

Energy Investment Opportunities in the Visayas Region

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Department of Energy

Visayas Energy Investment Forum
13 September 2018
Cebu City



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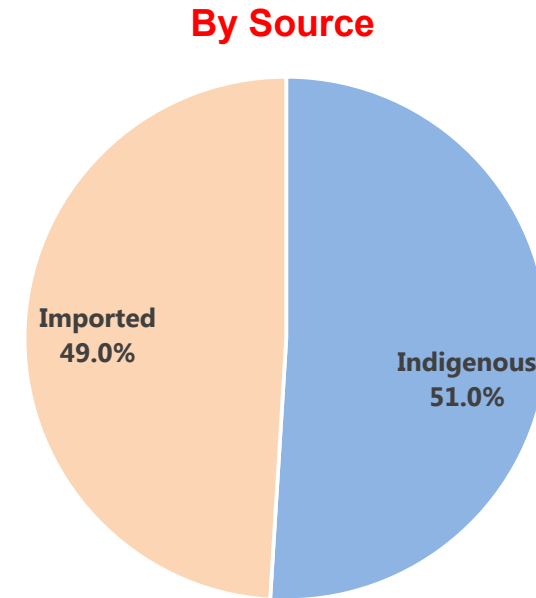
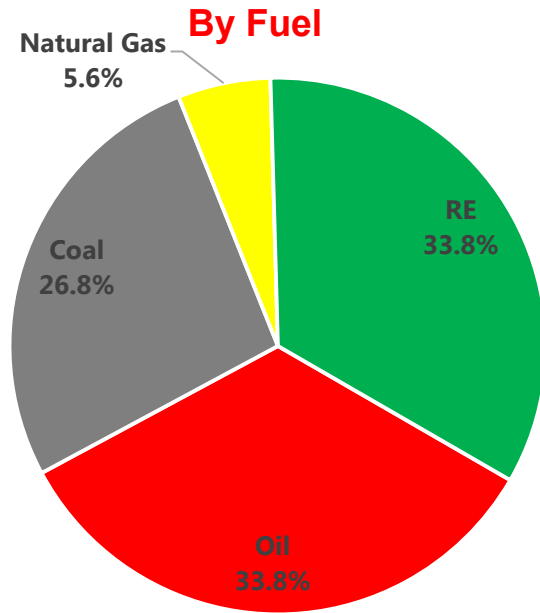
- Philippines Energy Situationer
- Visayas Power Situationer
- Investment Opportunities



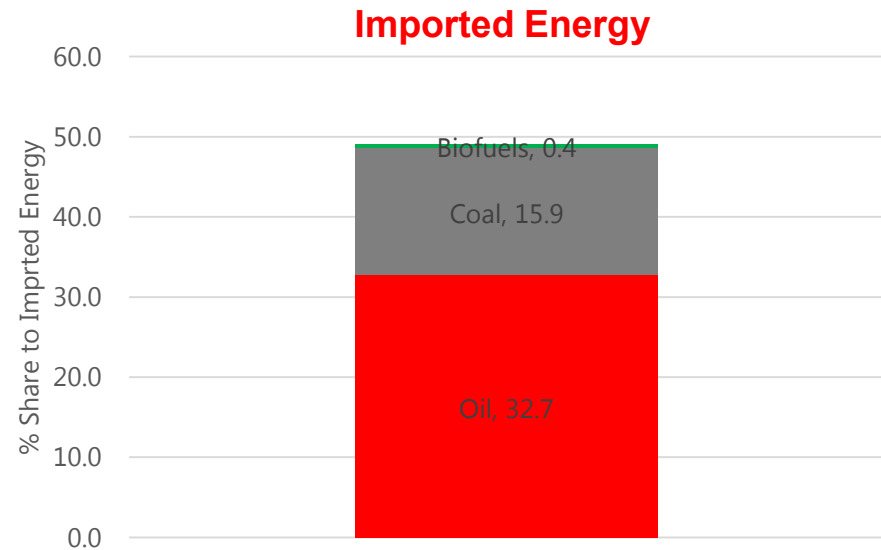
Energy Situationer



2017 Total Primary Energy Supply



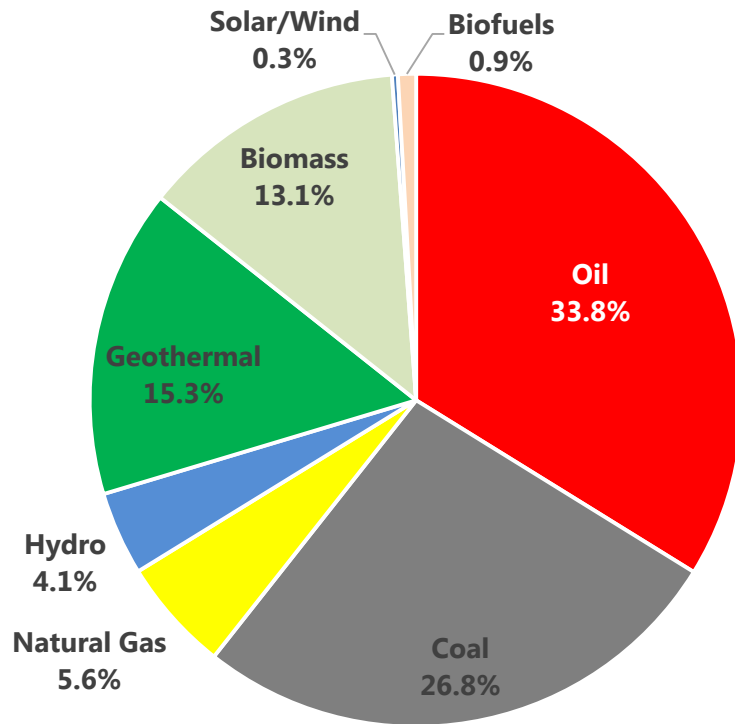
Total Energy	57.71 MTOE
Self-Sufficiency	51.0%
Renewable Energy (RE)	33.8%
Clean Energy (RE + Nat Gas)	39.4%



