# Energy Investment Opportunities in the Philippines

***Jesus Cristino P. Posadas***
*Undersecretary*
*Department of Energy*

Energy Investment Forum
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Shangri-La Hotel, Makati City

# Presentation Outline

## Investment Opportunities

A. Upstream Oil & Gas
B. Coal
C. Downstream Oil
D. Natural Gas
E. Renewable Energy
F. Power

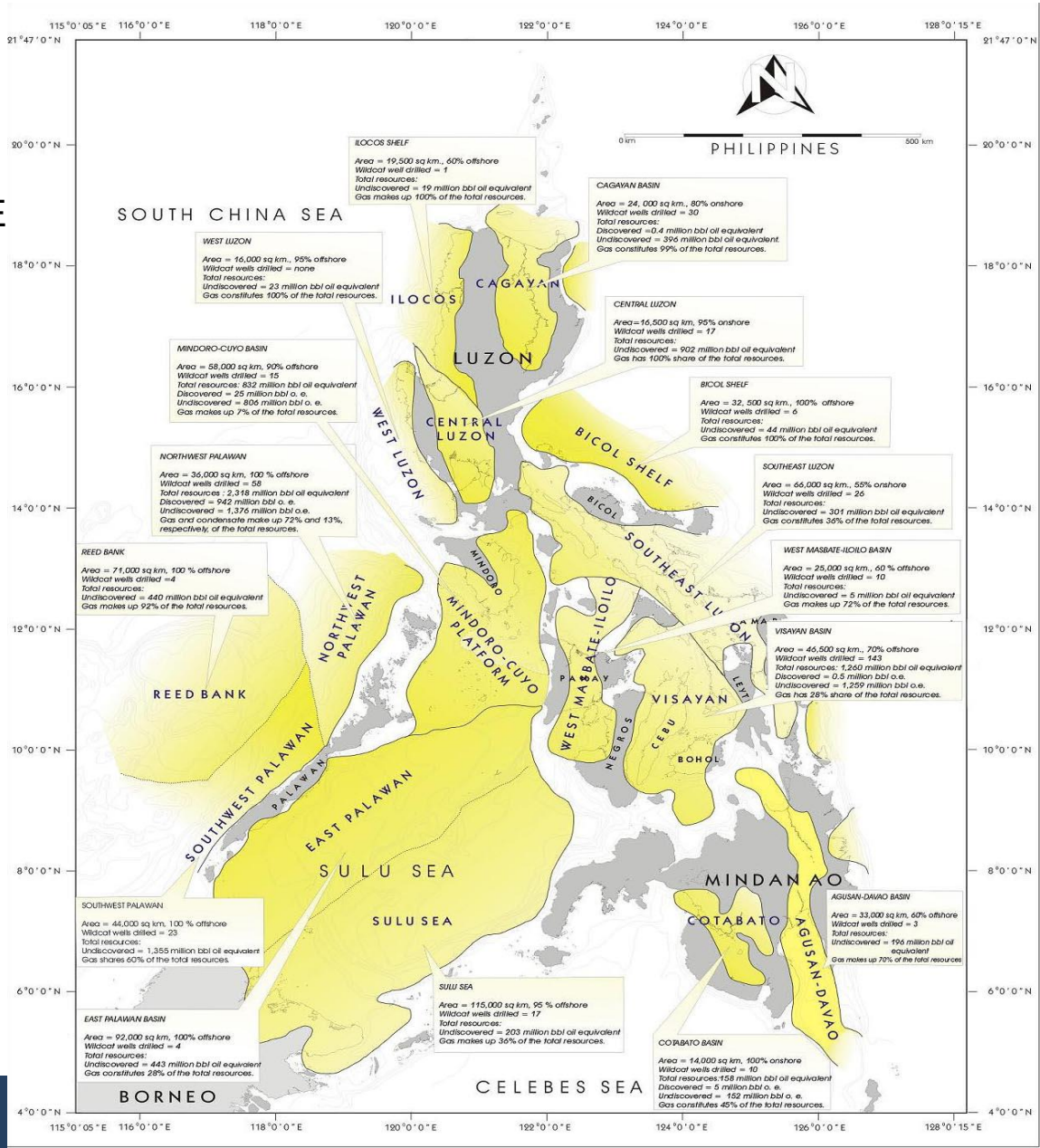
# Upstream Oil & Gas

## Philippine Sedimentary Basins

Total area: 709,000 sq km

Combined Potential: 4,777 MMBFOE

1. Ilocos Shelf
2. Cagayan Basin
3. Central Luzon Basin
4. Bicol Shelf
5. Southeast Luzon Basin
6. Mindoro-Cuyo Basin
7. West Masbate-Iloilo Basin
8. Visayan Basin
9. Agusan-Davao Basin
10. Cotabato Basin
11. Sulu Sea Basin
12. East Palawan Basin
13. Southwest Palawan Basin
14. Reed Bank Basin
15. Northwest Palawan Basin
16. West Luzon Trough



# Upstream Oil & Gas

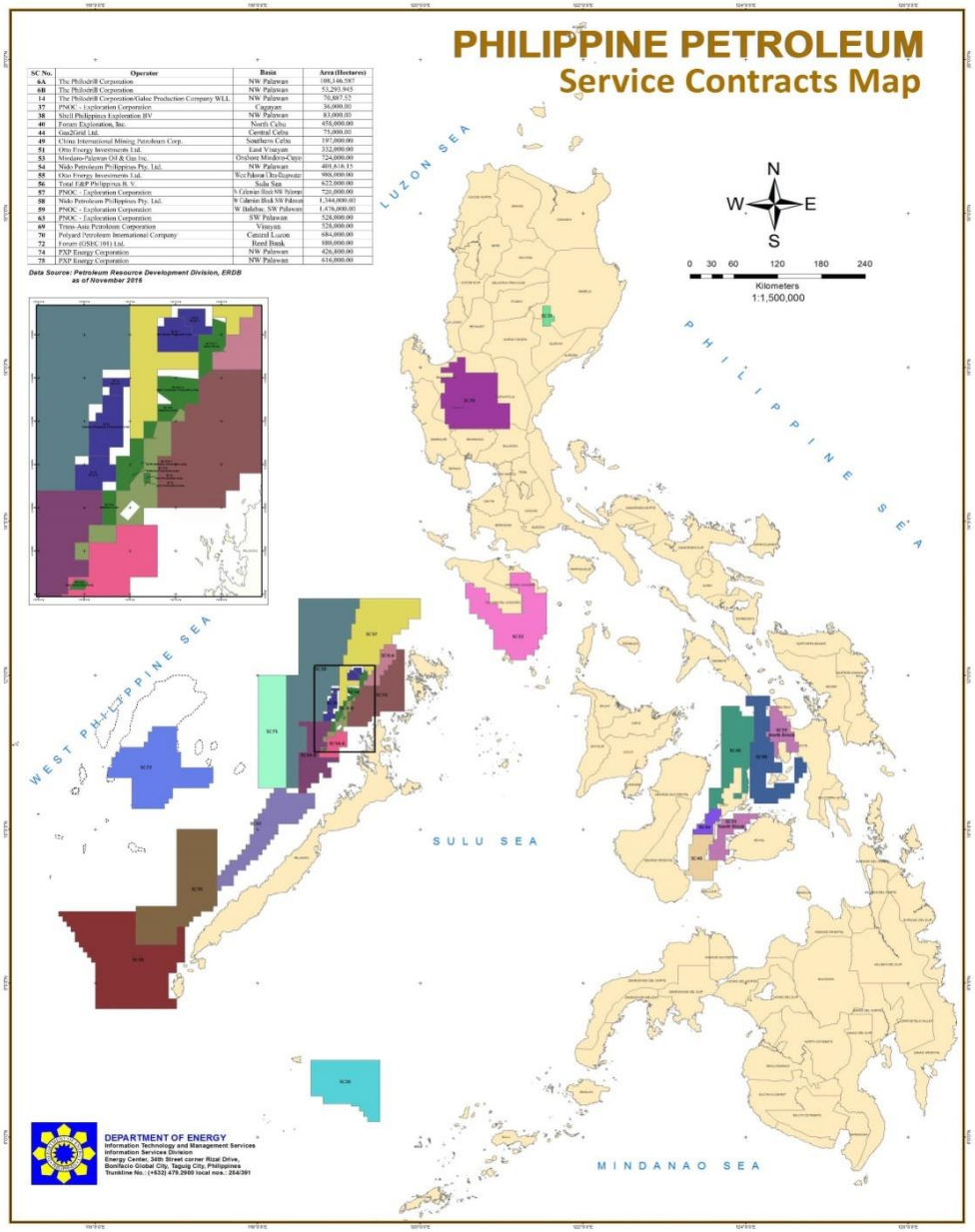
## Petroleum Service Contracts
### Exploration & Development

Currently, there are 22 Petroleum Service Contracts (PSCs)

As of December 01, 2017

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

DOE will implement the Philippine Conventional Energy Contracting Program (PCECP) for petroleum in 1Q 2018.



