

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



IN THE MATTER OF THE
APPLICATION FOR THE
APPROVAL OF THE CEBU-
NEGROS-PANAY 230 kV
BACKBONE PROJECT-
STAGE 2 (CEBU
SUBSTATION 230 kV
UPGRADING), WITH PRAYER
FOR THE ISSUANCE OF A
PROVISIONAL AUTHORITY

ERC CASE NO. 2015-049 RC

NATIONAL GRID
CORPORATION OF THE
PHILIPPINES (NGCP),
Applicant.

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BOOKED
Date: APR 28 2015
By: *M*

ORDER

On March 12, 2015, the National Grid Corporation of the Philippines (NGCP) filed an application for the approval of the Cebu-Negros-Panay 230 kV Backbone Project – Stage 2 (Cebu Substation 230 kV Upgrading), with prayer for the issuance of a provisional authority.

In the said application, NGCP alleged, among others, the following:

1. It is a corporation created and existing under the laws of the Philippines, with principal office address at NGCP Building, Quezón Avenue corner BIR Road, Diliman, Quezon City. It is the corporate vehicle of the consortium which was awarded the concession to assume the power transmission functions of the National Transmission Corporation (TRANSCO) pursuant to Republic Act No. 9136 (R.A. 9136), otherwise known as the Electric Power Industry Reform Act

of 2001 or the EPIRA. It was also awarded by Congress a franchise under R.A. 9511 (NGCP Franchise) to construct, maintain, rehabilitate repair and refurbish the present nationwide transmission system of the Republic of the Philippines;

STATEMENT OF THE CASE

2. One of its functions and responsibilities enumerated in Section 9 of the EPIRA is to *“improve and expand its transmission facilities, consistent with the Grid Code and the Transmission Development Plan (TDP) to be promulgated pursuant to this Act, to adequately serve generation companies, distribution utilities and suppliers requiring transmission service and/or ancillary services through the transmission system: Provided, That TRANSCO (now NGCP) shall submit any plan for expansion or improvement of its facilities for approval by the ERC”*;
3. In accordance with its mandate to ensure and maintain the quality, reliability, adequacy, security, stability and integrity of the Grid, it seeks authority from the Commission to immediately approve the implementation of the Cebu-Negros-Panay (CNP) 230 kV Backbone Project – Stage 2 (Cebu Substation 230 kV Upgrading), aimed among others to meet the transmission capacity requirements of capacity additions and load centers;

DISCUSSION

Brief Background

4. To augment the power generating capacity in Visayas, Thermal Visayas, Inc. (TVI), a subsidiary of Aboitiz Power Corporation, will be constructing a 2x150 MW Coal-fired Power Plant which will be located at Sitio Looc, Barangay Bato, Toledo City, Cebu Province. It is expected to be in commercial operation by 2017;
5. Two (2) possible schemes were considered for the connection of the proposed power plant to the Cebu Grid:

Connection Scheme 1:
Connection to Calung-Calung Substation via 138 kV Line

Connection Scheme 2:
Connection to Cebu Substation via 230 kV Line

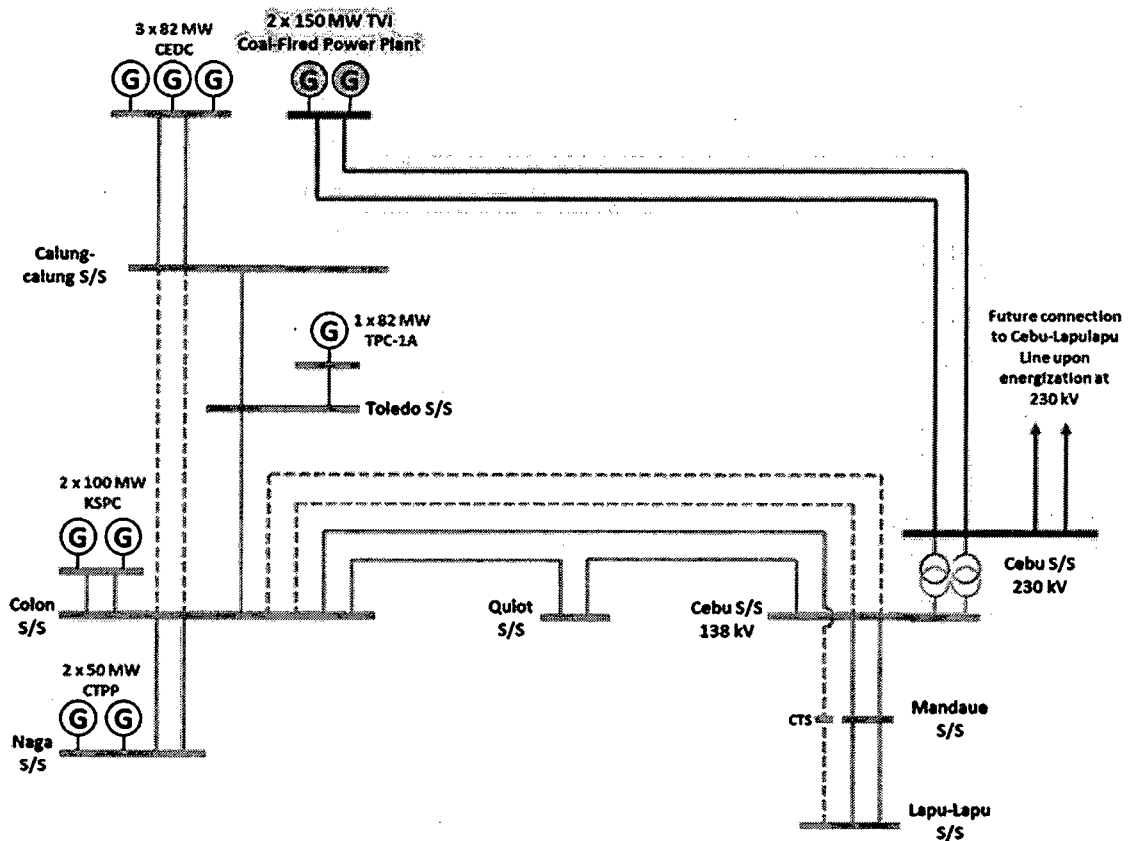
Based on the result of the system assessment, Connection Scheme No. 2 is the more optimal option for the connection of the 2x150 MW TVI power plant;

6. The recommended connection scheme will require the following components:
 - i. Switching Station in Bato;
 - ii. 230 kV transmission lines from the proposed Switching Station towards Cebu Substation; and
 - iii. 230 kV Expansion of the Cebu Substation;
7. The Bato Switching Station and the 230 kV transmission lines were classified as Connection Assets. Hence, it will be implemented by TVI pursuant to the December 15, 2014 Decision of the Commission in ERC Case No. 2014-088 MC. On the other hand, the proposed 230 kV facility in Cebu Substation will be constructed to accommodate the entry of the power plant since NGCP's existing facilities in Cebu are rated only at 138 kV. The upgraded substation will also cater to the 230 kV termination of Cebu – Lapu-Lapu Transmission Line (initially energized at 138 kV). Hence, the proposed Cebu 230 kV Substation will be considered as a transmission asset upon the energization of the Cebu-Lapu-Lapu Transmission Line at 230 kV;
8. The proposed 230 kV facility in Cebu will be constructed within the vicinity of the existing Cebu Substation and will also be linked to the existing 138 kV system. Moreover, the main switchgear station, as well as portion of the associated transmission lines, will be located adjacent to the existing high-voltage equipment in the substation. As such, the implementation of the proposed 230 kV facility, as well as its operation, will be directly associated with the existing facility. In consideration of the security and reliability of the existing transmission system in Cebu Substation, the proposed 230 kV facility shall be implemented by NGCP;

Justifications

9. The TVI Power Plant is proposed to be connected to Cebu Substation via 230 kV overhead lines. The connection scheme will involve the 230 kV upgrading at the Cebu Substation and construction of a 230 kV switching station near the power plant and double circuit overhead transmission lines. The overhead line will utilize a 4x795 MCM ACSR conductor and will have a transfer capacity of 1,200 MW (with N-1 contingency);

Simplified Single Line Diagram of the Proposed Connection Scheme No. 2



10. For the proposed connection scheme, TVI Power Plant can dispatch its maximum generation of 300 MW without overloading the associated transmission lines during normal and N-1 conditions. The loadings of the monitored transmission component associated with the proposed connection scheme are tabulated as follows:

Table No. 1 Summary of Loadings of Monitored Transmission Component for Connection Scheme No. 2 Year 2017, Peak Demand Condition				
Monitored Component	Capacity, MVA per Component	% Loading/Component		Component Outage
		At Normal Condition	During N-1 Condition	
Colon - Cebu 138 kV Lines	392	41.26	60.01	Colon - Cebu 138 kV Line
Colon – Lapu lapu 138 kV Line	196	45.42	64.65	Colon - Cebu 138 kV Line
Quiot - Cebu 138 kV Line	196	46.65	72.8	Colon - Cebu 138 kV Line
Colon - Quiot 138 kV Line	196	67.06	93.32	Colon - Cebu 138 kV Line
Colon - Toledo 138 kV Line	196	46.03	61.95	Calungcalung-Colon 138 kV Line
Calungcalung-Toledo 138 kV Line	196	9.94	41.03	Colon - Toledo 138 kV Line
Calungcalung - Colon 138 kV Line	196	31.56	54.29	Colon - Toledo 138 kV Line
Bato - Cebu 230 kV Line	1,276	11.81	23.65	Bato - Cebu 230 kV Line
Cebu S/S 2x300 MVA Transformers	300	49.3	99.7	300 MVA Transformer at Cebu

Table No. 2 Summary of Loadings of Monitored Transmission Component for Connection Scheme No. 2 Year 2019, Peak Demand Condition				
Monitored Facility	Capacity, MVA per Circuit	% Line Loading/Circuit		Line Outage
		At Normal Condition	During N-1 Condition	
Colon - Cebu 138 kV Lines	392	34.53	50.18	Colon - Cebu 138 kV Line
Colon – Lapu lapu 138 kV Line	196	38.83	54.87	Colon - Cebu 138 kV Line
Quiot - Cebu 138 kV Line	196	36.21	57.97	Colon - Cebu 138 kV Line
Colon - Quiot 138 kV Line	196	58.67	80.56	Colon - Cebu 138 kV Line
Colon - Toledo 138 kV Line	196	44.01	58.95	Calungcalung-Colon 138 kV Line

Calungcalung-Toledo 138 kV Line	196	7.78	41.05	Colon - Toledo 138 kV Line
Calungcalung - Colon 138 kV Line	196	29.47	51.30	Colon - Toledo 138 kV Line
Bato - Cebu 230 kV Line	1,276	11.7	23.46	Bato - Cebu 230 kV Line
Cebu S/S 2x300 MVA Transformers	300	49.7	100	300 MVA Transformer at Cebu

11. The proposed connection scheme will provide higher transmission capacity to accommodate future generation capacity addition of the power plant;
12. In addition, the central part of the Cebu Grid consists of seven (7) major substations interconnected through 138 kV transmission lines. The proposed connection scheme will serve as a major component of the 230 kV backbone system, a long-term transmission plan in the Visayas Grid intended to alleviate the existing 138 kV system;
13. Finally, the proposed connection scheme will provide termination for the Cebu – Lapu-Lapu Transmission Line upon its energization at 230 kV;

Components of the Project

14. The implementation of the project involves the expansion works at Cebu Substation;
15. The project component are as follows:

Cebu Substation Upgrading	
Cebu 230 kV GIS	<ul style="list-style-type: none"> • 2 x 300 MVA, 230/138-13.8 kV Transformer • 8 x 230 kV Gas-Insulated Switchgear • 1 x 138 kV Air-Insulated Switchgear • 2 sets of 230 kV Bus Disconnect Switch • Station Service Transformers and Metal-Clad Switchgears • Installation of associated protection, control and communication system • Revamping works at the 138 kV switchyards • Construction of associated buildings/facilities

Extension of the Bato – Cebu 230 kV Lines	<ul style="list-style-type: none"> • 230 kV Overhead Line, SP-DC, 4 x 795 MCM ACSR, 750 m
Extension of the Cebu – Lapu-Lapu 230 kV Lines	<ul style="list-style-type: none"> • 230 kV Underground Cables, Double Circuit of 600 MW-capacity, 425 m • 230 kV Overhead Line (conductors and line accessories), 2 x 795 MCM ACSR, 150 m
Extension of the Colon/Quiot Cebu 138 kV Lines	<ul style="list-style-type: none"> • 138 kV Underground Cables, Double Circuit of 180 MW-Capacity, 250 m • 138 kV Underground Cables, Single Circuit of 180 MW-Capacity, 100 m

