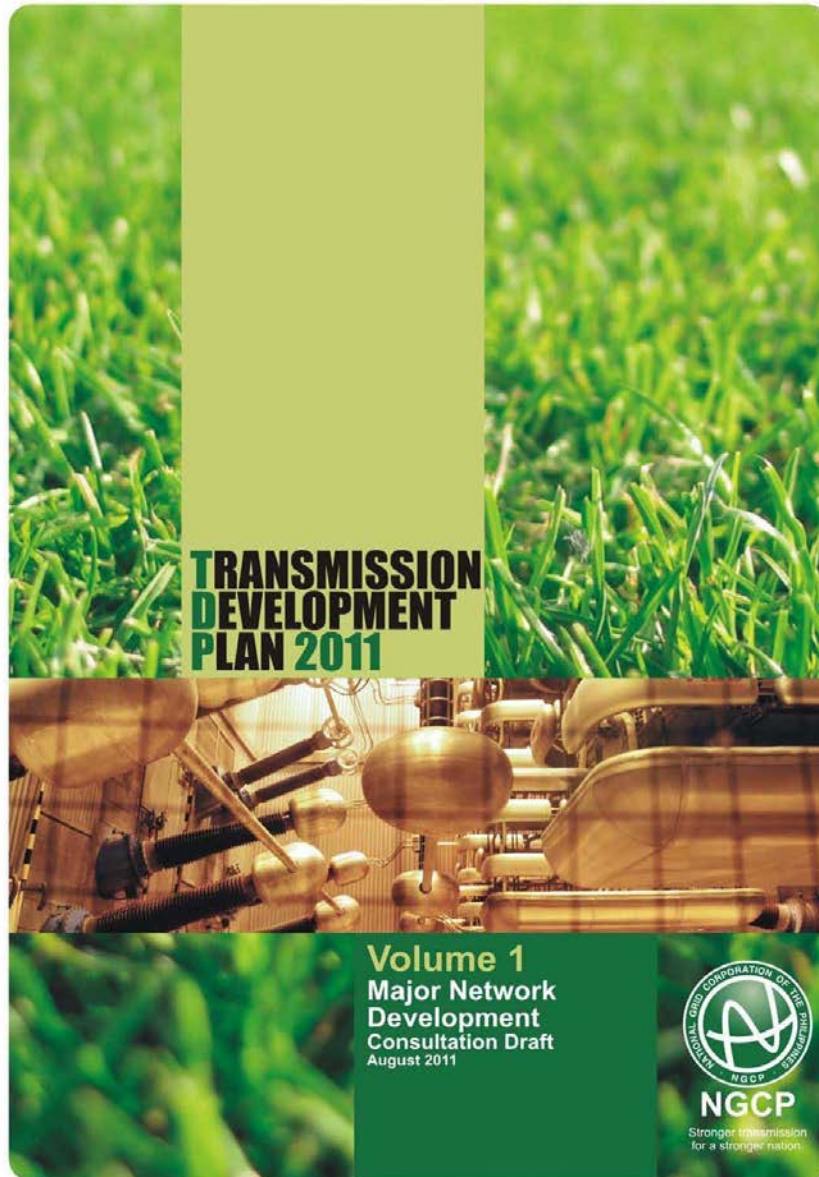




2011 Transmission Development Plan (Consultation Draft)

Presentation to Visayas Grid Stakeholders

**13 January 2012
Parklane Hotel, Cebu City**



About the Cover

The color green is associated with nature. It is so pervasive – it occupies more space in the spectrum than most colors.

It signifies regeneration and growth.

This year's cover represents growth and commitment to the environment.

NGCP's expansion projects are the waves of grass on a meadow.

A meadow portrays a land of prosperity.

It is a fertile land nurtured by nature.

The same way NGCP commits itself to the steady, sustainable growth of its power network.



Outline



- I. Overview of the Philippine Grid
- II. Major Challenges
- III. Major Planning Considerations
- IV. Load Forecast
- V. Generation Capacity Additions
- VI. Ideal Location of Power Plants
- VII. Visayas Grid System Development

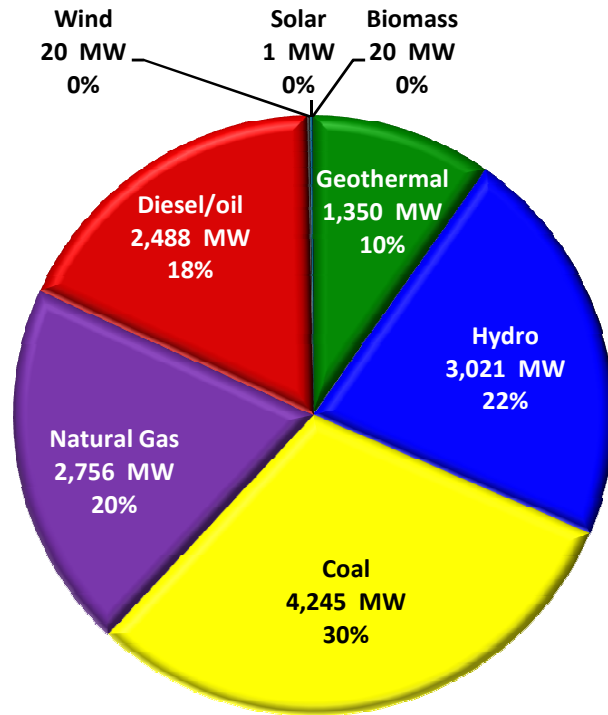


I. Overview of the Philippine Grid

I. Overview of the Philippine Grid

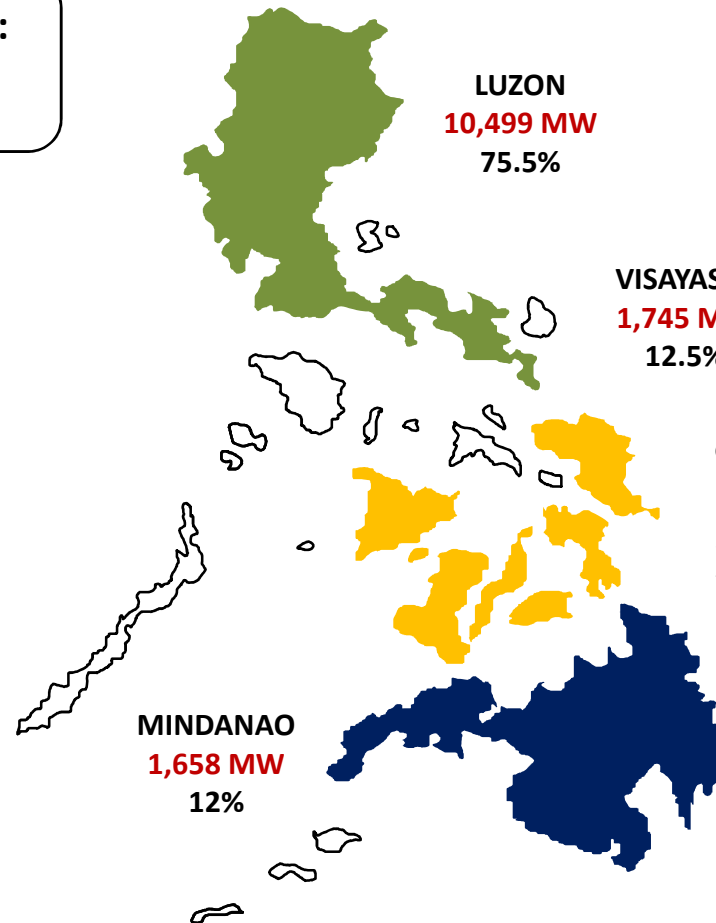
DEPENDABLE GENERATION CAPACITY

Year 2010 Total Dependable Capacity:
13,902 MW*



Dependable Capacity Mix

(as of December 31, 2010)



** Excluding new dependable capacity for 2011

1. CEDC Coal- 82 MW
2. PEDC Coal- 82 MW
3. KEPCO Coal- 100 MW

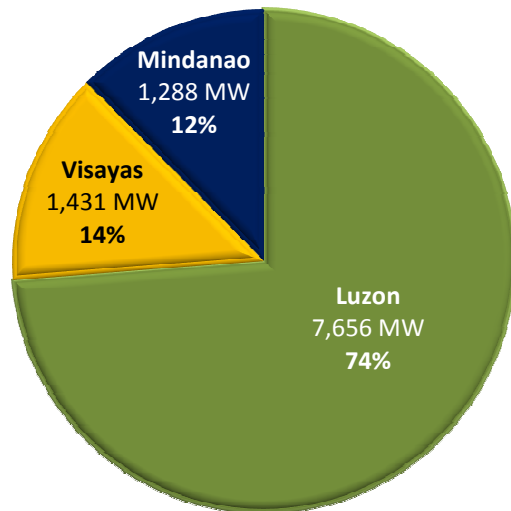
Note: Transparent islands in the above diagram are not covered by NGCP's network.