# 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

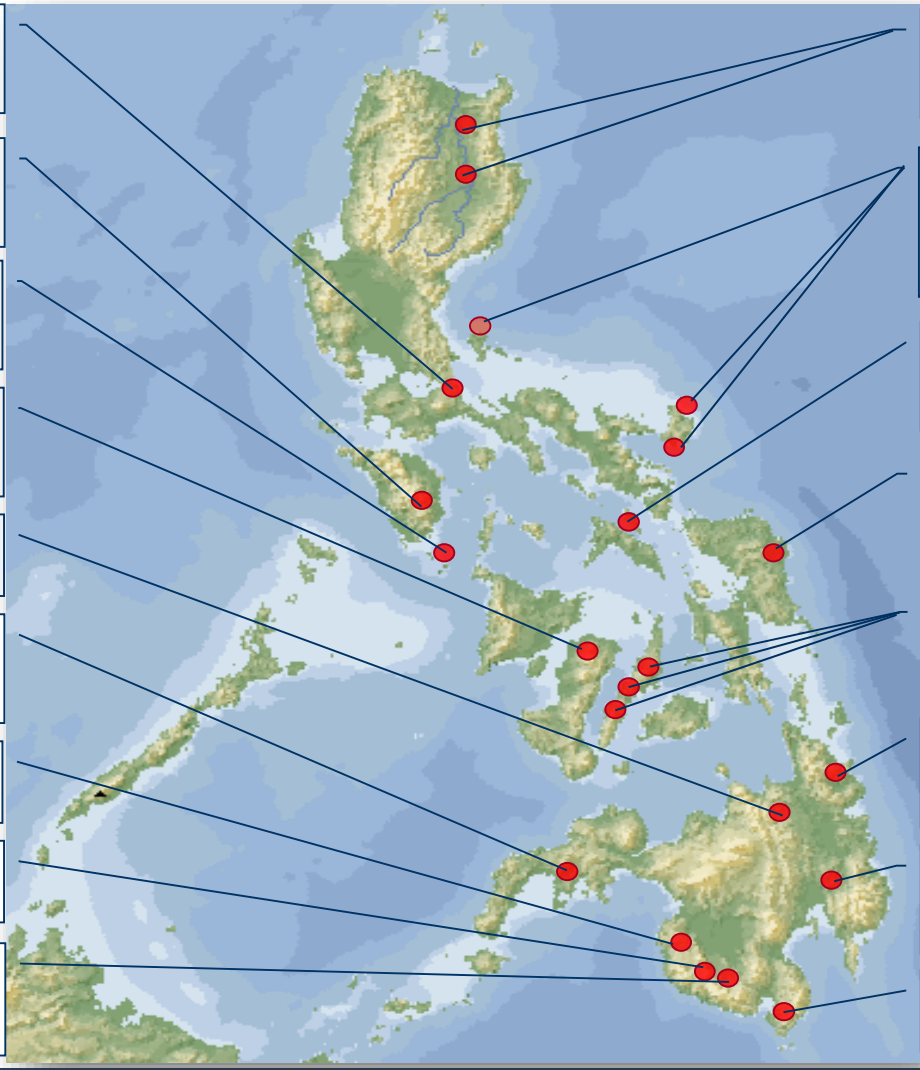
**BUKIDNON**
Resource Potential - 50.00

**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

# Coal

## Coal Operating Contracts
### Exploration & Development

66 Active Coal Operating Contracts (COCs)
As of December 01, 2017

- 34 COCs in the Exploration Stage
- 32 COCs in the Development and Production Stage

DOE will implement the Philippine Conventional Energy Contracting Program (PCECP) for coal in 1Q 2018.

# Philippine Conventional Energy Contracting Program (PCECP) for Petroleum and Coal

## I. Objectives

- To attain optimal exploration and development of the country's indigenous petroleum and coal resources
- To facilitate the acceptance of applications for Coal Operating Contracts (COCs) and Petroleum Service Contracts (PSCs) from interested applicants on any given time.
- Address weaknesses and oversights of the previous contracting/licensing schemes
- Adopt a simpler, faster and much more flexible contracting/licensing system
- Generate new technical data and additional revenues for the country

## II. Salient Features

- Two (2) Modes of Contracting:
  - Application for Pre-Determined Areas (PDA) offered by the DOE;
  - Option to Nominate and/or apply for areas submitted to the DOE for approval
- Institutionalized system (through a Review and Evaluation Committee) to oversee matters from awarding to termination of PSCs and COCs
- Adheres to the same evaluation criteria of PECR
- Opportunity for interested parties/investors to participate all-year-round
- Shorter period of processing time – **30 working days** from the opening of the application to the awarding

## III. Benefits

- Flexible timelines allow for interested parties' participation in the program at their own pace/convenience, and as current financial capacities permit;
- Quality of proposals (e.g. effective work programs) may be assured whereby adequate time will allow the careful examination of technical data and preparation of application requisites;

# 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 |
| Termenalling | 3 | 1.02 | 12 | 8.82 |
| Bunkering | 8 | 0.11 | 19 | 2.61 |
| **Total** | **56** | **11.03** | **272** | **57.46** |

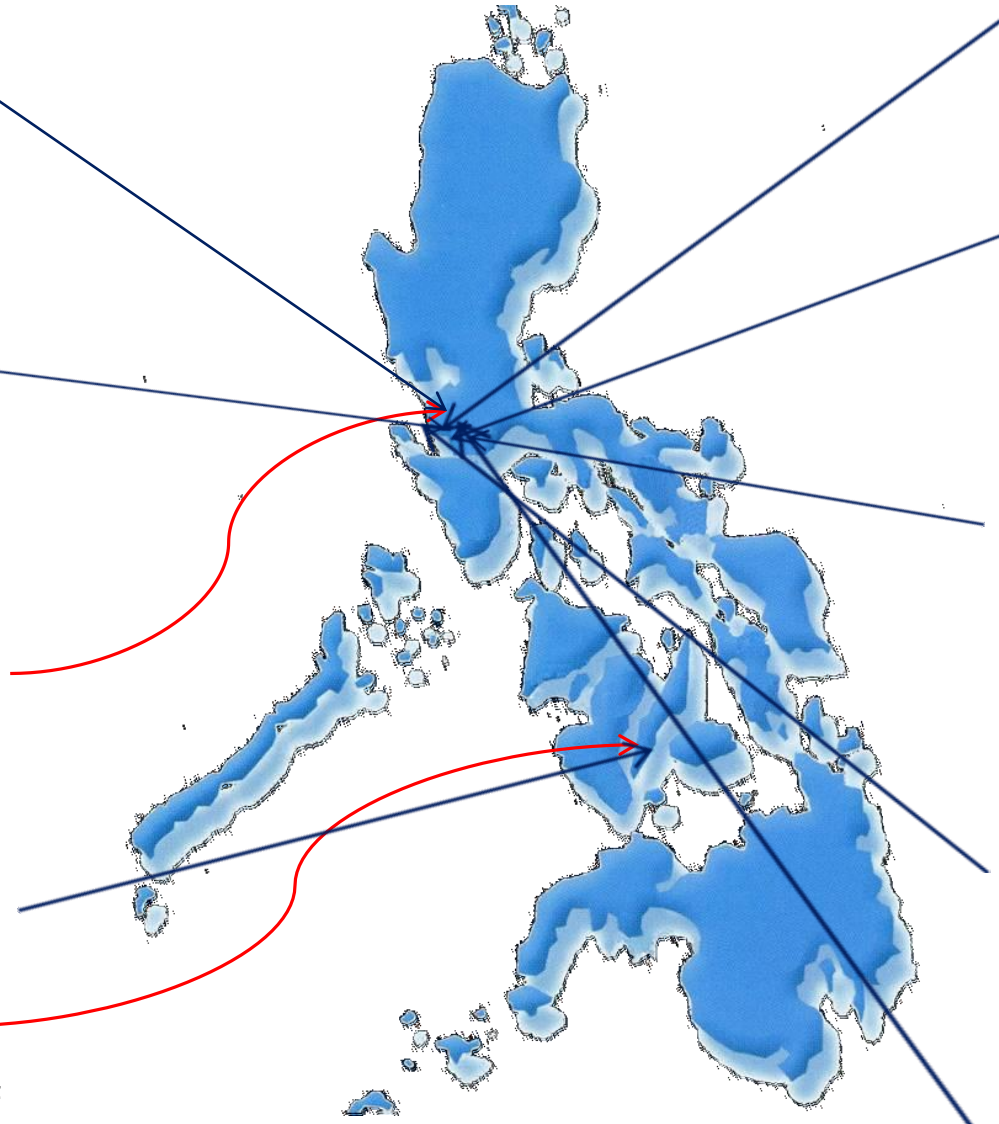
# Downstream Natural Gas

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 and Programs to Promote Renewable Energy

- **Net-Metering Rules and Interconnection Standards**
  - A Renewable Energy Policy mechanism which encourages the connection / sale of customers' RE generation to the grid with maximum capacity of 100 kW.
  - As of August 2017, there are 986 customers connected to 10 different Distribution Utilities in the country under Net-Metering agreements, amounting to 6,456.02 KWp in capacity

- **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
    - RPS for On-Grid Areas – Public consultations held in Cebu, Davao and NCR in July and August 2017. Draft rules was endorsed to the Secretary in November 2017
    - RPS for Off-Grid Areas – Public consultations in Palawan, Batangas, Cebu and CDO in October and November 2017

- **Renewable Energy Market (REM)**
  - the market where the trading of RE Certificates equivalent to an amount of power generated from RE resources is made
  - Public consultations are currently on-going.

