plant with four (4) power barges located at Navotas, Metro Manila. On March 04, 2013, TMO executed a power supply agreement with MERALCO. TMO's power plant is the source of power supply of the customers in the whole of Manila, Caloocan, Valenzuela, Malabon, Navotas, as well as some parts of Quezon City and San Jose Del Monte, Bulacan (MERALCO Sector 1).

The 115 kV switchyard at the Navotas Fishport Complex (TMO Switching Station) is currently owned by TMO. However, the switching station was only tapped to MERALCO's Grace Park- Malabon 115 kV line via 428 meters 115 kV line also constructed and owned by TMO.

In 2013, upon consultation of TMO and MERALCO with ERC, TMO was allowed to build a point-to-point facility so that it will be able to meet the target commissioning schedule for the plant. In 2014, considering the need to improve reliability of the Grace Park- Malabon 115 kV line, MERALCO took the initiative to have a cut-in connection of the switching station to the said 115 kV line. This will improve the reliability of the said line since when TMO's plant, an embedded generation (EG), is connected via cut-in, and there has been a fault on either line leg, the said plant will not be isolated from the MERALCO system. Thus, it cannot have an impact to the distribution system. Restoration works of the faulted leg may be conducted independently and without affecting the normal operations of the 115 kV system. Unlike where the EG is tapped only to a line, the fault shall be cleared first before the operation at 115 kV system can be resumed by MERALCO.

As above-mentioned, the TMO's plant supplies a portion of MERALCO's peak power requirements for the benefit of its customers in the said areas. EGs, like TMO's plant, play an important role especially when NGCP power plants are on emergency shutdown, experiencing an outage or running on limited capacity. Like any other EGs, TMO's plant could also contribute to system loss reduction and should therefore maintain being connected to the grid at all times. Specifically for this case, the connection of TMO (EG) results in 6,491,467 kWH loss reduction annually. Hence, MERALCO deems it relevant to assure that the connection of said plant to the 115 kV system is well-maintained and secured.

However, MERALCO still has no full control of the said switching station which is the connection point to MERALCO. Maintenance works or repairs require a series of coordination before it can be executed. Full control which is crucial to the operation especially during emergency can be achieved if MERALCO owns the said switching station. At present, MERALCO cannot ensure proper maintenance of the TMO switching station and equipment thereat. This exposes the 115 kV system to risks that may be caused by fault or trouble in the switching station.

In particular, the reliability of the MERALCO 115 kV system in Sector 1 will be compromised. A fault or trouble in TMO's switching station may cause the disconnection of the TMO plant and result to overloading of the remaining power transformer banks at Balintawak 230kV Delivery Point substation during N-1. It should also

be considered that when there is an outage of the Grace Park-TMO-Malabon 115 kV due to fault / any problems caused by the TMO's switching station, there will be no available 2nd 115 kV feed to Malabon and Grace Park Substations. Consequently, there will be power interruptions to customers being served by these substations.

For these reasons, the CAPEX project for acquisition of the 115 kV line and 115 kV switchyard in the Navotas Fishport Complex should be immediately approved. This will ensure that the switching station is properly maintained and consequently ensure that TMO's power plant is always connected and can deliver the peaking power that is required by MERALCO.

II. Technical Analysis:

In planning the expansion of its distribution system, MERALCO adheres to the following policies and criteria:

2.1 Subtransmission Planning Policies

a. Subtransmission lines and delivery point substation power transformers shall comply with the N-1 provision
b. Adequate subtransission feeds shall be provided to all substations to ensure reliability of power supply;
c. Subtransmission development plans should be aligned with relevant NGCP, NPC, IPP and Government Projects
d. Delivery Point substation and subtransmssion line projects should be financially viable.

2.2 Subtransmission Planning Criteria

a. Subtransmission lines shall not be loaded beyond 90% of its rated capacity during N-1 contingency.
b. Delivery point power transformers shall not be loaded beyond 100% of its FA2 rating during N-1 contingency.
c. Bus voltage regulation shall be within ± 5% of nominal voltage during normal condition and within ± 10% during N-1 condition.
d. Bus fault duty should not exceed 90% of the equipment interrupting rating.
e. There should be no loss of load during N-1 contingency.

Thus, MERALCO exerts its best effort to address all possible concerns/problems with its sub-transmission lines. This includes ensuring that all connections are properly maintained and secured. It is for these reasons that MERALCO deems it proper to acquire the TMO's switching station. MERALCO's ownership of the switching station will also lessen the probability of power interruptions caused by/due to improper maintenance of the switching station. If MERALCO will acquire the same, it would have a free hand to operate, maintain, repair and rehabilitate these assets.

TMO's connection to the 115 kV line needs to be secured considering that the Balintawak 230kV Delivery Point substation will be overloaded during N-1 contingencies without the EG (TMO). This delivery point substation, together with Duhat and Paco 230kV Delivery Point substations, supplies power to several 115 kV-34.5 kV substations in Sector 1 of MERALCO 115 kV system serving the customers in the north-western portion of Metro Manila and southern portion of Bulacan.

If MERALCO owns the said asset, problems arising from any of the equipment can be immediately addressed. This will avoid the occurrence of similar incidences in the past where MERALCO cannot provide the needed works for maintenance of equipment in said switching station because of lack of right to access and control thereto. Particularly, in February 2016, deteriorating battery condition had been discovered by MERALCO during maintenance inspection at TMO switching station. MERALCO could not replace the batteries due to the limitations provided in the Interconnection Agreement signed on March 4, 2013 by MERALCO and TMO. Per Section 3.2.1 of said Agreement, particularly, in the Fixed Asset Boundary Document (FABD), TMO's DC System is part of TMO's assets and MERALCO is only responsible to operate, maintain and control the interconnection facilities and switching station. Thus, replacement of the battery units is TMO's responsibility.

Also, MERALCO noticed that TMO was using two battery banks operating in parallel (10 cells for each bank with each cells having 12V) for the switching station. This can cause a large voltage drop when a single battery cell breaks down. Thus, MERALCO recommended to TMO to relocate the battery charger outside the battery room to avoid damage to its electronic components since substation batteries emit chemical fumes. TMO initially refused to heed to MERALCO's recommendation. However, after an exchange of series of correspondence between TMO and MERALCO and meetings, TMO finally replaced the battery bank 1 on May 5, 2016. But bank 2 will only be replaced upon the arrival of TMO's new charger.

The unreliable condition of TMO's DC system puts TMO's protection and control system at risk and may cause disruption of service to MERALCO's 115 kV Sub-transmission line. Said problems and other similar issues that may arise in the future regarding the conduct of maintenance will all be averted through the acquisition of the pertained Navotas Fishport Complex switching station, including the said DC system, by MERALCO. Moreover, additional improvement or expansion can be executed without delays due to the required approval or tedious coordination with TMO.

Without the project, the planning criteria "*Delivery point power transformers shall not be loaded beyond 100% of its FA2 rating during N-1 contingency*" will be breached.

Table 1: Actual and Forecasted Loading without EG due to switching station trouble

PARAMETERS UNDER CONSIDERATION			PERCENT LOADING OF AFFECTED BANKS/LINE DURING N-1 CONTINGENCY				
OUTAGE OF BANK/LINE DURING N-1 CONTINGENCY	AFFECTED SUBTRANSMISSION FACILITY DURING N-1 CONTINGENCY		RY2016	RY2017	RY2018	RY2019	RY2020
	BANK/LINE	CAPACITY (MVA)					
Balintawak 300 MVA Bank	Remaining Balintawak 3X300 MVA Banks	900	112%	117%	122%	126%	131%

Table2: Actual and Forecasted Loading with EG

PARAMETERS UNDER CONSIDERATION			PERCENT LOADING OF AFFECTED BANKS/LINE DURING N-1 CONTINGENCY				
OUTAGE OF BANK/LINE DURING N-1 CONTINGENCY	AFFECTED SUBTRANSMISSION FACILITY DURING N-1 CONTINGENCY		RY2016	RY2017	RY2018	RY2019	RY2020
	BANK/LINE	CAPACITY (MVA)					
Balintawak 300 MVA Bank	Remaining Balintawak 3X300 MVA Banks	900	95%	79%	82%	85%	88%

Note: Loadings are with the complimentary effect of other CAPEX projects.

III. Project Alternatives

In the process of determining the most cost-effective solution to address the identified system deficiencies, MERALCO generated technically feasible alternatives that could satisfy the distribution system requirements in a timely and efficient manner. Table 3 shows the summary of technically feasible projects that are evaluated.

Table 3: Project Alternatives

Problem Description	Lack of full operational and maintenance control at the Navotas Fishport Switching Station which affects the reliability of MERALCO's 115 kV System in Sector 1	
Alternative	**Project Name**	**Classification**
1	Acquisition of 115 kV Line and 115 kV Switchyard at Navotas Fishport Complex	Stand-alone
2	Construction of Grace-Park Malabon 115 kV Line	Stand-alone

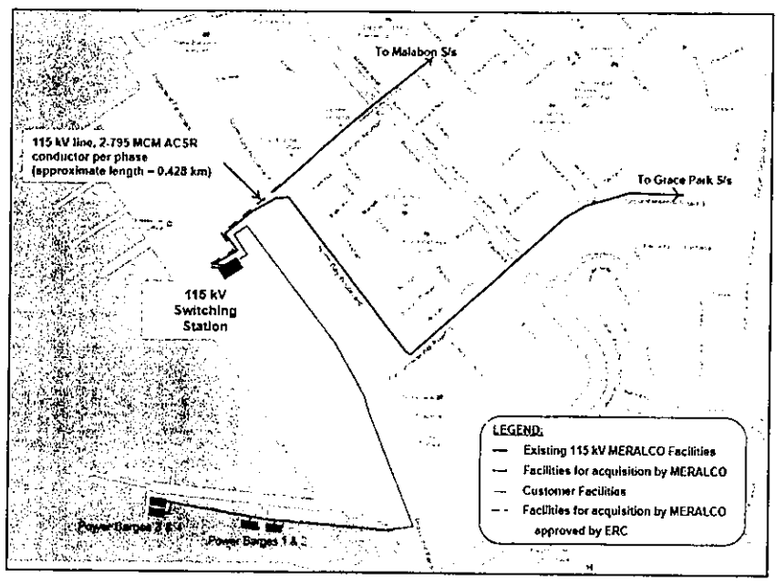
Note: Applicant considered as an option maintaining the current set-up. However, the same will not address the above-mentioned operational and maintenance of the Navotas Switching Station affecting the N-1 contingency problem.

