

Energy Investment Opportunities in the Philippines

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Presentation Outline

I. Energy Situationer

- A. 2016 Energy Supply
- B. 2016 Power Capacity and Gross Generation

II. Energy Outlook 2016 - 2040

- A. Energy Demand Outlook 2016-2040
- B. Primary Energy Mix 2016-2040
- C. Energy Supply Outlook 2016-2040

III. Strategic Direction

IV. Investment Opportunities

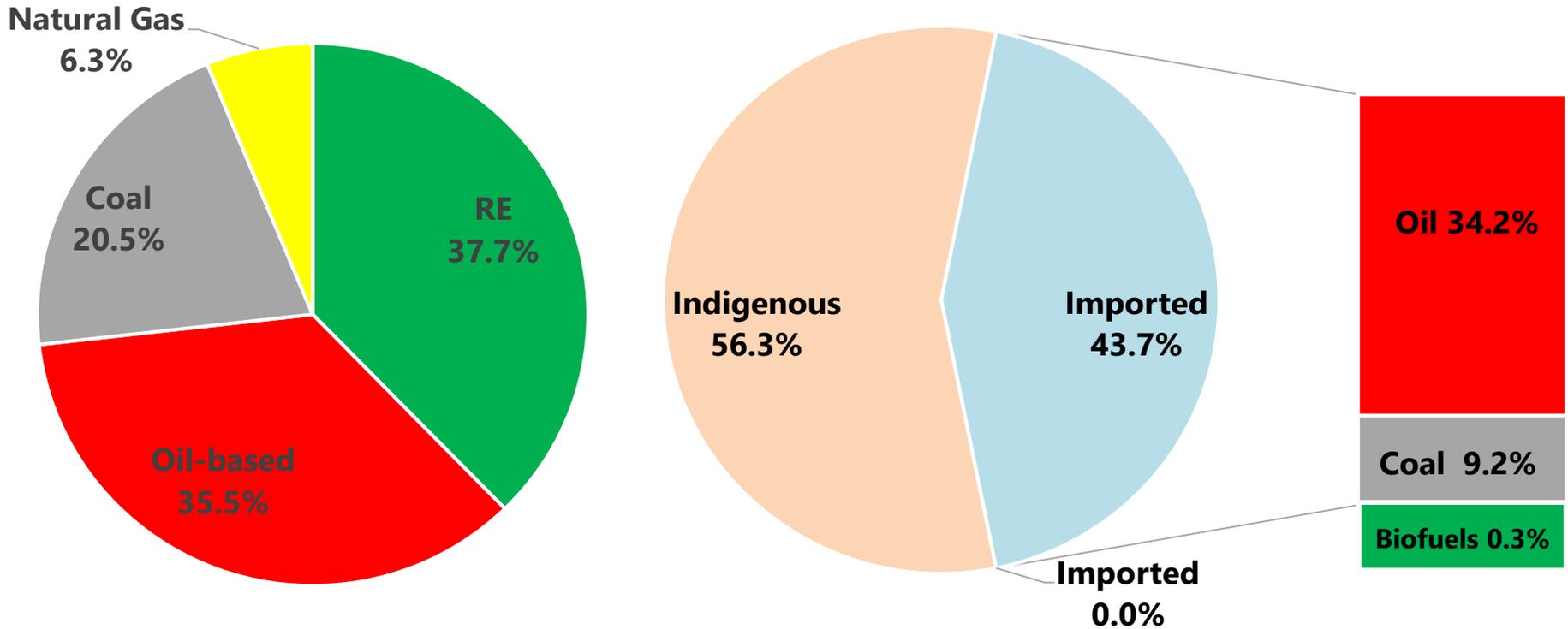


Energy Situationer



Energy Situationer

2016 Energy Supply



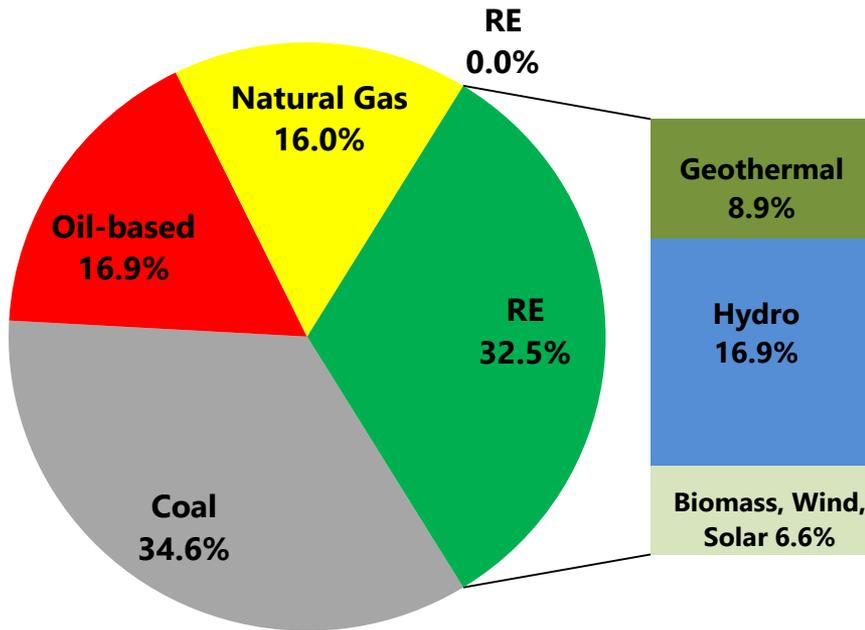
Total Energy:	52.21 MTOE
Self-sufficiency:	56.3%
Renewable Energy:	37.7%
RE + Nat Gas:	44.0%



Energy Situationer

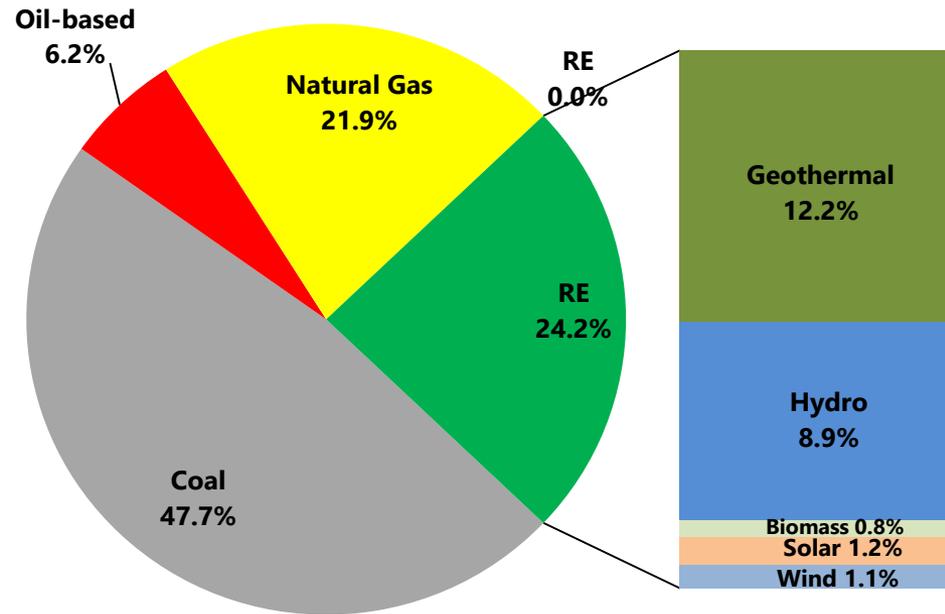
2016 Power Capacity and Gross Generation

