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# Procedures and Requirements for Energy Projects & Transmission Development Plans For Luzon Grid

**DOE Energy Investment Forum**

04 December 2015

Hotel Intercontinental, Makati City

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# Outline

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**1. Procedures and Requirements  
for Energy Projects**

**2. Transmission Development Plan  
for Luzon Grid**

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# Regulation on Grid Connection

Revised Rules, Terms and Conditions  
for the provision of

**OPEN ACCESS  
TRANSMISSION SERVICE**

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## **PHILIPPINE GRID CODE**

Amendment No. 1  
April 2, 2007

Drafted by:  
Grid Management Committee

Reviewed and Approved by:  
Energy Regulatory Commission

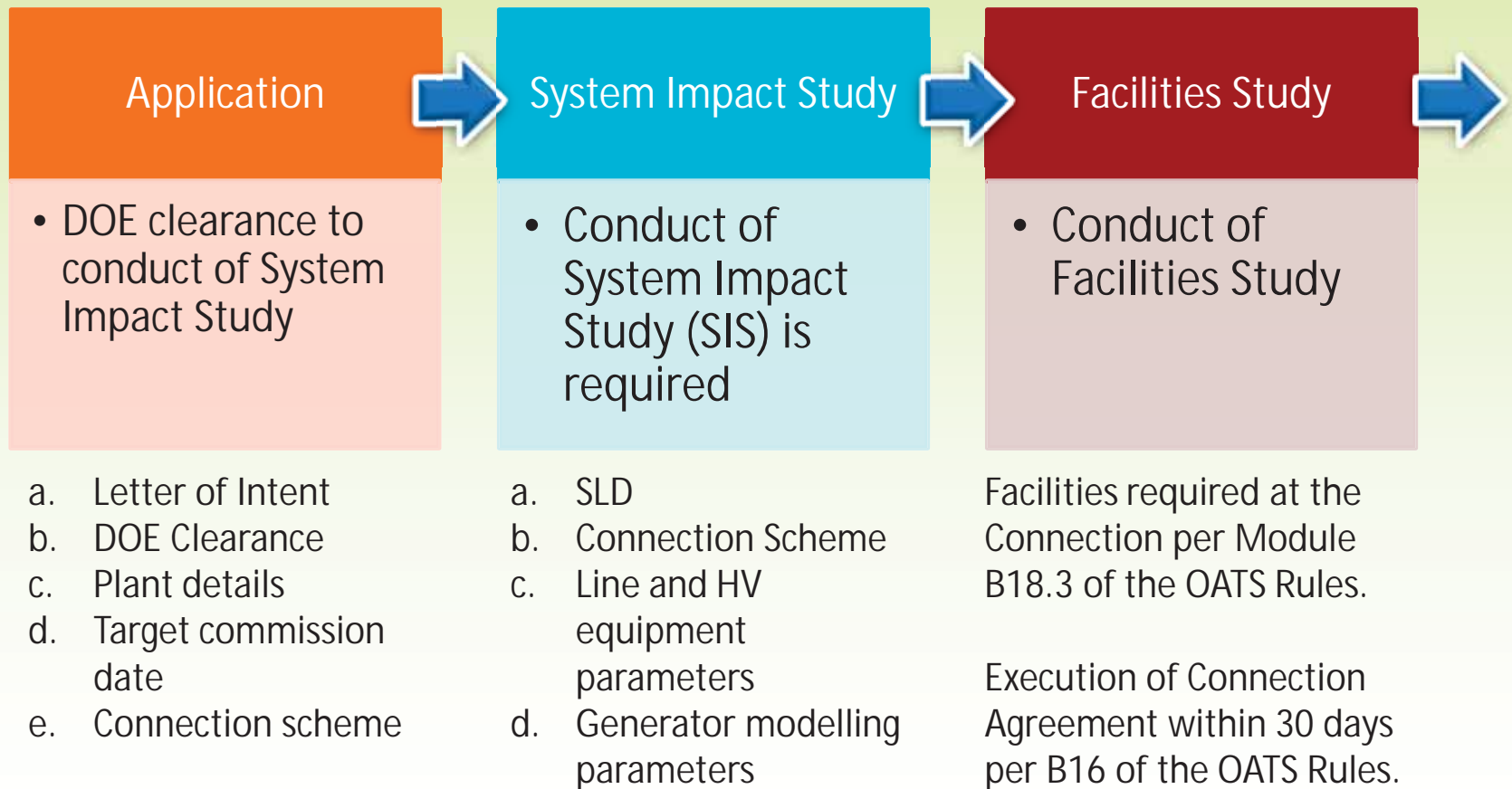
- ❑ The **Philippine Grid Code** provides, among others,-
  - “..Grid Owner shall establish the procedure for the processing of applications for connection ....”
  - “..Grid Owner may disapprove an application for connection.... if such will result in the Degradation of the Grid”.
  