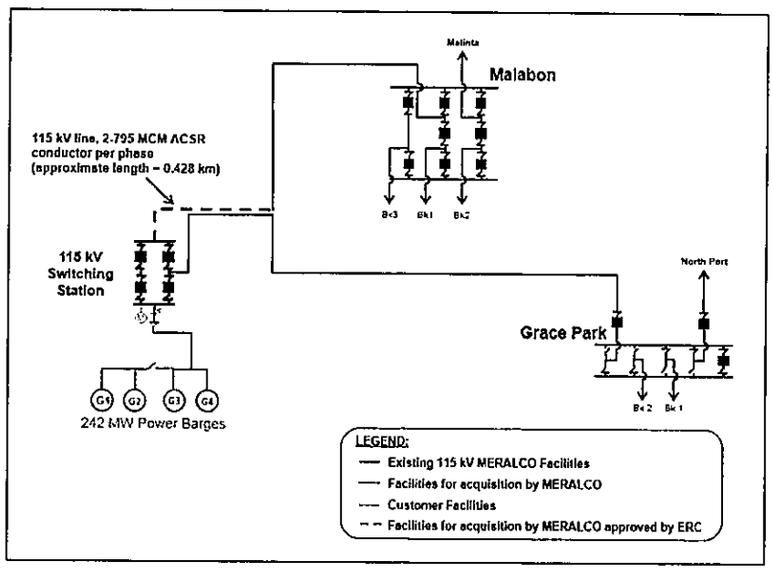
Alternative 1: Acquisition of 115 kV Line and 115 kV Switchyard at Navotas Fishport Complex

The proposed project for acquisition of TMO switching station comprises of four (4) 115 kV, 2000 A power circuit breakers, eight (8) 115 kV, 2000 A disconnect switches, two (2) 115 kV busses, teleprotection and radio links equipment, synchronism check relay, import-export billing meter and 115 kV line using 2-795 MCM ACSR conductor per phase with a total length of 428 meters.

It is a must that the ownership of the switching station be transferred to MERALCO so that it would have a free hand to operate, maintain, repair and rehabilitate the TMO switching station. This is to be able to prevent if not deter the above-discussed system problems/ constraints.

Project Cost (PhP): 118.48 M





Alternative 2: Construction of Grace-Park Malabon 115 kV Line

This project involves the installation of one (1) 115 kV power circuit breaker at Malabon substation, one (1) bay extension of the existing 115 kV GIS equipment at Grace Park substation, protection and control equipment and the construction of overhead (OH) 115 kV line using 2-795 MCM ACSR per phase on steel poles with an approximate length of 5 km.

There is a need to secure the reliability of 115 kV system in case MERALCO will not be allowed to acquire ownership of the switching station. As an alternative, the Grace Park Malabon 115 kV line may be constructed so that if there is trouble/fault in the Navotas Fishport Switching Station and the same causes outage to Malabon-TMO-Grace Park 115 kV line there will be an N-1 provision for the Malabon and Grace Park substations. However, this will not resolve all possible system constraints such as overloading of power transformers of Balintawak Delivery Point Substation during N-1 in case of fault/roubles in Navotas Fishport Switching Station.

Project Cost (PhP): 133.44 M

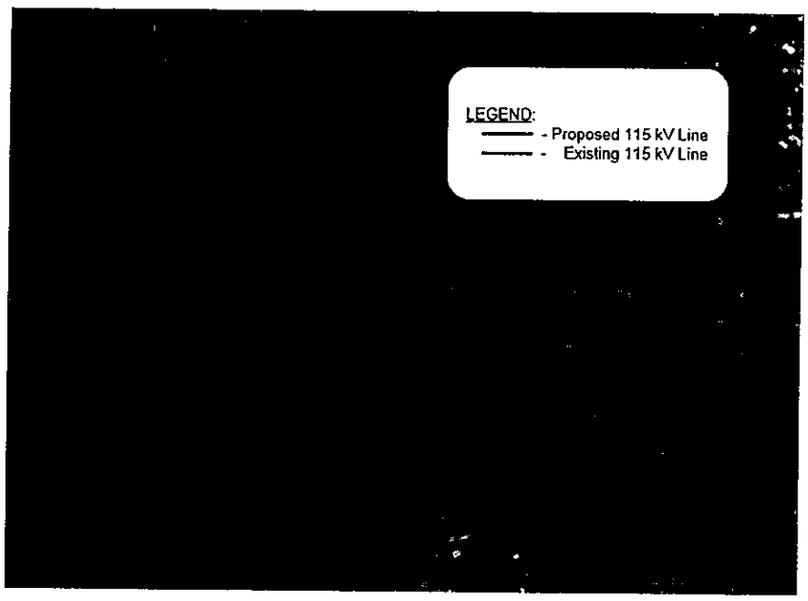


Table 4: Comparison of Project Alternatives:

Alternative	Advantages	Disadvantages
Alternative 1 Acquisition of 115 kV Line and 115 kV Switchyard at Navotas Fishport Complex	MERALCO can ensure proper maintenance of the TMO switching station and equipment thereat. Thus, risks and faults of said switching	There is no significant disadvantage

	station will be minimized if not totally prevented; Higher probability of uninterrupted EG connection thru properly maintained switching station results to the following: •Improvement of reliability of the Malabon-TMO-Grace Park 115 kV line so as to avoid any N-1 problem with Malabon and Grace Park substations; and •System loss reduction The implementation of this alternative will also address the N-1 deficiency at Balintawak DP substation and strengthen the 115 kV subtransmission system. There is no need to acquire property (lot) and secure ROW for 115 kV line works. This will save time of both MERALCO and TMO from coordinating with each other in relation to TMO for the enhancement, repair or replacement of the equipment within the switching so. Provides MERALCO full maintenance and operational control to facilitate restoration in a shorter time.	
Alternative 2 Construction of Grace-Park Malabon 115 kV Line	It will provide N-1 contingency of the Malabon and Grace Park substations during outage Malabon-TMO-Grace Park 115 kV line caused by the trouble in the Navotas Fishport Switching Station.	MERALCO will not be able to conduct proper maintenance of the TMO switching station and equipment thereat. Thus, possible risks and faults of said switching station may not be immediately addressed and the same may pose threats/impacts to the 115 kV line; There will still be risks to Grace Park-TMO-Malabon 115 kV corridor because the TMO Switching Station forms part of the MERALCO Subtransmission system. Although the Malabon and Grace Park Substations would have a 2nd 115 kV feed, there would still be overloading of Balintawak Delivery Point Substation remaining 3-300 MVA power transformers during N-1 in case of fault/roubles in Navotas Fishport Switching Station. Right-of-Way will be hard to secure in this urban area.

		Takes longer time to complete than Alternative 1 and will not be completed having the same target. This alternative is more expensive than alternative 1.

Table 5: Financial Evaluation of Project Alternatives:

Alternative	Project Name	Project Cost (P in M)	NPV (P in M)	FIRR	B/C Ratio
1	Acquisition of 115 kV Line and 115 kV Switchyard at Navotas Fishport Complex	118.48	55.05	18.96%	1.40
2	Construction of Grace-Park Malabon 115 kV Line	133.44	36.95	17.41%	1.24

IV. Recommendation

Based on the result of technical and financial evaluation, Alternative 1 or 'Acquisition of 115 kV Line and 115 kV Switchyard at Navotas Fishport Complex' will address all of the above-mentioned system constraints and deficiencies. Alternative 1 is better than Alternative 2 since the former can prevent the overloading of the remaining three (3) 300 MVA banks of Balintawak 230kV Delivery Point substation during N-1 when the EG disconnected due to trouble in the said switching station. Further, MERALCO's acquisition of said assets will also result to the following: (a) improved reliability of the Malabon-TMO-Grace Park 115 kV line and this will therefore avoid any N-1 problem with Malabon and Grace Park substations; and (b) system loss reduction. With this project, MERALCO will be able to maintain the switching station and other associated equipment as well as immediately address any concerns/problems in relation thereto.