Installed Capacity



Total Installed Capacity: 21,424 MW
Renewable Energy Share: 32.5%

Gross Generation



Total Generation: 90,797 GWh
Renewable Energy: 24.2%
RE + Nat Gas: 46.1%



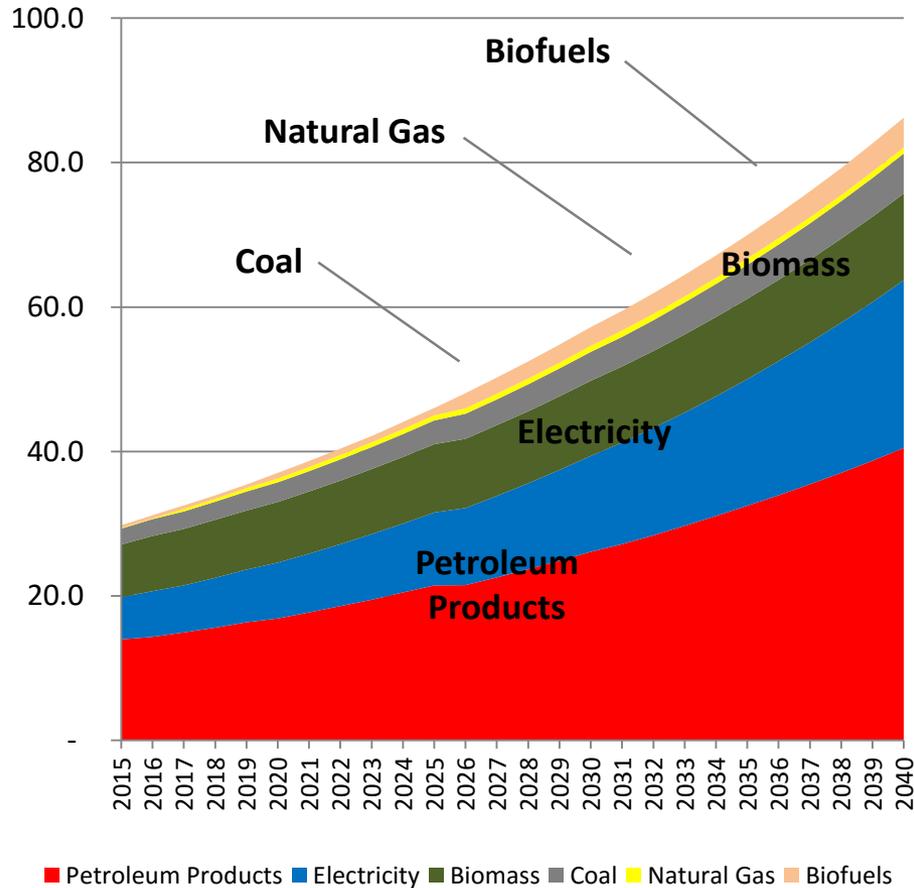
Energy Outlook 2016 - 2040



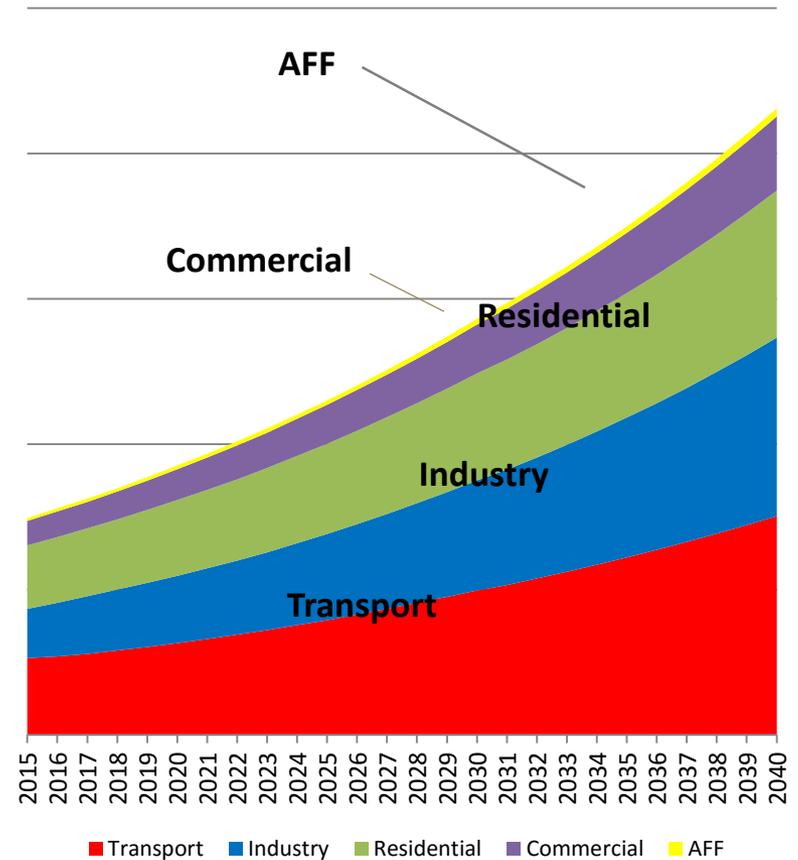
Energy Outlook 2016-2040

Demand Outlook 2016-2040

By Fuel Type

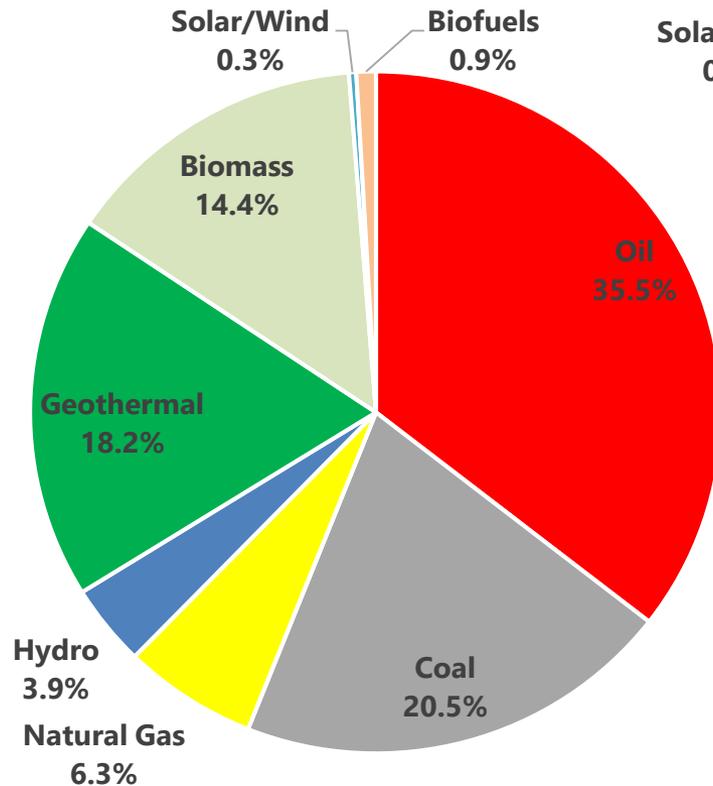


By Sector

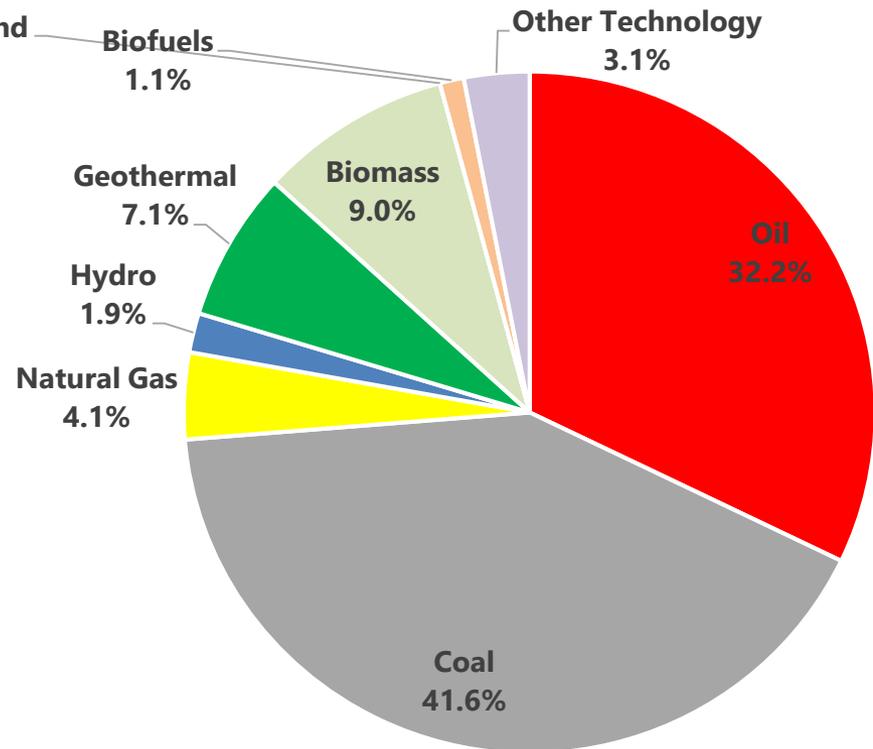


Energy Outlook 2016-2040

Primary Energy Mix 2016-2040



2016 Actual (prelim)
Total Energy: 52.2 MTOE

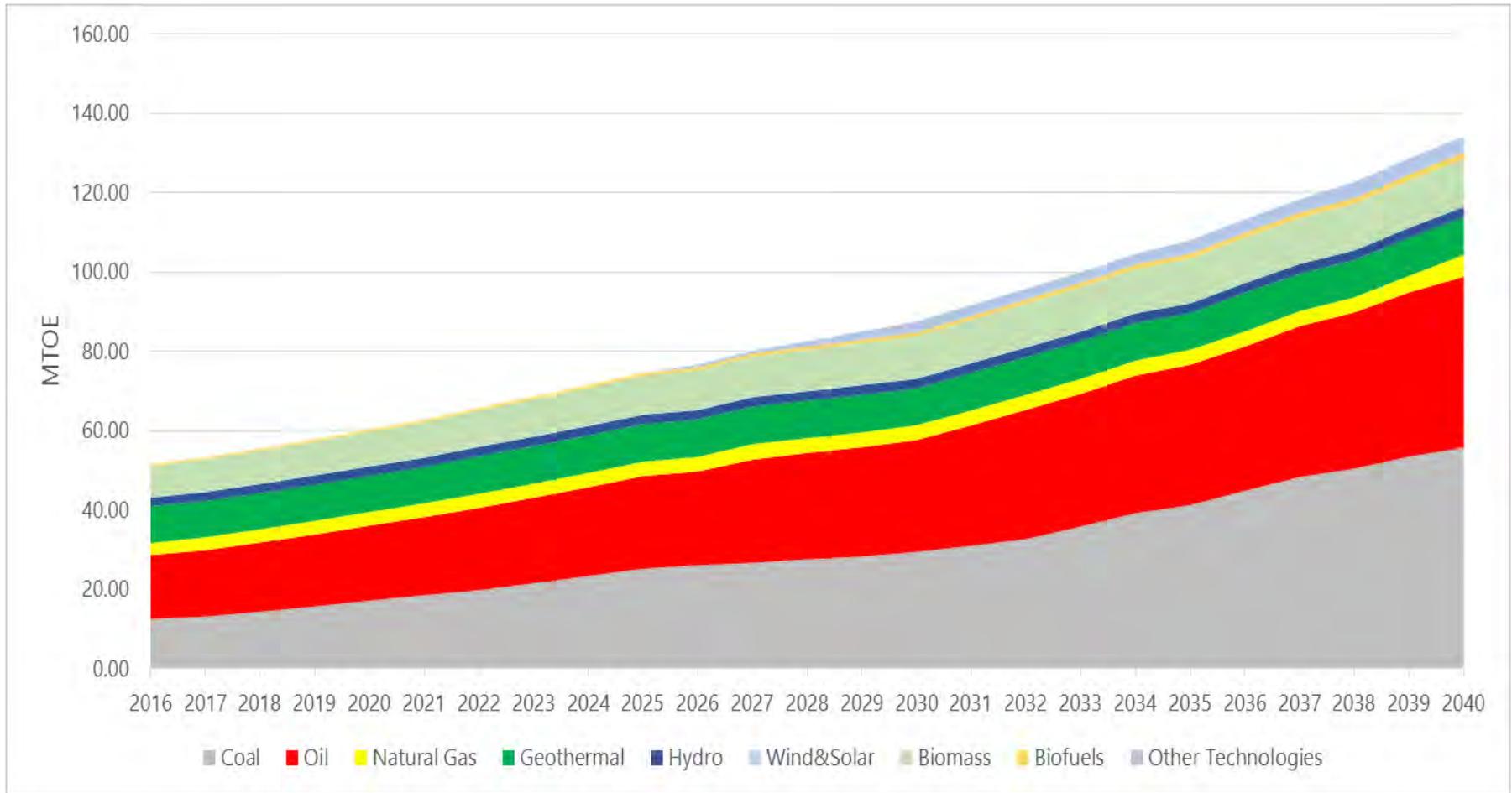


2040 Outlook
Total Energy: 134.2 MTOE



Energy Outlook 2016-2040

Supply Outlook 2016-2040



Strategic Directions 2016 - 2040



Strategic Directions 2017 – 2040

1

**ENSURE
ENERGY
SECURITY**

2

**EXPAND
ENERGY
ACCESS**

3