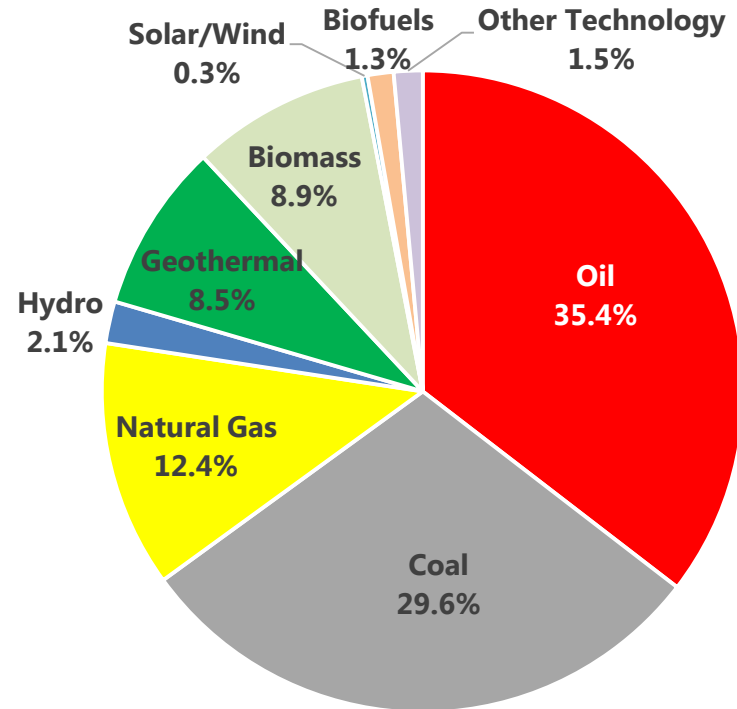
* Preliminary as of 24 April 2018



Total Primary Energy Supply, 2017 and 2040



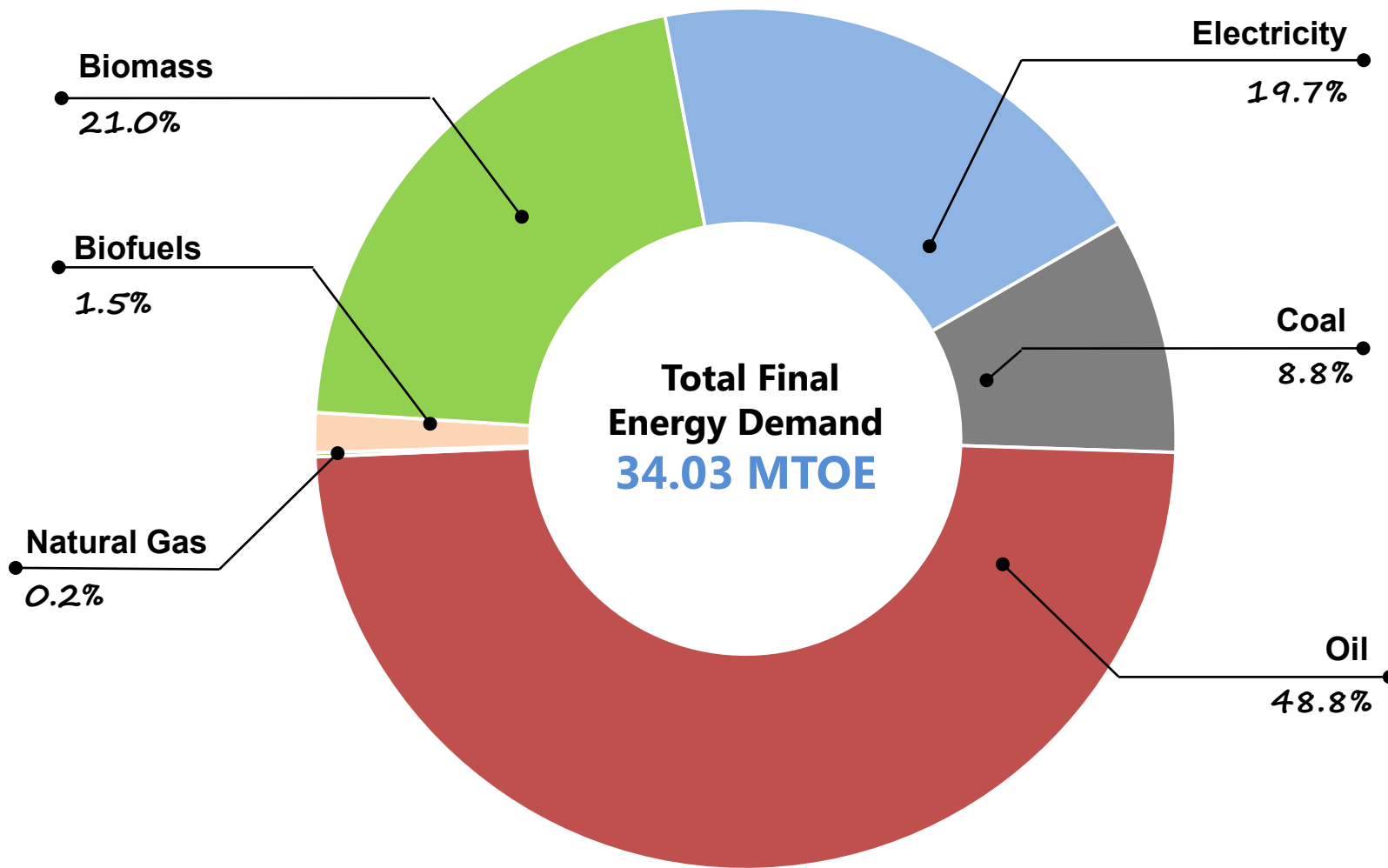
2017 (preliminary)
Total Energy: 57.7 MTOE