Annex A: Expenditure Summary
Annex B: Cost-Benefit Analysis
Annex C: Project Gantt Chart

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
US$ Expenditure (including all international expenditure)

MERALCO

PROJECT NAME: Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fishport Complex		CAPITAL EXPENDITURE - MAJOR PROJECTS (US$ COMPONENT)			
		Forecast (US$, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)				
	Structures and Improvements (Distribution Purposes)				
	Station Equipment				
	Power transformers				
	Switchgear				
	Protective equipment				
	Metering & control equipment				
	Communications equipment				
	Other station equipment				
	Poles, Towers and Fixtures - Distribution				
	Overhead Conductors and Devices - Distribution				
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	0	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		0	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on Jun 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
Local Expenditure

MERALCO

PROJECT NAME: Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fishport Complex		CAPITAL EXPENDITURE - MAJOR PROJECTS (LOCAL COMPONENT)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	300,000			
	Structures and Improvements (Distribution Purposes)	13,635,182			
	Station Equipment				
	Power transformers				
	Switchgear	25,749,280			
	Protective equipment	13,332,115			
	Metering & control equipment	5,658,860			
	Communications equipment				
	Other station equipment	14,486,232			
	Poles, Towers and Fixtures - Distribution	43,186,739			
	Overhead Conductors and Devices - Distribution	2,129,772			
	Underground Conduits - Distribution				
	Underground Conductors and Devices - Distribution				
	Distribution Transformers				
	Power Conditioning Equipment				
	Meters, Metering Instruments & Metering Transformers - Distribution				
	Information technology equipment (distribution)				
	Regulated Entity Property on Consumer's Premises				
	Street Lights and Signal Systems				
	Submarine Cables				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
Subtrans	Transferred subtransmission assets				
	Sub-total Regulated Distribution Services	118,478,179	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)				
	Overhead Conductors and Devices (Customer)				
	Underground Conduits (Customer)				
	Underground Conductors and Devices (Customer)				
	Line Transformers (Customer)				
	Information Systems Equipment (Connection)				
Non-network	Land and Land Rights (non-network)				
	Structures and Improvements (non-network)				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment (non-network)				
	Power-operated Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
Materials	Materials and supplies (including spares)				
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)				
	Land and land rights				
	Structures and improvements				
	Office Furniture and Equipment				
	Transportation Equipment				
	Stores Equipment				
	Tools, Shop and Garage Equipment				
	Laboratory Equipment				
	Information Systems Equipment				
	Communication Plant and Equipment				
	Miscellaneous Equipment				
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		118,478,179	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX A: EXPENDITURE SUMMARY

MANILA ELECTRIC COMPANY
Capital Expenditure - Major Projects
Total Expenditure, local and foreign (PhP, real)

MERALCO

PROJECT NAME: Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fishport Complex		CAPITAL EXPENDITURE - MAJOR PROJECTS (TOTAL, REAL)			
		Forecast (PhP, real) (Regulatory Year)			
Category		2016	2017	2018	2019
Regulated Distribution Services Assets					
Network	Land and Land Rights (Distribution Purposes)	300,000	0	0	0
	Structures and Improvements (Distribution Purposes)	13,635,182	0	0	0
	Station Equipment				
	Power transformers	0	0	0	0
	Switchgear	25,749,280	0	0	0
	Protective equipment	13,332,115	0	0	0
	Metering & control equipment	5,658,860	0	0	0
	Communications equipment	0	0	0	0
	Other station equipment	14,486,232	0	0	0
	Poles, Towers and Fixtures - Distribution	43,186,739	0	0	0
	Overhead Conductors and Devices - Distribution	2,129,772	0	0	0
	Underground Conduits - Distribution	0	0	0	0
	Underground Conductors and Devices - Distribution	0	0	0	0
	Distribution Transformers	0	0	0	0
	Power Conditioning Equipment	0	0	0	0
	Meters, Metering Instruments & Metering Transformers - Distribution	0	0	0	0
	Information technology equipment (distribution)	0	0	0	0
	Regulated Entity Property on Consumer's Premises	0	0	0	0
	Street Lights and Signal Systems	0	0	0	0
	Submarine Cables	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
Subtrans	Transferred subtransmission assets	0	0	0	0
	Sub-total Regulated Distribution Services	118,478,179	0	0	0
Distribution Connection Services Assets					
Network	Poles, Towers and Fixtures (Customer)	0	0	0	0
	Overhead Conductors and Devices (Customer)	0	0	0	0
	Underground Conduits (Customer)	0	0	0	0
	Underground Conductors and Devices (Customer)	0	0	0	0
	Line Transformers (Customer)	0	0	0	0
	Information Systems Equipment (Connection)	0	0	0	0
Non-network	Land and Land Rights (non-network)	0	0	0	0
	Structures and Improvements (non-network)	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment (non-network)	0	0	0	0
	Power-operated Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
Materials	Materials and supplies (including spares)	0	0	0	0
	Sub-total Distribution Connection Assets	0	0	0	0
Regulated Retail Services Assets					
	Meters, Instruments & Metering Transformers (Consumer Consumption Metering)	0	0	0	0
	Land and land rights	0	0	0	0
	Structures and improvements	0	0	0	0
	Office Furniture and Equipment	0	0	0	0
	Transportation Equipment	0	0	0	0
	Stores Equipment	0	0	0	0
	Tools, Shop and Garage Equipment	0	0	0	0
	Laboratory Equipment	0	0	0	0
	Information Systems Equipment	0	0	0	0
	Communication Plant and Equipment	0	0	0	0
	Miscellaneous Equipment	0	0	0	0
	Sub-total Regulated Retail Services Assets	0	0	0	0
TOTAL CAPEX		118,478,179	0	0	0

Notes : References to Regulatory Years are for the 12-month period ending on June 30 of the year noted.

ANNEX B: COST BENEFIT ANALYSIS CALCULATION

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: ACQUISITION OF 115 kV LINE AND 115 kV SWITCHYARD YARD AT THE NAVOTAS FISHPORT COMPLEX (ALTERNATIVE 1)
YEAR : 2016

		INVESTMENTS			EXPENSES						REVENUE							
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH)	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX	FREE CASH FLOW
					W/ LOSS												(W/ DEPRECIATION ADDED BACK)	
0	2016	118,478	-	118,478	6.94	7.27	-					8.81	-	-	-	-	-	(118,478)
1	2017		10,013	10,013	7.23	7.57	114,235	5,924	3,949	124,109	15,098	9.17	138,404	14,295	4,288	10,006	13,956	3,942
2	2018		821	821	7.52	7.87	124,087	5,924	3,949	133,960	15,760	9.54	150,313	16,353	4,906	11,447	15,396	14,575
3	2019		892	892	7.83	8.19	134,789	5,924	3,949	144,662	16,451	9.92	163,248	18,586	5,576	13,010	16,960	16,068
4	2020		969	969	8.14	8.53	146,413	5,924	3,949	156,286	17,172	10.32	177,296	21,010	6,303	14,707	18,656	17,687
5	2021		1,052	1,052	8.47	8.87	159,040	5,924	3,949	168,913	17,925	10.74	192,552	23,639	7,092	16,548	20,497	19,445
6	2022		1,242	1,242	8 82	9.23	172,755	7,109	3,949	183,813	18,711	11.18	209,122	25,308	7,592	17,716	21,665	20,423
7	2023		1,242	1,242	9.18	9.61	187,654	7,109	3,949	198,712	19,531	11.63	227,117	28,405	8,521	19,883	23,833	22,591
8	2024		1,349	1,349	9.55	10.00	203,837	7,109	3,949	214,895	20,388	12.10	246,661	31,765	9,530	22,236	26,185	24,836
9	2025		1,465	1,465	9.94	10.40	221,417	7,109	3,949	232,475	21,282	12.59	267,886	35,412	10,624	24,788	28,738	27,273
10	2026		1,591	1,591	10 34	10 83	240,512	7,109	3,949	251,570	22,215	13.10	290,939	39,369	11,811	27,558	31,508	29,916
11	2027		1,827	1,827	10.76	11.27	261,254	8,293	3,949	273,496	23,189	13.63	315,975	42,478	12,743	29,735	33,684	31,857
12	2028		1,878	1,878	11.20	11.72	283,785	8,293	3,949	296,027	24,206	14.18	343,165	47,138	14,141	32,996	36,946	35,068
13	2029		2,039	2,039	11.65	12.20	308,258	8,293	3,949	320,501	25,267	14.75	372,695	52,194	15,658	36,536	40,485	38,446
14	2030		2,215	2,215	12.13	12.70	334,843	8,293	3,949	347,086	26,375	15.35	404,767	57,681	17,304	40,377	44,326	42,111
15	2031		2,406	2,406	12.62	13.21	363,720	8,293	3,949	375,963	27,531	15.97	439,598	63,635	19,091	44,545	48,494	46,088
16	2032		2,713	2,713	13.13	13.75	395,088	9,478	3,949	408,515	28,739	16.61	477,427	68,912	20,674	48 238	52.188	49,475
17	2033		2,839	2,839	13.66	14 31	429,160	9,478	3,949	442,588	29,999	17.28	518,511	75,923	22,777	53,146	57,096	54,256
18	2034		3,084	3,084	14.22	14.89	466,171	9,478	3,949	479,599	31,314	17 98	563,131	83,532	25,060	58,472	62,422	59,337
19	2035		3,350	3,350	14.80	15.49	506,375	9,478	3,949	519,802	32,687	18.71	611,590	91,788	27,537	64,252	68,201	64,851
20	2036		3,639	3,639	15.40	16.12	550,045	9,478	3,949	563,472	34,120	19.47	664,220	100,748	30,224	70,523	74,473	70,834
21	2037		4,052	4,052	16.02	16 78	597,481	10,663	3,949	612,093	35,616	20.25	721,379	109,285	32,786	76,500	80,449	76,397
22	2038		4,294	4,294	16.67	17.46	649,008	10,663	3,949	663,621	37,178	21.07	783,456	119,836	35,951	83,885	87,834	83,540
23	2039		4,664	4,664	17.35	18.17	704,980	10,663	3,949	719,592	38,808	21.93	850,876	131,284	39,385	91,899	95,848	91,184
24	2040		5,067	5,067	18.05	18.90	765,778	10,663	3,949	780,390	40,510	22.81	924,098	143,708	43,112	100,596	104,545	99,478
25	2041		5,503	5,503	18.79	19.67	831,819	10,663	3,949	846,431	42,286	23.73	1,003,621	157,189	47,157	110,033	113 982	108,478
26	2042		6,077	6,077	19.55	20 47	903,556	11,848	3,949	919,353	44,140	24.69	1,089,987	170,634	51,190	119,444	123,393	117,316
27	2043		6,494	6,494	20.34	21.30	981,479	11,848	3,949	997,276	46,076	25.69	1,183,786	186,509	55,953	130,556	134,506	128 012
28	2044		7,054	7,054	21.17	22.17	1,066,123	11,848	3,949	1,081,920	48,096	26.73	1,285,656	203,736	61,121	142,615	146,565	139,511
29	2045		7,662	7,662	22.03	23.07	1,158,067	11,848	3,949	1,173,864	50,205	27.81	1,396,294	222,430	66,729	155,701	159,650	151,988
30	2046		8,323	8,323	22.92	24.00	1,257,939	11,848	3,949	1,273,736	52,407	28.94	1,516,452	242,716	72,815	169,901	173,851	165,528
															NPV			55,049
															IRR			18.96%
															B/C			1 40