**PROMOTE A
LOW CARBON
FUTURE**

4

**STRENGTHEN
COLLABORATION
AMONG ALL
GOVERNMENT
AGENCIES
INVOLVED IN
ENERGY**

5

**IMPLEMENT,
MONITOR AND
INTEGRATE
SECTORAL AND
TECHNOLOGICAL
ROADMAPS AND
ACTION PLANS**

6

**ADVOCATE THE
PASSAGE OF THE
DEPARTMENT'S
LEGISLATIVE
AGENDA**

7

**STRENGTHEN
CONSUMER
WELFARE AND
PROTECTION**

8

**FOSTER
STRONGER
INTERNATIONAL
RELATIONS AND
PARTNERSHIPS**



Investment Opportunities



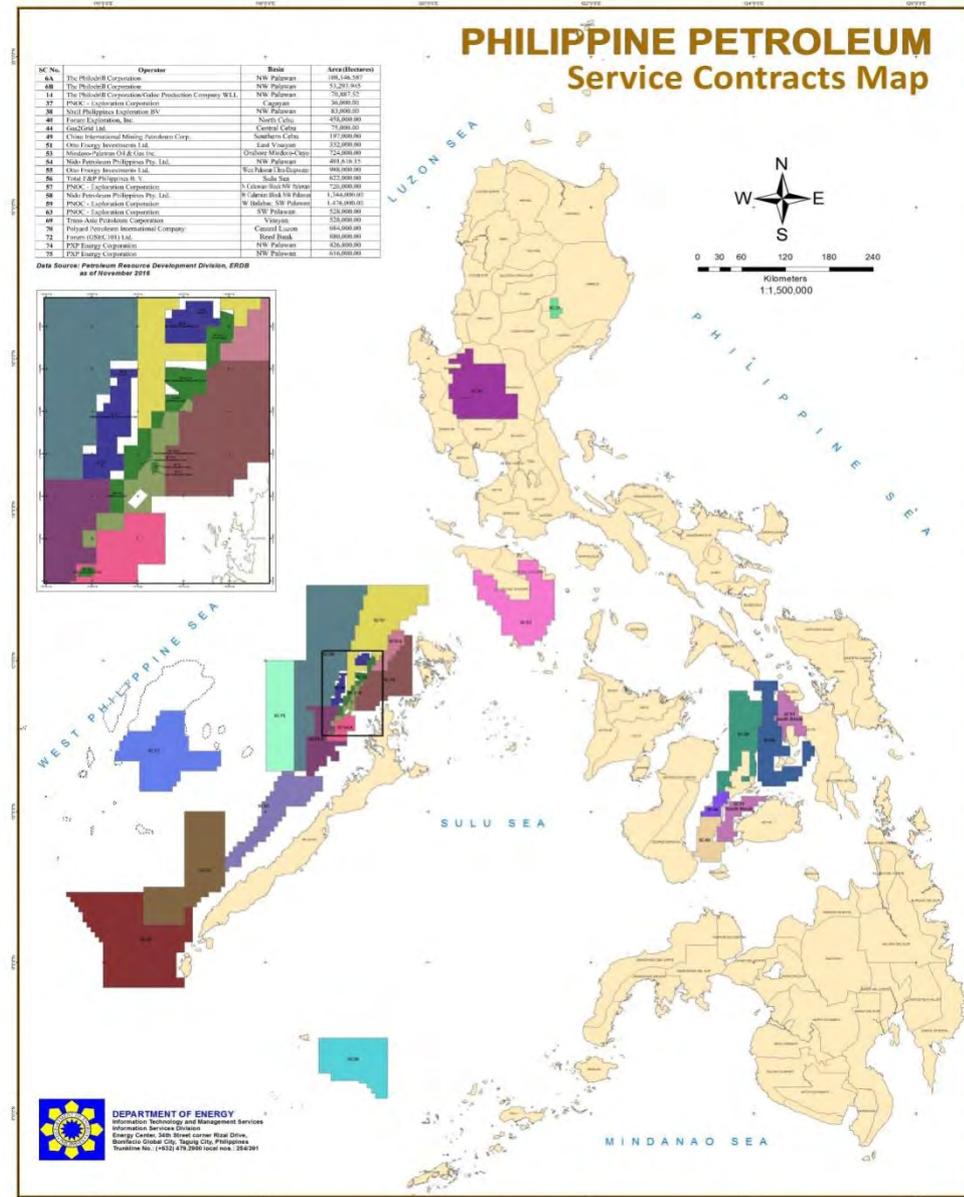
Upstream Oil & Gas

Petroleum Service Contracts Exploration & Development

Currently, there are 23 Petroleum Service Contracts (PSCs)

- 7 PSCs in the Production Stage
- 16 PSCs in the Exploration Stage

DOE will implement the Philippine Conventional Energy Contracting Program (PCECP) for petroleum



Upstream Coal

Summary of Regional Coal Reserves (in Million Metric Tons)