- ❑ The **Open Access Transmission Service (OATS) Rules** mandates “..Transmission Provider and Prospective Transmission Customer to comply with the processes set out ... for processing of new or modified connection arrangement”
  
- ❑ **ERC Resolution No. 16-2011**, a Resolution Amending the Definition and Boundaries of Connection Assets



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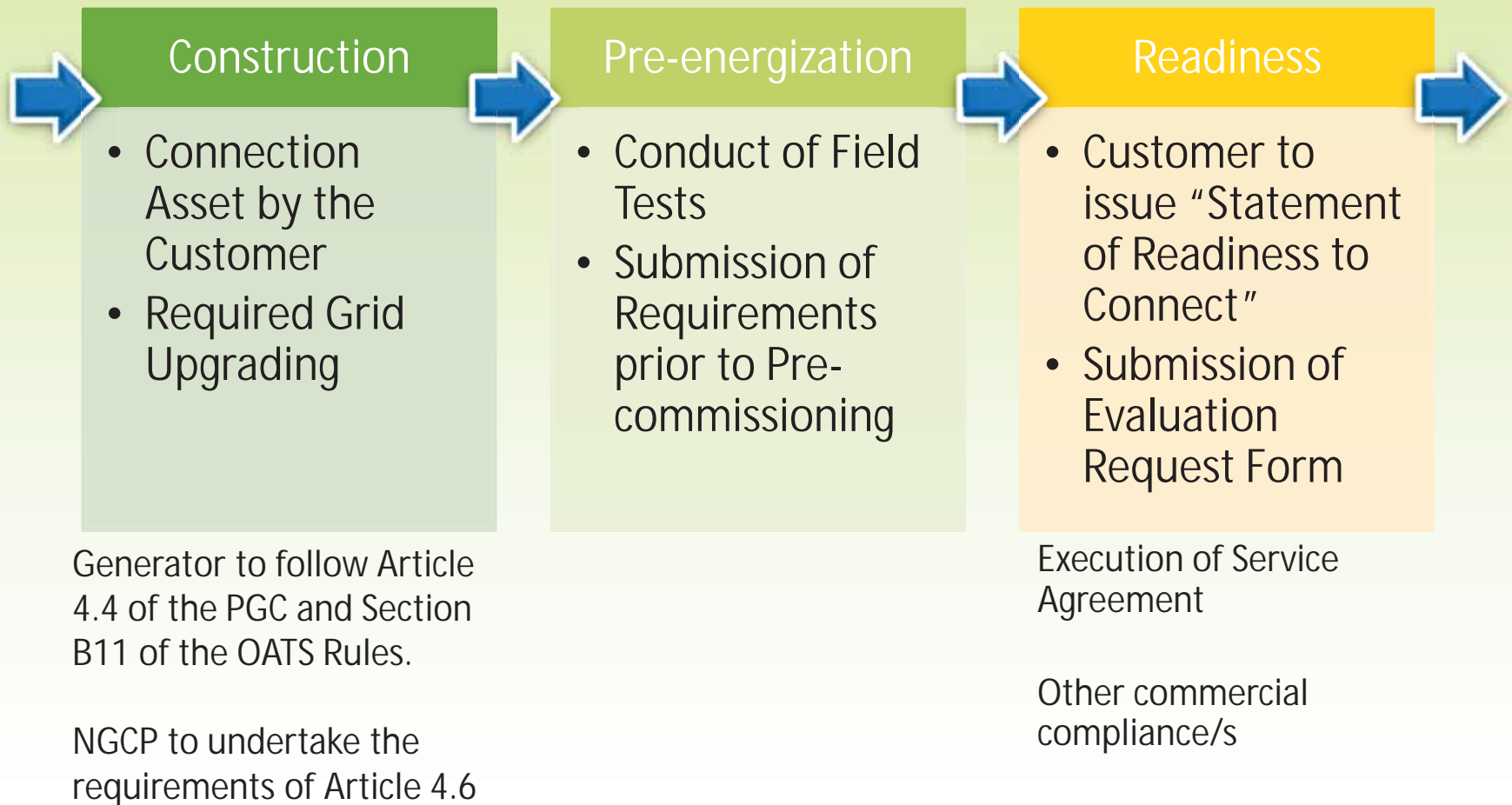
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# Connection Requirements and Procedure