ANNEX B: COST BENEFIT ANALYSIS CALCULATION

FINANCIAL ANALYSIS
(COST X 1,000)
PROJECT: CONSTRUCTION OF GRACE PARK-MALABON 115 KV LINE (ALTERNATIVE 2)
YEAR : 2016

		INVESTMENTS			EXPENSES						REVENUE							
REF	YEAR	CAPITAL EXPENDITURE	CHANGE IN WORKING CAPITAL	TOTAL INVESTMENTS	PURCH. POWER (P/KWH)	PURCH. POWER (P/KWH)	PURCH. POWER COST	O&M COST	DEPRECIATION	TOTAL EXPENSES	ENERGY SALES (MWH)	SELLING RATE (P/KWH)	TOTAL REVENUE	EARNINGS BEFORE TAX	CORPORATE INCOME TAX	EARNINGS AFTER TAX	EARNINGS AFTER TAX	FREE CASH FLOW
					W/ LOSS												(W/ DEPRECIATION ADDED BACK)	
0	2016	133,437	-	133,437	6.94	7.27	-					8.81	-	-	-	-	-	(133,437)
1	2017		10,076	10,076	7.23	7.57	114,235	6,672	4,448	125,355	15,098	9.17	138,404	13,048	3,915	9,134	13,582	3,506
2	2018		821	821	7.52	7.87	124,087	6,672	4,448	135,207	15,760	9.54	150,313	15,106	4,532	10,574	15,022	14,201
3	2019		892	892	7.83	8.19	134,789	6,672	4,448	145,908	16,451	9.92	163,248	17,340	5,202	12,138	16,586	15,694
4	2020		969	969	8.14	8.53	146,413	6,672	4,448	157,533	17,172	10.32	177,296	19,763	5,929	13,834	18,282	17,313
5	2021		1,052	1,052	8.47	8.87	159,040	6,672	4,448	170,159	17,925	10.74	192,552	22,393	6,718	15,675	20,123	19,071
6	2022		1,254	1,254	8.82	9.23	172,755	8,006	4,448	185,210	18,711	11.18	209,122	23,912	7,174	16,738	21,186	19,932
7	2023		1,242	1,242	9.18	9.61	187,654	8,006	4,448	200,108	19,531	11.63	227,117	27,009	8,103	18,906	23,354	22,113
8	2024		1,349	1,349	9.55	10.00	203,837	8,006	4,448	216,292	20,388	12.10	246,681	30,369	9,111	21,258	25,706	24,358
9	2025		1,465	1,465	9.94	10.40	221,417	8,006	4,448	233,871	21,282	12.59	267,886	34,016	10,205	23,811	28,259	26,794
10	2026		1,591	1,591	10.34	10.83	240,512	8,006	4,448	252,966	22,215	13.10	290,939	37,973	11,392	26,581	31,029	29,438
11	2027		1,840	1,840	10.76	11.27	261,254	9,341	4,448	275,042	23,189	13.63	315,975	40,932	12,280	28,653	33,101	31,261
12	2028		1,878	1,878	11.20	11.72	283,785	9,341	4,448	297,573	24,206	14.18	343,165	45,592	13,678	31,914	36,362	34,485
13	2029		2,039	2,039	11.65	12.20	308,258	9,341	4,448	322,047	25,267	14.75	372,695	50,648	15,195	35,454	39,902	37,862
14	2030		2,215	2,215	12.13	12.70	334,843	9,341	4,448	348,631	26,375	15.35	404,767	56,136	16,841	39,295	43,743	41,527
15	2031		2,406	2,406	12.62	13.21	363,720	9,341	4,448	377,508	27,531	15.97	439,598	62,090	18,627	43,463	47,911	45,504
16	2032		2,725	2,725	13.13	13.75	395,088	10,675	4,448	410,210	28,739	16.61	477,427	67,217	20,165	47,052	51,500	48,774
17	2033		2,839	2,839	13.66	14.31	429,160	10,675	4,448	444,283	29,999	17.28	518,511	74,228	22,268	51,960	56,408	53,568
18	2034		3,084	3,084	14.22	14.89	466,171	10,675	4,448	481,294	31,314	17.98	563,131	81,837	24,551	57,286	61,734	58,649
19	2035		3,350	3,350	14.80	15.49	506,375	10,675	4,448	521,497	32,687	18.71	611,590	90,093	27,028	63,065	67,513	64,163
20	2036		3,639	3,639	15.40	16.12	550,045	10,675	4,448	565,168	34,120	19.47	664,220	99,053	29,716	69,337	73,785	70,145
21	2037		4,064	4,064	16.02	16.78	597,481	12,009	4,448	613,938	35,616	20.25	721,379	107,441	32,232	75,208	79,656	75,592
22	2038		4,294	4,294	16.67	17.46	649,008	12,009	4,448	665,466	37,178	21.07	783,456	117,991	35,397	82,594	87,041	82,748
23	2039		4,664	4,664	17.35	18.17	704,980	12,009	4,448	721,437	38,808	21.93	850,876	129,439	38,832	90,608	95,056	90,391
24	2040		5,067	5,067	18.05	18.90	765,778	12,009	4,448	782,235	40,510	22.81	924,098	141,863	42,559	99,304	103,752	98,686
25	2041		5,503	5,503	18.79	19.67	831,819	12,009	4,448	848,276	42,286	23.73	1,003,621	155,344	46,603	108,741	113,189	107,686
26	2042		6,089	6,089	19.55	20.47	903,556	13,344	4,448	921,347	44,140	24.69	1,089,987	168,640	50,592	118,048	122,496	116,406
27	2043		6,494	6,494	20.34	21.30	981,479	13,344	4,448	999,271	46,076	25.69	1,183,786	184,515	55,354	129,160	133,608	127,115
28	2044		7,054	7,054	21.17	22.17	1,066,123	13,344	4,448	1,083,915	48,096	26.73	1,285,656	201,742	60,523	141,219	145,667	138,614
29	2045		7,662	7,662	22.03	23.07	1,158,067	13,344	4,448	1,175,858	50,205	27.81	1,396,294	220,436	66,131	154,305	158,753	151,091
30	2046		8,323	8,323	22.92	24.00	1,257,939	13,344	4,448	1,275,731	52,407	28.94	1,516,452	240,722	72,216	168,505	172,953	164,630
															NPV			36,947
															IRR			17.41%
															B/C			1.24

ANNEX C: GANTT CHART

Name of Project: Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fishport Complex
Target Completion: October 2016

Activity	2016												2017					
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Acquisition of 115 kV Switchyard and115 kV Line																		

ANNEX "B"

Republic of the Philippines
ENERGY REGULATORY COMMISSION
San Miguel Avenue, Pasig City

IN THE MATTER OF THE APPLICATION FOR APPROVAL OF EMERGENCY AND/OR URGENT MAJOR CAPITAL EXPENDITURE (CAPEX) PROJECTS,

ERC CASE NO. ____

MANILA ELECTRIC COMPANY (MERALCO),
Applicant.
x----------x

JUDICIAL AFFIDAVIT
OF ENGR. FROILAN J. SAVET

I, **FROILAN J. SAVET**, Filipino, of legal age, married and with office address at 5th floor, Technical Services Building, Meralco Center, Ortigas Avenue, Pasig City, Philippines after being sworn to in accordance with law, fully conscious that I am answering the questions under oath, hereby depose and state THAT:

Q1: What are your professional and educational qualifications?

A1: I am a Professional Electrical Engineer, with PRC No. 0003687. I passed the March 2015 Technical Evaluation for the Upgrading as Professional Electrical Engineer. I also passed the April 1992 Board Examination for Assistant Electrical Engineer and was the 2nd placer of the said exam.

My educational background are as follows:

- Master of Science in Electrical Engineering (Major in Power), U.P. Diliman, October 2003

- Bachelor of Science in Electrical Engineering, Mapua Institute of Technology (MIT), May 1990, Silver Medalist

Q2: Where are you presently employed?

A2: I am presently employed at MERALCO as Senior Assistant Vice President and Head of Network Planning and Project Management (NPPM) Office.

Q3: How long have you been employed by MERALCO?

A3: I have been employed by MERALCO for twenty five (25) years. I started out as a System Planning Engineer and have gained experience in electric system planning, project management, substation standards, substation design and construction, and distribution connection.