*Based on DOE's 2011 Power Development Program (PDP) Update

I. Overview of the Philippine Grid

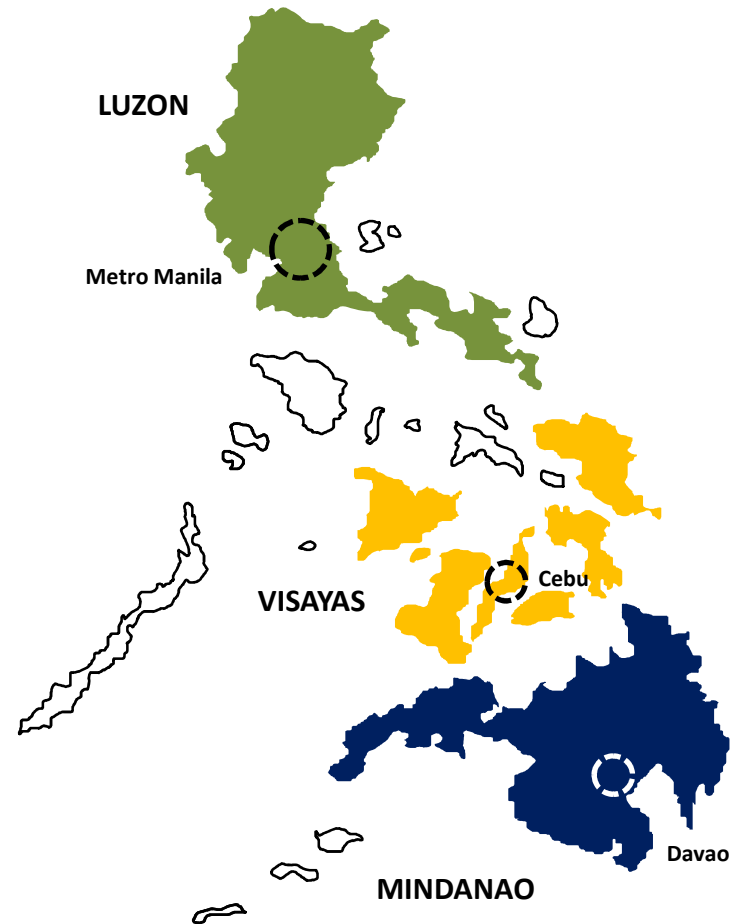
SYSTEM PEAK DEMAND

Year 2010 Total Demand:
10,375 MW*



Load Distribution among the Main Grids

*Based on NGCP-SO recorded total demand (non-coincident)



Note: Transparent islands in the above diagram are not covered by NGCP's network.

I. Overview of the Philippine Grid

EXISTING ASSETS

TRANSMISSION LINES (Ckm)

(As of December 31, 2010)

500 kV : 548.96
 230 kV : 3,022.80
 115 kV : 221.06
 69 kV : 1,850.41
 (& Below)

TOTAL : 5,643.23

500 kV : 433.34
 350 kV : 386.99
 230 kV : 2,228.83
 115 kV : 21.59
 69 kV : 923.64
 (& Below)

TOTAL : 3,994.39

350 kV : 518.00
 230 kV : 343.84
 138 kV : 1,650.28
 69 kV : 2,167.87
 (& Below)

TOTAL : 4,679.99

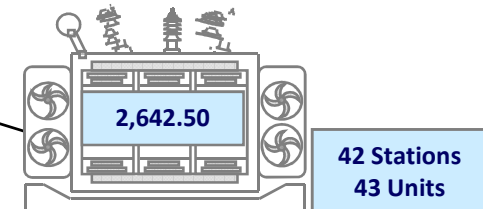
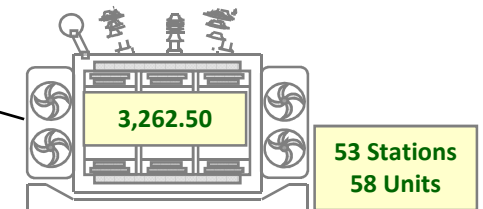
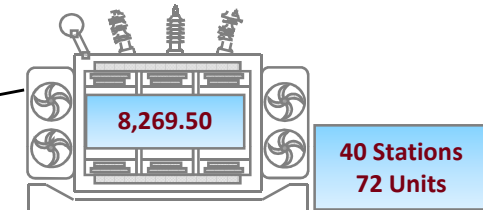
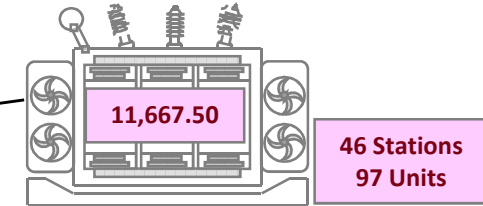
138 kV : 3,073.10
 69 kV : 2,184.57
 (& Below)

TOTAL : 5,257.58

TOTAL : 19,575.19

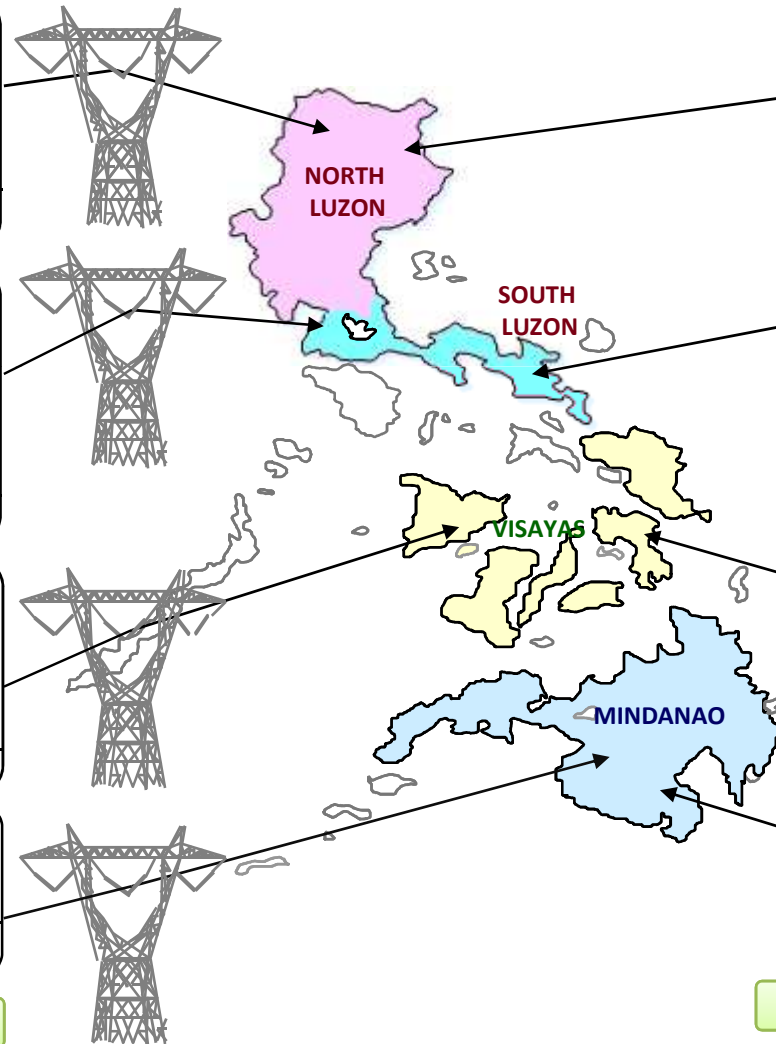
SUBSTATION CAPACITY (MVA)

(As of December 31, 2010)



TOTAL : 25,842.00

**181 Stations
 270 Units**





II. Major Challenges

II. Major Challenges



1. Upgrade to comply with N-1 criterion
2. New system reinforcements to answer market demand and accommodate new power plants (includes RE)
3. Upgrade RAB-reverted 69 kV subtransmission facilities
4. Alternative transmission corridors and space limitations in urban areas



III. Major Planning Considerations

III. Major Planning Considerations



1. Be the strongest power grid in Southeast Asia, contribute to socio-economic development and satisfy stakeholders' need.
2. Develop a reliable power grid nationwide.
3. Comply with the Grid Code
4. Accommodate all power plants approved by DOE in its Power Development Program.

III. Major Planning Considerations



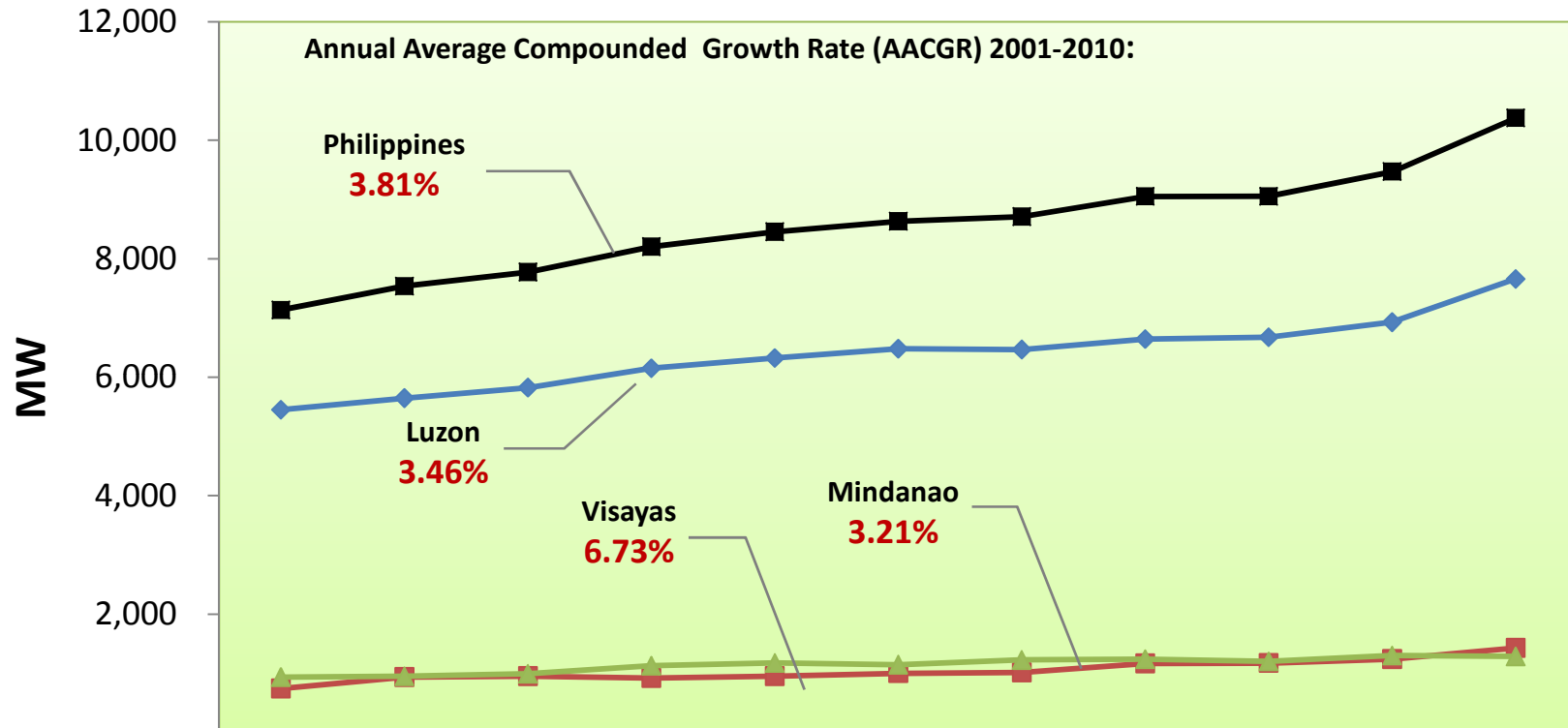
5. Comply with mandates of RA 9513 on RE-based plants
6. Identify ideal connection points for new power plants
7. Upgrade aging transmission facilities.
8. Utilize “smart grid” technology for SCADA system
9. Improve telecommunication network