# Renewable Energy

## Policies and Programs to Promote Renewable Energy

- **Green Energy Option**
  - Mechanism to provide end-users the option to choose RE as their sources of energy (open access)
  - Conducted public consultations in Bacolod, Davao and Manila in September 2017
  - NREB endorsed the draft GEOP Rules to the Secretary in November 2017.

- **Must and Priority Dispatch for Variable REs**
  - DOE Circular No. DC2015-03-0001 dated 20 March 2015 promulgated the implementation framework

- **Issuance of DOE Department Circular No. 2015-07-0014**
  - Prescribing the new guidelines in the processing of applications for renewable energy service/operating contract
  - Further enhances the transparency in processing and issuance of service contracts and permits and shorten the time frame to 25 days

# Renewable Energy

## Summary of Renewable Energy Projects

As of November 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 | |
| Hydro Power | 454 | - | 13,475.48 | | 965.04 | - |
| Ocean Energy | 6 | - | 26.00 | - | - | - |
| Geothermal | 41 | - | 575.00 | - | 1,906.19 | |
| Wind | 68 | 1 | 2,381.50 | - | 426.90 | 0.0006 |
| Solar | 216 | 16 | 5,181.67 | 4.286 | 900.18 | 3.218 |
| Biomass | 51 | 24 | 313.18 | 23.07 | 393.08 | 119.86 |
| Sub-Total | **836** | **41** | **21,952.83** | **27.356** | **4,591.39** | **123.08** |
| TOTAL | **877** | | **21,980.19** | | **4,714.47** | |

** - 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

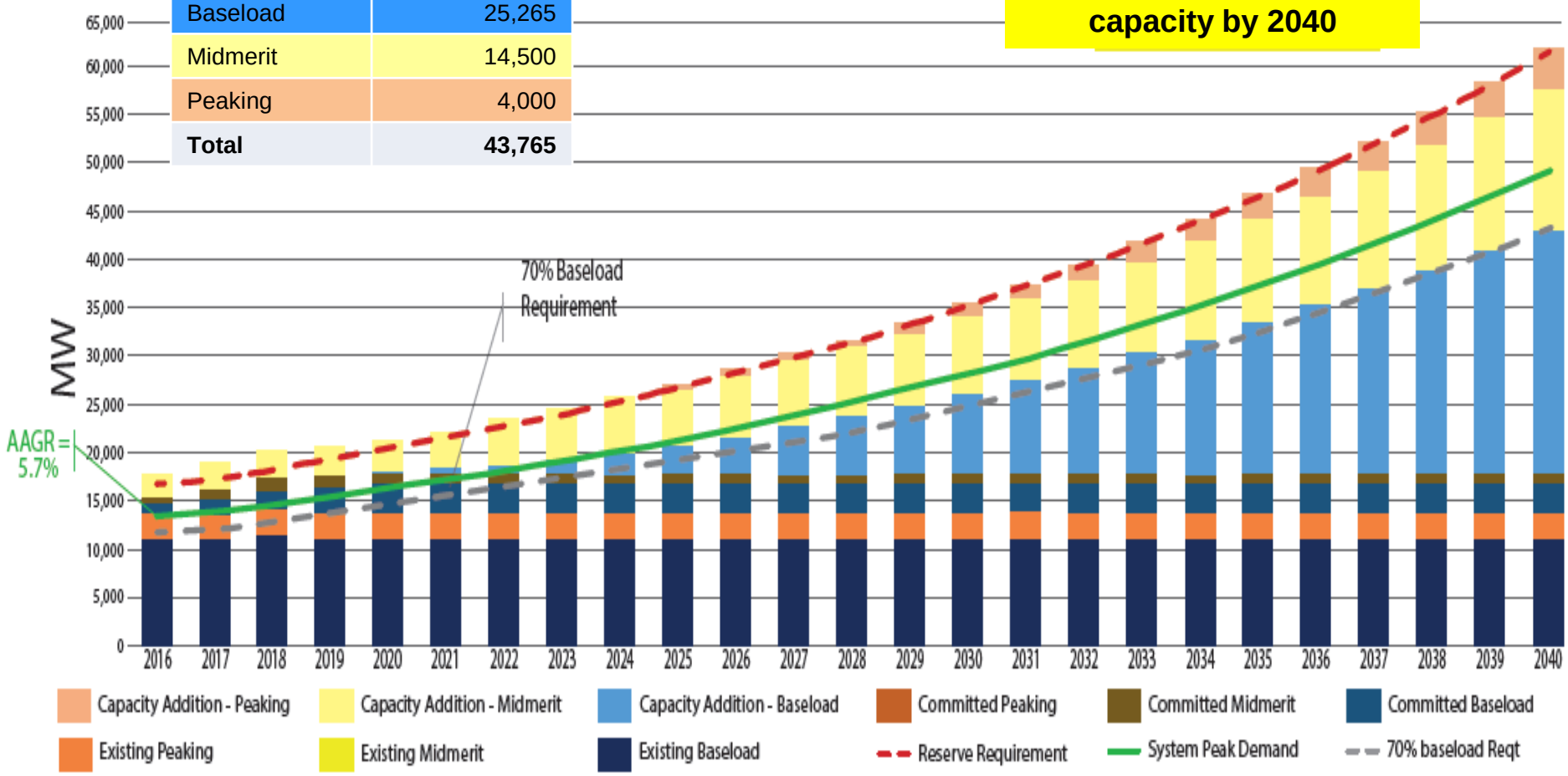
| RESOURCES | AWARDED | REGISTERED CAPACITY (million liters/year) | COR (with Notice to Proceed) | REGISTERED CAPACITY (million liters/year) |
|---|---|---|---|---|
| Bioethanol | 10 | 282.12 | 3 | 149.00 |
| Biodiesel | 11 | 574.90 | 2 | 165.00 |
| Total | **21** | **857.02** | **5** | **314.00** |