Q4: What are your duties and responsibilities as Senior Assistant Vice President and Head of MERALCO's NPPM?

A4: The following are, among other things, my principal duties and responsibilities:

- Conceptualization of plans for the timely expansion of Meralco's sub-transmission lines, substation, and distribution lines;
- Preparation of planning standards or criteria for the said asset groups;
- Management of the completion of MERALCO sub-transmission lines, substation and distribution lines;
- Management of the network asset planning processes;
- Preparation, review and approval of documents necessary to implement major electrical capital expenditure projects; and
- Compliance to the reportorial requirements of regulatory bodies in relation to electric system expansion.

Q5: Are you familiar with the Application of MERALCO entitled: ***"IN THE MATTER OF THE APPLICATION FOR APPROVAL OF EMERGENCY AND/OR URGENT MAJOR CAPITAL EXPENDITURE (CAPEX) PROJECTS"***?

A5: Yes. I am familiar with said Application as I have participated in the preparation of the said Application as well as its supporting documents.

Q6: What is the Application all about?

A6: In brief, the Application seeks the Energy Regulatory Commission's (ERC) approval of emergency and/or urgent major Capital Expenditure (CAPEX) projects.

Q7: Why is MERALCO filing the instant Application?

A7: The last year of MERALCO's Third Regulatory Period expired on 30 June 2015. The Fourth Regulatory Period (4RP) for the First Entry Group commenced on 1 July 2015 and shall end on 30 June 2019. However, the Honorable Commission has not yet issued the relevant rules to govern the reset process and the filing by the DUs of their reset application. Pending the reset process, MERALCO needs to secure

approval of its forecast CAPEX for the period after 1 July 2015. MERALCO then filed an Application for Approval of its proposed Capital Expenditure (CAPEX) projects for Regulatory Year (RY) 2016 (ERC Case 2015-016 RC).

On 15 June 2016, MERALCO received a copy of the Decision dated 12 April 2016 which partially approved MERALCO's CAPEX program for RY 2016. However, the Honorable Commission also deferred the following projects, without prejudice to refilling:

Project Code	Project Title
MER-2	Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)
MER-4	Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer
MER-11	Rebuilding of Portion of Dasmarinas-FCIE 115kV Line
MER-13	Cut-in of Pinagbuhatan Switching Station
MER-14	Replacement of Power Transformer No.2 at Mandaluyong Substation
MER-15	Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation
MER-20	Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex

Hence, MERALCO is filing the instant Application. Further, this application is being filed pursuant to the Honorable Commission's Resolution No. 26, Series of 2009, entitled: "*Resolution Amending the Rules for Approval of Regulated Entities' Capital Expenditure Projects*". Emergency Capital Expenditure projects are those that require immediate implementation during an event that is not a force majeure or fortuitous event in order to maintain safe, reliable, secure and efficient operation of the power system to meet the growing and future needs of its more than 5.78 million customers.

Q8: During the pendency of the RY2016 Application, did MERALCO inform the Honorable Commission of the urgency of these projects?

A8: Yes. In fact, MERALCO filed several manifestations and motions with the Honorable Commission, namely:

a. On 10 April 2015, MERALCO filed an Urgent Motion for Issuance of a Provisional Authority ("Urgent Motion") dated 8 April 2015

requesting that it be allowed to immediately implement its priority projects, the list of which was attached to said Urgent Motion.

b. On 15 April 2015, MERALCO filed a Motion of even date attaching a detailed list showing a further breakdown of the projects into business segments especially those that are shared by different business segments.

c. On 11 June 2015, MERALCO filed a Very Urgent Motion for Authority to Commence Implementation of RY 2016 Priority Projects with an attached list of the RY 2016 priority projects ("Very Urgent Motion").

d. On 2 September 2015, MERALCO again filed a Very Urgent Motion to Resolve, emphasizing the urgency to implement its CAPEX projects to ensure reliability and quality of service and avoid further delays.

e. On 4 February 2016, MERALCO filed a Manifestation, dated 2 February 2016, informing the Honorable Commission that in the interest of complying with its obligation to provide safe, adequate, reliable and efficient electric service to its customers, Applicant has implemented four (4) of its proposed major CAPEX projects for RY 2016.

f. On 1 April 2016, MERALCO filed another Manifestation of even date informing the Honorable Commission that in the pursuit of its obligation to provide safe, reliable and continuous electric service to its customers, MERALCO was constrained to implement additional priority CAPEX projects to address the need for capacity upgrades in order to avert multiple power interruptions to its customers and maintain a robust electric distribution infrastructure.

Q9: During the pendency of the RY2016 Application, why did MERALCO implement the projects under this Application?

A9: During its pendency however, MERALCO had no other recourse but to implement several priority projects included in its Application in order to ensure continuous compliance with safety and performance standards of the distribution system, and at the same time, provide the needed capacity for the forecasted growth of future electricity demand within MERALCO's franchise area. These are:

Project Title	**Cost (in PhP)**
Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)	162,580,219.00

Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer	68,161,085.00
Rebuilding of Portion of Dasmarinas-FCIE 115kV Line	75,913,229.00
Replacement of Power Transformer No.2 at Mandaluyong Substation	52,908,466.00

We note that these projects, while not emergency at the time of their original filing under ERC Case No. 2015-016 RC, have become critical and had to be immediately implemented as an emergency CAPEX in order to ensure continuous, safe and reliable electric service and compliance with safety and performance standards of the distribution system. More importantly, the immediate implementation of these projects averted emergency conditions or situations, and at the same time, provided the needed capacity intended for the forecasted growth of future electricity demand within MERALCO's franchise area.

In addition, thereto, MERALCO is also refiling the following major capital projects:

Project Title	**Cost (in PhP)**
Cut-in of Pinagbuhatan Switching Station	58,635,873.00
Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation	46,443,027.00
Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex	118,478,179.00

These three (3) projects are necessary to be acquired immediately in order to readily and quickly address contingencies requiring immediate response. The cut-in of Pinagbuhatan Switching Station project is intended to comply with the N-1 contingency and thus address system constraints and deficiencies. In the case of the spare power transformer, the same is urgently needed in order to have a ready replacement in the event of a failure of MERALCO's commissioned 83MVA power transformers. This will definitely prevent any prolonged and sustained power interruption in the event of a transformer failure. On the other hand, the acquisition of the 115kV line and switchyard at Navotas is urgently needed in order to have full control of such asset that are already part of MERALCO's distribution system.

Q10: You mentioned earlier that you have participated in the preparation of supporting documents to the Application. What are these projects included in the Application and their respective supporting documents?

A10: Annex "A" of the Application elaborates in detail the different Project Information Summaries and their respective supporting documents: (a) Technical and Economic Analysis; (b) Cost Estimates; (c) Expenditure Summary; (d) Cost Benefit Analysis Calculation; and (e) Gantt Chart of the following projects:

Project Title
Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)
Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer
Rebuilding of Portion of Dasmarinas-FCIE 115kV Line
Cut-in of Pinagbuhatan Switching Station
Replacement of Power Transformer No.2 at Mandaluyong Substation
Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation
Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex

(The witness showed and identified the original copies of the above-mentioned documents to the counsel.)

Q11: How much are MERALCO's costs for the emergency and/or urgent CAPEX projects covered by the Application?

A11: MERALCO's costs for the emergency and/or urgent CAPEX projects are:

Project Title	Cost (in PhP)
Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)	162,580,219.00
Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer	68,161,085.00
Rebuilding of Portion of Dasmarinas-FCIE 115kV Line	75,913,229.00
Cut-in of Pinagbuhatan Switching Station	58,635,873.00

Replacement of Power Transformer No.2 at Mandaluyong Substation	52,908,466.00
Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation	46,443,027.00
Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex	118,478,179.00

Q12: What will be the impact of MERALCO's proposed CAPEX Program on its current rates?

A12: The CAPEX projects have no immediate impact on MERALCO's rates. However, in light of the resulting benefits of MERALCO's RY 2017 CAPEX Program in the overall service to the electricity consumers, MERALCO respectfully submits that the building block components, particularly the return of capital and return on capital associated therewith, from the time it is put in service and considered used and useful, should be considered as a deferred amount to be included in MERALCO's 4RP reset calculations.

Q13: Can you tell us why you are executing this Judicial Affidavit?

A13: I am executing this Judicial Affidavit to attest to the truthfulness and veracity of the foregoing statements and in support of MERALCO's Application.

IN WITNESS WHEREOF, I have hereunto affixed my signature this 12th day of August 2016 at Pasig City, Philippines.

FROILAN J. SAVET
Affiant

SUBSCRIBED AND SWORN to before me this 12th day of August 2016 by Engr. Froilan J. Savet exhibiting SSS ID with No. 3309022139.

Doc. No. 245;
Page No. 50;
Book No. IV;
Series of 2016.

ATTY. CARMEN GRACE S. RAMOS
NOTARY PUBLIC
Pasig, Pateros, Taguig & San Juan
Issued on July 13, 2015 at Pasig City
until December 31, 2016
Roll No. 55945; IBP No. 1023723; 01/08/16; RSM Chapter
PTR No. 1473409; 01/21/16; Pasig City
7th Floor, Lopez Bldg., Ortigas Ave., Pasig City

Republic of the Philippines)
City of Pasig)S.S.