# Connection Requirements and Procedure

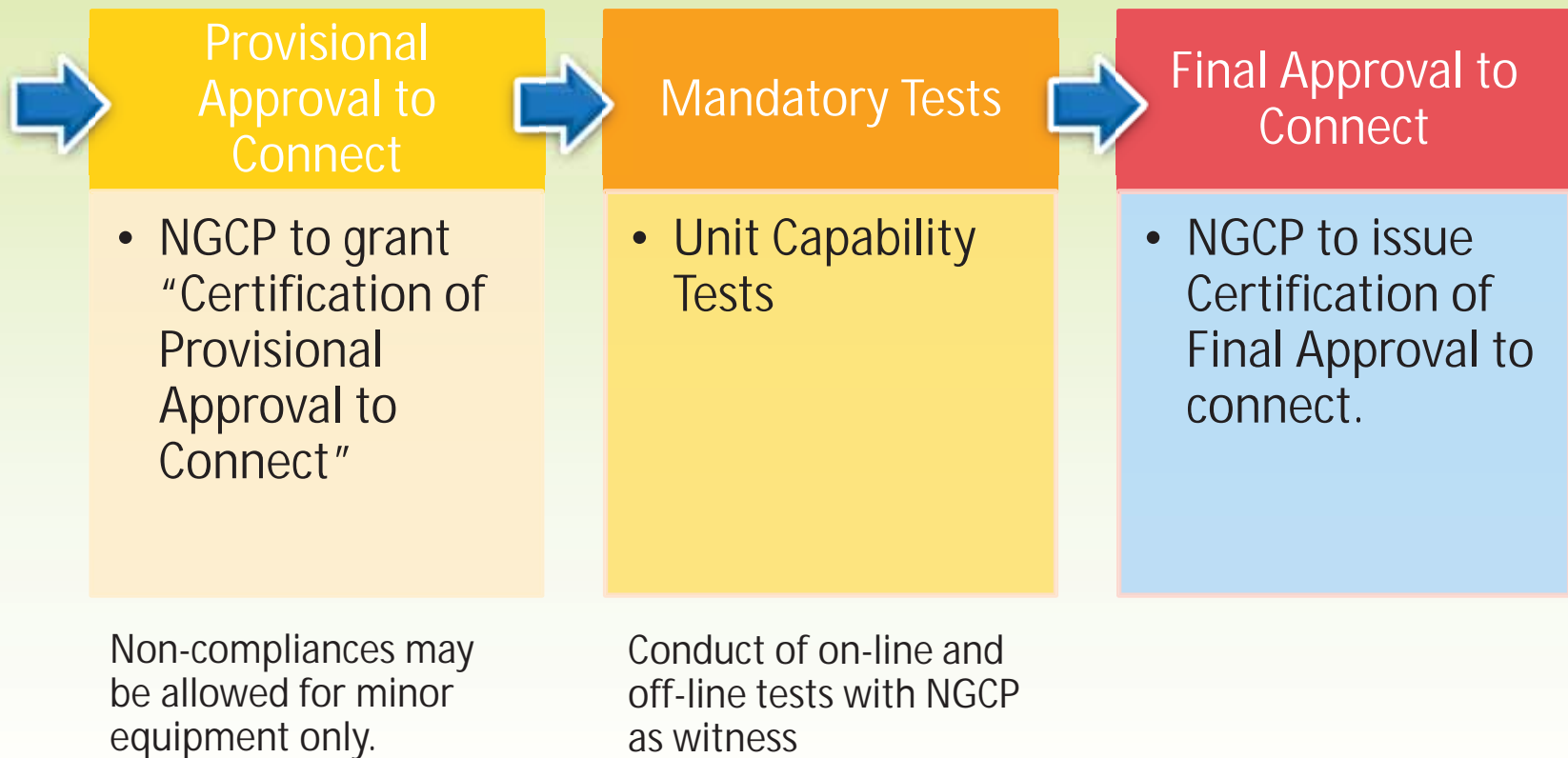




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# Connection Requirements and Procedure





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# Connection Requirements and Procedure

## Service Agreements with NGCP

Connection Agreement

Transmission Service Agreement

Metering Service Agreement

## Compliances, Testing and Commissioning

- Technical requirements should be complied by the proponent prior connection of power plant.
- Documentary requirements and compliances:
  - Approved Energization Request Form
  - Statement of Readiness to Connect
  - Certificate of Technical Requirements Compliance
  - Certificate of Provisional/Final Approval to Connect
- Annex A 2.10 of the OATS Rule: Requirements as Generator Customer shall be complied by the Transmission Customer 30 days before energization.

## Commercial Operation

*SIS and FS should have been completed at this time.*



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# Requirements of Grid Connection

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## TRANSMISSION CONNECTION ASSET (INCLUSION)