# 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**

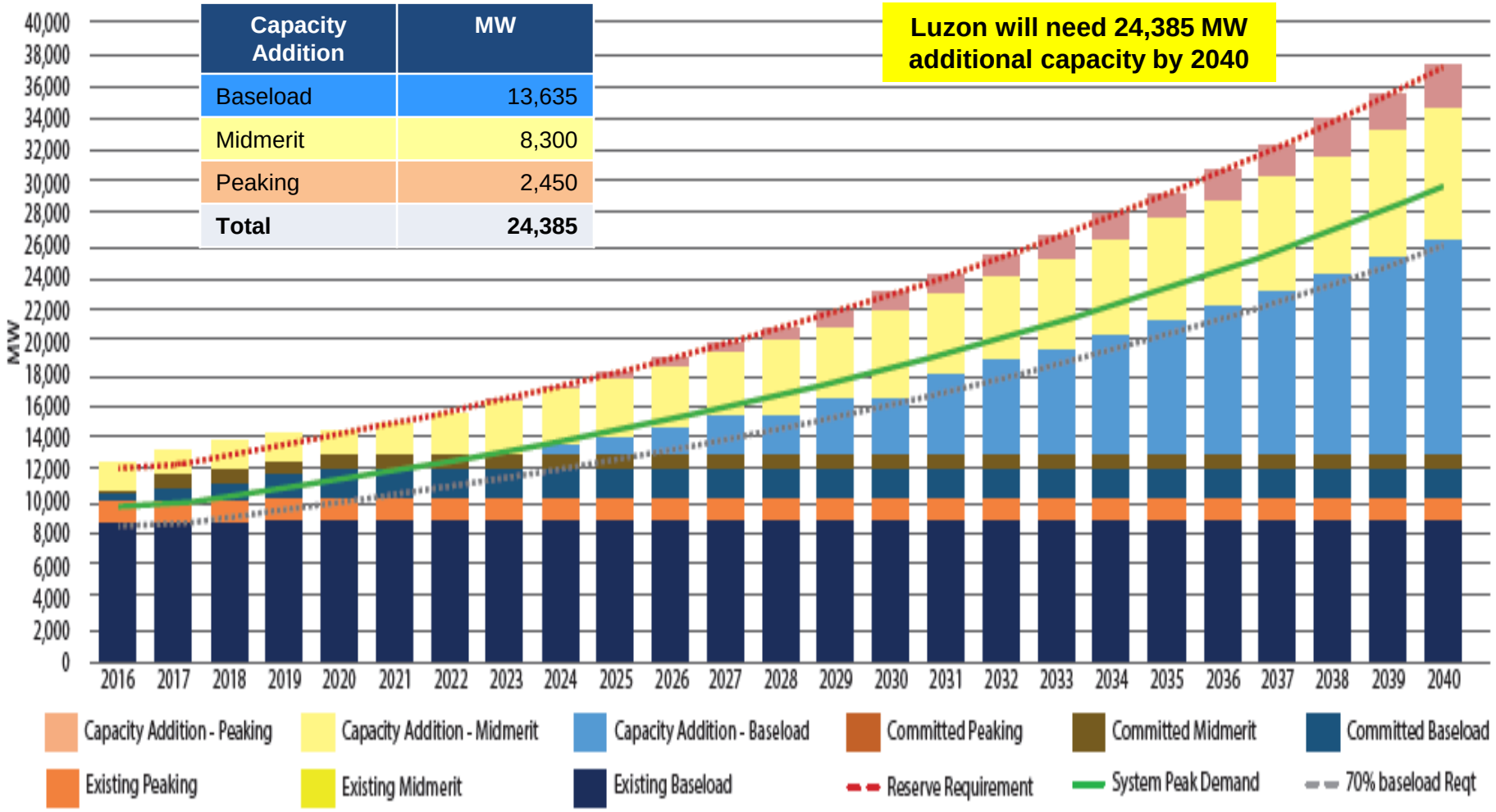


# Power

## Luzon Demand and Supply Outlook, 2016-2040

| Capacity Addition | MW |
|---|---|
| Baseload | 13,635 |
| Midmerit | 8,300 |
| Peaking | 2,450 |
| **Total** | **24,385** |

**Luzon will need 24,385 MW additional capacity by 2040**



# Power

## Summary of Luzon Power Projects
### as of 30 September 2017

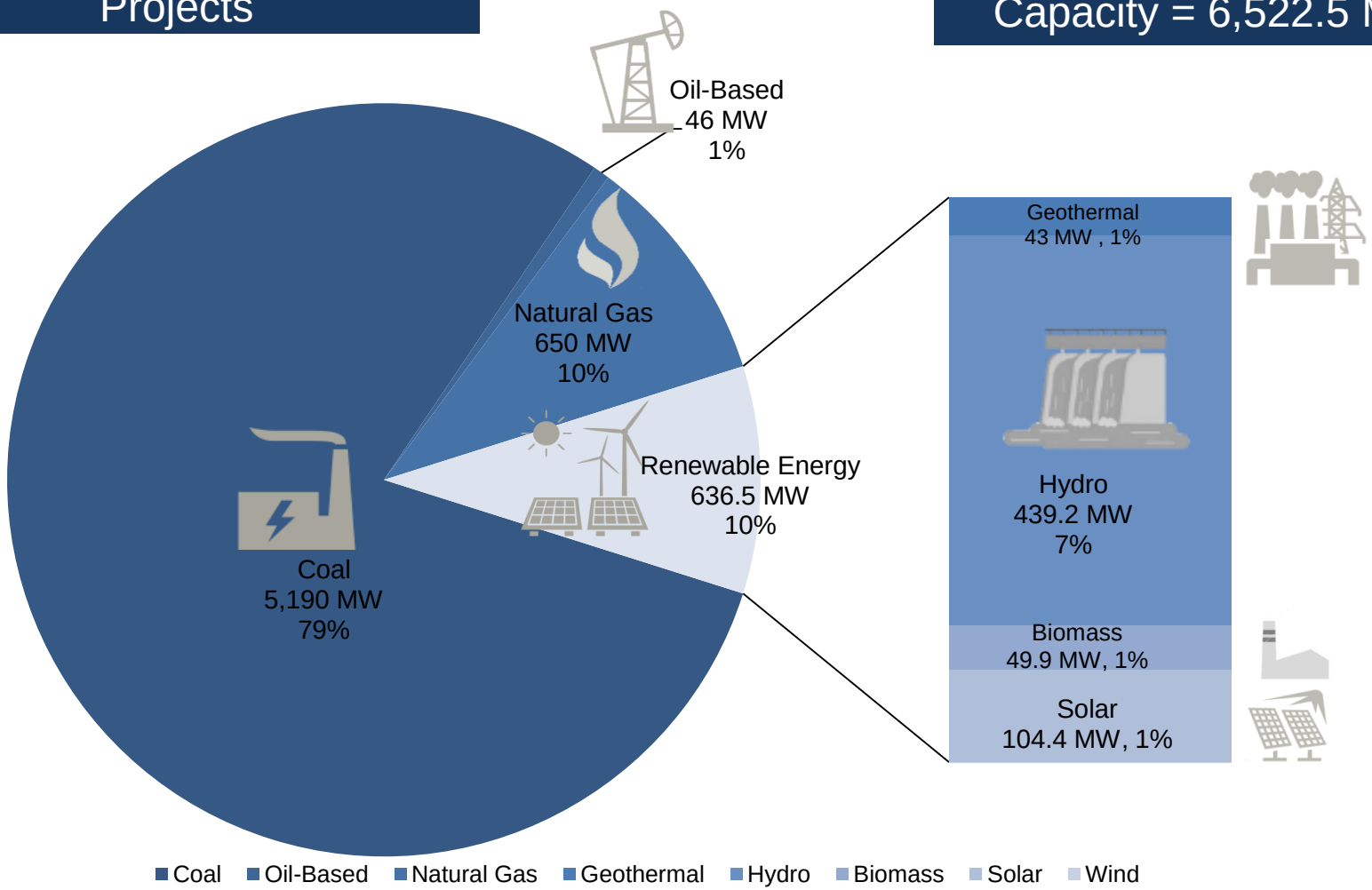
| Type of Power Plant | Committed | | | Indicative | | |
|---|---|---|---|---|---|---|
| | No. of Proponents | Capacity (MW) | % Share | No. of Proponents | Capacity (MW) | % Share |
| Coal | 8 | 5,190.0 | 79.6 | 9 | 6,660.0 | 42.1 |
| Oil-Based | 1 | 46.0 | 0.7 | 2 | 450.0 | 2.8 |
| Natural Gas | 1 | 650.0 | 10.0 | 4 | 2,816.0 | 17.8 |
| Renewable Energy | 39 | 636.5 | 9.8 | 56 | 5,877.7 | 37.2 |
| Geothermal | 2 | 43.0 | 0.7 | 1 | 50.0 | 0.3 |
| Hydro | 29 | 439.2 | 6.7 | 15 | 2,708.3 | 17.1 |
| Biomass | 4 | 49.9 | 0.8 | 10 | 114.2 | 0.7 |
| Solar | 4 | 104.4 | 1.6 | 24 | 1,729.8 | 10.9 |
| Wind | 0 | 0.0 | 0.0 | 6 | 1,275.4 | 8.1 |
| **TOTAL** | **49** | **6,522.5** | **100.0** | **71** | **15,803.7** | **100.0** |
| Battery Storage* | 1 | 10.0 | | 2 | 230.0 | |