IV. Load Forecast

IV. Load Forecast

HISTORICAL SYSTEM PEAK DEMAND



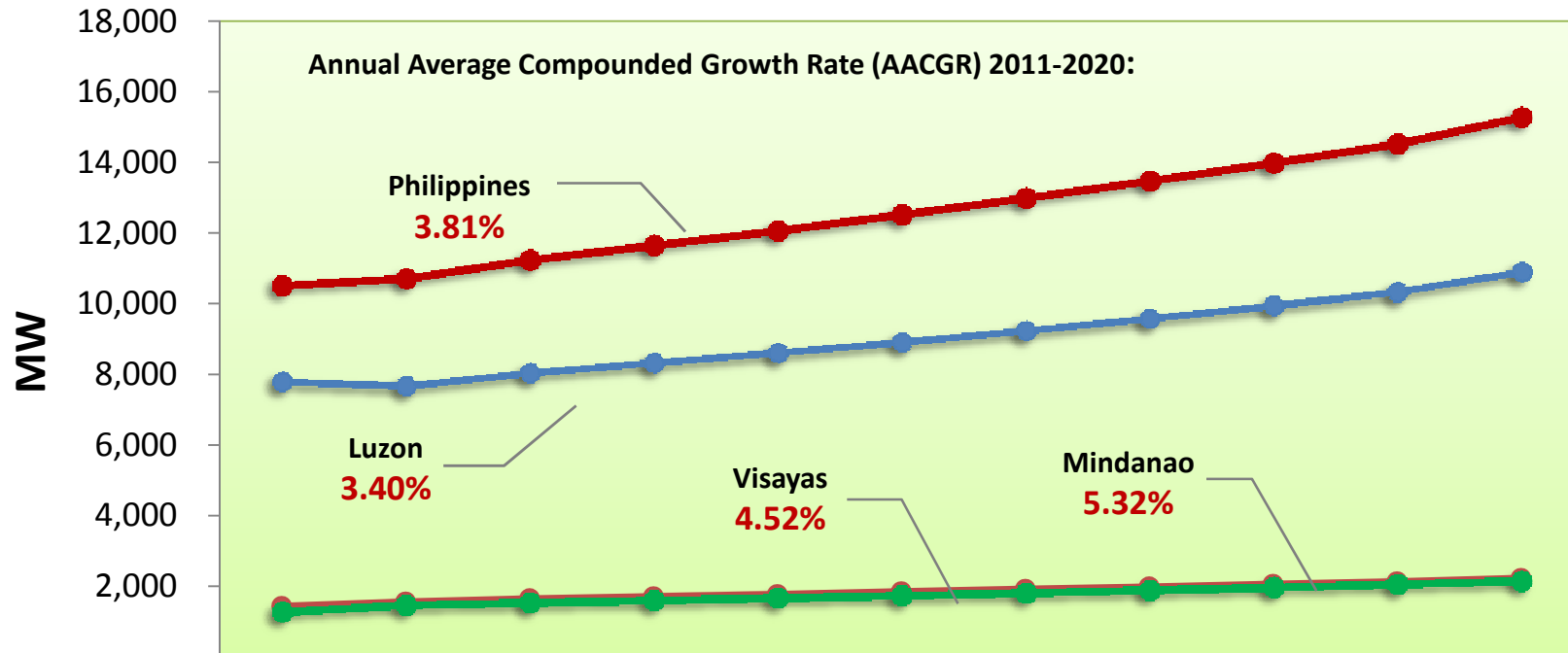
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
◆ Luzon	5,450	5,646	5,823	6,149	6,323	6,479	6,466	6,643	6,674	6,928	7,656
■ Visayas	746	939	957	923	955	1,004	1,017	1,168	1,176	1,241	1,431
▲ Mindanao	939	953	995	1,131	1,177	1,149	1,228	1,241	1,204	1,303	1,288
■ Philippines	7,135	7,538	7,775	8,203	8,455	8,632	8,711	9,052	9,054	9,472	10,375

IV. Load Forecast

SYSTEM PEAK DEMAND FORECAST*



Based on DOE's 2011 Power Development Program (PDP) Update



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
—●— Luzon	7,799	7,673	8,048	8,331	8,618	8,921	9,247	9,587	9,948	10,322	10,893
—●— Visayas	1,431	1,553	1,647	1,706	1,768	1,850	1,915	1,983	2,056	2,132	2,226
—●— Mindanao	1,288	1,484	1,550	1,616	1,686	1,755	1,829	1,906	1,987	2,071	2,163
—●— Philippines	10,518	10,710	11,245	11,653	12,072	12,526	12,991	13,476	13,991	14,525	15,282

*includes embedded generation



V. Generation Capacity Additions

V. Generation Capacity Additions

VISAYAS

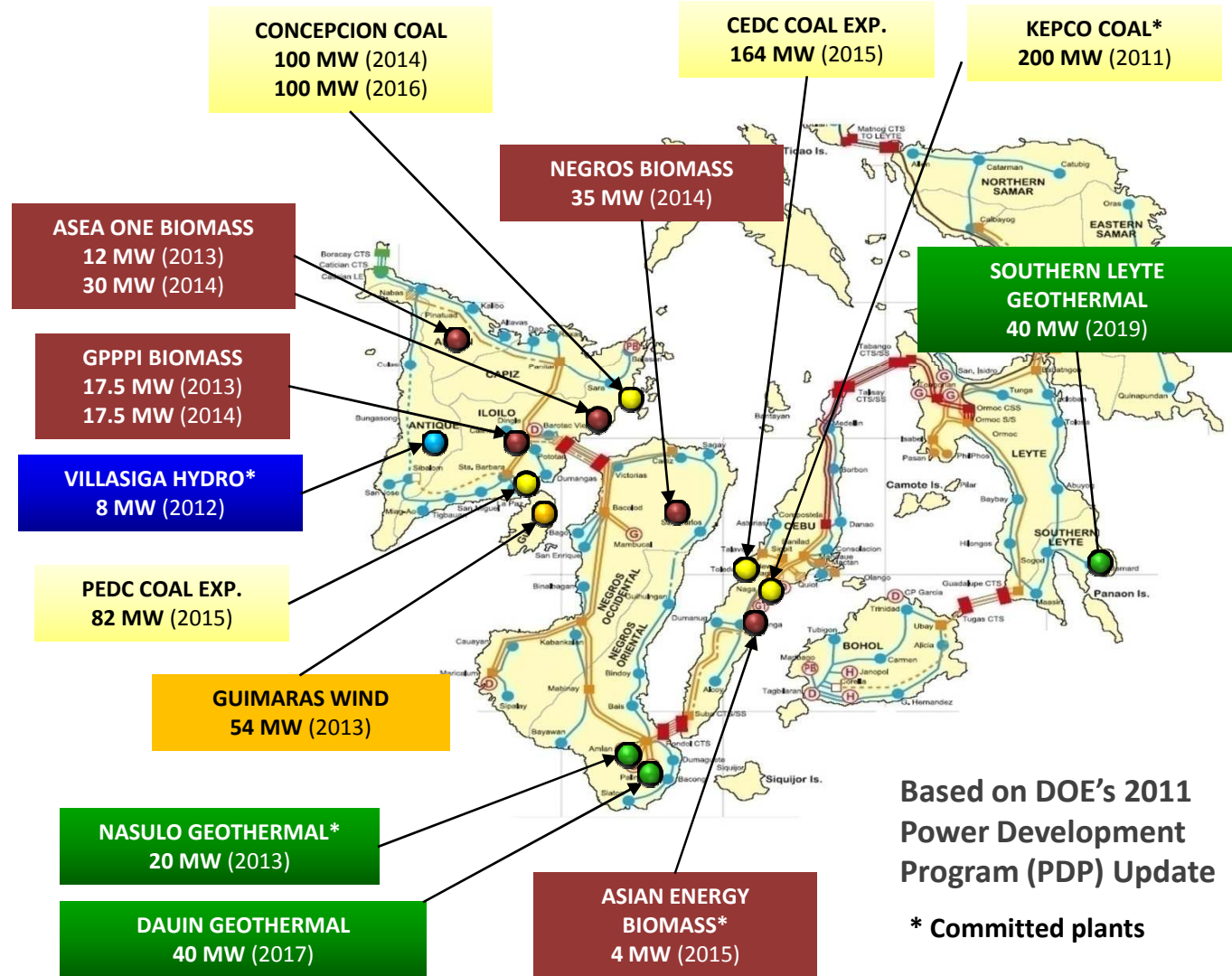


(Conventional)

	MW
Coal	646
Subtotal	646

(Renewable)