- Power Circuit Breaker, Surge Arrester, Disconnect Switch including Protective Relays, Breaker Failure Relay and any other multifunction protective devices and equipment.

## TRANSMISSION CONNECTION ASSET (EXCLUSION)

- Communication equipment, SCADA and other equipment used by the System Operator
  - Meters and Metering Equipment for the Supply and Metering Services
  - Step-down transformer within the Grid
  - Any transmission line
  - Contributed Asset
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# Regulated Services

## Power Delivery Service (PDS), Php/kW-month

- Recovers cost of conveying electricity to or from the Grid
- One rate per grid

## System Operator (SO), Php/kW-month

- Recovers cost of services by SO (e.g. communication, SCADA) to ensure safety, power quality, stability, reliability and security of the Grid
- P/kW rate approved annually by ERC

## Metering Service Provider (MSP)

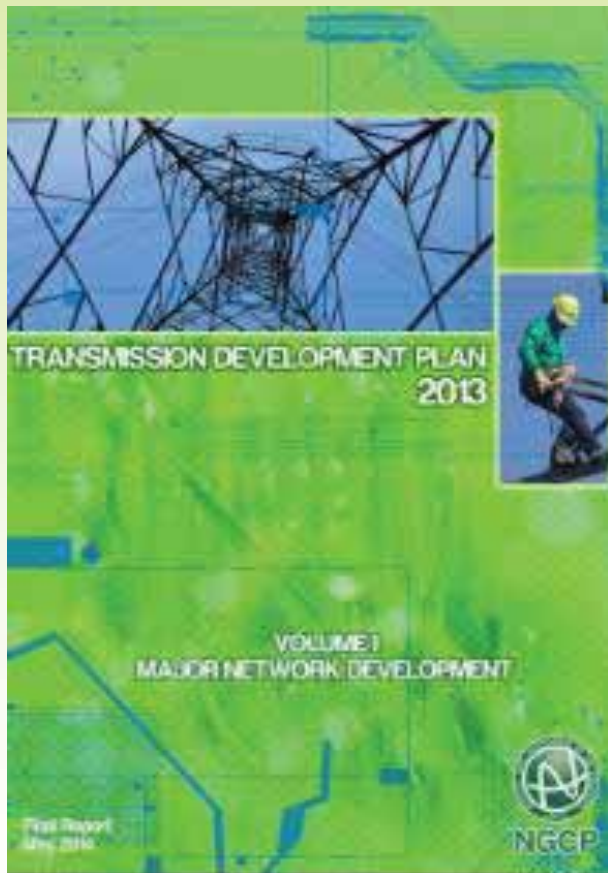
- **Common Metering Charge** - cost of metering software, hardware, and related costs. Uniform rate per meter.
- **Full Metering/ Meter Only Charge**- cost of metering facilities. Different rate per delivery voltage and ownership of CTs and PTs.