** for accounting purposes; declared capacity for Ancillary Services (AS) to the system

# Power

## Luzon Committed Power Projects

## Total Luzon Committed Capacity = 6,522.5 MW

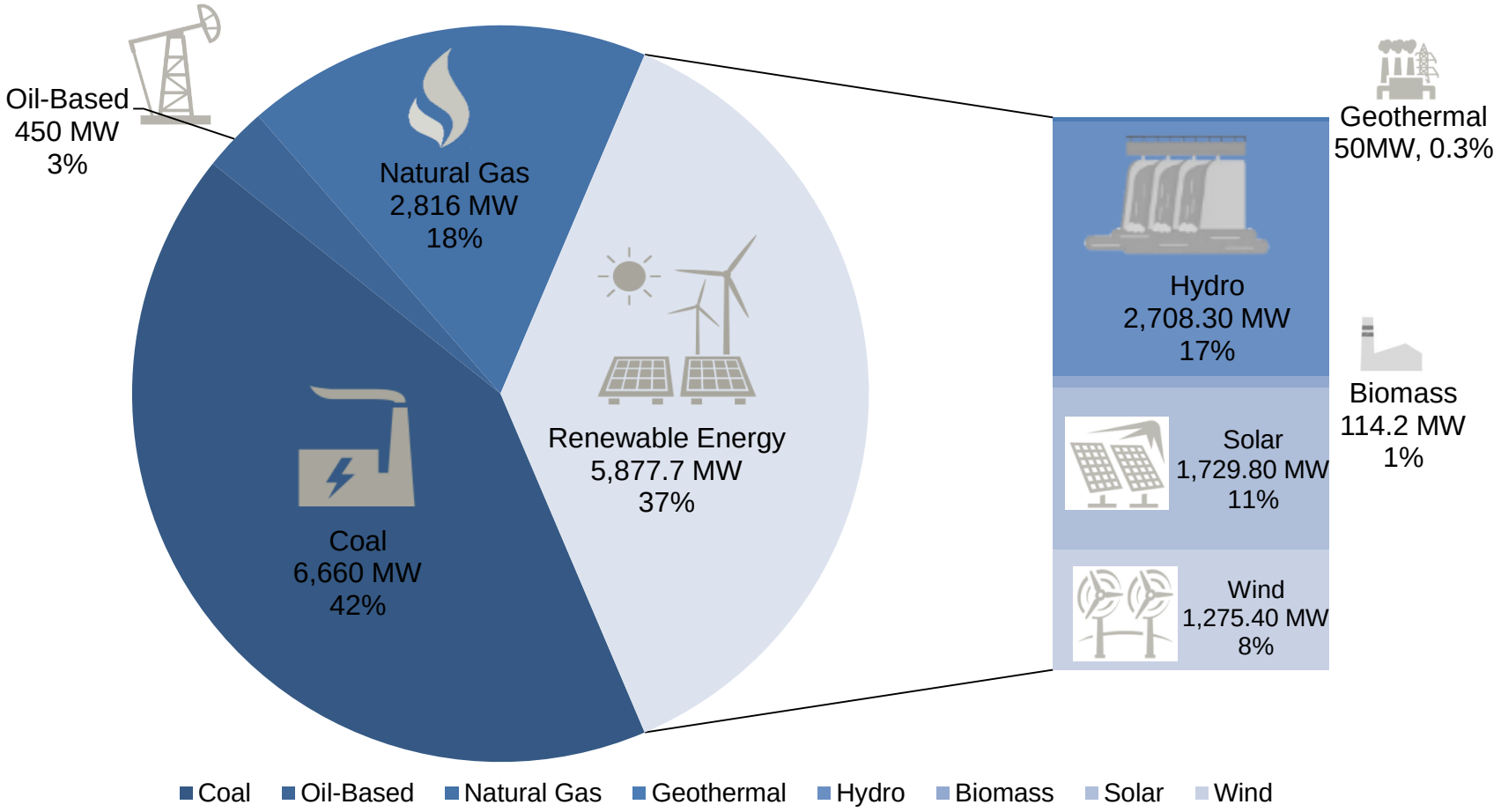



Source: DOE List of Private Sector-Initiated Power Projects as of September2017

# Power

## Luzon Indicative Power Projects

## Total Luzon Indicative Capacity = 15,803.7 MW



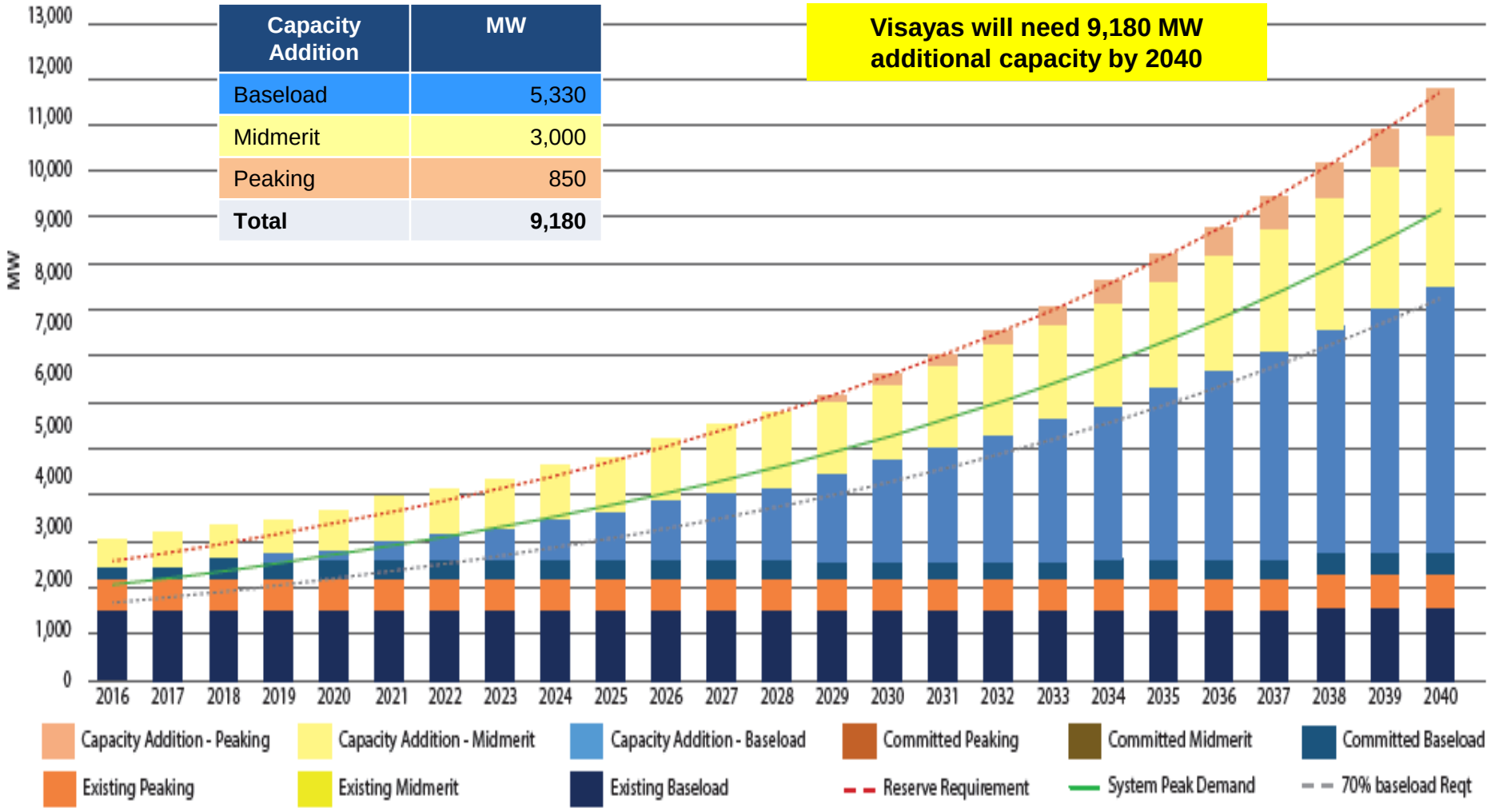

Source: DOE List of Private Sector-Initiated Power Projects as of September2017

# 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

## Summary of Visayas Power Projects
### as of 30 September 2017

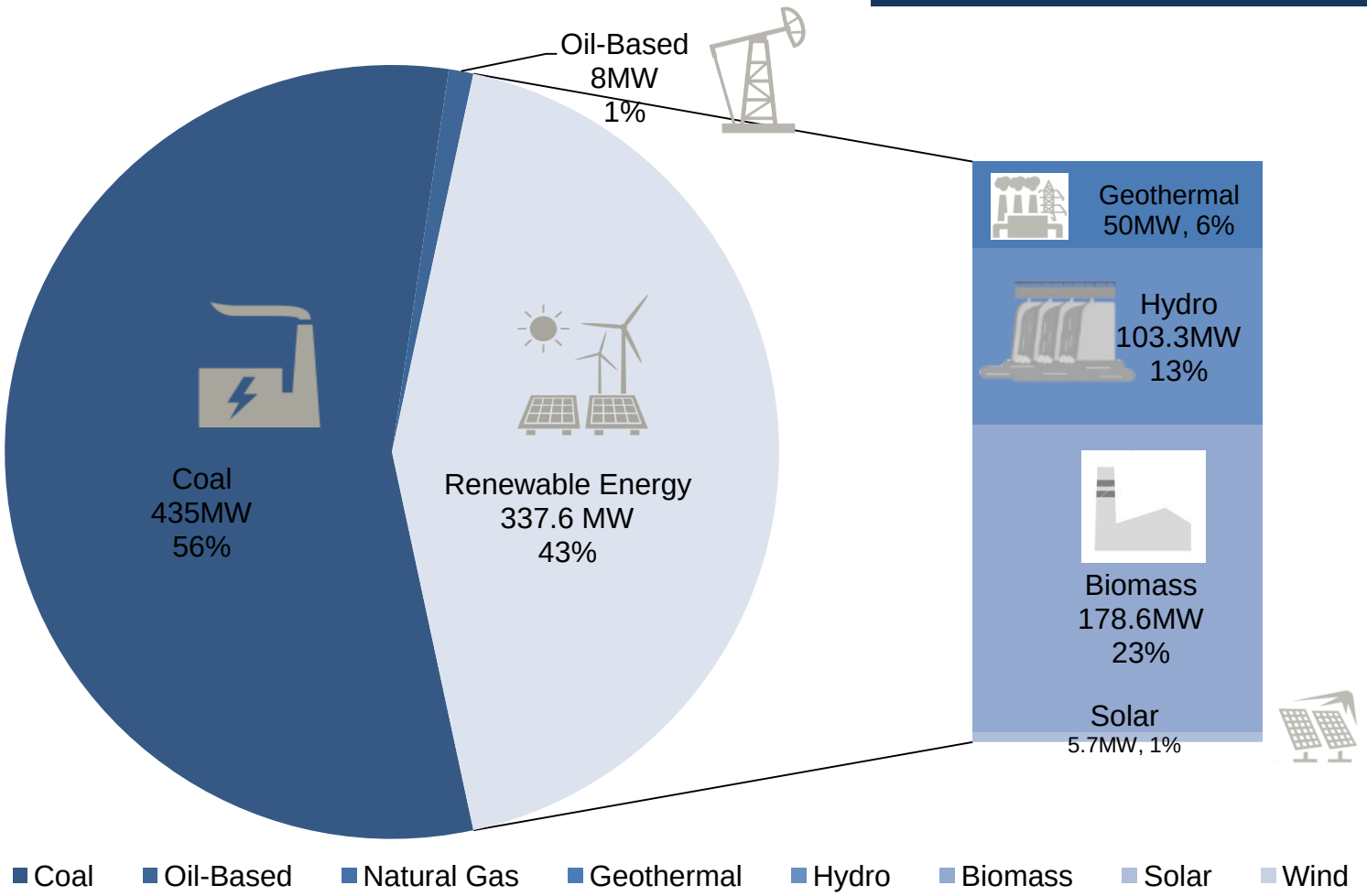
| Type of Power Plant | Committed | | | Indicative | | |
|---|---|---|---|---|---|---|
| | No. of Proponents | Capacity (MW) | % Share | No. of Proponents | Capacity (MW) | % Share |
| **Coal** | **2** | **435.0** | **55.7** | **1** | **300.0** | **10.0** |
| **Oil-Based** | **1** | **8.0** | **1.0** | **3** | **87.2** | **3.0** |
| **Natural Gas** | **0** | **0.0** | **0.0** | **1** | **138.0** | **4.6** |
| **Renewable Energy** | **16** | **337.6** | **43.3** | **20** | **2,465.7** | **82.4** |
| Geothermal | 1 | 50.0 | 6.4 | 1 | 40.0 | 1.3 |
| Hydro | 3 | 103.3 | 13.2 | 3 | 621.6 | 20.8 |
| Biomass | 11 | 178.6 | 22.9 | 2 | 14.5 | 0.5 |
| Solar | 1 | 5.7 | 0.8 | 10 | 521.6 | 17.4 |
| Wind | 0 | 0.0 | 0.0 | 4 | 1,268 | 42.4 |
| **TOTAL** | **19** | **780.6** | **100.0** | **25** | **2,990.9** | **100.0** |
| **Battery Storage**** | **0** | **0.0** | | **3** | **130.0** | |