QUEZON
Resource Potential - 2.00
In-situ Reserves - 0.09

MINDORO
Resource Potential - 100.00
In-situ Reserves - 1.44

SEMIRARA
Resource Potential - 570.00
In-situ Reserves - 112.32

NEGROS
Resource Potential - 4.50
In-situ Reserves - 2.01

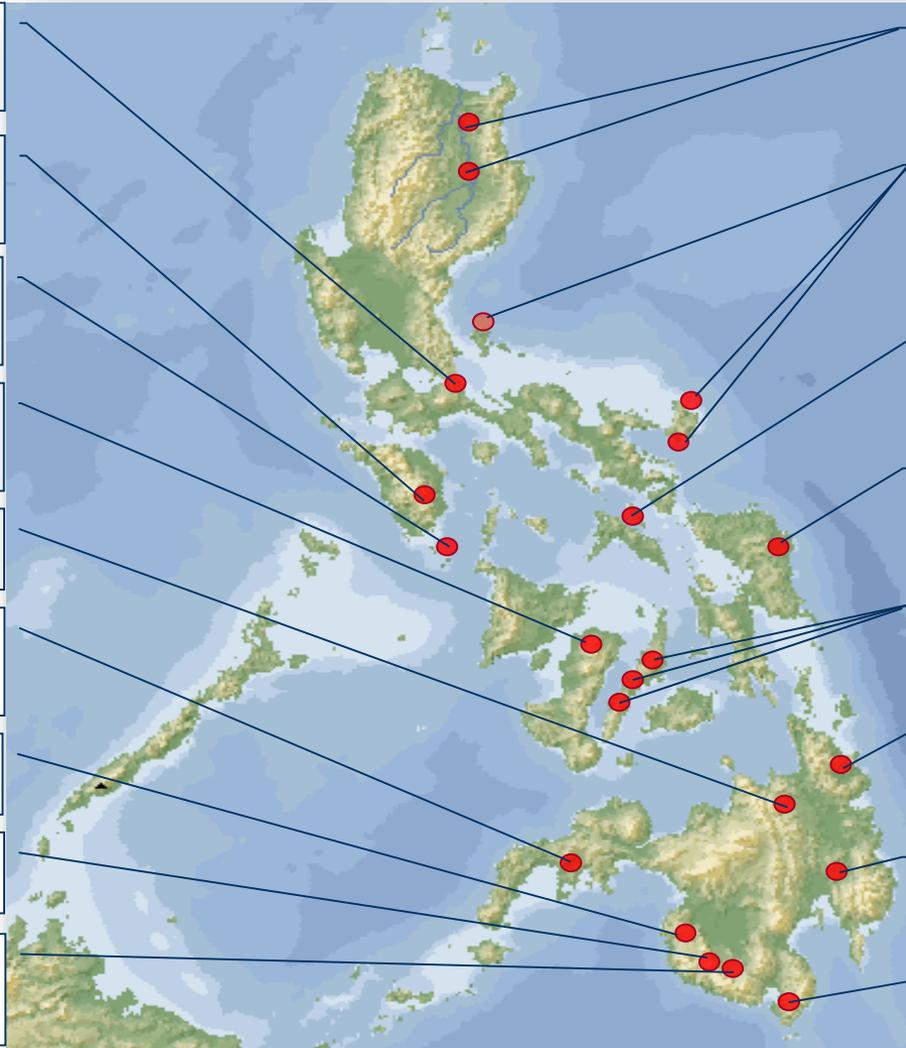
BUKIDNON
Resource Potential - 50.00

ZAMBOANGA
Resource Potential - 45.00
In-situ Reserves - 37.99

MAGUINDANAO
Resource Potential - 108.00

SULTAN KUDARAT
Resource Potential - 300.30

SOUTH COTABATO
Resource Potential - 230.40
In-situ Reserves - 81.07



CAGAYAN VALLEY
Resource Potential - 336.00
In-situ Reserves - 82.57

BATAN-POLILLO-CATANDUANES
Resource Potential - 17.00
In-situ Reserves - 6.02

MASBATE
Resource Potential - 2.50
In-situ Reserves - 0.08

SAMAR
Resource Potential - 27.00
In-situ Reserves - 8.59

CEBU
Resource Potential - 165.00
In-situ Reserves - 11.63

SURIGAO
Resource Potential - 209.00
In-situ Reserves - 69.55

DAVAO
Resource Potential - 100.00
In-situ Reserves - 0.21

SARANGANI
Resource Potential - 120.00



Upstream Coal

Coal Operating Contracts Exploration & Development

70 Active Coal Operating Contracts (COCs)

- 40 COCs in the Exploration Stage
- 30 COCs in the Development and Production Stage

DOE will implement the Philippine Conventional Energy Contracting Program (PCECP) for coal



Downstream Oil

Number of Downstream Oil Players and Investments

Activity	No. of Players and Investments			
	1999 (before the Oil Deregulation Law)		1H 2017 (after RA 8479 Oil Deregulation Law)	
	In Operation	In Billion Pesos	In Operation	In Billion Pesos
Liquid Fuel Bulk Marketing	22	6.06	219	17.36
Fuel Retail Marketing	16	0.46	11	14.31
LPG Bulk Marketing	7	3.28	11	14.36
Termanalling	3	1.02	12	8.82
Bunkering	8	0.11	19	2.61
Total	56	11.03	272	57.46



Downstream Natural Gas



414 MW San Gabriel First Gen/ IPP



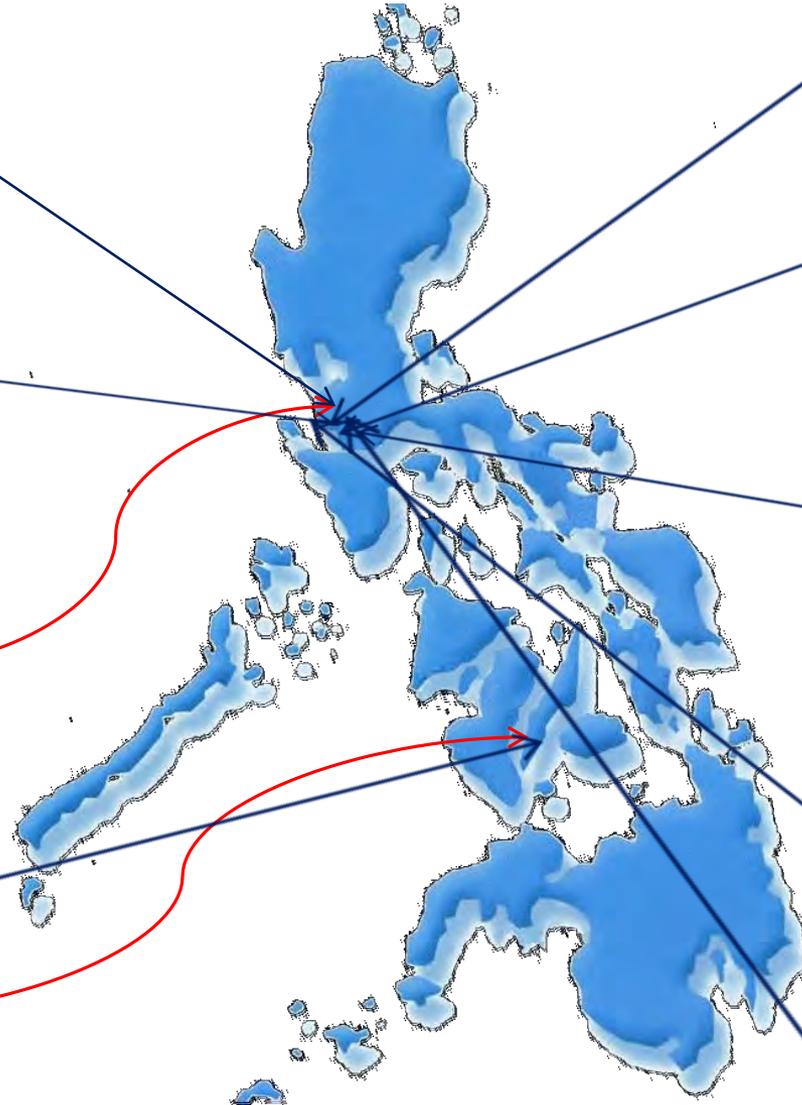
Shell Refinery



Malampaya Gas Field
2.7 TCF (2001)



Libertad Gas Field 0.6 BCF
(2012)



97 MW Avion
First Gen/ IPP



560 MW San Lorenzo First Gen/ IPP



1,000 MW Sta. Rita
First Gen/ IPP



1,200 MW Ilijan Power Plant
NPC IPP(KEPCO)



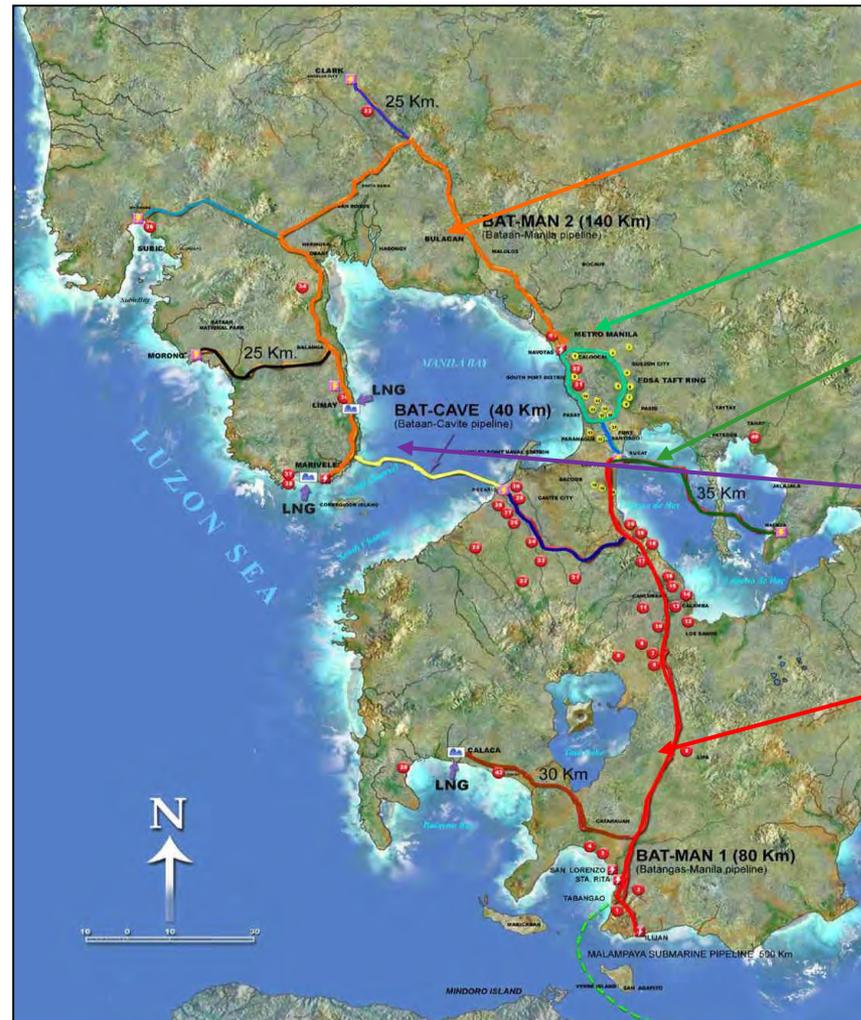
CNG Bus (2008)