	MW
Wind	54
Geo	100
Biomass	116
Hydro	8
Subtotal	278
TOTAL	924



Based on DOE's 2011 Power Development Program (PDP) Update

* Committed plants



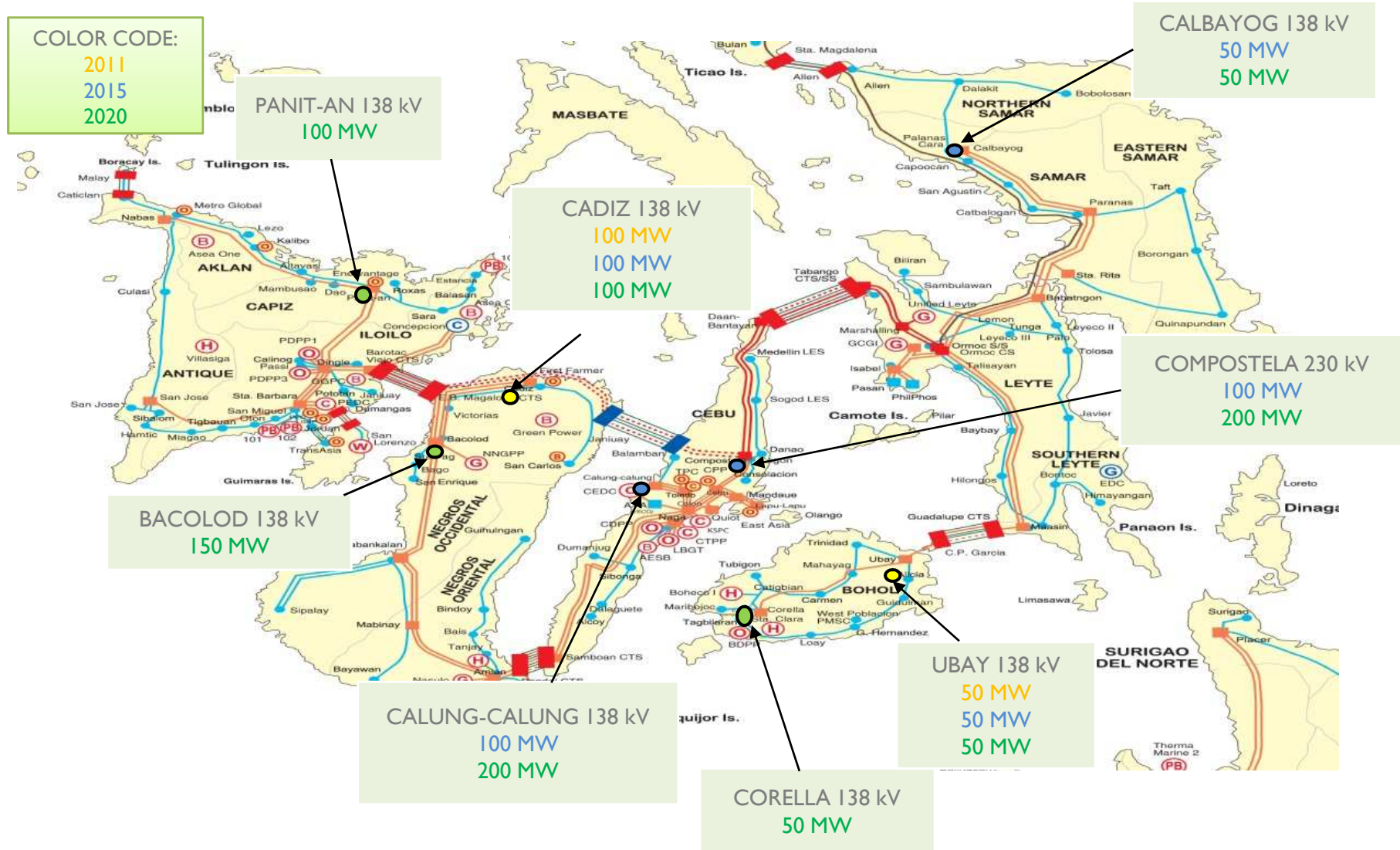
VI. Ideal Locations of Power Plants

VI. Ideal Locations of Power Plants

VISAYAS



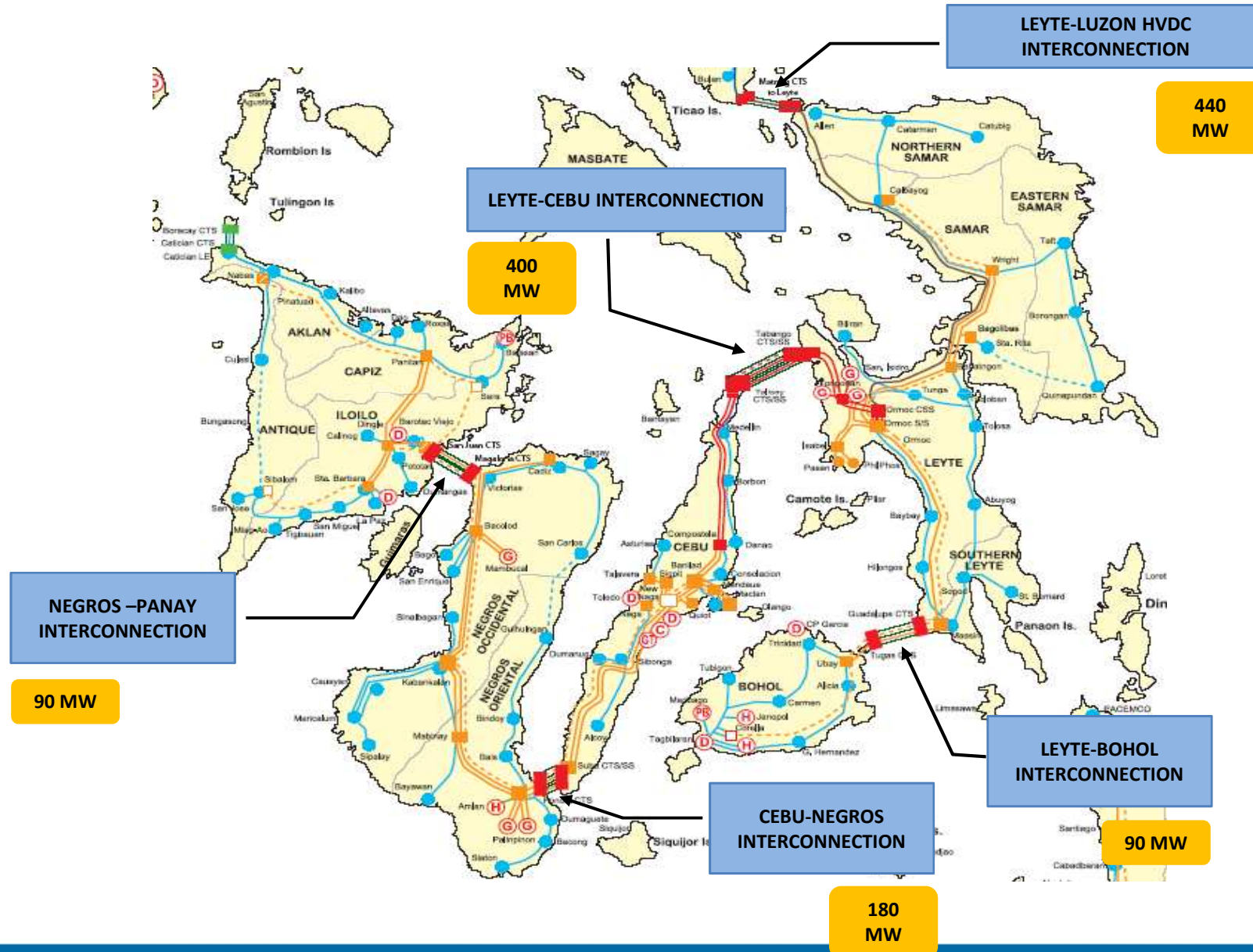
COLOR CODE:
 2011
 2015
 2020





VII. Visayas Grid System Development

Existing Interconnection Capacity



2011-2020 Visayas System Development

Interconnection Projects

ERC APPROVED

NEW PROJECT FOR 3RD REG

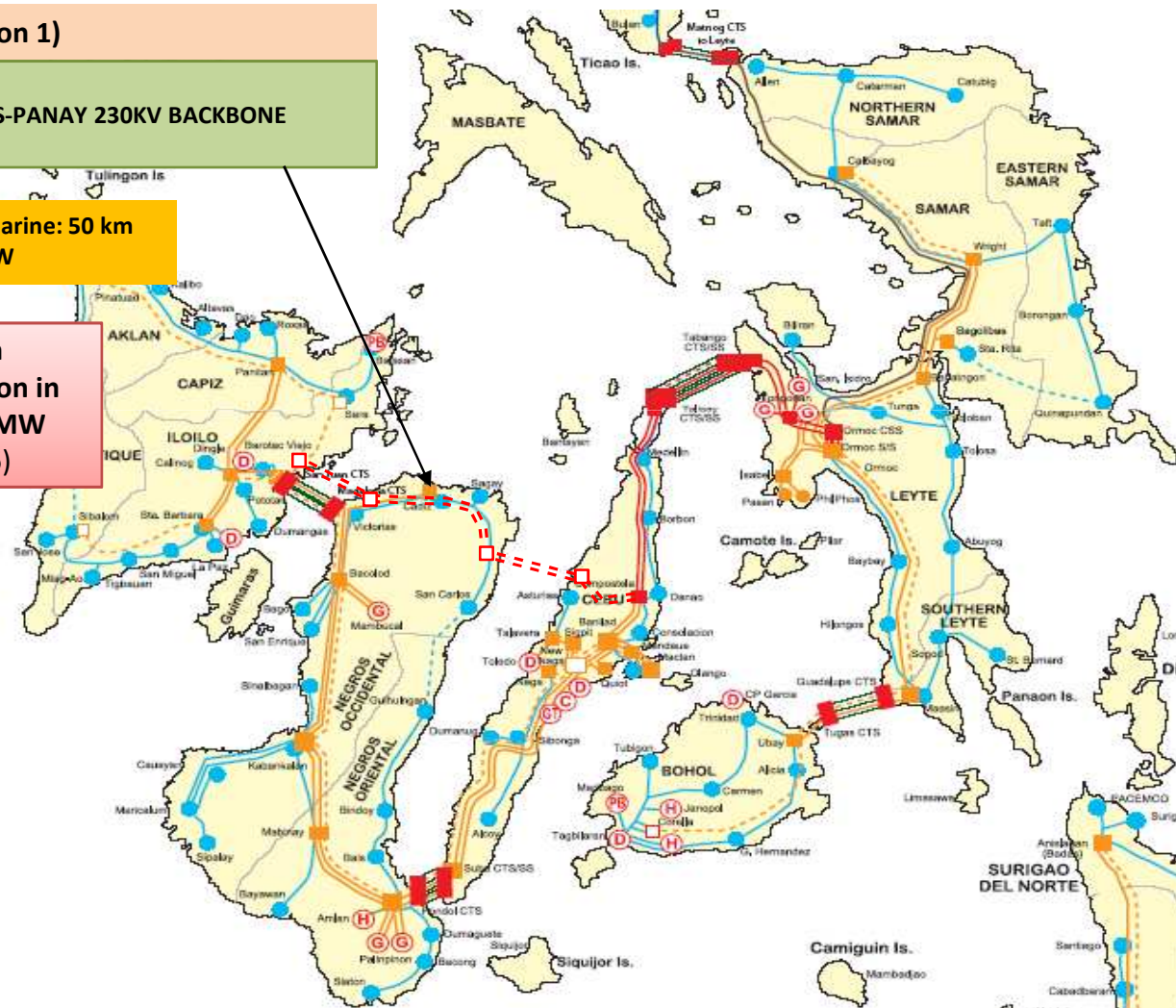
INDICATIVE

P 36 Billion (Option 1)