2040 Outlook
Total Energy: 137.8 MTOE



2017 Total Final Energy Consumption by Fuel

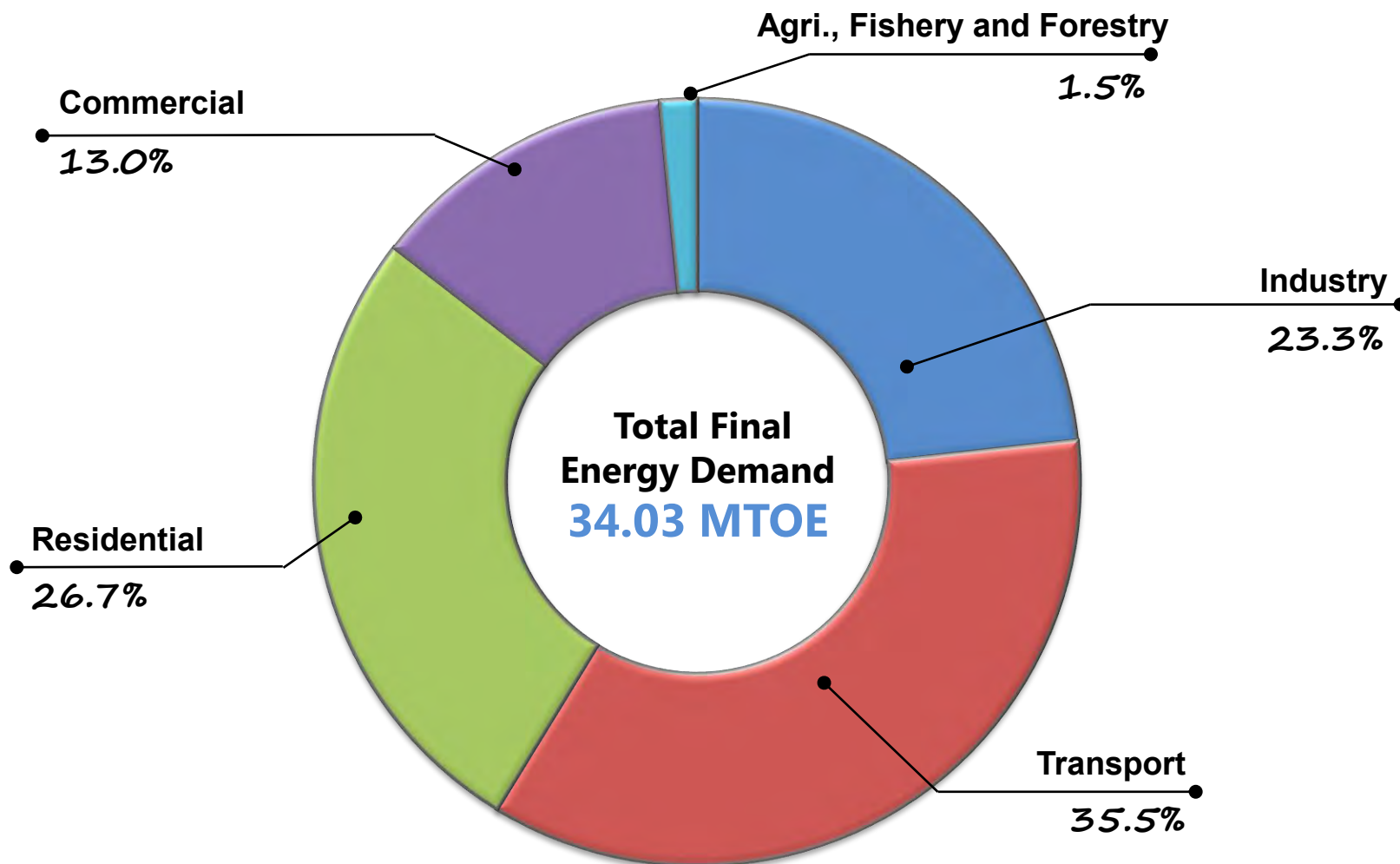


* Preliminary as of 24 April 2018

** Excludes non-energy used



2017 Total Final Energy Consumption by Sector



* Preliminary as of 24 April 2018

** Excludes non-energy used



Power Supply and Demand Outlook

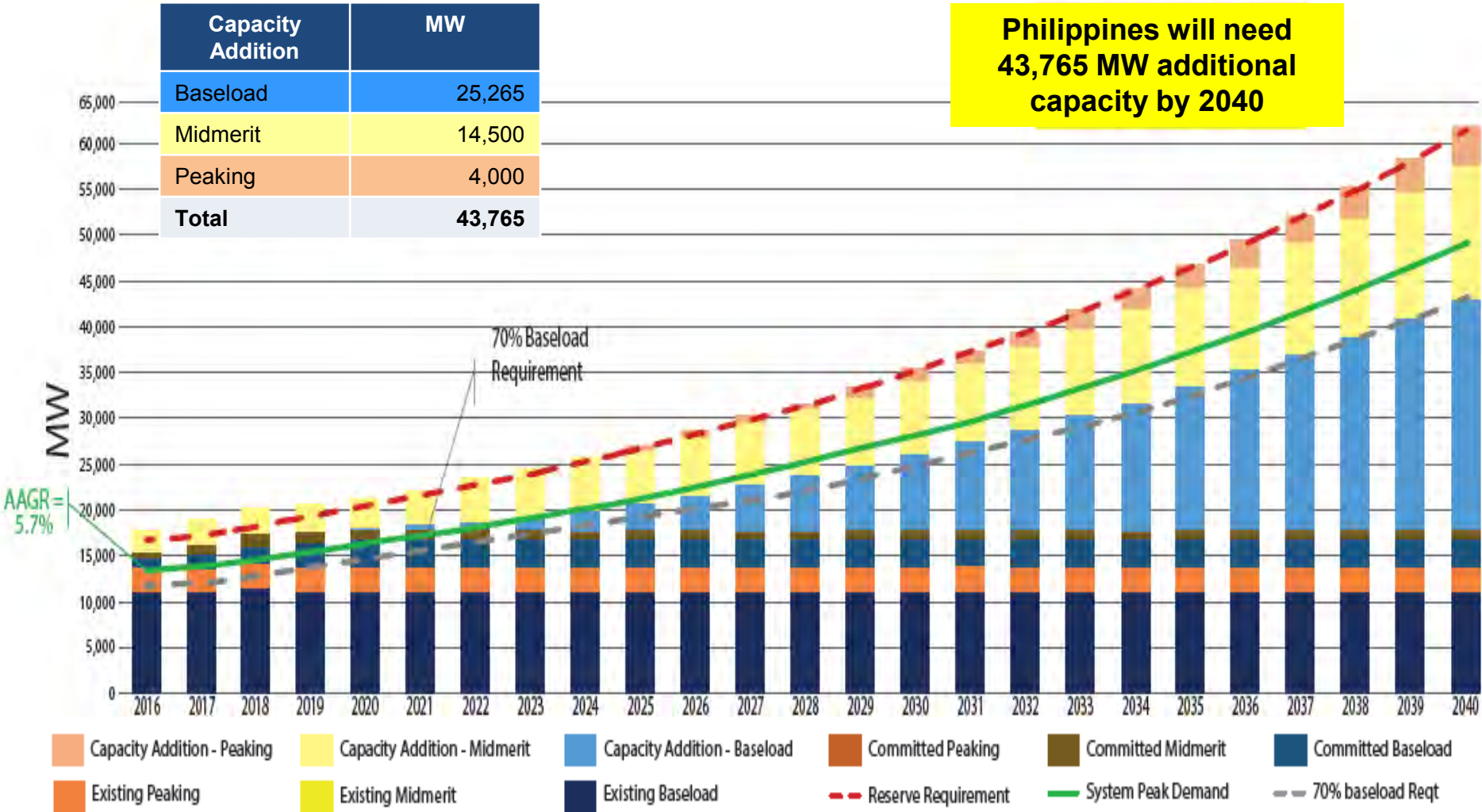


Philippines Power Demand and Supply Outlook

Philippines Demand and Supply Outlook, 2016-2040

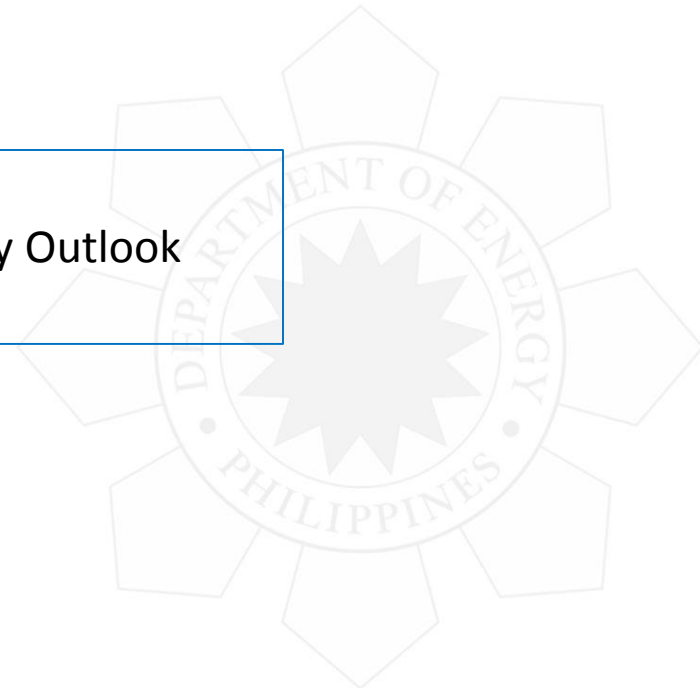
Capacity Addition	MW
Baseload	25,265
Midmerit	14,500
Peaking	4,000
Total	43,765