Downstream Natural Gas

Natural Gas Infrastructure

- Develop strategic infrastructure for receiving, storage, transmission and distribution
- Promote use of natural gas beyond power
- Serve as major alternative fuel for transport especially public transport



BATMAN 2
(Bataan - Manila)
140 kms. (2020)

ET LOOP
(EDSA – Taft Loop)
40 kms. (2020)

SU-MA
(Sucat - Malaya)
35 kms. (2017)

BATCAVE
(Batangas – Cavite)
40 kms (2022)

BATMAN 1
(Batangas Manila)
80-100 kms. (2015-17)



Downstream Natural Gas

Integrated LNG Terminal



- Safeguard against the anticipated depletion of the Malampaya gas facility in 2024.
- Initial 200-MW power plant, storage facilities, liquefaction and regasification units.
- Output will serve PEZA areas.

Project Cost: **PHP 100 billion**
Targeted Completion: **2020**



Renewable Energy

National Renewable Energy Program

Renewable Energy Targets, 2010 - 2030		
Sector	Target Additional Capacity	Target Year
Biomass	277 MW	2015
Wind	2,345 MW	2022
Hydropower	5,398 MW	2023
Ocean Power	75 MW	2025
Geothermal	1,495 MW	2030
Solar	284 MW	2030
Total	9,874 MW	



Renewable Energy

Policies to Promote Renewable Energy

- **Net-Metering for RE**
 - A Renewable Energy Policy Mechanism which shall provide consumers to produce its own electricity requirement with maximum capacity of 100 kW.
- **RE Portfolio Standards**
 - Market based policy that requires the mandated electricity industry participants to source an agreed portion of their supply from eligible RE Resources
- **Must and Priority Dispatch for Variable REs**
 - DOE Circular No. DC2015-03-0001 dated 20 March 2015 promulgated the implementation framework
- **Renewable Energy Market (REM)**
 - Venue for trading of Renewable Energy Certificates (RE Certificates)
- **Green Energy Option**
 - Mechanism to provide end-users the option to choose RE as their sources of energy



Renewable Energy

Summary of Renewable Energy Projects

As of July 2017

Awarded Projects Under The RE Law

RESOURCES	AWARDED PROJECTS		POTENTIAL CAPACITY (MW)		INSTALLED CAPACITY (MW)	
	Grid-Use	Own-Use	Grid-Use	Own-Use	Grid-Use	Own-Use
Hydro Power	451	-	13,513.63		965.04	-
Ocean Energy	6	-	26.00	-	-	-
Geothermal	41	-	575.00	-	1,906.19	0.0006
Wind	59	1	2,341.50	-	426.90	3.218
Solar	196	16	5,567.27	4.286	900.18	126.78
Biomass	51	24	326.68	16.15	389.58	130.00
Sub-Total	804	41	22,350.08	20.436	4,587.89	
TOTAL	845		22,370.52		4,717.89	

* - excluding 55 installed projects with 3,050.47MW capacity under RA 7156, CA 120, PD 1645, RA 3601 & Own-Use

** - excluding 1 potential project with 20MW capacity under PD 1442

Biofuels Registration / Accreditation

RESOURCES	AWARDED	REGISTERED CAPACITY (million liters/year)	COR (with Notice to Proceed)	REGISTERED CAPACITY (million liters/year)
Bioethanol	10	282.12	3	149.00
Biodiesel	11	614.9	2	90.00
Total	21	897.02	5	239.00