CEBU-NEGROS-PANAY 230KV BACKBONE

OH: 131 km Submarine: 50 km
400 MW

Generation
Capacity Addition in
PANAY : 420 MW
(2011-2016)



2011-2020 Visayas System Development

Interconnection Projects

ERC APPROVED

NEW PROJECT FOR 3RD REG

INDICATIVE

P 0.7 Billion

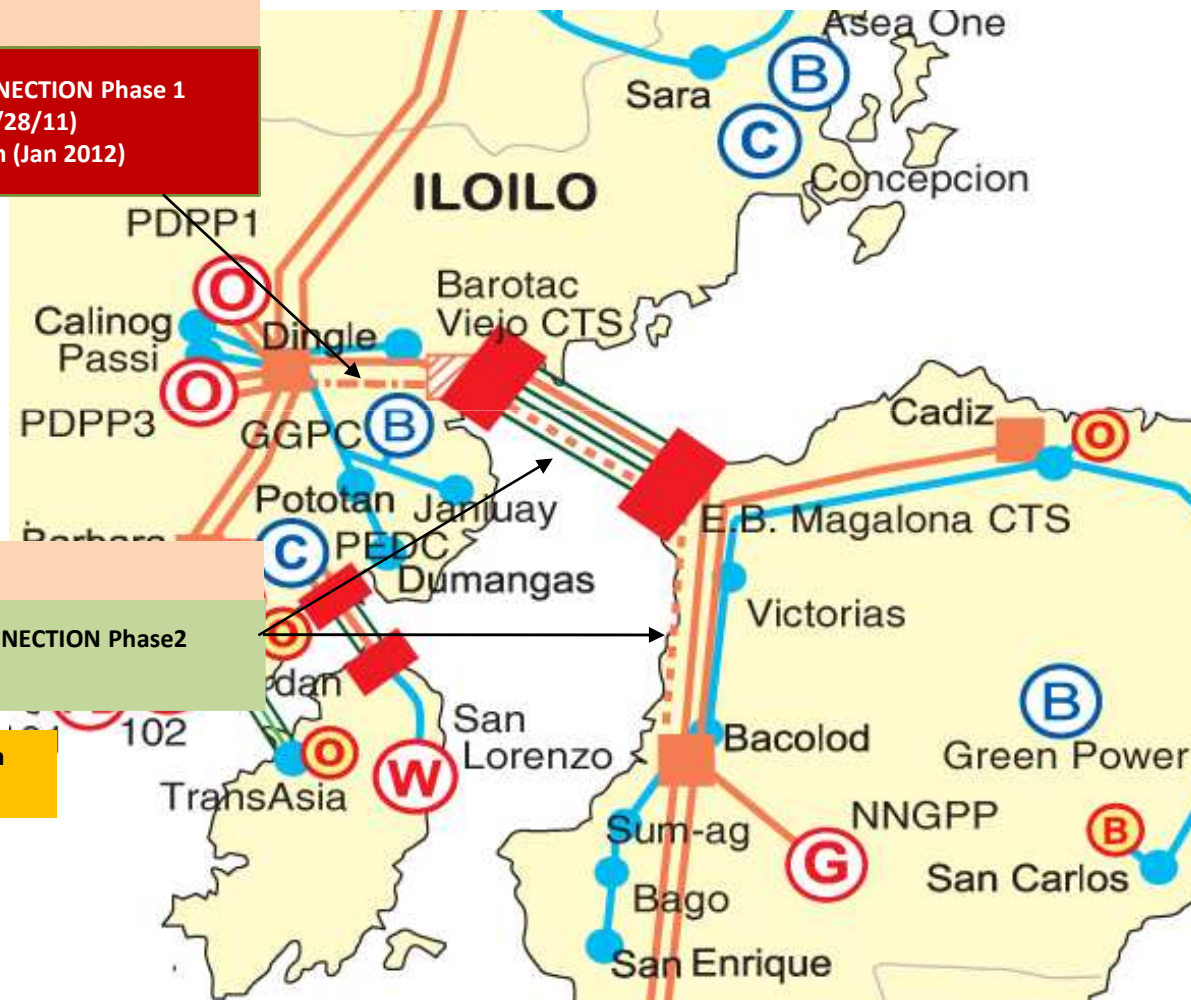
NEGROS-PANAY INTERCONNECTION Phase 1
T/L energized (12/28/11)
S/S target energization (Jan 2012)

OH: 34 km

P 2.8 Billion (Option 2)

NEGROS-PANAY INTERCONNECTION Phase 2
(2014)