Philippines will need 43,765 MW additional capacity by 2040

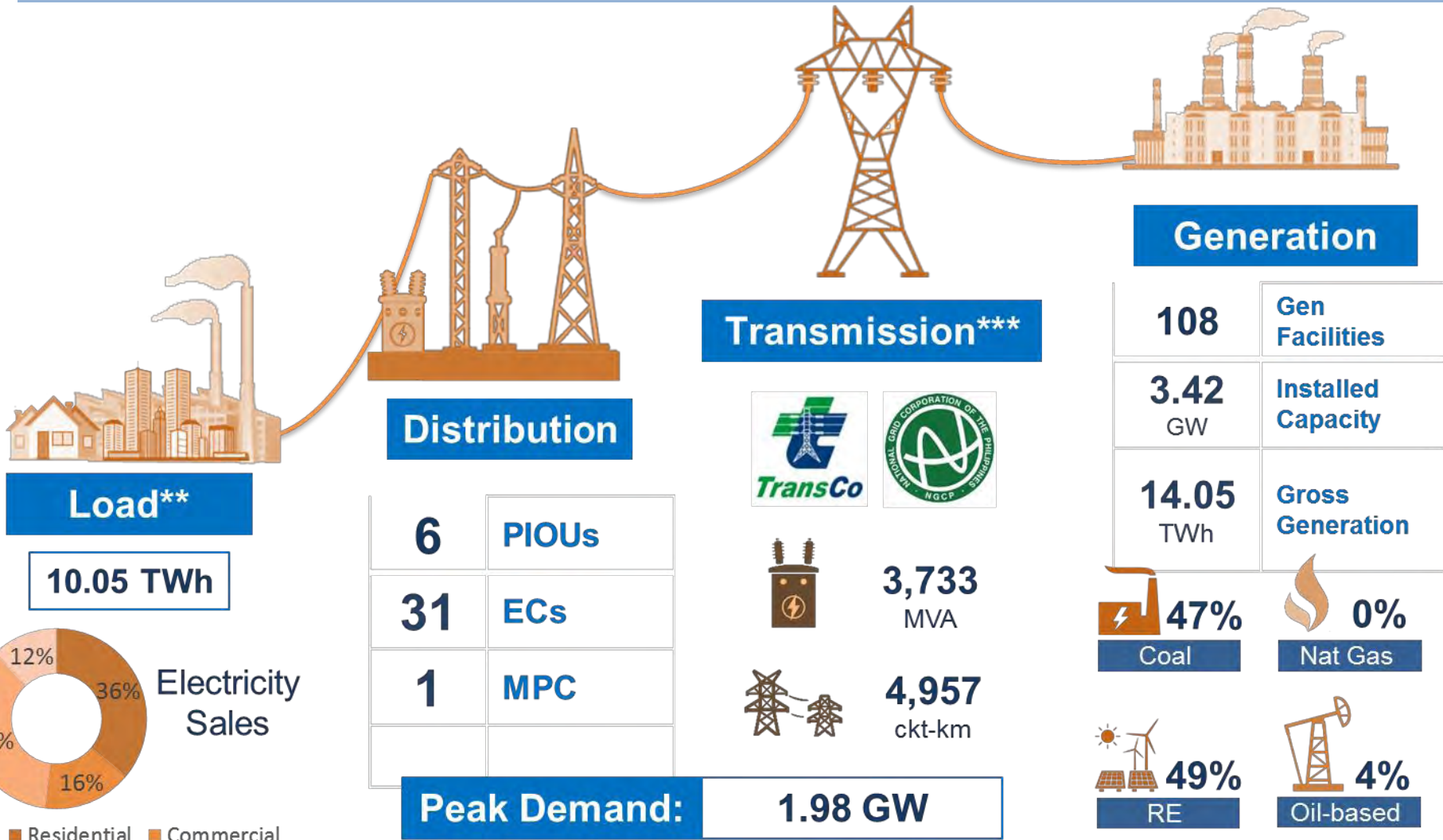


Visayas Power Situation and Outlook

- 2017 Visayas Power Grid
- 2018 – 2040 Demand and Supply Outlook
- 2018 – 2020 Power Outlook



Visayas Grid Power System*



PIOUs - Private-Investor Owned Utilities
ECs - Electric Cooperatives
MPC - Multi-purpose Cooperative

* 2017 DOE Power Statistics
 ** DU data Including off-grid, as of December 2017
 *** Based on 2014-2015 TDP
 Sources of Data: DOE; NGCP



Newly Operational Power Plants in 2017 (Grid-connected)

Facility Name	Capacity, MW		Location
	Installed	Dependable	Municipality / Province
Diesel	40.0	32.4	
Calumangan DPP U5	8.0	6.4	Bago City, Negros Occidental
PB 104	32.0	26.0	Ubay, Bohol
Solar	65.7	54.0	
COSMO Solar	5.7	5.0	Miag-ao, Iloilo
First Toledo Solar	60.0	49.0	Toledo, Cebu
TOTAL	105.7	86.4	



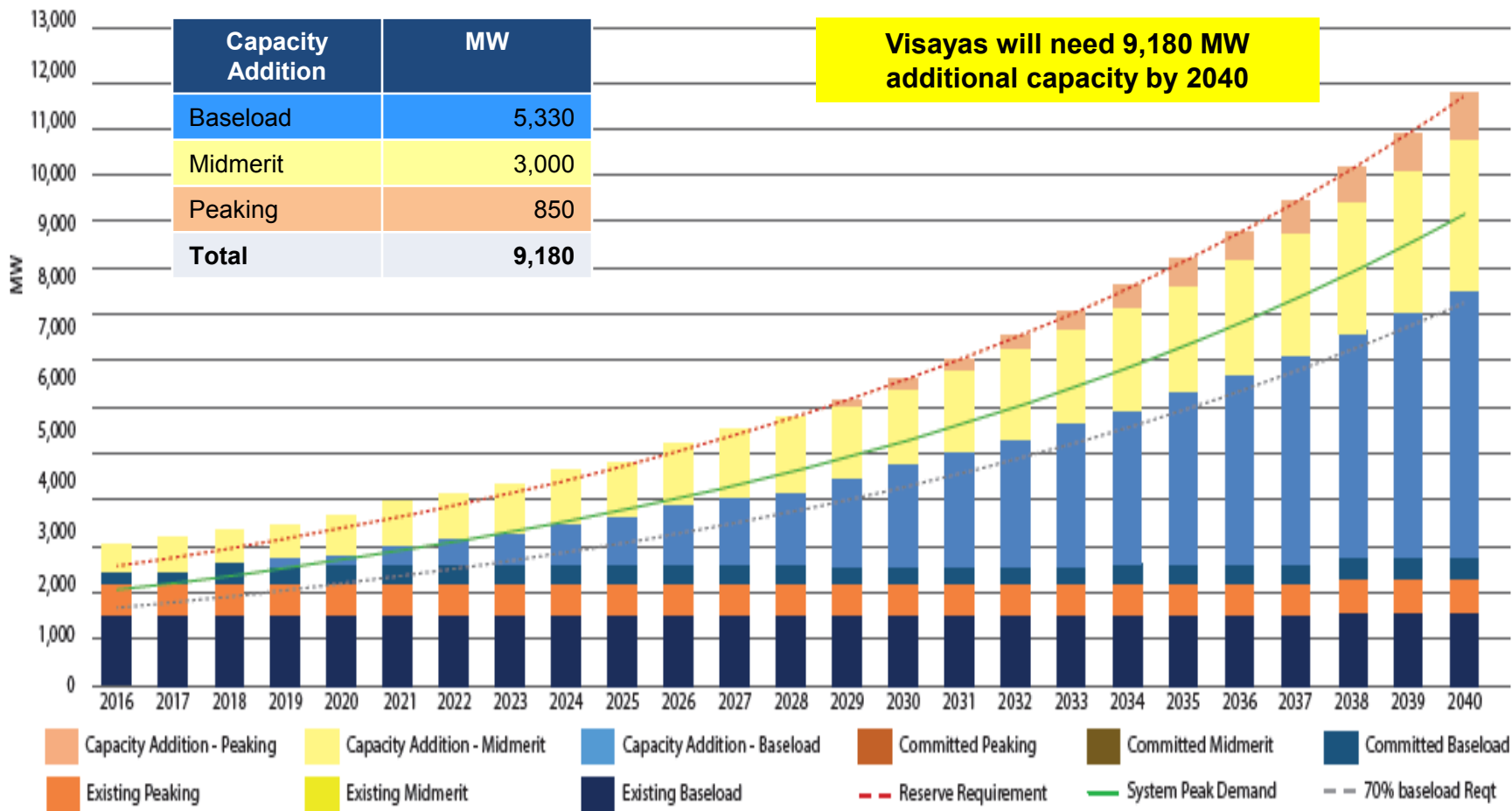
Source: DOE List of Private Sector-Initiated Power Projects as of 31 December 2017

Link: <https://www.doe.gov.ph/electric-power/private-sector-initiated-power-projects>