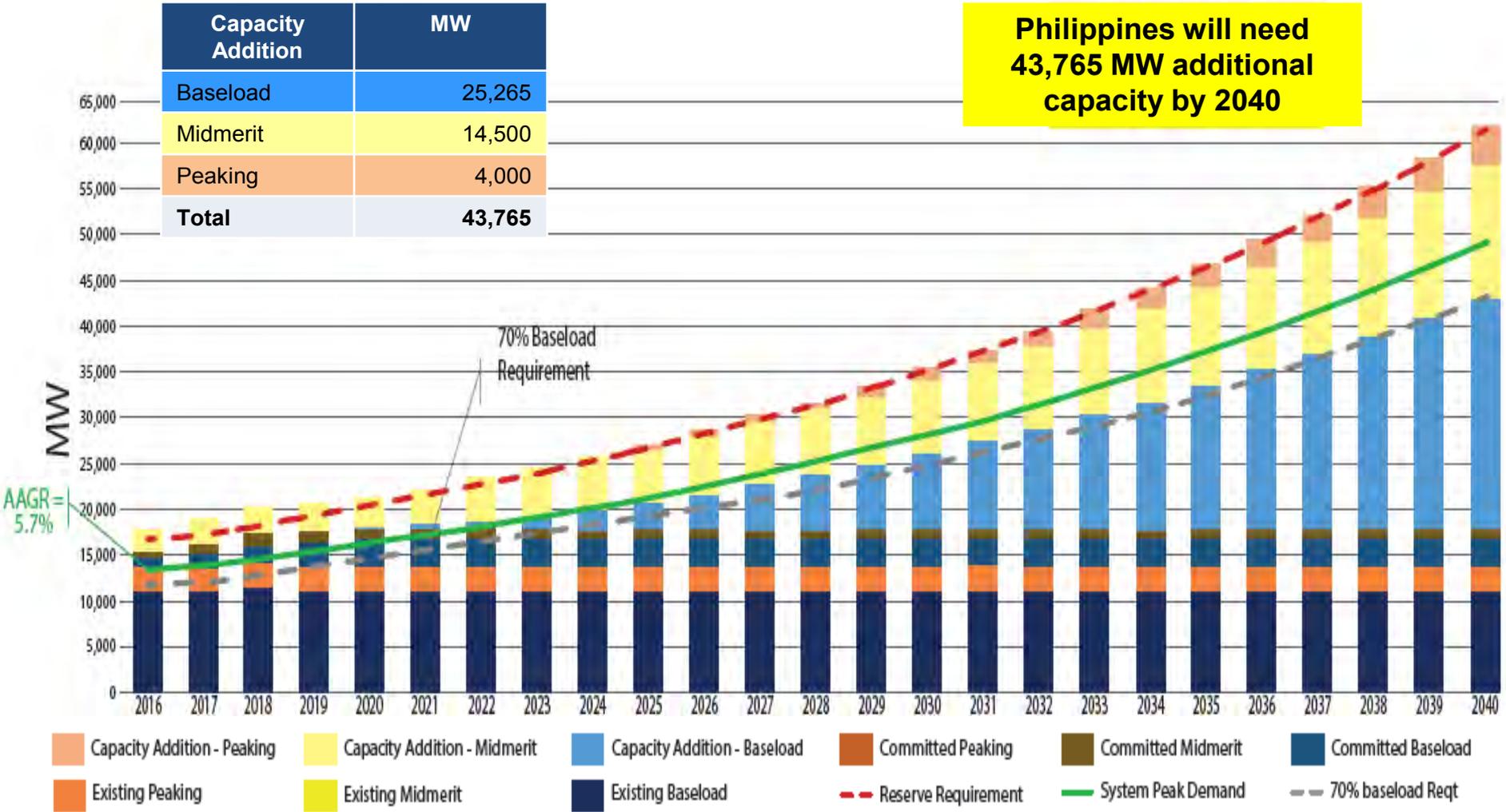


Power

Philippines Demand and Supply Outlook, 2016-2040

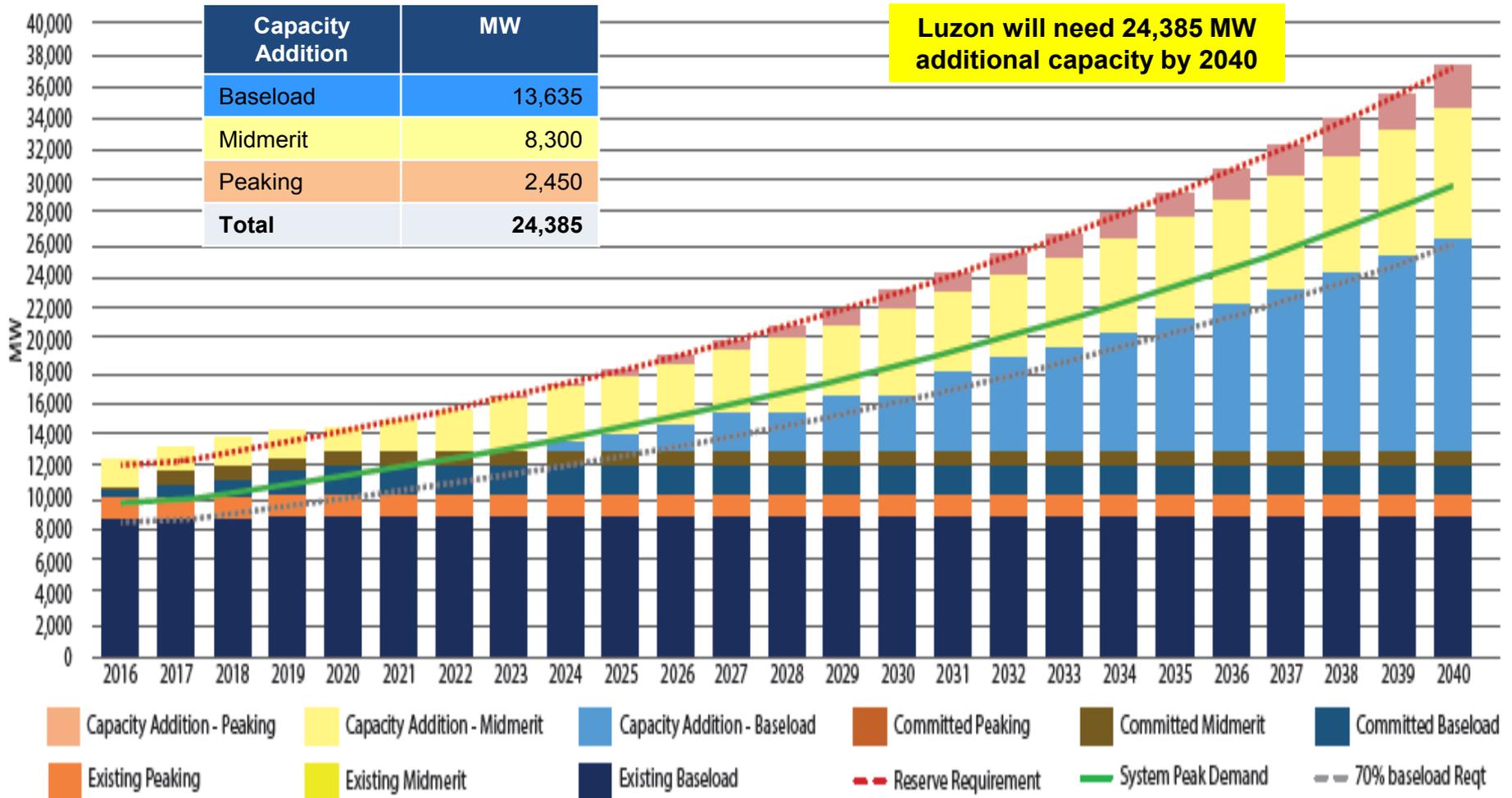
Capacity Addition	MW
Baseload	25,265
Midmerit	14,500
Peaking	4,000
Total	43,765

Philippines will need 43,765 MW additional capacity by 2040



Power

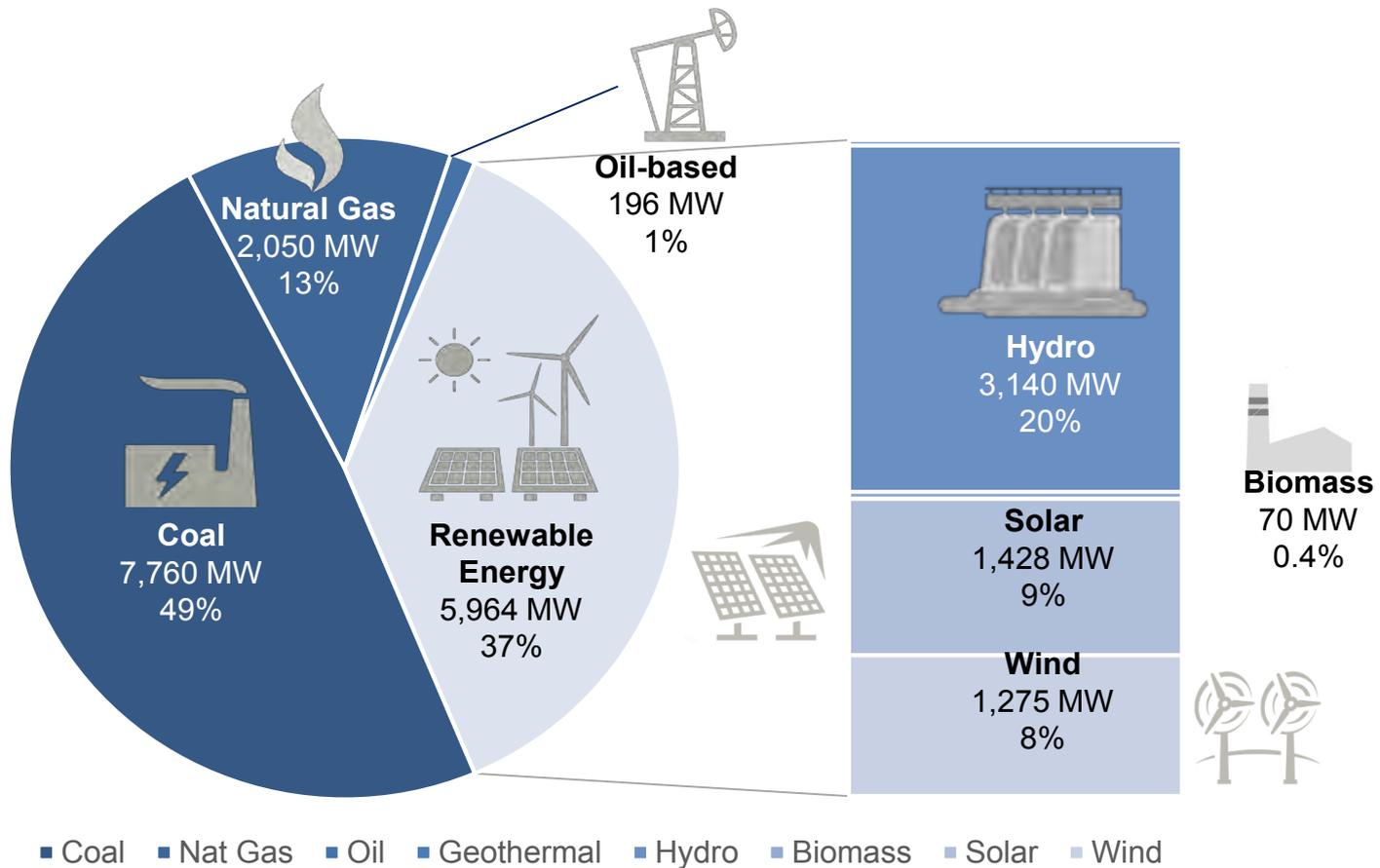
Luzon Demand and Supply Outlook, 2016-2040