OH: 30 km Submarine: 18 km
90 MW

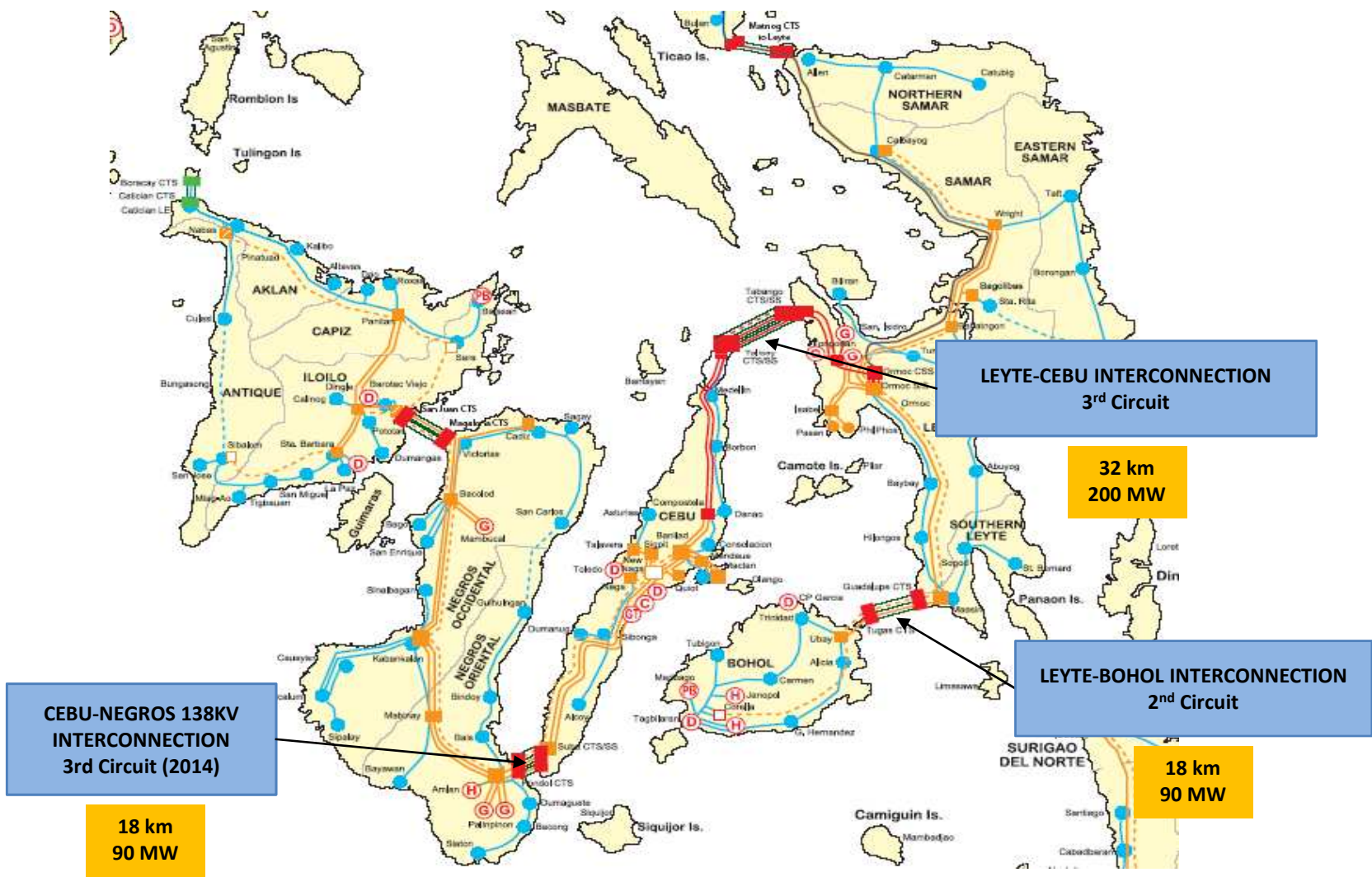


2011-2020 Visayas System Development Interconnection Projects

ERC APPROVED

NEW PROJECT FOR 3RD REG

INDICATIVE



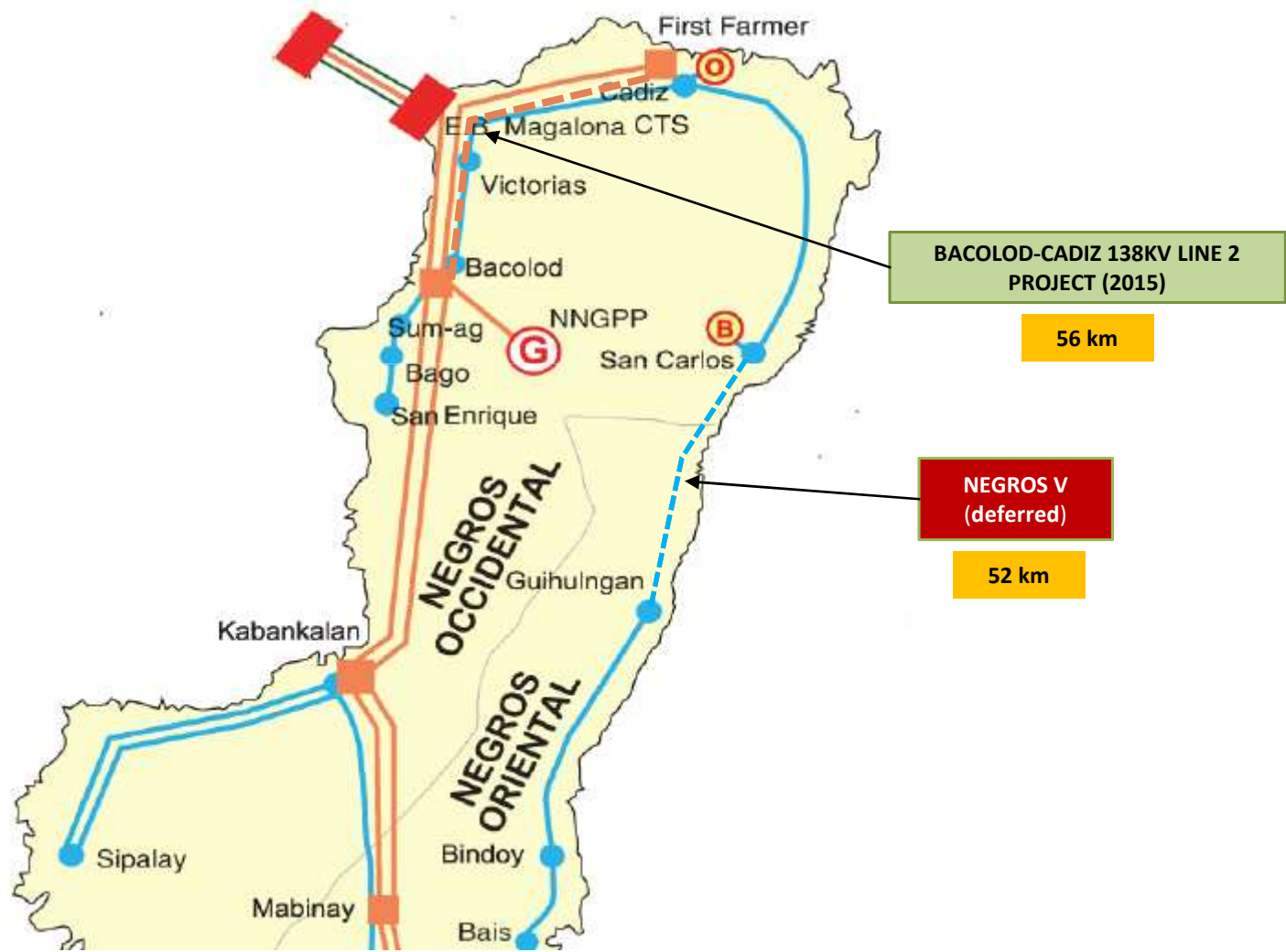
2011-2020 Visayas System Development

Major Projects in Negros

ERC APPROVED

NEW PROJECT FOR 3RD REG

INDICATIVE

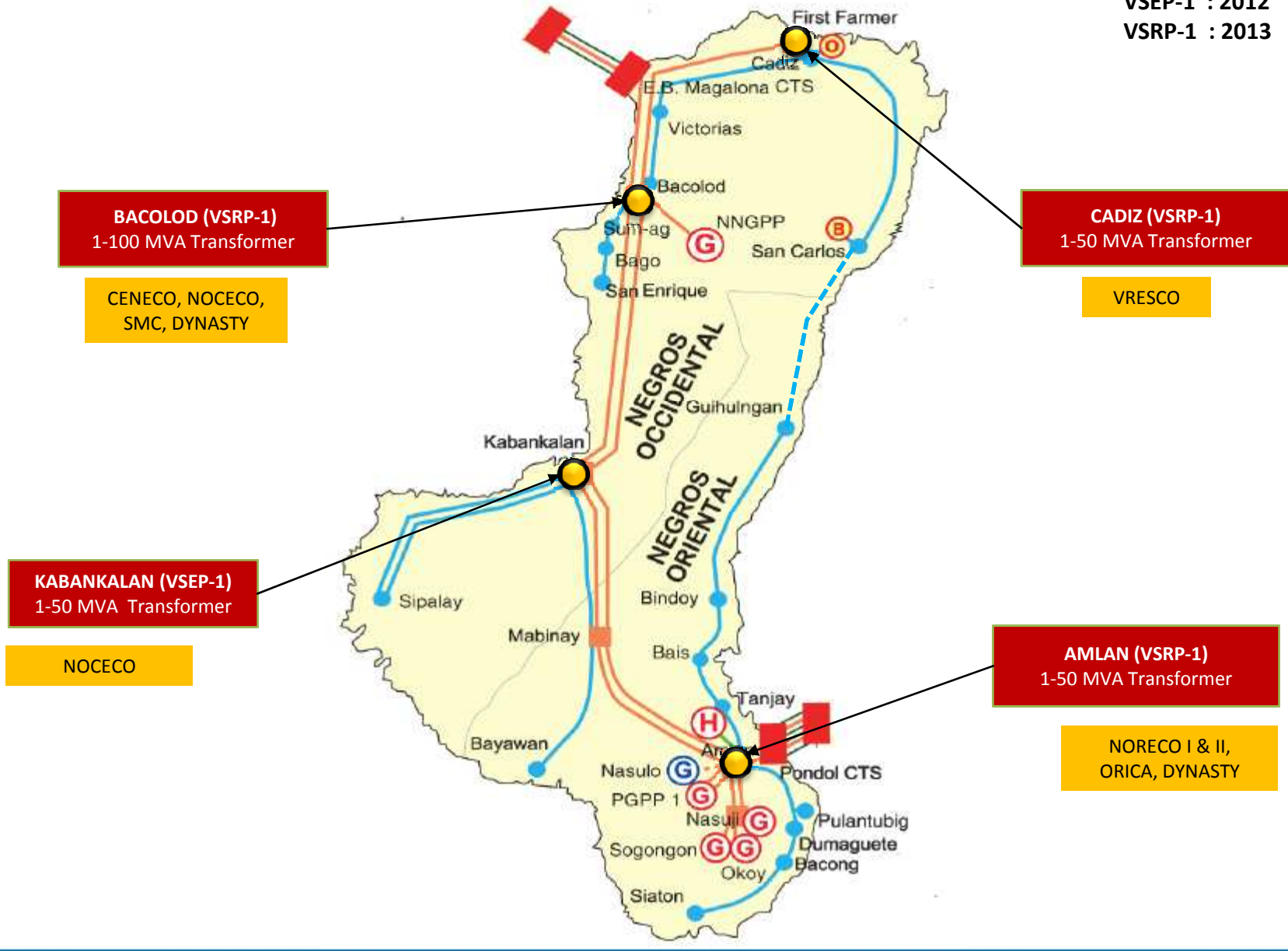


2011-2020 Luzon System Development

Substation Capacity Expansions in Negros

ERC-APPROVED

VSEP-1 : 2012
VSRP-1 : 2013

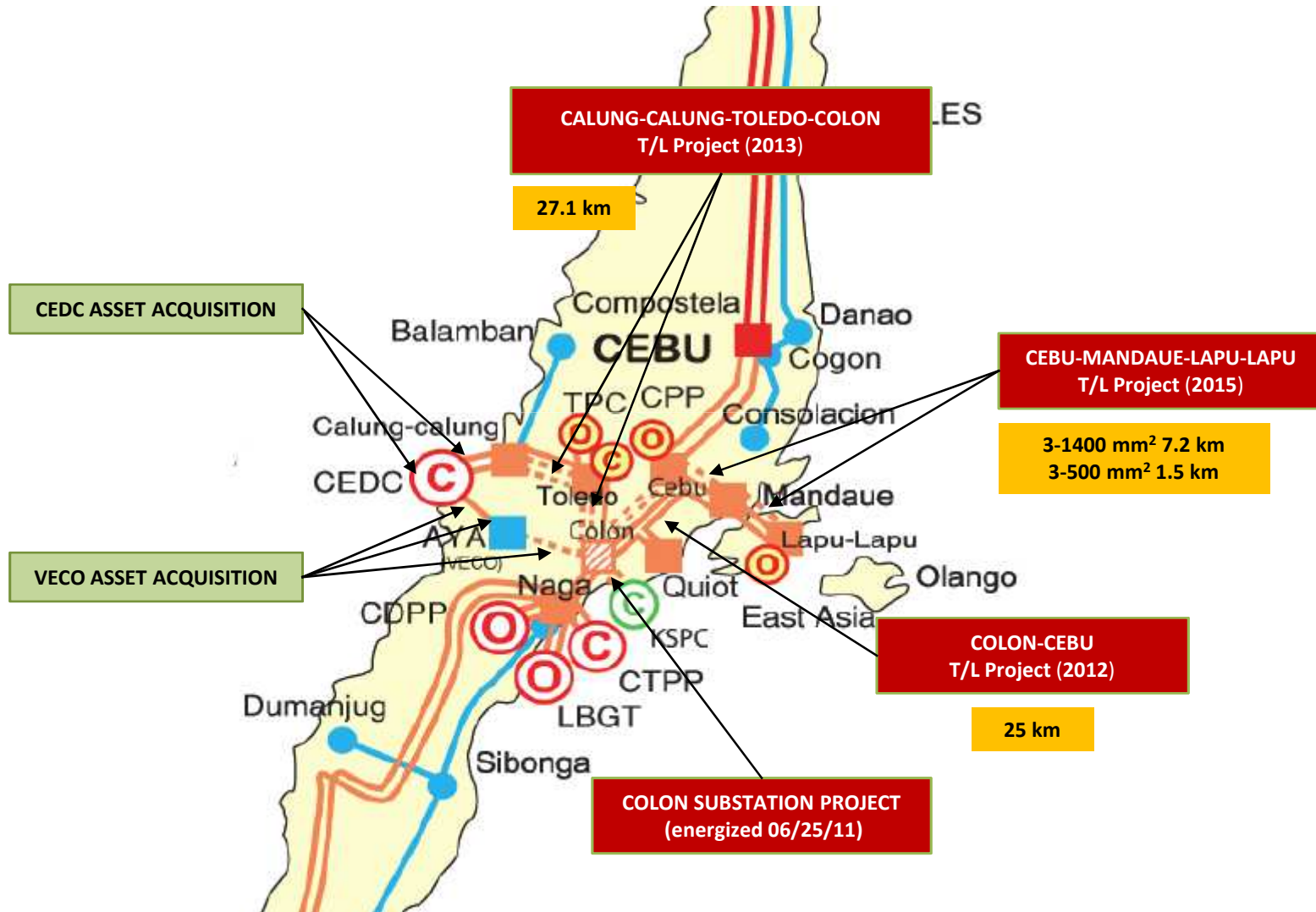


2011-2020 Visayas System Development

Major Projects in Cebu

ERC APPROVED

INDICATIVE



2011-2020 Luzon System Development

Substation Capacity Expansions in Cebu

ERC-APPROVED

VSEP-1 : 2012
 VSRP-1 : 2013
 VSRP-2 : 2014

CALUNG-CALUNG (VSEP-1)
 1-50 MVA Transformer

CEBECO III,
 BALAMBAN ENERZONE

COMPOSTELA 230/138 kV
 1-150 MVA Transformer
 (JUNE 2012)