** for accounting purposes; declared capacity for Ancillary Services (AS) to the system

# Power

## Visayas Committed Power Projects

## Total Visayas Committed Capacity = 780.60 MW

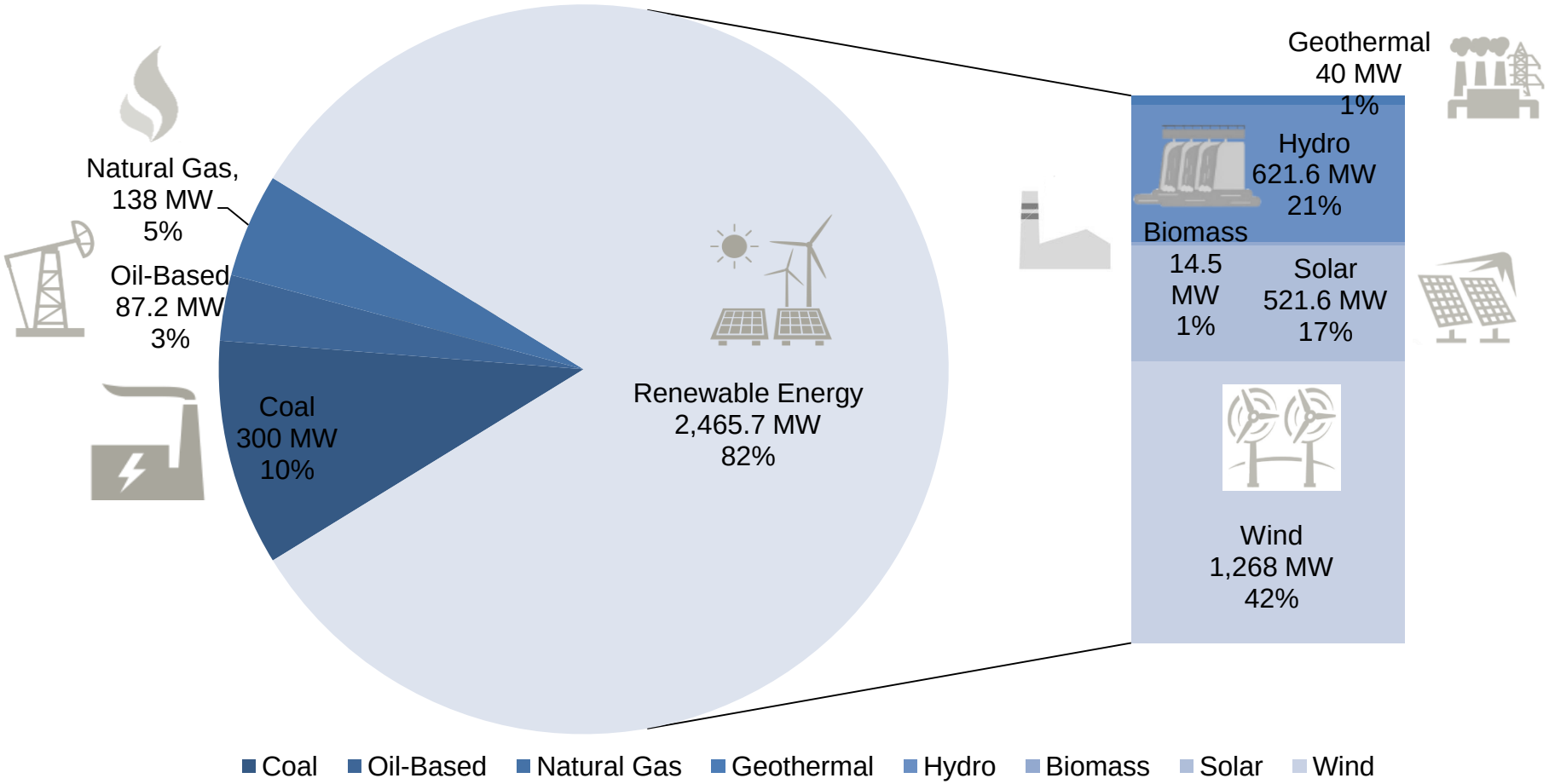



Source: DOE List of Private Sector-Initiated Power Projects as of September2017

# Power

## Visayas Indicative Power Projects

## Total Visayas Indicative Capacity = 2,990.90 MW



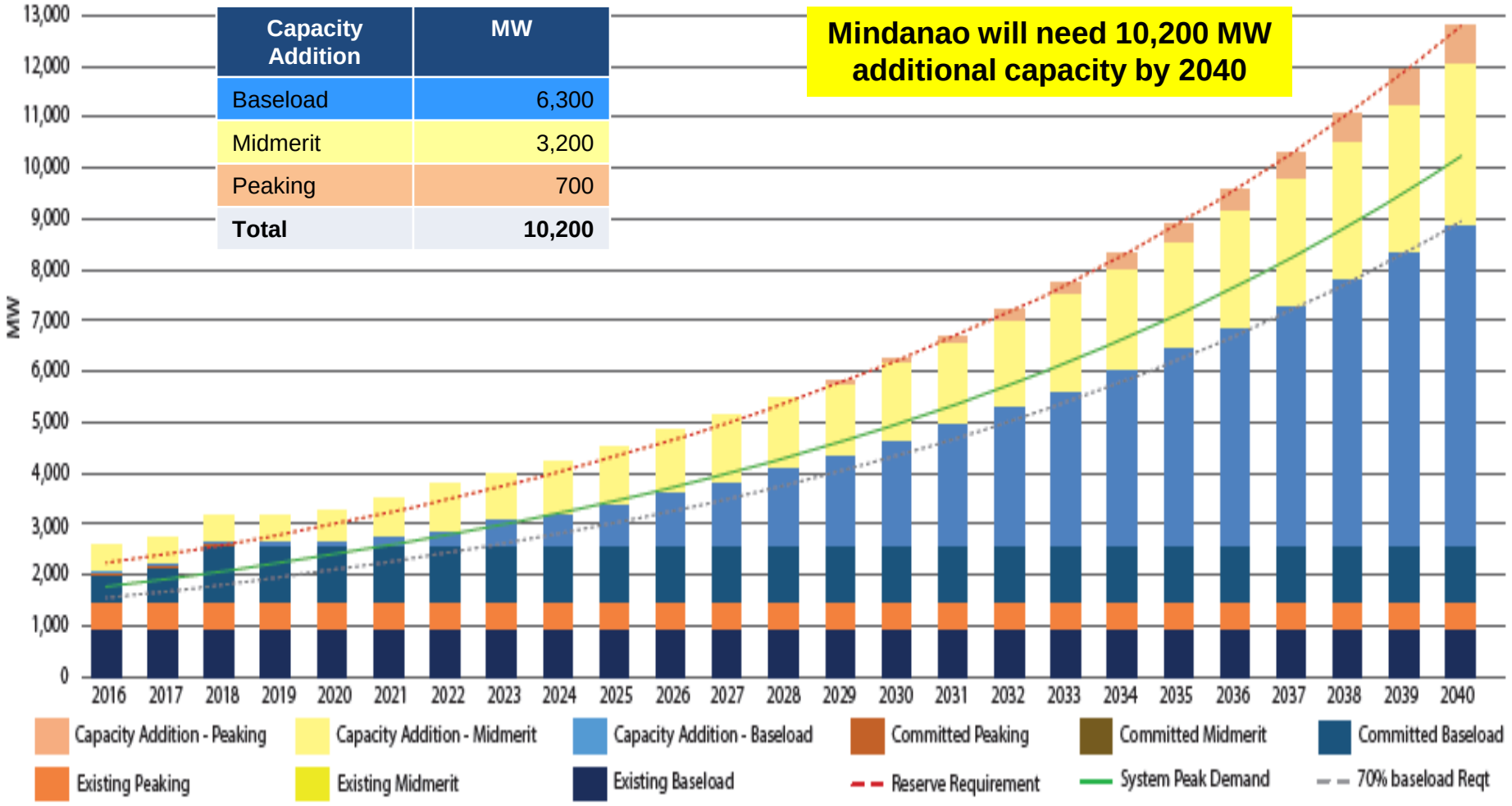

Source: DOE List of Private Sector-Initiated Power Projects as of September2017

# Power

## Mindanao Demand and Supply Outlook, 2016-2040

| Capacity Addition | MW |
|---|---|
| Baseload | 6,300 |
| Midmerit | 3,200 |
| Peaking | 700 |
| **Total** | **10,200** |

**Mindanao will need 10,200 MW additional capacity by 2040**



# Power

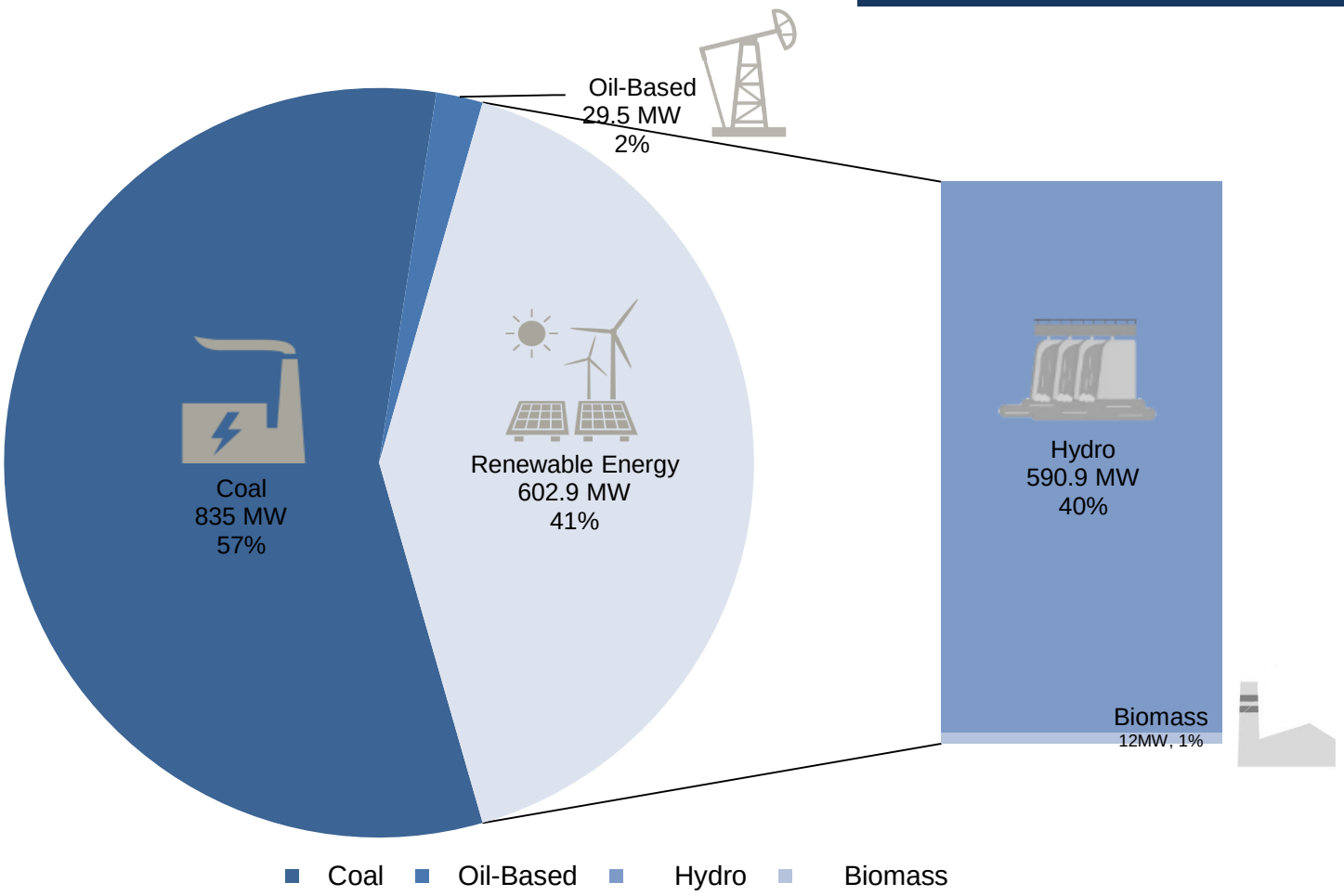