ATTESTATION

I, **ADRIAN REX C. DIMALANTA**, of legal age, Filipino, with business address 7th floor, Lopez Building Meralco Center, Ortigas Avenue, Pasig City after being duly sworn depose and say:

1. I conducted the direct examination of ENGR. FROILAN J. SAVET, the witness to testify on matters in support of the Application entitled "**IN THE MATTER OF THE APPLICATION FOR APPROVAL OF EMERGENCY AND/OR URGENT MAJOR CAPITAL EXPENDITURE (CAPEX) PROJECTS,**" at the afore-mentioned business address;

2. I have faithfully recorded the questions asked and the corresponding answers that were given by the witness; and

3. Neither I nor any other person then present or assisting him coached the witness regarding his answers.

IN WITNESS WHEREOF, I have hereunto set my hand this 12th day of August 2016 at Pasig City.

ADRIAN REX C. DIMALANTA
Affiant

SUBSCRIBED AND SWORN to before me this 12th day of August 2016 by Atty. Adrian Rex Dimalanta who exhibited his Driver's License with No. N03-03-365433.

Doc. No. 246;
Page No. 51;
Book No. IV;
Series of 2016.

ATTY. CARMEN GRACE S. RAMOS
NOTARY PUBLIC
Pasig, Pateros, Taguig & San Juan
Issued on July 13, 2015 at Pasig City
until December 31, 2016
Roll No. 55945; IBP No. 1023723; 01/08/16; RSM Chapter
PTR No. 1473409; 01/21/16; Pasig City
7th Floor, Lopez Bldg., Ortigas Ave., Pasig City

ANNEX "C"

MERALCO

ORTIGAS AVENUE, PASIG CITY
0300 PHILIPPINES

SECRETARY'S CERTIFICATE

I, WILLIAM S. PAMINTUAN, a duly elected, qualified and incumbent Assistant Corporate Secretary of the Manila Electric Company (MERALCO), a corporation duly organized and existing under and by virtue of the laws of the Philippines, do hereby certify that:

At the regular meeting of the Board of Directors of the Company duly convened and held on February 23, 2015, at which meeting a quorum was present, acted throughout and voted, the following resolution amending the resolution of the Board on January 27, 2014 on the same subject, was approved and that said amendatory resolution is in full force and effect on the date hereof:

"RESOLVED, that the Board of Directors of the Manila Electric Company (MERALCO) authorize, as it hereby authorizes, Messrs. MANUEL V. PANGILINAN, Chairman, OSCAR S. REYES, President & Chief Executive Officer, SIMEON KEN R. FERRER, Corporate Secretary, ALFREDO S. PANLILIO, Senior Vice President, Head, Customer Retail Services and Head, Corporate Communication, RAMON B. SEGISMUNDO, Senior Vice President & Head, Human Resources & Corporate Services, ROBERTO R. ALMAZORA, Senior Vice President, RAFAEL L. ANDRADA, First Vice President & Treasurer, RUBEN B. BENOSA, First Vice President & Head, Corporate Logistics, Ms. IVANNA G. DELA PEÑA, First Vice President & Head, Regulatory Management Office, WILLIAM S. PAMINTUAN, First Vice President, Assistant Corporate Secretary, Compliance Officer and Head, Legal and Corporate Governance, RONNIE L. APEROCHO, First Vice President & Head, Networks, MARTHYN S. CUAN, Vice President & Head, Corporate Information and Technology, JOSE RONALD V. VALLES, Vice President and Head, Regulatory Affairs, MARIA ZARAH R. VILLANUEVA-CASTRO, Senior Assistant Vice President & Head, Corporate Legal Services, HORATIO ENRICO M. BONA, Assistant Vice President & Head, Litigation Team 2, RAUL G. CORALDE, Assistant Vice President & Head, Litigation Team 1, MICHELLE O. DELOS SANTOS-BONA, Assistant Vice President & Head, Legal Operations Support, EUGENE JUDE DENIS GERARD E. ALABANZA, Senior Manager & Head, Litigation Team 3, CORNELIO MANUEL C. DICCION, Manager & Legal Counsel, and any lawyer or employee of MERALCO that any of them may designate, name or appoint:

(1) to represent the Company, in the institution, prosecution, and defense of any claim, complaint, action, proceeding, petition, application, protest, suit, or case, for or against the Company, before any court, prosecutor's office, regulatory, quasi-judicial, or administrative body, agency, or office of the national or any local government;

(2) to sign, execute, and deliver in connection therewith the necessary or appropriate complaint, petition, application, position paper, memorandum, all types of pleadings and motions, verifications, affidavit-complaint, counter-affidavit, affidavit of merit, affidavit of desistance, affidavit of witness, and all other affidavits of whatever nature, certificate of non-forum shopping,

powers of attorney, certifications, and all other instruments as may be necessary or proper;

(3) to represent the Company or to designate, name, and appoint a representative or an attorney-in-fact in behalf of the company during the investigation, inquest, preliminary investigation, preliminary conference, pre-trial, mediation, conciliation, arbitration, trial, execution, and all other stages of or incidents related to the case, proceeding or action; to negotiate, enter into, and agree to an amicable settlement, compromise agreement, plea bargaining, admissions or stipulations of fact or documents, simplification of issues, limitation on the number of witnesses, alternative modes of dispute resolution, withdrawal, dismissal or waiver of claim or action; and to perform and execute any and all actions or deeds as may aid in the prompt disposition of such cases, proceedings, or actions filed in behalf of or against the Company;

"RESOLVED, FURTHER, that any previous resolution of the Board of Directors on the same subject matter that is inconsistent herewith shall be deemed terminated, superseded and revoked."

Pursuant to the above resolutions, it is hereby certified that MERALCO is authorized to file the Application with the Energy Regulatory Commission (ERC) entitled "IN THE MATTER OF THE APPLICATION FOR APPROVAL OF EMERGENCY AND/OR URGENT MAJOR CAPITAL EXPENDITURE (CAPEX) PROJECTS" and that Atty. JOSE RONALD V. VALLES, Vice President and Head, Regulatory Affairs, is an authorized representative and signatory of the Company with respect to the aforesaid application.

WITNESS THE SIGNATURE of the undersigned as such officer of the Company and its corporate seal hereunto affixed on this ____ day of August 2016.

AUG 12 2016

WILLIAM S. PAMINTUAN
Assistant Corporate Secretary

SUBSCRIBED AND SWORN to before me this AUG 12 2016 day of August 2016, affiant exhibited to me his Taxpayer Identification Number (TIN) 146-473-562, issued by the Bureau of Internal Revenue (BIR) as his competent evidence of identity.

Doc. No. 243;
Page No. 50;
Book No. IV;
Series of 2016.

ATTY. CARMEN GRACE S. RAMOS
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7th Floor, Lopez Bldg., Ortigas Ave., Pasig City

MERALCO

ORTIGAS AVENUE, PASIG CITY
0300 PHILIPPINES

FILE COPY

August 15, 2016

Office of the Sangguniang Panlungsod
City of Pasig

Gentlemen:

Attached is a copy of a verified Application entitled: **"IN THE MATTER OF THE APPLICATION FOR APPROVAL OF EMERGENCY AND/OR URGENT MAJOR CAPITAL EXPENDITURE (CAPEX) PROJECTS,"** with attached Annexes, being served to your Office, prior to its filing with the Energy Regulatory Commission (ERC).

Please acknowledge receipt thereof in the suggested form attached.

RECEIVED
SECRETARIAT
PASIG CITY COUNCIL

BY: Renjo Jose
DATE: 08/15/16 TIME: 3:47 pm

Very truly yours,

FRANCIS DINO S. ANTONIO
Head, Regulatory Legal

/mgmd/mgmd

641 8653
City Council Sec.

TEL. NO. (632) 631-2222 • (632) 16220

Malaya
Business Insight

People's Independent Media, Inc.
652 Sto. Tomas St.,
Intramuros, Manila
Tel. Nos. 527-1841 * 527-7242

AFFIDAVIT OF PUBLICATION

I, **Mitchell M. Encarnado,** Filipino of legal age, married and residing at No. 1131 Prudencio St., Sampaloc, Manila after having been duly sworn to in accordance with law, depose and say:

That I am the Advertising Director of Malaya Business Insight, a daily newspaper published, edited and printed in Metro Manila and circulated nationwide, from Monday to Friday with editorial and business offices at 652 Sto. Tomas St., Intramuros, Manila.

That the attached copy of Application from ERC, re: Manila Electric Company (MERALCO)-Applicant,

was published in Malaya Business Insight in its issue/s

August 15, 2016

In witness whereof, I signed this affidavit in Manila Philippines, this 15th day of Aug.'2016

MITCHELL M. ENCARNADO
Advertising Director

Subscribed and Sworn to before me this 15th day of Aug.'2016, in Mla, Philippines, affiant exhibiting to me his Res. Cert. No.*16013647 issued at Mla on *6-17-2015
SSS No.04-0922169-7.

ATTY. VICENTE C. CRUZ
Notary Public
Until 12-31-2017
PTR No. *2131633
Issued at Q.C., 1-4-2016
Roll No. 33952/NC-NP No. 003
On:
IBP: Lifetime Member No. 02322

Doc. No. 441
Page No. 89
Book No. III
Series of 2016

Malaya

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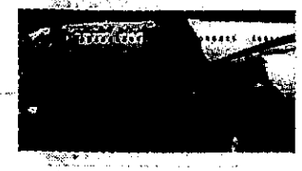
Int'l air traffic up; PAL leads local travel Page A2



DMCI gets P4.4B new contracts Page A3

2017 RH budget to double to P4.26B Page A4

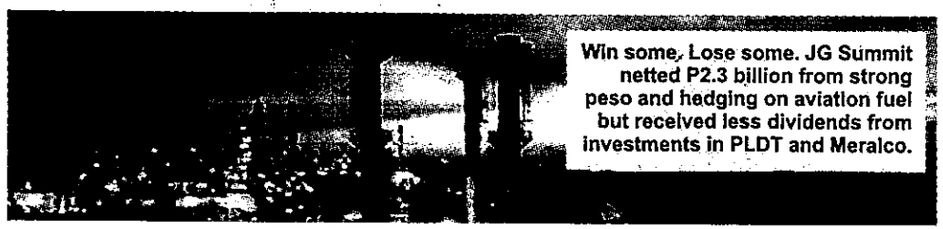
Asia loses its policy punch as consumers pile on debt Page A5

Strong peso, hedging net JG Summit P2B

BY RUELLE CASTRO

THE strong peso and hedging on aviation fuel netted JG Summit Holdings Inc. P2.3 billion for the first half of the year.