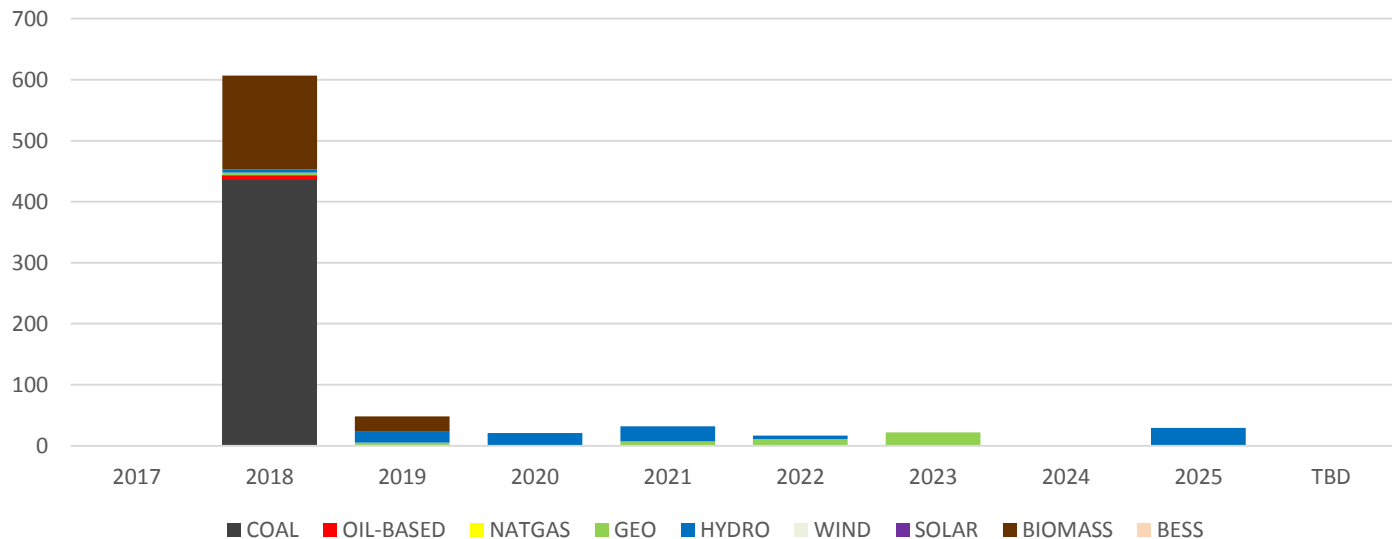
Power Development Plan to 2040

Visayas Demand and Supply Outlook, 2016-2040



Visayas Committed Power Projects

Plant Type	2018	2019	2020	2021	2022	2023	2024	2025	TBD	TOTAL by Type
COAL	435	0	0	0	0	0	0	0	0	435.00
OIL-BASED	8	0	0	0	0	0	0	0	0	8.00
NATGAS	0	0	0	0	0	0	0	0	0	0.00
GEO	5	5	0	7	11	22	0	0	0	50.00
HYDRO	5.1	18	20.88	25	5.5	0	0	28.9	0	103.38
WIND	0	0	0	0	0	0	0	0	0	0.00
SOLAR	0	0	0	0	0	0	0	0	0	0.00
BIOMASS	153.58	25	0	0	0	0	0	0	0	178.58
BESS	0	0	0	0	0	0	0	0	0	0.00
TOTAL by year	606.68	48.00	20.88	32.00	16.50	22.00	0.00	28.90	0.00	774.96



Note: TBD – To be Determined



Visayas Committed Power Projects

TOTAL VISAYAS COMMITTED CAPACITY = 775 MW

Legend:

Coal	Geothermal	Biomass
Oil-based	Hydro	Wind
NatGas	Solar	BESS

40 MW VMC Cogeneration Power Project (2018)

135 MW PCPC Coal Fired Power Project (2018)

Aggregated 103 MW from 22 Hydro projects

50 MW Biliran Geothermal Power Project (2018-2023)

8 MW Calumangan Diesel Fired Power Project (2018)

300 MW Therma Visayas Coal (2018)

20 MW HPC Cogeneration Power Project (2018)

48 MW BISCOM Cogeneration Power Project (2018)

20 MW SCBI Multi-Feedstock Biomass Power Project (2018)

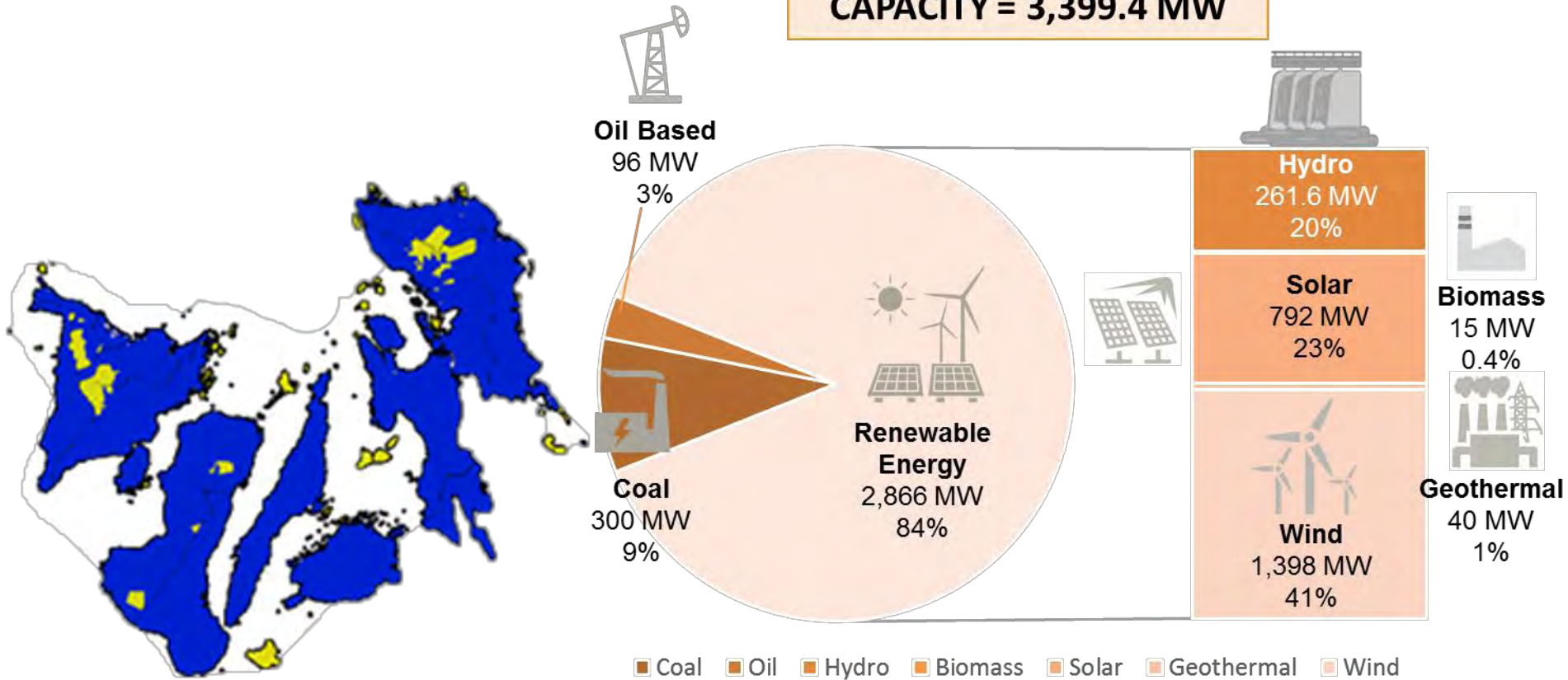
25 MW SNBI Cane trash-Fired Biomass Power Project (2019)