MANDAUE (VSRP-2)
 1-100 MVA Transformer

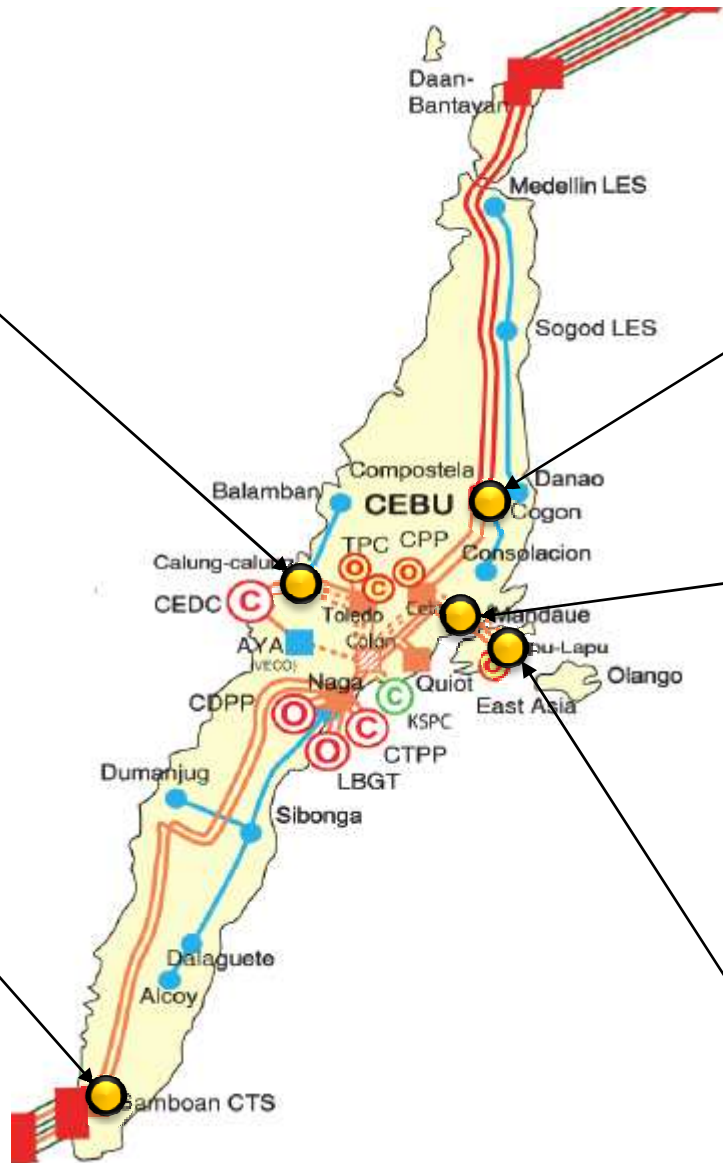
VECO

SAMBOAN (VSRP-1)
 1-50 MVA Transformer

CEBECO I

LAPU-LAPU (VSRP-2)
 1-100 MVA Transformer

MECO, MEPZ I, MEZ,
 WATERFRONT, PAF, GMC



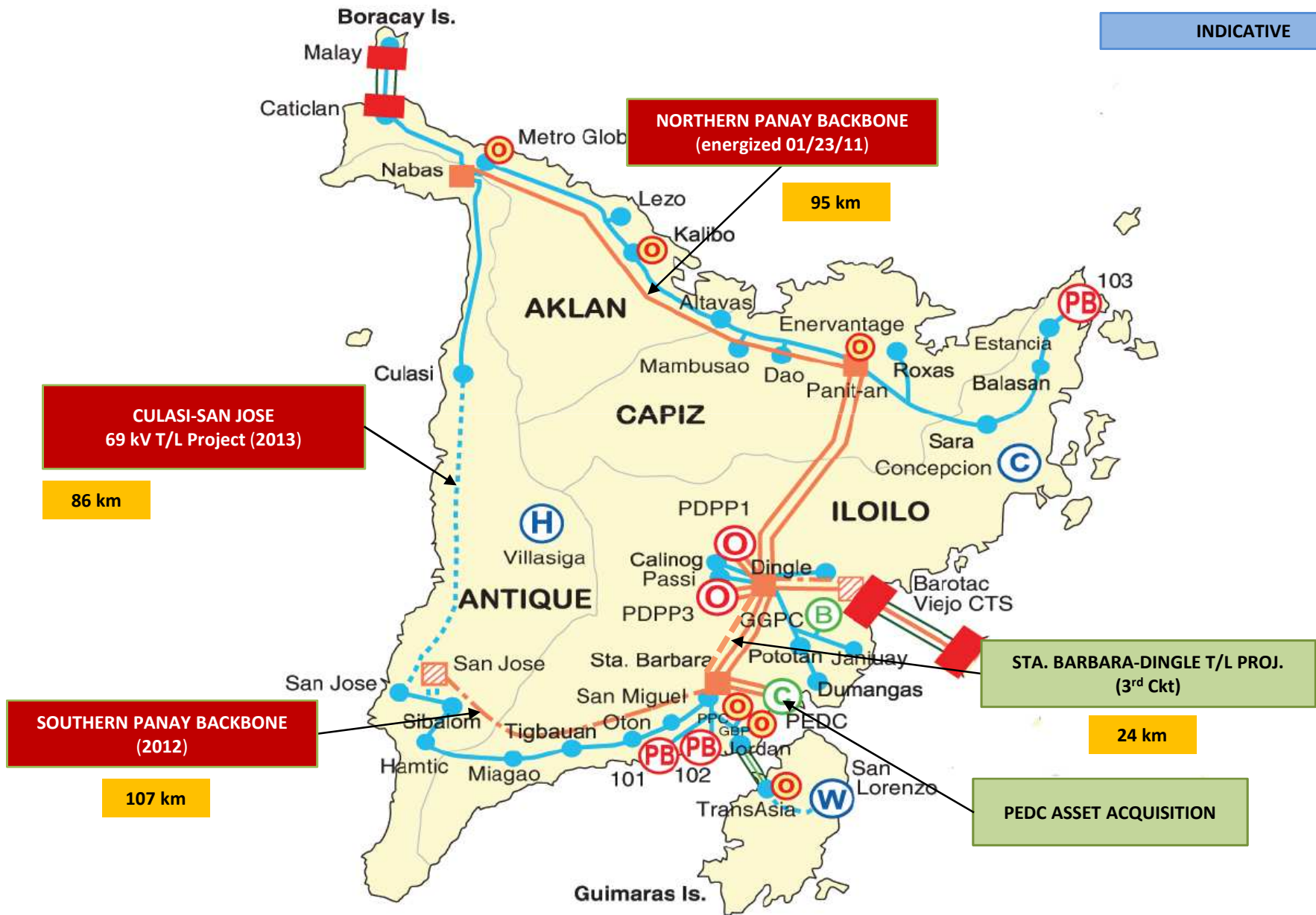
2011-2020 Visayas System Development

Major Projects in Panay

ERC APPROVED

NEW PROJECT FOR 3RD REG

INDICATIVE



2011-2020 Luzon System Development

Substation Capacity Expansions in Panay

ERC-APPROVED

VSRP-2 : 2014

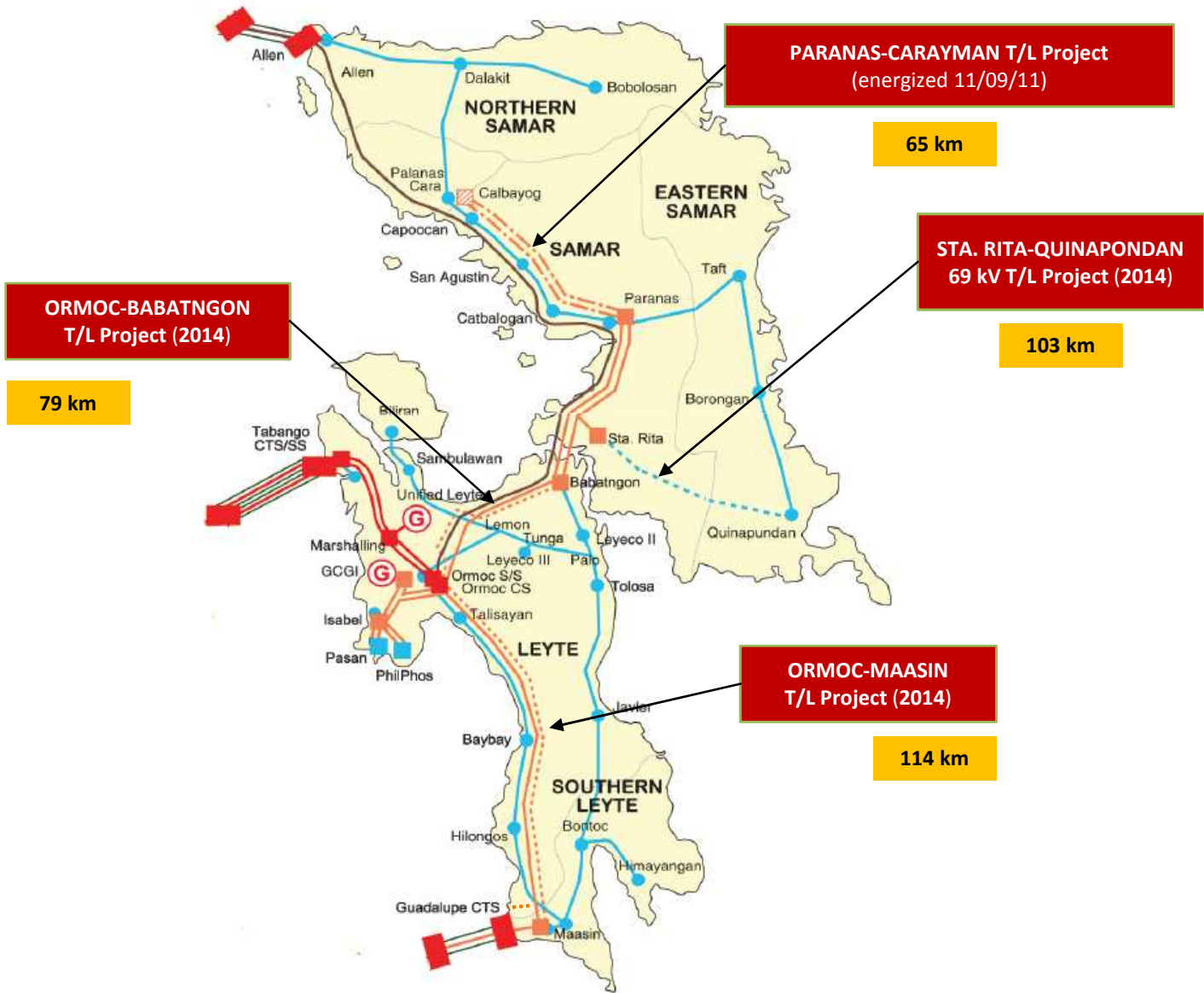


2011-2020 Visayas System Development

Major Projects in Leyte-Samar

ERC APPROVED

INDICATIVE



2011-2020 Luzon System Development