## Summary of Mindanao Power Projects
### as of 30 September 2017

| Type of Power Plant | Committed | | | Indicative | | |
|---|---|---|---|---|---|---|
| | No. of Proponents | Capacity (MW) | % Share | No. of Proponents | Capacity (MW) | % Share |
| **Coal** | **3** | **835.0** | **56.9** | **4** | **1,238.0** | **59.5** |
| **Oil-Based** | **4** | **29.5** | **2.0** | **4** | **45.2** | **2.2** |
| **Natural Gas** | **0** | **0.0** | **0.0** | **0** | **0.0** | **0.0** |
| **Renewable Energy** | **22** | **602.9** | **41.1** | **21** | **797.4** | **38.3** |
| Geothermal | 0 | 0.0 | 0.0 | 1 | 30.0 | 1.4 |
| Hydro | 19 | 590.9 | 40.3 | 5 | 268 | 12.9 |
| Biomass | 3 | 12.0 | 0.8 | 6 | 89.4 | 4.3 |
| Solar | 0 | 0.0 | 0.0 | 9 | 410.0 | 19.7 |
| Wind | 0 | 0.0 | 0.0 | 0 | 0.0 | 0.0 |
| **TOTAL** | **29** | **1,467.4** | **100.0** | **29** | **2,080.6** | **100.0** |