25 MW Bais Baggasse-Fired Power Project (2018)



Visayas Indicative Power Projects

TOTAL VISAYAS INDICATIVE CAPACITY = 3,399.4 MW



Visayas 2018-2020 Power Outlook

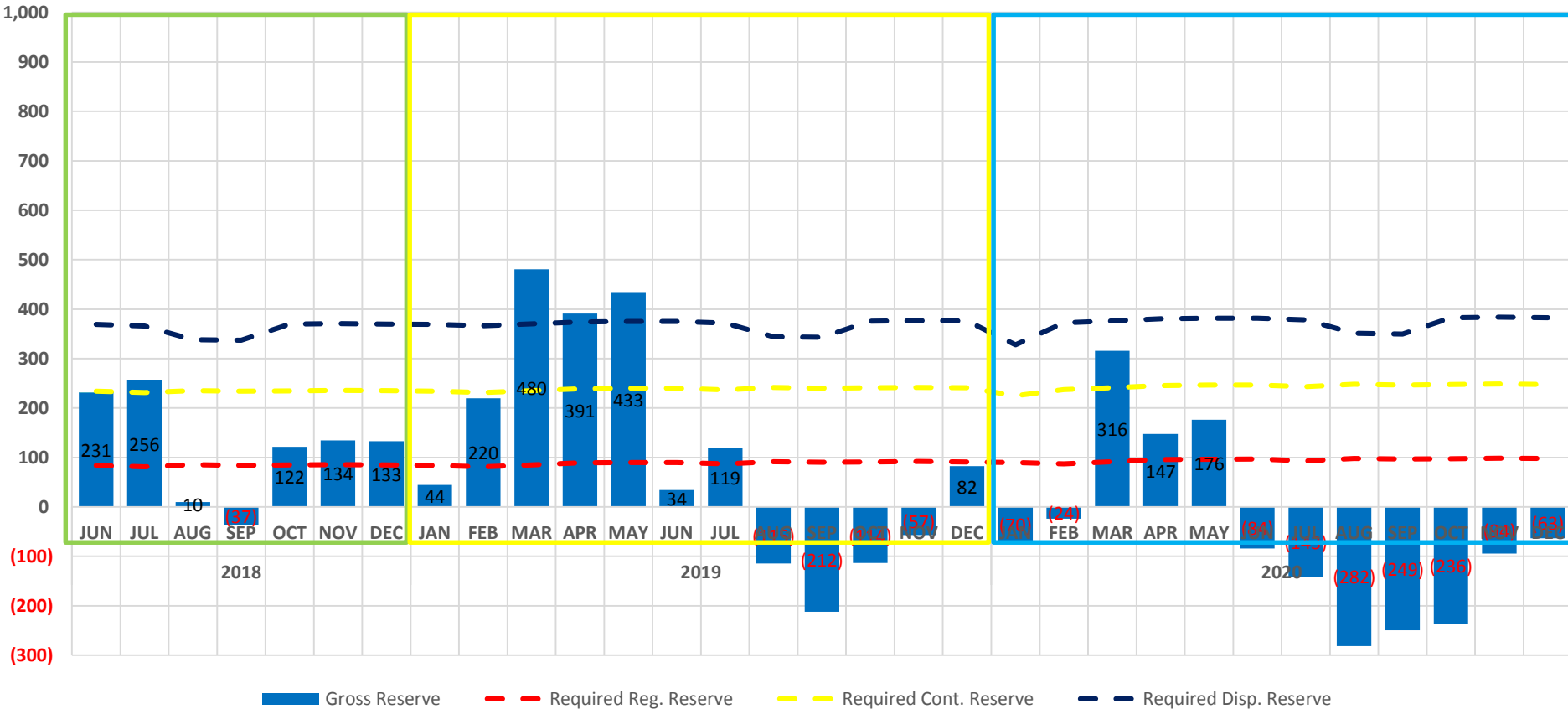
- **Assumptions**

- DOE Peak Demand forecast*
 - 2018 – 2,143 MW
 - 2019 – 2,298 MW
 - 2020 – 2,465 MW
- Committed Power projects based on actual project status
- Preventive Maintenance considered based on NGCP Grid Operating Program (GOP) 2018-2020
- HVDC Import from Luzon not considered
- Output from solar farms considered only during summer period
- Transmission constraints per Visayas sub-grid not considered



Visayas 2018-2020 Power Outlook

Reserve Profile



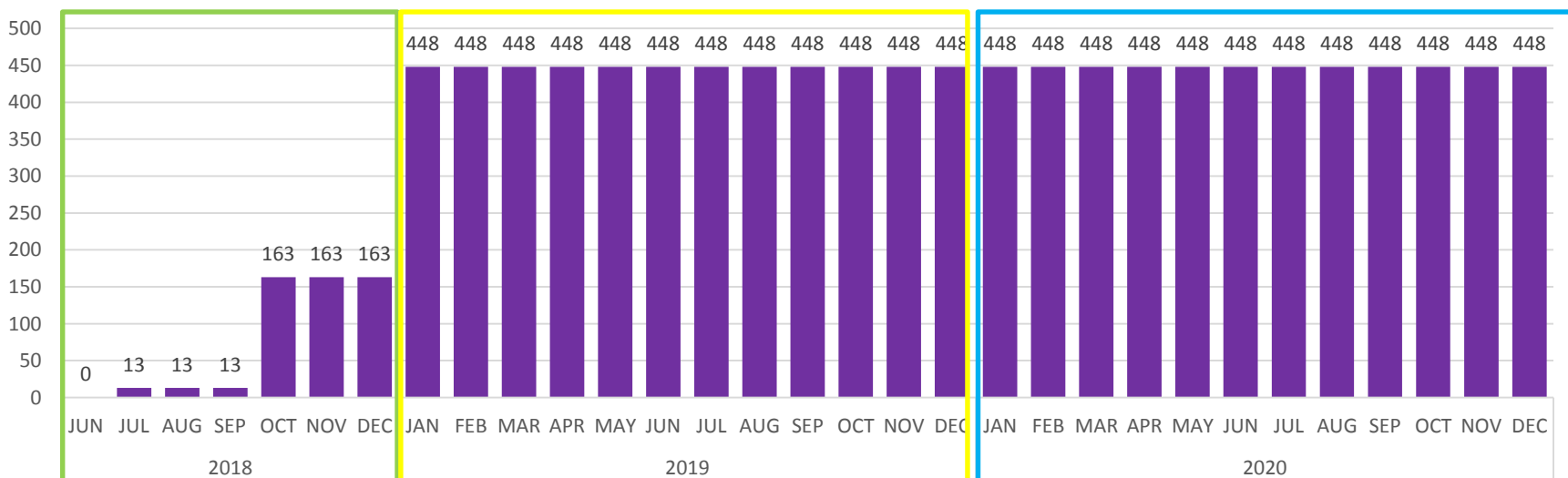
2018-2020 Monthly	2018												2019												2020											
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC					
Total Available Capacity	2,331	2,284	2,142	2,064	2,241	2,277	2,256	2,143	2,252	2,609	2,618	2,682	2,286	2,294	2,172	2,041	2,159	2,241	2,359	2,181	2,156	2,599	2,536	2,589	2,331	2,190	2,171	2,167	2,202	2,371	2,379					
System Demand	2,100	2,028	2,132	2,101	2,119	2,143	2,123	2,099	2,033	2,128	2,227	2,249	2,251	2,175	2,286	2,253	2,272	2,298	2,277	2,252	2,180	2,283	2,389	2,413	2,415	2,333	2,453	2,416	2,438	2,465	2,443					
Gross Reserve	231	256	10	(37)	122	134	133	44	220	480	391	433	34	119	(115)	(212)	(92)	(157)	82	(70)	(24)	316	147	176	(84)	(113)	(212)	(249)	(236)	(94)	(53)					
Required Reg. Reserve	84	81	85	84	85	86	85	84	81	85	89	90	90	87	91	90	91	92	91	90	87	91	96	97	97	93	98	97	98	99	98					
Required Cont. Reserve	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	135	150	150	150	150	150	150	150	150	150	150	150					
Required Disp. Reserve	135	135	103	103	135	135	135	135	135	135	135	135	135	135	103	103	135	135	135	103	135	135	135	135	135	103	103	135	135	135	135					