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# Transmission Development Plan



**Major  
Network  
Development**

**VOL 1**

- **Ten 10-year program for expansion, reinforcement, and rehabilitation of the Transmission System**

**Operations &  
Maintenance**

**VOL 2**

**Metering**

- **Annually updated and submitted to DOE for approval and integration to its PDP and PEP**

**System  
Operations**

**VOL 3**

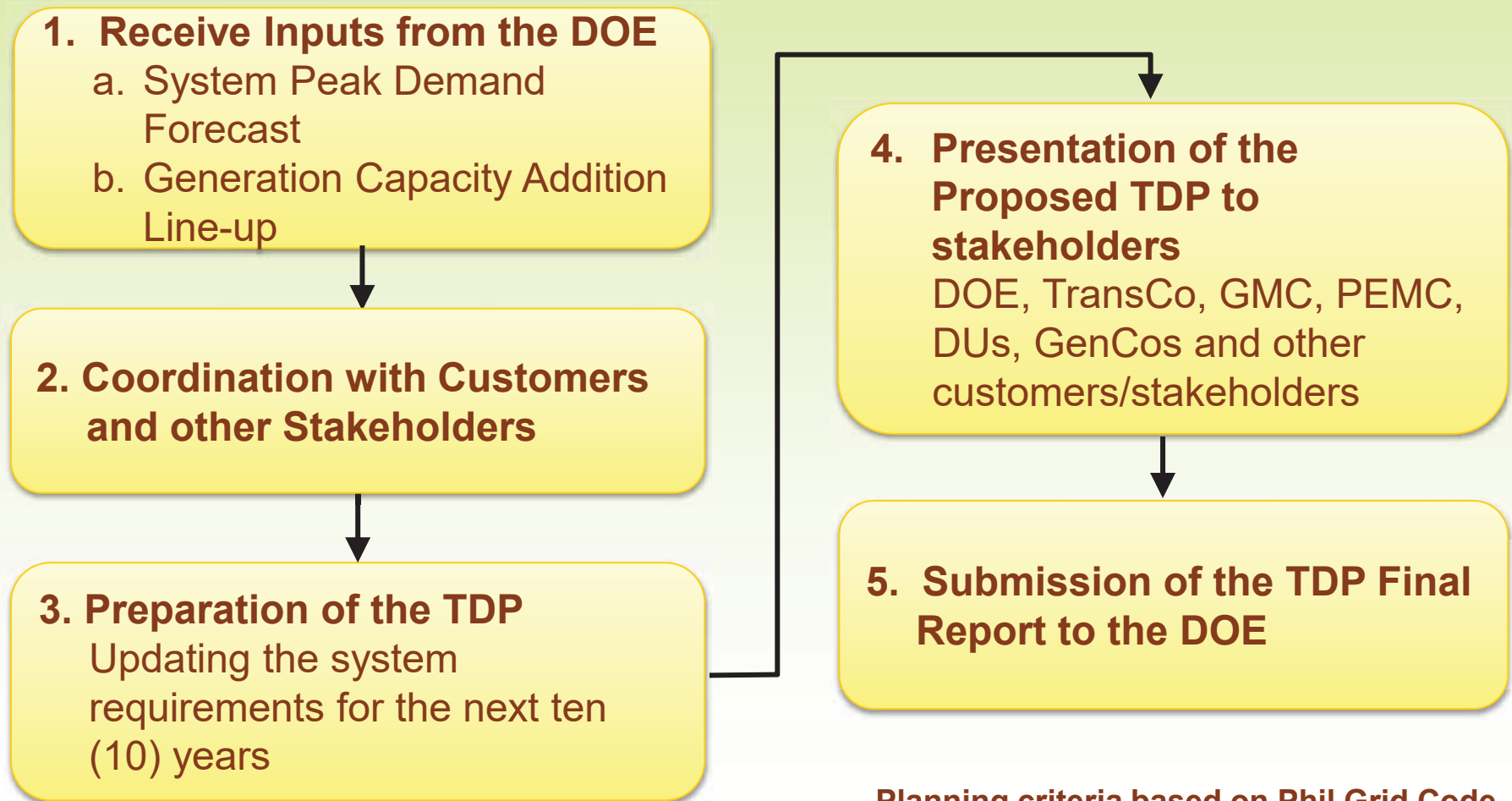
- **Reference plan for NGCP's CAPEX application with the ERC for approval**