Conceptual Design for the Substation

Proposed 230 kV Gas-Insulated Switchgear (GIS) at Cebu Substation

16. The existing Cebu Substation has six (6) 138 kV switch bays which accommodates eleven (11) air-insulated switchgears and six (6) compact air-insulated switchgears. It has two (2) 100 MVA, 138/69-13.8 kV power transformers;
17. A new 230 kV facility will be constructed within the vicinity of the Cebu Substation. It be linked to the existing 138 kV switchbays via two (2) 300 MVA 230/138-13.8 kV power transformers. It will be composed of eight (8) 230 kV GIS's that will accommodate the following:
 - a) Connection of two (2) 230/138 kV power transformers;
 - b) Termination of double circuit transmission lines from the Bato Switching Station;
 - c) Termination of the Cebu – Lapu-Lapu Transmission Line; and
 - d) Future connection of additional 300 MVA, 230/138-13.8 kV power transformer;

In order to accommodate the termination of the secondary side of the new transformers, there is a need to transfer the termination of the existing transmission line from Quiot Substation and the existing and ongoing transmission lines from Colon Substation;

Conceptual Design for the Associated Transmission Lines

18. It will involve the construction of short transmission lines which will link the Bato–Cebu 230 kV Line and the Cebu–Lapu-Lapu Transmission Line to the proposed GIS Building. Due to limited area at the substation, the proposed line extension of the Bato–Cebu and Cebu–Lapu-Lapu Transmission Lines were initially planned to be installed utilizing same structures. However, due to insufficient area within the substation to allow the laying of structural foundation for the multi-circuit lines, the proposed transmission links will be constructed separately;
19. The proposed line extension of the Bato – Cebu 230 kV Lines will be composed generally of an overhead line, which will be routed near the perimeter of the substation in order to avoid overhead line crossing between the existing lines. On the other hand, the proposed line extension for the Cebu – Lapu-Lapu Transmission Line will be composed of an underground cable system designed at 230 kV which will be routed along the roadway within the substation;
20. The project will also involve a 138 kV underground cable system which will accommodate the transfer of termination of the existing Colon/Quiot – Cebu 138 kV Lines;

Provision for the Energization of the Cebu – Lapu-Lapu Transmission Line at 138 kV

21. The construction of the new substation will also facilitate the energization of the Cebu – Lapu-Lapu Transmission Line at 138 kV and its proposed connection to the existing Colon – Cebu 138 kV Line 1. As such, a portion of the proposed 230 kV GIS will be initially energized at 138 kV and shall be isolated from the 230 kV-energized portion through the installation of additional two (2) 230 kV bus disconnect switches. The 138 kV-energized portion of the GIS will serve as the connection point between the Cebu –

Lapu-Lapu Transmission Line and the existing Colon – Cebu 138 kV Line 1, which will be temporarily connected to the 230 kV switchgear intended for the future 3rd transformer.

The temporary connection scheme will involve the installation of a 138 kV underground cable which will be routed along the proposed cable trench for the Cebu – Lapu-Lapu 230 kV Transmission Line;

22. The estimated cost of the Project is One Billion Six Hundred Thirty Six Million One Hundred Forty Eight Thousand Two Hundred Twelve Pesos and 02/100 (PHP1,636,148,212.02);
23. The duration of the implementation of the project is twenty-eight (28) months including the topographic and geological survey, preparation of bidding documents, procurement stage and actual construction;

Allegation in Support of the Prayer for Provisional Approval

24. The proposed 230 kV facility in Cebu Substation is an integral component of the recommended scheme for the connection of the TVI Power Plant to the Grid which is expected to start its commercial operation in 2017. Without the project, the 230 kV Transmission Lines from the proposed Switching Station in Bato towards Cebu Substation will be inoperable and TVI will not be able to dispatch its capacity to the Grid;
25. The connection of the TVI Power Plant to the transmission system will vastly improve the adequacy and reliability of the power system in Visayas. Considering the necessity of the Project and the length of time necessary for its completion, its implementation must commence as scheduled. Thus, it prays for the issuance of a provisional authority;
26. A copy of the Judicial Affidavit of Engr. Christian B. Ereño, Head of the Visayas System Planning Division Transmission Planning Department of NGCP, is hereto attached to the application as Annex “B”; and