Visayas 2018-2020 Power Outlook

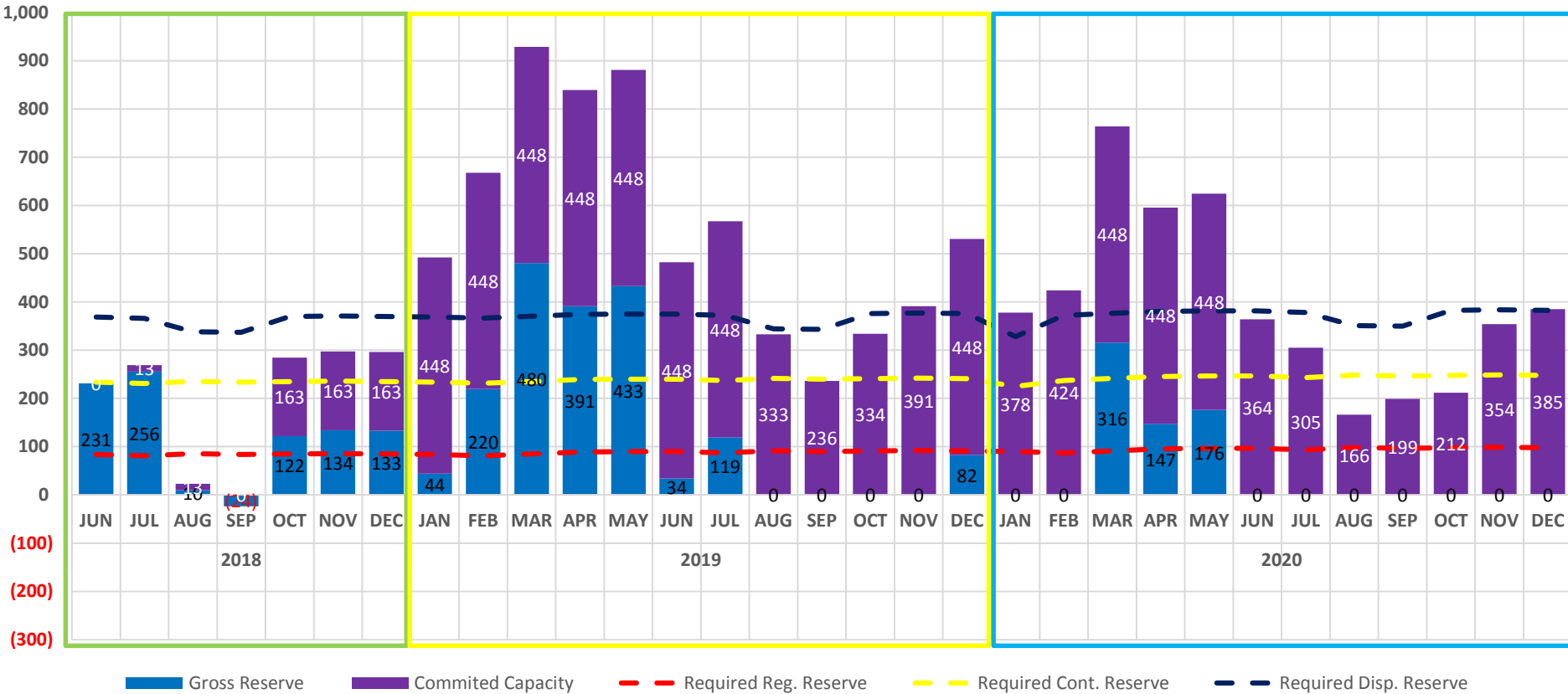
- Committed Power Projects considered**

Power Project	Installed Cap (MW)	Target COD
Calumangan DPP	8.0	Jun 2018
Igbulo HEPP	5.1	Jun 2018
Therma Visayas Coal U1	150.0	Sep 2018
Therma Visayas Coal U2	150.0	Dec 2018
Palm Concepcion Coal U2	135.0	Dec 2018
Total	448.1	



Visayas 2018-2020 Power Outlook

Reserve Profile with Committed Power Projects



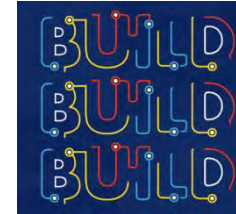
2018-2020 Monthly	2018												2019												2020											
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC					
Total Available Capacity	2,331	2,284	2,142	2,064	2,241	2,277	2,256	2,143	2,252	2,609	2,618	2,682	2,286	2,294	2,172	2,041	2,159	2,241	2,359	2,181	2,156	2,599	2,536	2,589	2,331	2,190	2,171	2,167	2,202	2,371	2,379					
System Demand	2,100	2,028	2,132	2,101	2,119	2,143	2,123	2,099	2,033	2,128	2,227	2,249	2,251	2,175	2,286	2,253	2,272	2,298	2,277	2,252	2,180	2,283	2,389	2,413	2,415	2,333	2,453	2,416	2,438	2,465	2,443					
Gross Reserve	231	256	10	(13)	122	134	133	44	220	480	391	433	34	119	0	0	0	82	0	0	316	147	176	0	0	0	0	0	0	0						
Committed Capacity	0	13	13	0	163	163	163	448	448	448	448	448	448	448	333	236	334	391	448	378	424	448	448	448	364	305	166	199	212	354	385					
Required Reg. Reserve	84	81	85	84	85	86	85	84	81	85	89	90	90	87	91	90	91	92	91	90	87	91	96	97	97	93	98	97	98	99	98					
Required Cont. Reserve	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	135	150	150	150	150	150	150	150	150	150	150	150					
Required Disp. Reserve	135	135	103	103	135	135	135	135	135	135	135	135	135	135	103	103	135	135	135	103	135	135	135	135	135	135	103	103	135	135	135					



Policy Initiatives



Policy Initiatives



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**



Policy Initiatives

DOE's Legislative Agenda:

- Downstream Oil Industry Deregulation Bill
- LPG Industry Safety Bill
- Amending Sec. 45 of RA 9136
- Electric, Hybrid and Other Alternative Fuel Vehicles Promotions Bill
- Downstream Natural Gas Infrastructure Development Bill
- Energy Efficiency and Conservation Bill
- Green Vehicles Incentives Bills
- EVOSS Bill



Policy Initiatives

- Department Circular No. 2013-03-0003, the DOE shall propose a National Strategy for the Smart Grid for the period until 2040.
- Executive Order No. 30 was signed by President R. Duterte on 28 June 2017 creating the Energy Investment Coordinating Council (EICC) in order to Streamline the Regulatory Procedures Affecting Energy Projects
- Department Circular No. DC2017-11-0012 Rules & Regulations Governing the Philippine Downstream Natural Gas Industry
- Department Circular No. 2017-12-0014 Providing Policies on the Implementation of Retail Competition and Open Access for Retail Electricity Suppliers



Policy Initiatives

- Department Circular No. DC2017-12-0015
Promulgating the Rules and Guidelines Governing the Establishment of the Renewable Portfolio Standards for On-Grid Areas
- Department Circular No. DC2017-12-0017
Adopting the Philippine Conventional Energy Contracting Program (PCECP)
- Department Circular No. DC2018-01-0002
Adopting Policies for the Effective and Efficient Transition to the IMO for the WESM