The conglomerate said valuation gains from fuel hedging rose to P1.3



Win some, Lose some. JG Summit netted P2.3 billion from strong peso and hedging on aviation fuel but received less dividends from investments in PLDT and Meralco.

DOLE HALTS OPERATIONS

Insurgency driving investors away

THE Pilipino Banana Growers and Exporters Association (PBGEA) said insurgents are driving away investors from Mindanao.

The New People's Army (NPA), according to Steve Antig, PBGEA executive director has forced Dole-Stanfilco to shut down operations.

Dole-Stanfilco, a multinational banana firm operating in Tagbina, Surigao del Sur, suffered a series of attacks by the NPA for refusing to pay revolutionary taxes.

PBGEA claimed that the NPA has burned a total of 19 container trucks and caused P20 million in losses to the company since 2010.

"The closure of plantations will lead to unemployment and then to poverty. There will be a domino effect on the local economy

Republic of the Philippines
ENERGY REGULATORY COMMISSION
San Miguel Avenue, Pasig City

IN THE MATTER OF THE APPLICATION FOR APPROVAL OF EMERGENCY AND/OR URGENT MAJOR CAPITAL EXPENDITURE (CAPEX) PROJECTS,

ERC CASE NO. ____

MANILA ELECTRIC COMPANY (MERALCO),

Applicant.

x----------x

APPLICATION

Applicant **MANILA ELECTRIC COMPANY (MERALCO)**, through the undersigned counsel, and to this Honorable Commission, most respectfully avers that:

1. Applicant MERALCO is a private corporation duly organized and existing under the laws of the Republic of the Philippines, with principal office located at Lopez Building, Ortigas Avenue, Barangay Ugong, Pasig City. It may be served with notices and other processes of this Honorable Commission through its undersigned counsel at the address indicated herein.
2. MERALCO has a legislative franchise to construct, operate and maintain an electric power distribution system for the conveyance of electric power to the end-users in the cities and municipalities of Metro Manila, Bulacan, Cavite and Rizal, and certain cities/municipalities/barangays in Batangas, Laguna, Quezon and Pampanga, pursuant to Republic Act No. 9209.
3. The Application is being filed pursuant to the Honorable Commission's Resolution No. 26, Series of 2009, entitled: *"Resolution Amending the Rules for Approval of Regulated Entities' Capital Expenditure Projects"*. Emergency Capital Expenditure projects are those that require immediate implementation during an event that is not a force majeure or fortuitous event in order to maintain safe, reliable, secure and efficient operation of the power system.
4. However, for purposes of recovering the capital cost of the emergency project through the DU's rates, the same will go through the process of evaluation by the Honorable Commission during the regulatory reset of the DU, unless there is basis for a rate-reopening in the current regulatory period, in accordance with the Rules for the Setting of Distribution Wheeling Rates (RDWR) for DUs.

DISCUSSION OF MERALCO'S EMERGENCY CAPEX PROGRAM

5. MERALCO is part of the First Entry Group of distribution utilities that entered Performance Based Regulation ("PBR"). In its Final Determination dated 6 June 2011 in ERC Case No. 2010-069 RC, the Honorable Commission set out its final position on the price control arrangements that would apply to MERALCO for the Third Regulatory Period (3RP) covering the period from 1 July 2011 to 30 June 2015, including its approval of MERALCO's proposed Capital Expenditure (CAPEX) Program, for the said period.
6. The last year of MERALCO's Third Regulatory Period expired on 30 June 2015. The Fourth Regulatory Period (4RP) for the First Entry Group commenced on 1 July 2015 and will end on 30 June 2019. However, the Honorable Commission has not yet issued the relevant rules to govern the reset process and the filing by the DUs of their reset application.
7. As such, on 9 February 2015, MERALCO filed an application for the approval of its CAPEX program for Regulatory Year (RY) 2016. The said application was docketed as ERC Case No. 2015-016 RC.
8. On 10 April 2015, MERALCO filed an Urgent Motion for Issuance of a Provisional Authority ("Urgent Motion") dated 8 April 2015 requesting that it be allowed to immediately implement its priority projects, the list of which was attached to said Urgent Motion.
9. On 15 April 2015, MERALCO filed a Motion of even date attaching a detailed list showing a further breakdown of the projects into business segments especially those that are shared by different business segments.
10. On 11 June 2015, MERALCO filed a Very Urgent Motion for Authority to Commence Implementation of RY 2016 Priority Projects with an attached list of the RY 2016 priority projects ("Very Urgent Motion").
11. On 2 September 2015, MERALCO again filed a Very Urgent Motion to Resolve, emphasizing the urgency to implement its CAPEX projects to ensure reliability and quality of service and avoid further delays.
12. On 4 February 2016, MERALCO filed a Manifestation, dated 2 February 2016, informing the Honorable Commission that in the interest of complying with its obligation to provide safe, adequate, reliable and efficient electric service to its customers, Applicant has implemented four (4) of its proposed major CAPEX projects for RY 2016.
13. On 1 April 2016, MERALCO filed another Manifestation of even date informing the Honorable Commission that in the pursuit of its obligation to provide safe, reliable and continuous electric service to its customers, MERALCO was constrained to implement additional priority CAPEX projects to address the need for capacity upgrades in order to avert multiple power interruptions to its customers and maintain a robust electric distribution infrastructure.
14. On 15 June 2016, MERALCO received a copy of the Decision dated 12 April 2016 which partially approved MERALCO's CAPEX program for RY 2016. However, the Honorable Commission also deferred the following projects, without prejudice to refiling:

Project Title	Cost (in PhP)
Cut-in of Pinagbuhatan Switching Station	58,635,873.00
Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation	46,443,027.00
Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex	118,478,179.00

These projects are necessary to be acquired immediately in order to readily and quickly address contingencies requiring immediate response. The cut-in of Pinagbuhatan Switching Station project is intended to comply with the N-1 contingency and thus address system constraints and deficiencies. In the case of the spare power transformer, the same is urgently needed in order to have a ready replacement in the event of a failure of MERALCO's commissioned 83MVA power transformers. This will definitely prevent any prolonged and sustained power interruption in the event of a transformer failure. On the other hand, the acquisition of the 115kV line and switchyard at Navotas is urgently needed in order to have full control of such asset that are already part of MERALCO's distribution system.

16. We note that these projects, while not emergency at the time of their original filing under ERC Case No. 2015-016 RC, have become critical and had to be immediately implemented as an emergency CAPEX in order to ensure continuous, safe and reliable electric service and compliance with safety and performance standards of the distribution system. More importantly, the immediate implementation of these projects averted emergency conditions or situations, and at the same time, provided the needed capacity intended for the forecasted growth of future electricity demand within MERALCO's franchise area.
17. In addition thereto, MERALCO is also refiling the following major capital projects:
18. In view of the foregoing, MERALCO is refiling the foregoing projects as Emergency/ Urgent Major CAPEX projects. It must be emphasized that MERALCO's customers benefitted from the implementation of these projects as the integrity and reliability of the distribution system was maintained.

    Copies of the different Project Information Summaries with supporting documents: (a) Technical and Economic Analysis; (b) Cost Estimates; (c) Expenditure Summary; (d) Cost Benefit Analysis Calculation; and (e) Gantt Chart of the projects are attached herewith as **Annexes "A" and series** and made integral parts hereof.
19. In further support of the Application, attached hereto as **Annex "B"** is the Judicial Affidavit of Mr. Froilan J. Savet, Senior Assistant Vice-President and Head of MERALCO's Network Planning and Project Management Office.

PRAYER

WHEREFORE, it is respectfully prayed to this Honorable Commission that the instant Application be **APPROVED** and that the building block components associated with the foregoing Major CAPEX projects from the time the same are put in service and considered use and useful be recognized as a deferred amount to be included in MERALCO's subsequent regulatory reset calculations.

Other relief just and equitable under the premises are likewise prayed for.

Pasig City, 12 August 2016.

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MERALCO Compound
Ortigas Avenue, Pasig City

By:

FRANCIS DINO S. ANTONIO
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IBP No. 1023724; 01/08/16; RSM
MCLE Compliance No. V-0004608; 6 November 2014

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Brgy. Ugong, Pasig City
Telephone Number 1622-2260; Fax No. 1622-3550

Republic of the Philippines)
Pasig City) S.S.

• FROM PAGE B1 •

ANTI-DRUGS

of the National Highway in Barangay EJC Montilla, one of two men on a motorcycle tailing him opened fire, hitting him several times in the body.

The killers escaped towards Isulan town. Two bullet casings for a .45 caliber pistol were recovered at the crime scene.

Police have yet to establish the motive behind the killing.

Guira's killing came a day after PO2 Ryan Casiban, a member of the Cordova Police Station in Cebu, was found dead Friday night, two days after he went missing.