27. It prays that the Commission:

- a. Issue, immediately upon filing of the application, a provisional authority for the implementation of the CNP 230 kV Backbone Project-Stage 2 (Cebu Substation 230 kV Upgrading); and
- b. Approve, after notice and hearing, the application for the implementation of the CNP 230 kV Backbone Project-Stage 2 ((Cebu Substation 230 kV Upgrading); and render judgment making the provisional approval permanent.

Finding the said application sufficient in form and substance with the required fees having been paid, the same is hereby set for jurisdictional hearing, expository presentation, pre-trial conference and evidentiary hearing on **June 2, 2015 (Tuesday) at ten o'clock in the morning (10:00 A.M.) at the ERC Hearing Room, 15th Floor, Pacific Center Building, San Miguel Avenue, Pasig City.**

NGCP is hereby directed to cause the publication of the attached Notice of Public Hearing, at its own expense, twice (2x) for two (2) successive weeks in two (2) newspapers of general circulations in the Philippines, with the date of the last publication to be made not later than ten (10) days before the date of the scheduled initial hearing. It is also directed to inform the consumers, by any other means available and appropriate, of the filing of the instant application, its reasons therefor, and of the scheduled hearing thereon.

Let copies of the application, this Order and the attached Notice of Public Hearing be furnished the Office of the Solicitor General (OSG), the Commission on Audit (COA), and the Committees on Energy of both Houses of Congress. They are hereby requested, if they so desire, to send their duly authorized representatives at the scheduled hearing.

Likewise, let copies of this Order and the attached Notice of Public Hearing be furnished the Offices of the Provincial Governor of Cebu and the Mayors of Quezon City and Cebu City for the appropriate posting thereof on their respective bulletin board.

NGCP is hereby directed to furnish all those making requests therefor with copies of the application and its attachments, subject to reimbursement of reasonable photocopying costs.

On the date of the initial hearing, NGCP must submit to the Commission its written Compliance with the jurisdictional requirements attaching therewith, methodically arranged and duly marked, the evidences on the actual posting and publication of the Notice of Public Hearing consisting of a certification issued to that effect, signed by the afore-mentioned Mayors or their duly authorized representatives, bearing the seals of their offices, and the affidavits of the Editors or Business Managers of the newspapers where the said Notice of Public Hearing were published together with the complete issues of the said newspapers, and such other proofs of compliance with the requirements of the Commission.

NGCP and all interested parties are directed to submit, at least five (5) days before the date of initial hearing and pre-trial conference, their respective Pre-trial Briefs containing, among others:

- a) A summary of admitted facts and proposed stipulation of facts;
- b) The issues to be tried or resolved;
- c) The documents or exhibits to be presented, stating the purposes and proposed markings therefore; and
- d) The number and names of the witnesses, with their written testimonies in an individual affidavit form, to be attached to the Pre-trial Brief.


Failure of NGCP to submit the required Pre-trial Brief and Judicial Affidavits of its witnesses within the prescribed period shall be a ground for cancellation of the scheduled hearing, and the resetting of which shall be six (6) months from said date of cancellation.

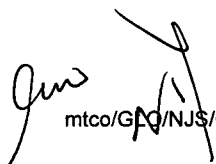
As part of the pre-trial conference, NGCP must also be prepared to make an expository presentation of its application, aided by whatever communication medium that it may deem appropriate for the purpose, in order to put in plain words and explain, for the benefit of the consumers and other concerned parties, what the application is all about and the reasons and justifications being cited in support thereof.

SO ORDERED.

Pasig City, April 20, 2015.

FOR AND BY AUTHORITY
OF THE COMMISSION:


ZENAIDA G. CRUZ-DUCUT
Chairperson *per 4*



Copy Furnished:

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5. **THE COMMITTEE ON ENERGY**
House of Representatives
Batasan Hills, Quezon City, Metro Manila
6. **Office of the City Mayor**
Quezon City
7. **Office of the City Mayor**
Cebu City
8. **The Provincial Governor**
Province of Cebu