Power

Luzon Indicative Power Projects

Total Luzon Indicative Capacity = 15,970 MW



Source: DOE List of Private Sector-Initiated Power Projects as of 31 May 2017

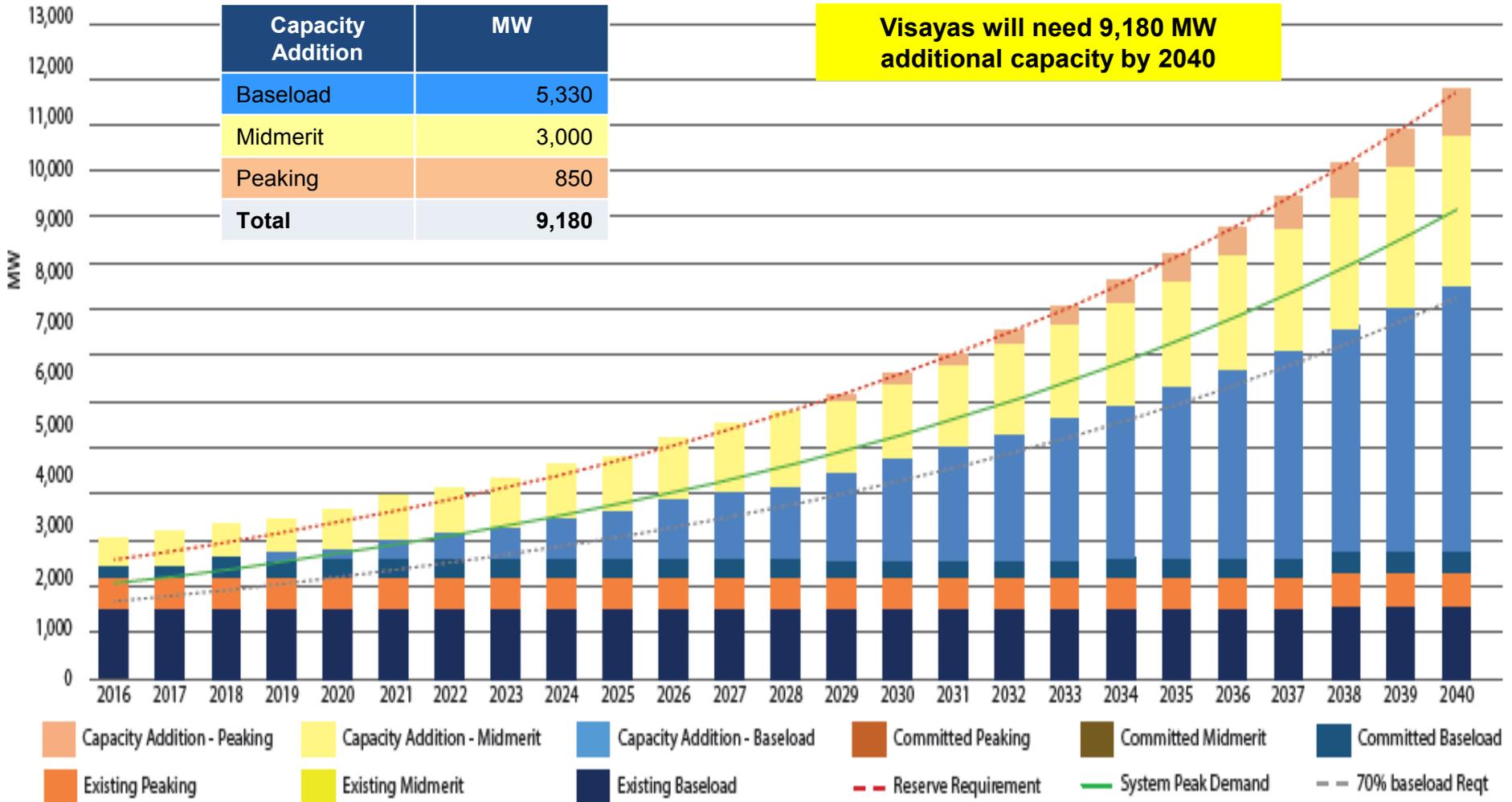


Power

Visayas Demand and Supply Outlook, 2016-2040

Capacity Addition	MW
Baseload	5,330
Midmerit	3,000
Peaking	850
Total	9,180

Visayas will need 9,180 MW additional capacity by 2040



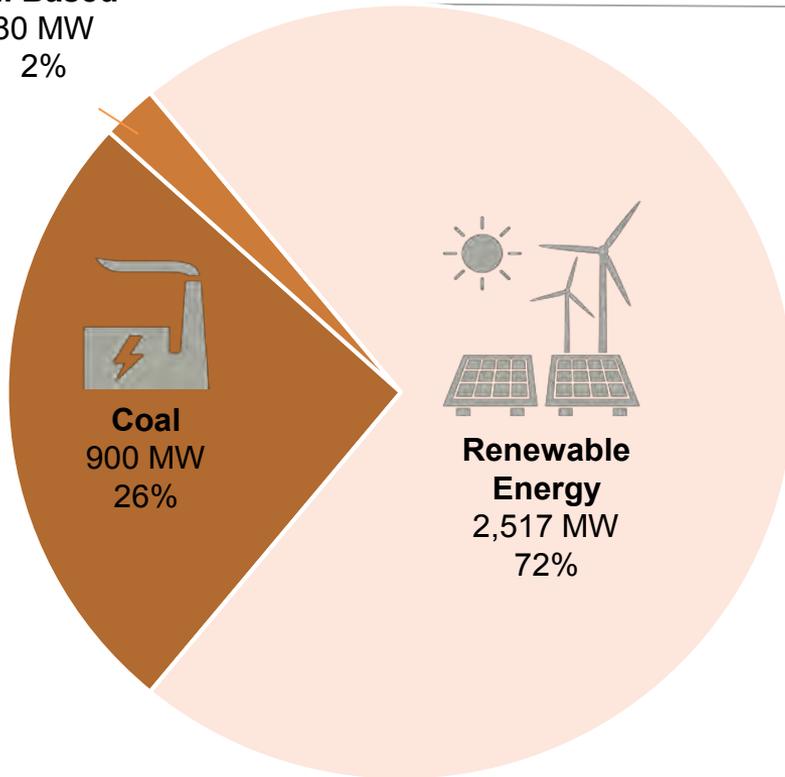
Power

Visayas Indicative Power Projects

Total Visayas Indicative Capacity = 3,497 MW



Oil Based
80 MW
2%



Coal
900 MW
26%



Renewable Energy
2,517 MW
72%



Hydro
705 MW
20%



Solar
540 MW
15%



Wind
1,218 MW
35%



Biomass
15 MW
0.4%



Geothermal
40 MW
1%

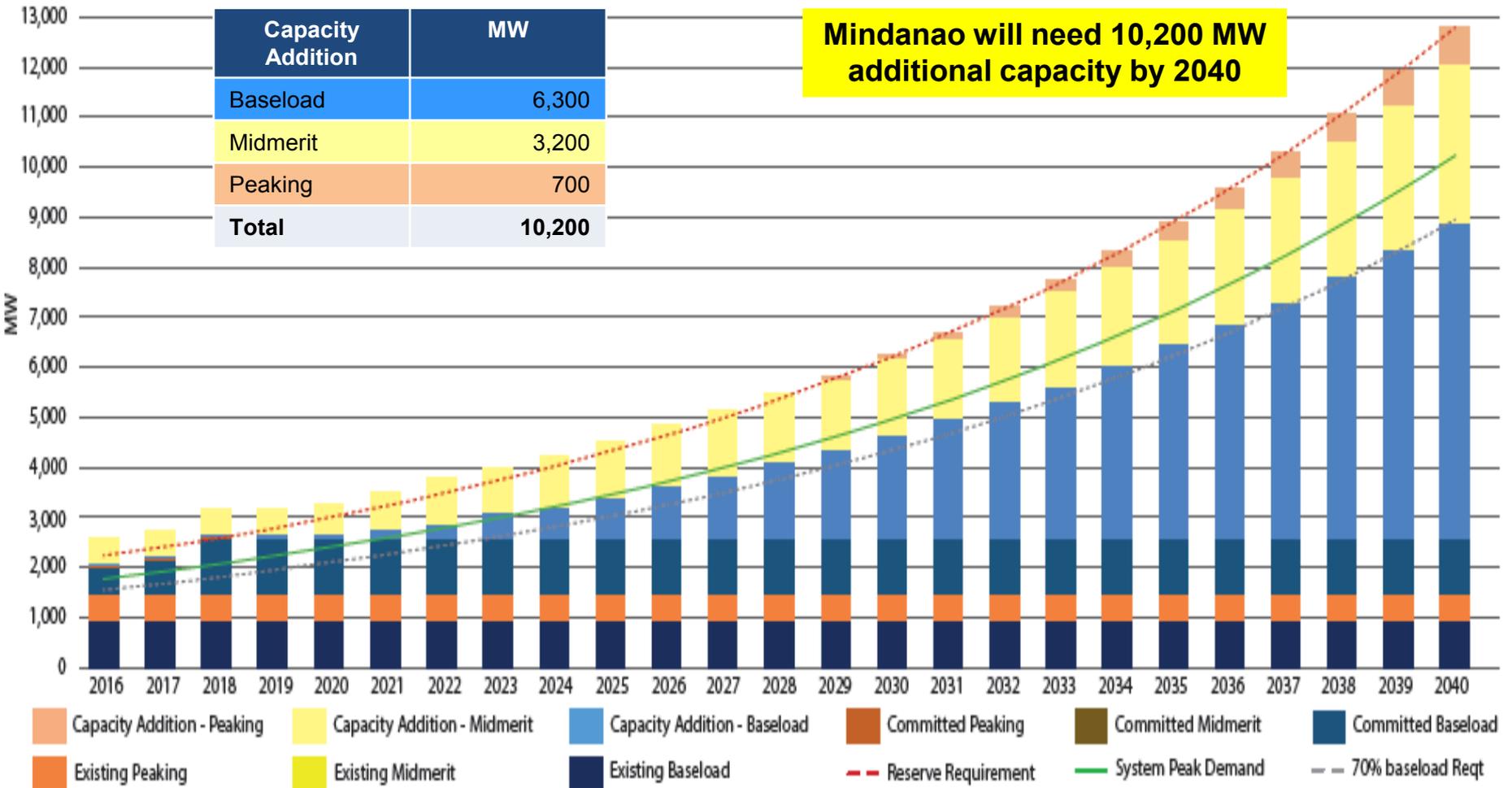
■ Coal ■ Oil ■ Hydro ■ Biomass ■ Solar ■ Wind ■ Geothermal