Substation Capacity Expansions in Leyte-Samar

ERC-APPROVED

VSEP-1 : 2012
 VSRP-1 : 2013
 VSRP-2 : 2014

BABATNGON (VSRP-1)
 1-50 MVA Transformer

LEYECO II

STA. RITA (VSRP-2)
 1-50 MVA Transformer

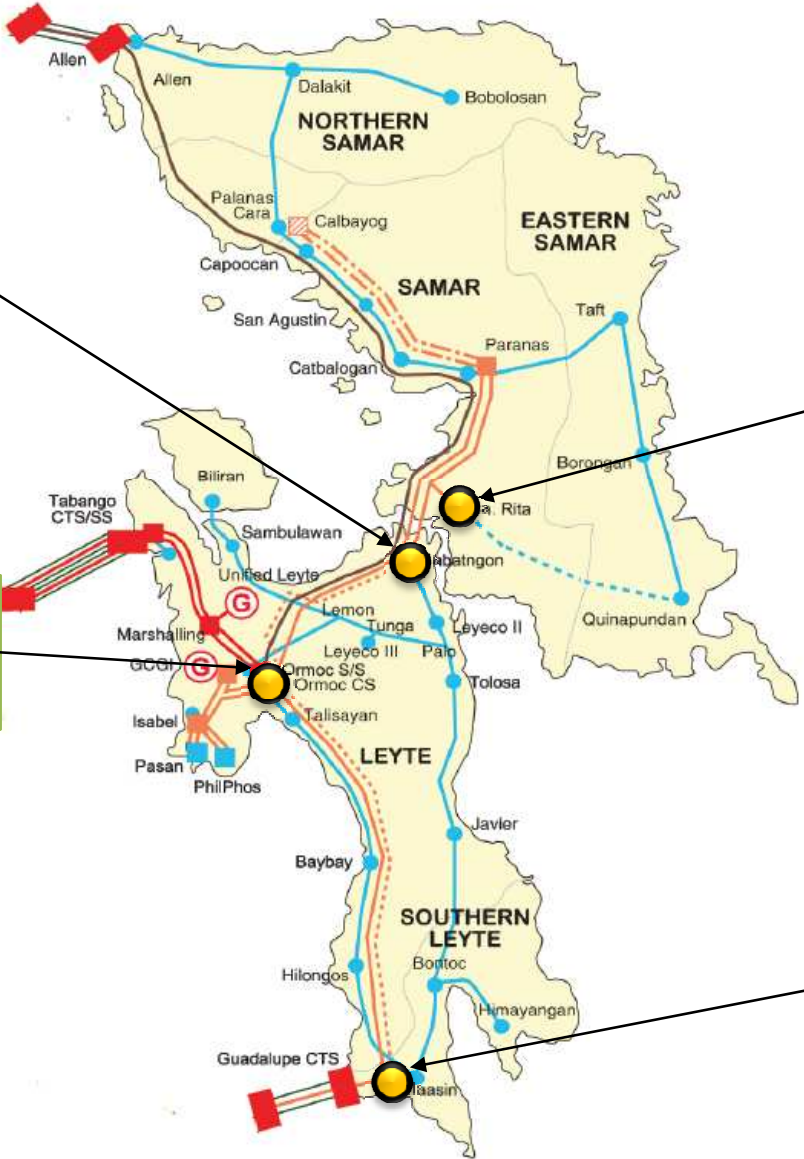
SAMELCO,
 ESAMELCO

ORMOC
 1-150 MVA 230/138kV (VSRP-1)
 1-100 MVA 138/69 kV (VSEP-1)
 1-100 MVA 138/69 kV (VSRP-2)

LEYECO III, IV & V,
 DORELCO, BILECO,
 LIDE, VOMI, SPMI, SCGCPI

MAASIN (VSRP-1)
 1-50 MVA Transformer

SOLECO, LEYECO IV

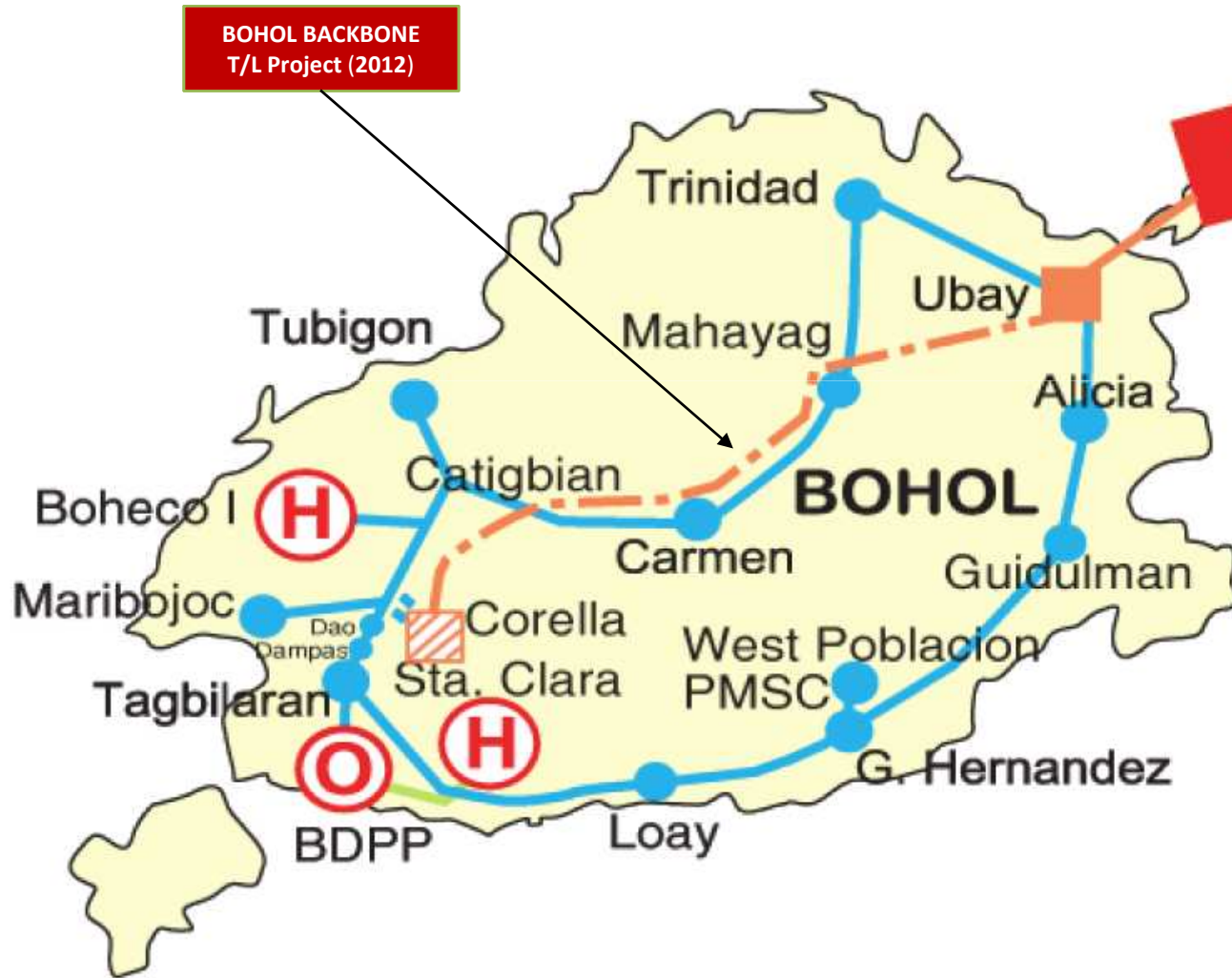


2011-2020 Visayas System Development

Major Projects in Bohol

ERC APPROVED

INDICATIVE





End of Presentation

2011 TDP Volume 1

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