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# Preparation Process



Planning criteria based on Phil Grid Code



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# Main Project Drivers

**1. Load growth**

**2. Generation Entry**

**3. Congestion Alleviation**

**4. System Reliability**

**5. Power Quality**

**6. Island Interconnection**





# ERC-Approved Projects

San Esteban-Laoag, 230 kV T/L,  
120km, 300MVA, 2015

Capacity additions to the existing substations:

- Laoag
- Bantay
- San Esteban
- La Trinidad
- Bayombong
- Botolan
- Limay
- Concepcion
- Mexico
- Cabanatuan
- San Rafael
- San Jose
- Dasmariñas
- Batangas
- Tayabas
- Labo
- Naga
- Daraga



Completed

Legend:

- 500 kV
- 230 kV
- 115 kV
- 69 kV

Lumban - Bay, 230 kV T/L,  
40km, 1200MVA, 2015

# ERC-Approved Projects

Ongoing

Legend:

- 500 kV
- 230 kV
- 115 kV
- 69 kV

- Ongoing capacity additions and new substations:
- La Trinidad
  - Ambuklao
  - Binga
  - Balingaeo (new)
  - San Manuel
  - Santiago
  - Gamu
  - Tuguegarao
  - Antipolo (new)
  - Batangas
  - Gamu



Tuguegarao – Lal-lo, 230 kV T/L, 64km, 300MVA, 2018 \*

Santiago – Tuguegarao, 230 kV T/L, 118km, 300MVA, 2017

Ambuklao – Binga – San Manuel, 230 kV T/L, 51km, 1100MVA, 2018




Calaca – Dasmariñas, 500 kV T/L, 58km, 4704MVA, 2019 \*

\* Provisional Approval for advance implementation



# Proposed Projects

Legend:

-  500 kV
-  500 kV
-  230 kV
-  230 kV
-  115 kV
-  69 kV

North Luzon 230 kV Loop, 160km, 300MVA, 2023

La Trinidad – Sagada – San Esteban, 230kV T/L, 142km, 600MVA, 2024

Nagsaag-Santiago, 500 kV T/L, 140km, 2850MVA, 2022

Western 500 kV Backbone – Stage 2, 174km, 2850MVA, 2030

Hermosa – San Jose, 500 kV T/L, 82km, 4704MVA, 2019

Alaminos – Taguig, 500 kV T/L, 73km, 2850MVA, 2025

Mariveles – Hermosa, 500 kV T/L, 55km, 4704MVA, 2019

Bataan-MM/Cavite Submarine  
Option 1 – 230 kV to Pasay  
Option 2 – 500 kV to Dasmariñas

Pagbilao EHV S/S, 3000MVA, 2017

Batangas-Mindoro Interconnection Project, 230 kV T/L, 48km (OH), 25km (submarine), 300MVA, 2022



# Proposed Projects

## New Substations for Metro Manila

- Navotas
- Pasay
- Marilao
- Camarin
- San Mateo
- Antipolo
- FBGC
- Taguig



Option 1 - 230 kV to Pasay  
Option 2 - 500 kV to Dasmariñas

Legend:  
— 500 kV  
— 230 kV





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**End of Presentation**

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