Source: DOE List of Private Sector-Initiated Power Projects as of 31 May 2017



Power

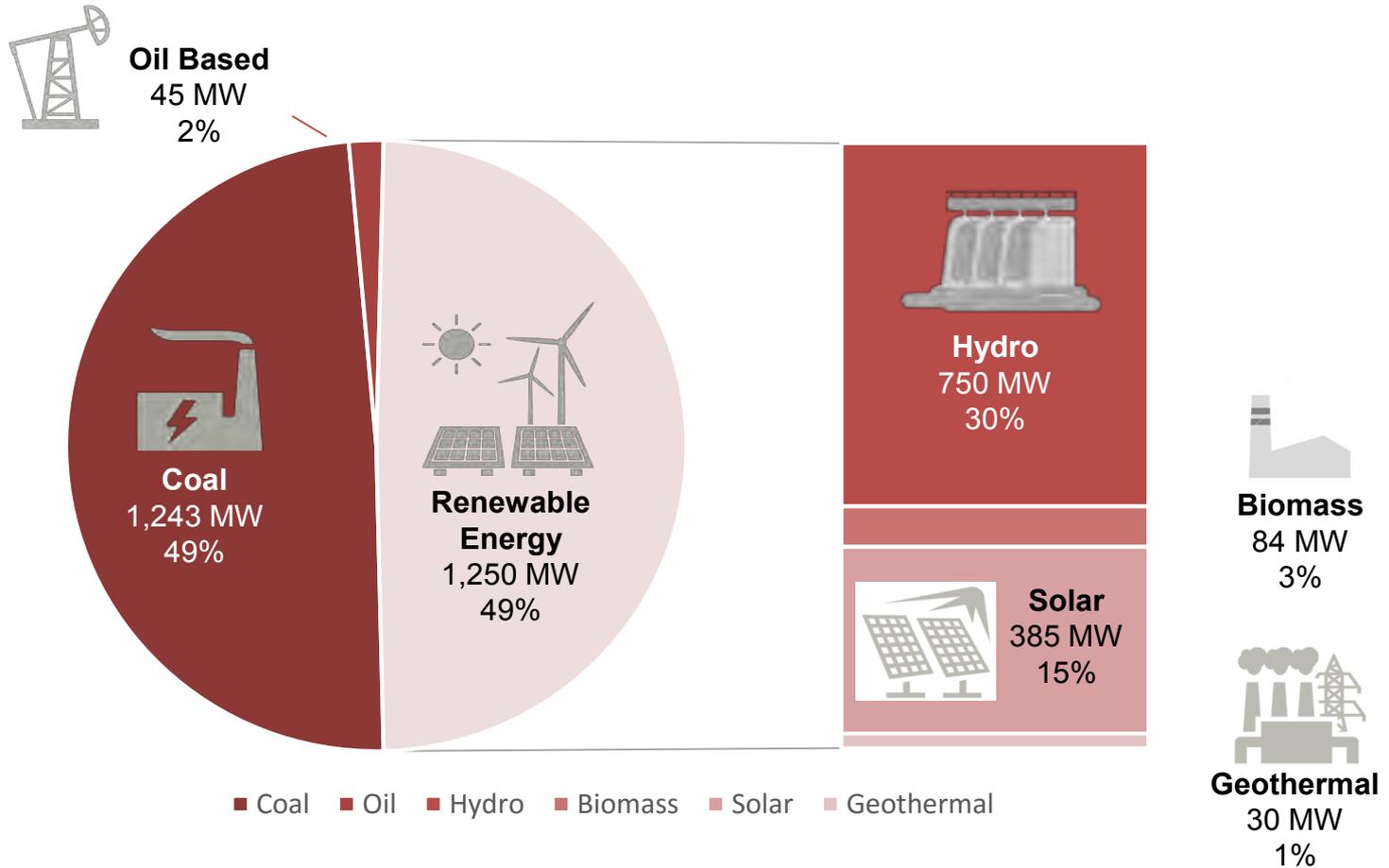
Mindanao Demand and Supply Outlook, 2016-2040



Power

Mindanao Indicative Power Projects

Total Mindanao Indicative Capacity = 2,538 MW

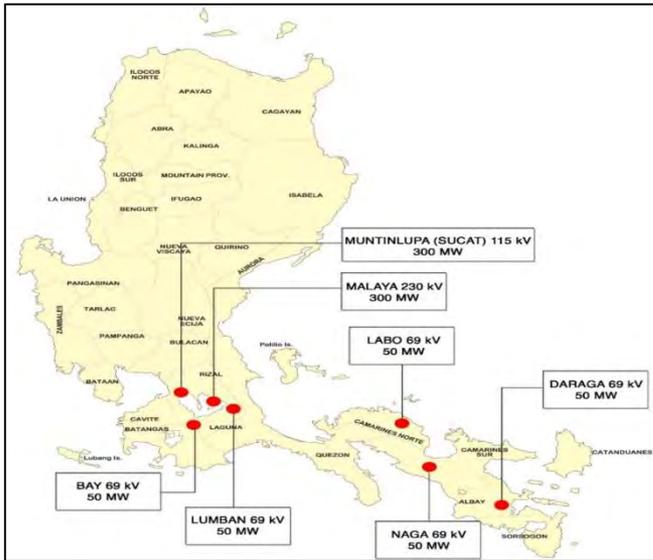


Source: DOE List of Private Sector-Initiated Power Projects as of 31 May 2017



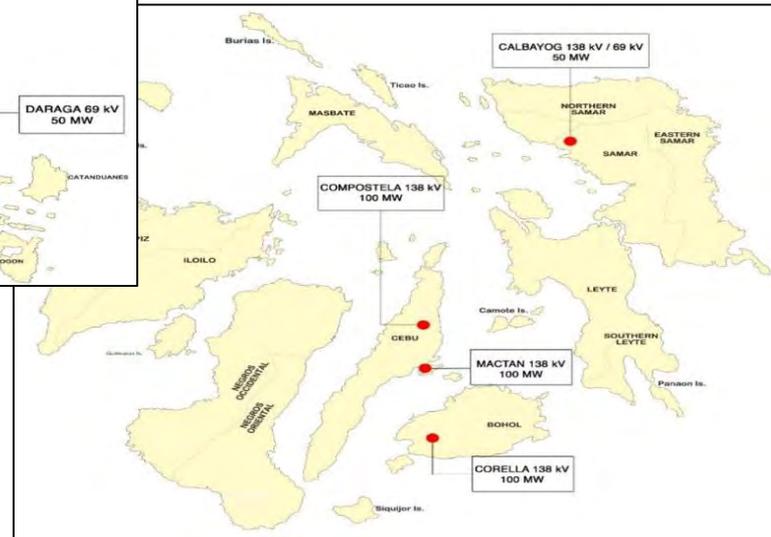
Power

Ideal Location of New Power Plants

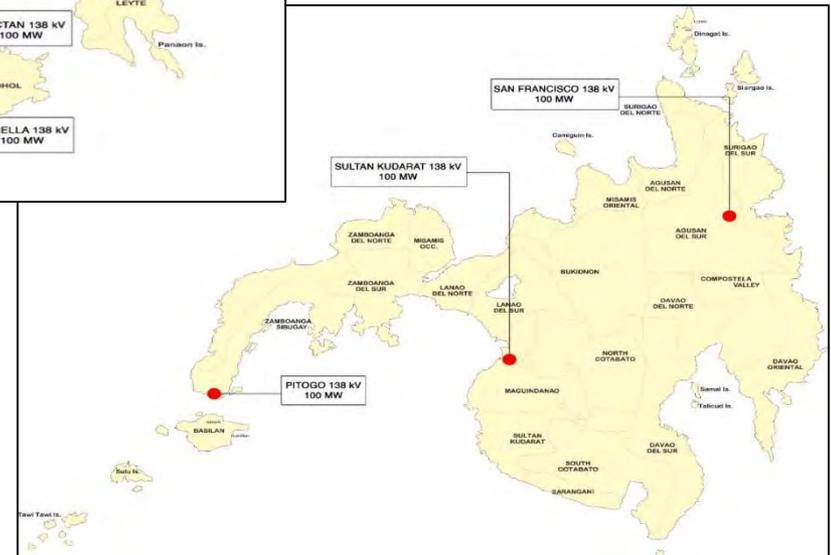


Luzon

Visayas



Mindanao



Policy Initiatives



By the President of the Philippines

EXECUTIVE ORDER NO. 30

**Creating the Energy Investment
Coordinating Council (EICC) in
Order to Streamline the
Regulatory Procedures
Affecting Energy Projects**



Main Features

- **Classification of Energy Projects of National Significance (EPNS)**
- **Establishment of a simplified approval process and harmonize the relevant rules and regulations of all government agencies**
- **Preparation of rules governing the resolution of inter-agency issues affecting the timely and efficient implementation of EPNS**
- **Maintenance of a database of information and web-based monitoring system**





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