



# **2011 TDP Volume 3: System Operations**

**Public Consultation – Visayas  
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## Major Considerations



1. Quickly realize the smart grid objectives
2. Integrate grid control and unify market operations
3. Optimize access to RE sources
4. Standardize management mechanisms
5. Reinforce network security

## Major Considerations



### 1. Quickly realize the Smart Grid paradigm

- SAS-based data collection/control;
- Advanced EMS market modeling applications;
- Increased telecom bandwidth to end-point substations;
- IEC 61850 standards for protection equipment.

## Major Considerations



### 2. To integrate control of the Power Grid and unify Market Operations

- Consolidated/synchronized SCADA/EMS operations;
- RCC access to the HVDC control system;
- Accelerated telecom backbone construction (e.g., OPGW retrofitting and submarine cable)
- Conformity of IT equipment with standards of access control.

## Major Considerations



### 3. To optimize access to renewable sources of energy

- Extended telecom backbone reach,
- Interfacing at anticipated service access points;
- Capability for integrating control systems of RE generators;
- Enhanced power quality measurements.

## Major Considerations



### 4. To standardize management mechanisms

- Integrated Telecom Network Management System based on industry-standard protocols;
- Stand-alone ACC operation for all Regions;
- Central-nationwide Protection Management System.

## Major Considerations



### 5. To reinforce network security

- Compliance with Protection Philosophy;
- Wide Area Monitoring System (WAMS) in SCADA/EMS;
- Direct fiber links for reliable protection signaling;
- Secured IT network against internal threats;
- Physical infra compliant with data center standards.

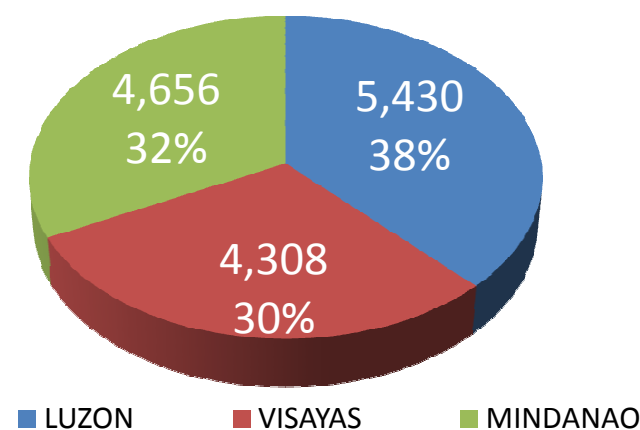
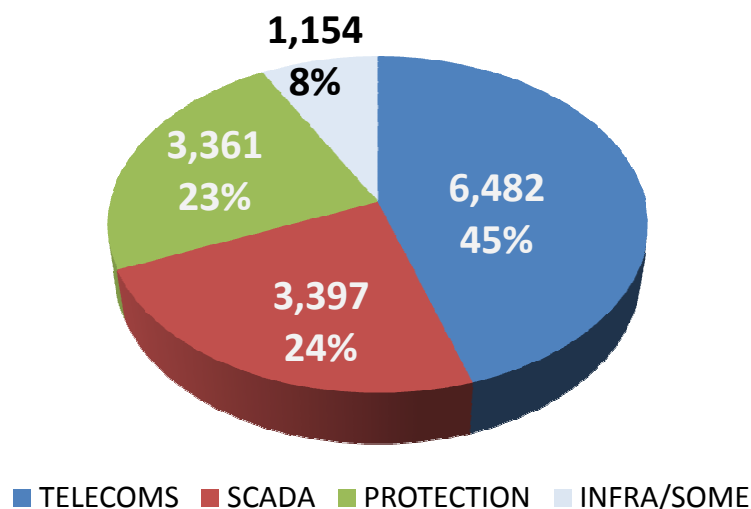
# CAPEX Cost Distribution



## CAPEX COSTS 2011-2020

IN MILLION PESOS

FUNCTION	REPLENISHMENTS	REHAB/UPGRADES	EXPANSIONS	TOTAL
TELECOMS	1,933	806	3,743	6,482
SCADA	952	342	2,103	3,397
PROTECTION	0	3,361	0	3,361
INFRA/SOME	304	265	585	1,154
<b>TOTAL</b>	<b>3,188</b>	<b>4,774</b>	<b>6,431</b>	<b>14,394</b>



**End of Presentation**