# Power

## Mindanao Committed Power Projects

## Total Mindanao Committed Capacity = 1,467.4 MW

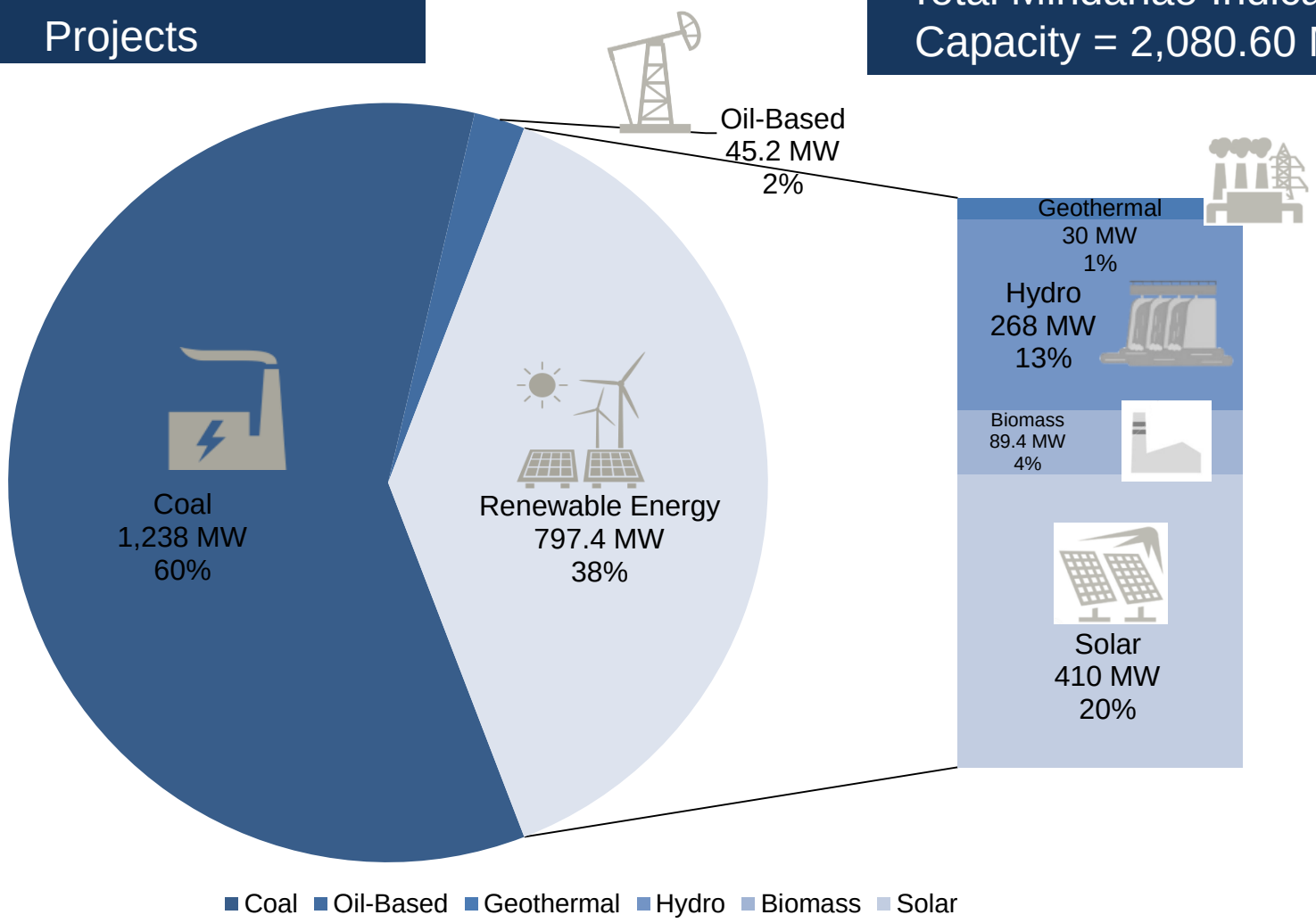



Source: DOE List of Private Sector-Initiated Power Projects as of September2017

# Power

## Mindanao Indicative Power Projects

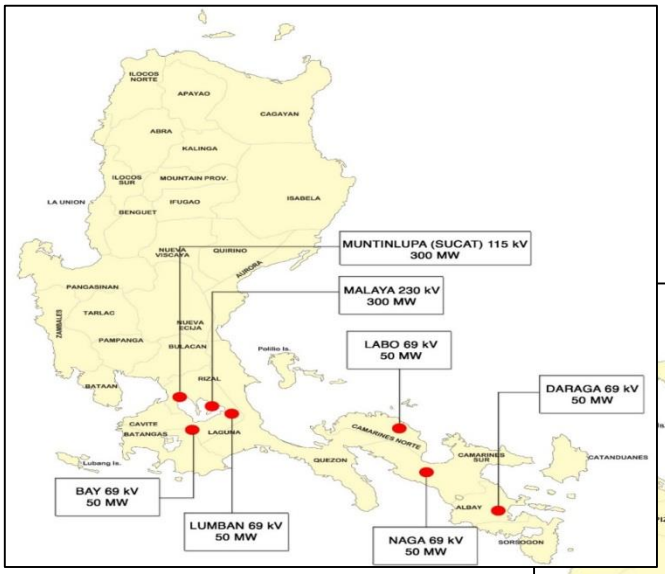
## Total Mindanao Indicative Capacity = 2,080.60 MW




Source: DOE List of Private Sector-Initiated Power Projects as of September2017

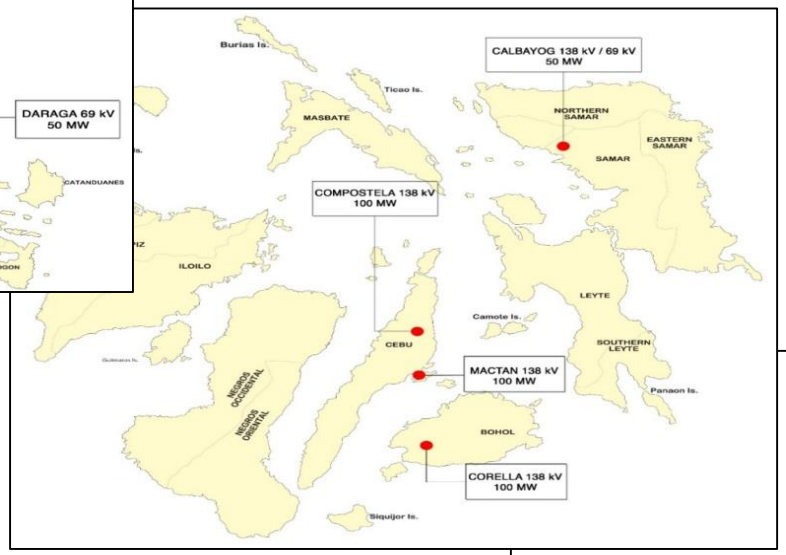
# Power

## Ideal Location of New Power Plants

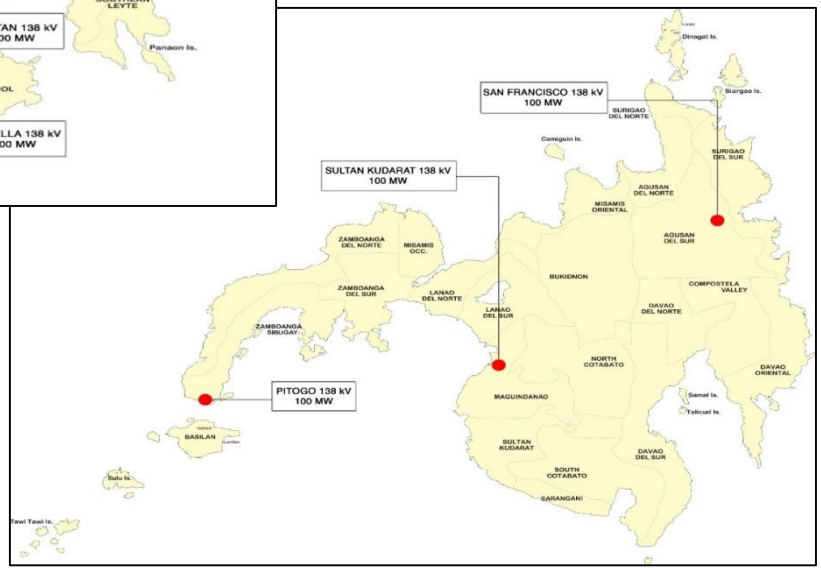



Luzon

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**

# Thank you!


 (+632) 479-2900 loc. 423

 jesus.posadas@doe.gov.ph

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