Reports said Casiban wrote in the station's blotter book that retired Deputy Director General Marcelo Garbo and retired Chief Supt. and now Daanbantayan Mayor Vicente Loot were alleged protectors of drug syndicates.

Garbo and Loot were among the five generals named by President Duterte as involved in illegal drugs. The others were Director Joel Pagdilao, Chief Supt. Edgardo Tinio, and Chief Supt. Bernardo Diaz.

Reports said Casiban was found by residents of Barangay Agus in Lapu-lapu City at around 9 p.m. Friday in a grassy portion of the barangay.

Police crime scene operatives recovered from the victim a Glock .9 mm pistol, three magazines with 23 bullets, a pair of handcuffs, a cell phone, and a wallet containing various IDs and papers.

Casiban's colleagues said he was supposed to be on duty from 8 p.m. on Tuesday up to 8 a.m. Wednesday but left his post at around 3 a.m. Wednesday and went missing.

In Cavite, an alleged drug suspect was shot dead by still unidentified men in Dasmarinas City Saturday night.

Police identified the fatality as Roderick Permejo, who is in the city police's drug watch list. He died on the spot due to a lone gunshot wound in the head.

Reports said residents of Barangay San Francisco 2 heard a gunshot at around 7 p.m. and later saw the victim sprawled on the ground with a carton on top his body which bore the words "PUSHER AKO HUWAG TULARAN".

A bullet shell for a .45 caliber pistol was recovere the area.

CCP WITHDRAWS SUPPORT

The Communist Party o Philippines has withdraw support of President Dute campaign against the proli tion of illegal drugs, sayi has turned "anti-people anti-democratic."

The CPP said Duterte's drug war has "rapidly spi into a frenzied campaig extra-judicial killings and lante murders perpetrate the police and police-li criminal syndicates."

"The rights of tens u thousands of people are b violated as the criminal ju system is upturned," the said, adding that police have summarily executed peddlers and users.

"Hundreds have been k while 'resisting arrest' or v under custody and detentio police cars as well as in j added the CPP, the political of the New People's Army

Last month, the CPP airc support behind Duterte's drug campaign, saying it sl the President's "reprehensi the illegal drug trade and its effects on the Filipino peop

"The proliferation of il drugs, especially shabu, an concomitant rise in incic of violent crime serves the petuation of the ruling syst the CPP said then.

In its latest statement em to reporters on Saturday nigh CPP said no amount of killin put an end to the drug mena

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"As before, the NPA will tinue to exercise due proce dealing with suspects," suc those PNP officers present custody in Compostela V and Surigao del Sur," the g added, referring to Chief Arnold Ongachen, the chi police of Gov. Generoso t in Compostela Valley; and Richard Yu of Carmen t police station in Surigao de PNP who were abducted by rebels last May 29, and Ju respectively. – *With Victor R*

HEAVY

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Of the number, 5,139 families or 24,225 persons are housed in 52 evacuation centers – 2,657 families or 12,481 persons of them are from Metro Manila. Marikina had the most number of evacuees with 1,883 families or 8,895 persons.

The Armed Forces' Joint Task Force National Capital Region has deployed 10 trucks to Marikina City to assist the city's disaster risk reduction and management office in the distribution of relief goods.

Many areas in Metro Manila were flooded but NDRRMC executive director and concurrent Office of Civil Defense director Ricardo Jalad said floods have subsided as of 3 p.m. yesterday.

He attributed the flooding to clogged drainage systems in the metropolis.

Weather forecaster Aldczar Aurelio said the storm with in- p.m. yesterday and was mo towards Japan.

The LPA was seen over West Philippine Sea, goin China.

Aurelio said both weat disturbances are not expec to enter the country, "but enhance the southwest m soon in the next few days."

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Water level at Ipo dam rea 101.50 meters, breaching its ing level of 101 meters.

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Project Code	Project Title
MER-2	Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)
MER-4	Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer
MER-11	Rebuilding of Portion of Dasmarinas-FCIE 115kV Line
MER-13	Cut-in of Pinagbuhatan Switching Station
MER-14	Replacement of Power Transformer No.2 at Mandaluyong Substation
MER-15	Spare 83MVA 110 kV-34.5 kV-13.8 kV Power Transformer with OLTC for GIS Substation
MER-20	Acquisition of 115 kV Line and 115 kV Switchyard at the Navotas Fish Port Complex

15. In the light of said decision, Applicant hereby refiles the following as major emergency capital projects, to wit:

Project Title	Cost (in PhP)
Expansion of Bagbaguin 115 kV-34.5 kV Substation (2nd Bank)	162,580,219.00
Installation of 34.5 kV Metalclad Switchgear at Dasmariñas 83 MVA Power Transformer	68,161,085.00
Rebuilding of Portion of Dasmarinas-FCIE 115kV Line	75,913,229.00
Replacement of Power Transformer No.2 at Mandaluyong Substation	52,908,466.00

18. In view of the foregoing, MERALCO is refiling the foregoing projects as Emergency/ Urgent Major CAPEX projects. It must be emphasized that MERALCO's customers benefitted from the implementation of these projects as the integrity and reliability of the distribution system was maintained.

    Copies of the different Project Information Summaries with supporting documents: (a) Technical and Economic Analysis; (b) Cost Estimates; (c) Expenditure Summary; (d) Cost Benefit Analysis Calculation; and (e) Gantt Chart of the projects are attached herewith as **Annexes "A" and series** and made integral parts hereof.

19. In further support of the Application, attached hereto as **Annex "B"** is the Judicial Affidavit of Mr. Froilan J. Savet, Senior Assistant Vice-President and Head of MERALCO's Network Planning and Project Management Office.

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WHEREFORE, it is respectfully prayed to this Honorable Commission that the instant Application be **APPROVED** and that the building block components associated with the foregoing Major CAPEX projects from the time the same are put in service and considered use and useful be recognized as a deferred amount to be included in MERALCO's subsequent regulatory reset calculations.

Other relief just and equitable under the premises are likewise prayed for.

Pasig City, 12 August 2016.

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MERALCO Compound
Ortigas Avenue, Pasig City

By:

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IBP No. 1023724; 01/08/16; RSM
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Republic of the Philippines)
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VERIFICATION AND CERTIFICATE OF NON-FORUM SHOPPING

I, **JOSE RONALD V. VALLES** , Filipino, of legal age and with office address at 7th Floor, Lopez Building, Ortigas Avenue, Pasig City, after being sworn to in accordance with law, hereby depose and say, that –

1. I am the Vice-President and Head of the Regulatory Affairs Office of Applicant Manila Electric Company;
2. I have been authorized by the Board of Directors of the Applicant to cause the preparation and filing of the Instant Application. I have read and understood the allegations contained therein and the same are true and correct based on my personal knowledge and authentic records made available to me in the ordinary course of business of the Applicant;
3. I have been authorized by the Board of Directors to certify that Applicant has not heretofore commenced any other action or proceeding involving the same issues in the Supreme Court, the Court of Appeals, or any other tribunal or agency and to the best of my knowledge, no such action or proceeding is pending in the Supreme Court, the Court of Appeals, or any other tribunal or agency. A copy of the Secretary's Certificate authorizing the undersigned to sign this Verification and Certification is attached as Annex "C" of this Application and made integral part hereof;
4. Except for the application for the approval of Applicant's Capital Expenditure Program for Regulatory Year (RY) 2016 docketed as ERC Case No. 2015-016 RC, where a decision was already rendered by the Commission and a Motion for Reconsideration was filed by an intervenor, there is no other similar action or proceedings involving the same subject matter before the Commission or any other tribunal or agency. If I should hereafter learn that a similar action or proceeding has been filed or is pending before the Supreme Court, the Court of Appeals, or any other tribunal or agency, I undertake to report such fact within five (5) days there from to this Honorable Commission.

IN WITNESS WHEREOF, I have hereunto affixed my signature this 12th day of August 2016 at Pasig City, Philippines.

JOSE RONALD V. VALLES

SUBSCRIBED AND SWORN to before me this 12th day of August 2016, by affiant having exhibited his Social Security System (SSS) ID bearing the number 33-10900088.

Doc. No. 244;
Page No. 50;
Book No. IV;
Series of 2016.

Malaya – Aug. 15, 2016

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HEAVY

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Water levels at Angat Dam Bulacan, Magat Dam in Isabe Ambuklao and Binga dams Benguet, and San Roque Dam Pangasinan continued to be "l low and very far" from its resp tive spilling levels. – *With Ang Lopez de Leon and Evan Orias*

SENATE

with Cha-cha discussions ahead of the 2017 national budget.

"It's the committee chairman's prerogative to set the schedule of the hearing," said Jeeno Arellano, Drilon's media relations officer.

Drilon said, "The committee understands the importance of this undertaking as part of the agenda of the Duterte administration and has therefore decided to give it the highest priority."

"We have a really big task ahead of us," Drilon said, stressing that "an undertaking as monumental as revising the Constitution needs the active and direct cooperation and participation of every Filipino."

Drilon vowed that all views and opinions will be heard and taken into consideration, and that "no one will be left in th dark."

To ensure that the hearin will be consultative, the co mittee will invite as resour person representatives of va ous sectors such as busines labor, academe, and civil s ciety, as well as constitution and legal experts and form Supreme Court justices.

The panel plans hold a s ries of public hearings outsi Metro Manila such as the citi of Baguio, Cebu and Davao.

Drilon said thorough co sultations are needed in ligh of the recent survey showin that Filipinos are divided on th question of whether to amen or revise the Constitution.

Drilon is the author of Reso lution of Both Houses No. calling for a constitutional co vention to amend or revise th Constitution.