Investment Opportunities

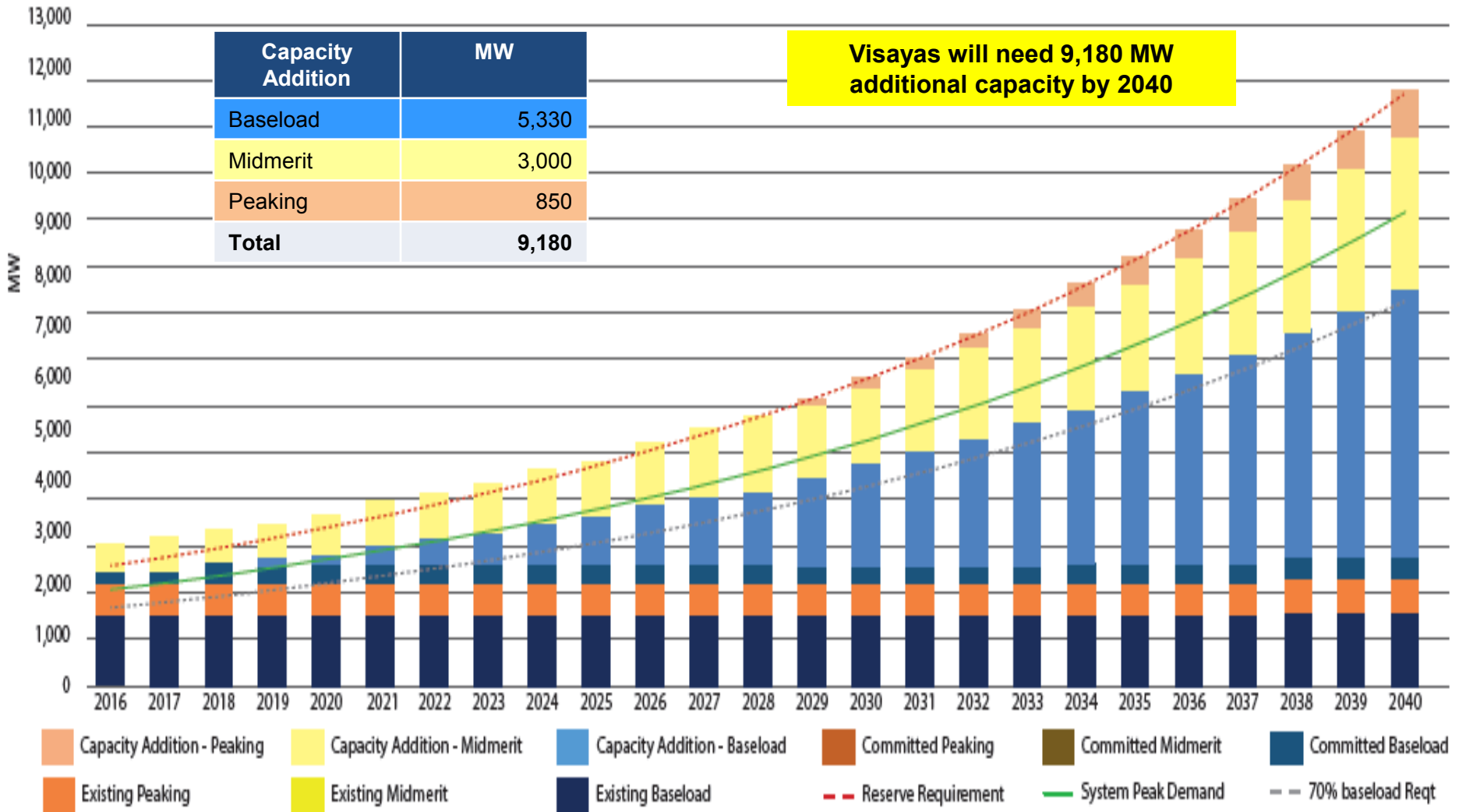


Power

Visayas Demand and Supply Outlook, 2016 - 2040

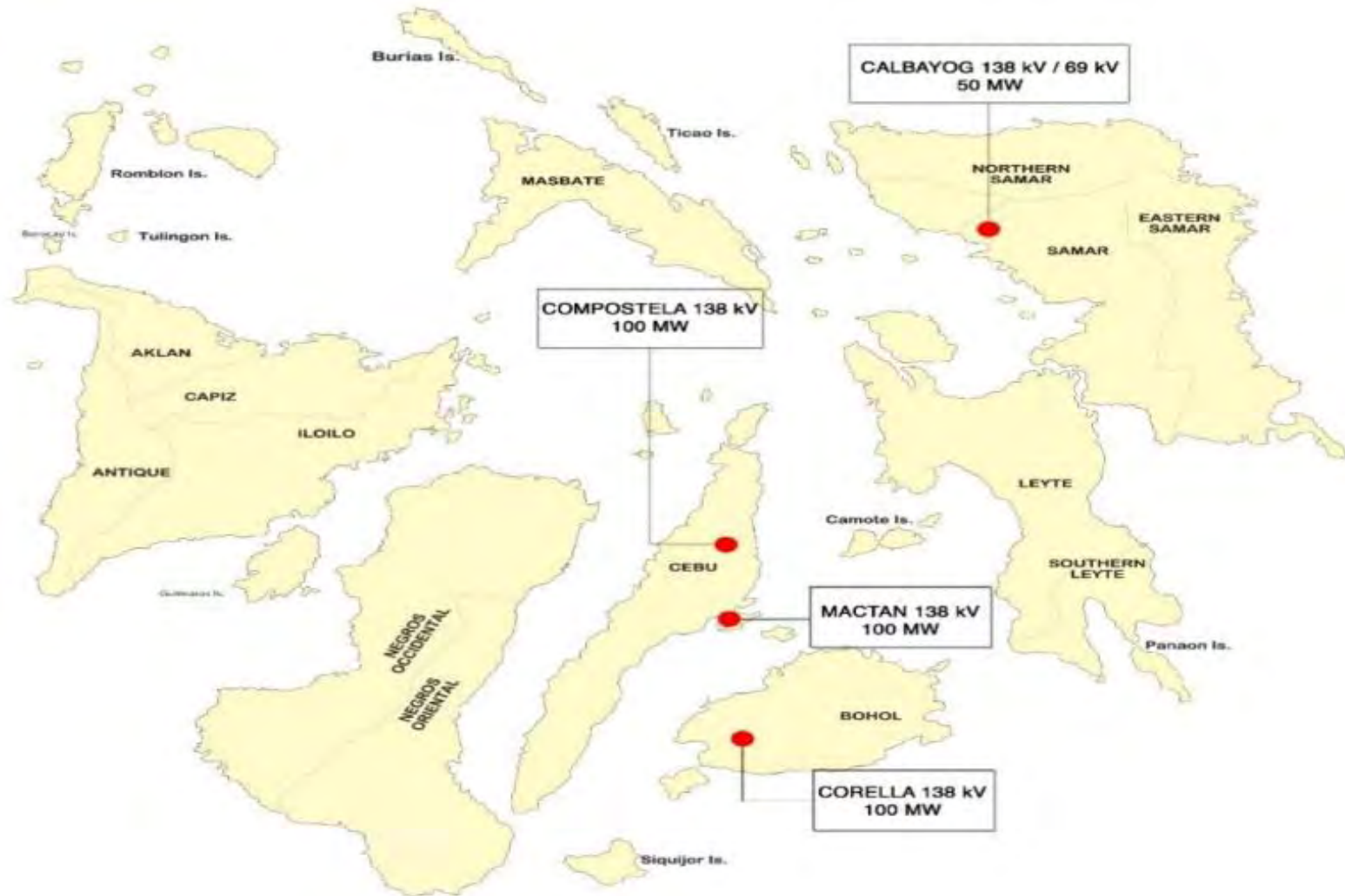
Capacity Addition	MW
Baseload	5,330
Midmerit	3,000
Peaking	850
Total	9,180

Visayas will need 9,180 MW additional capacity by 2040



Power

Ideal Location of New Power Plants in Visayas



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



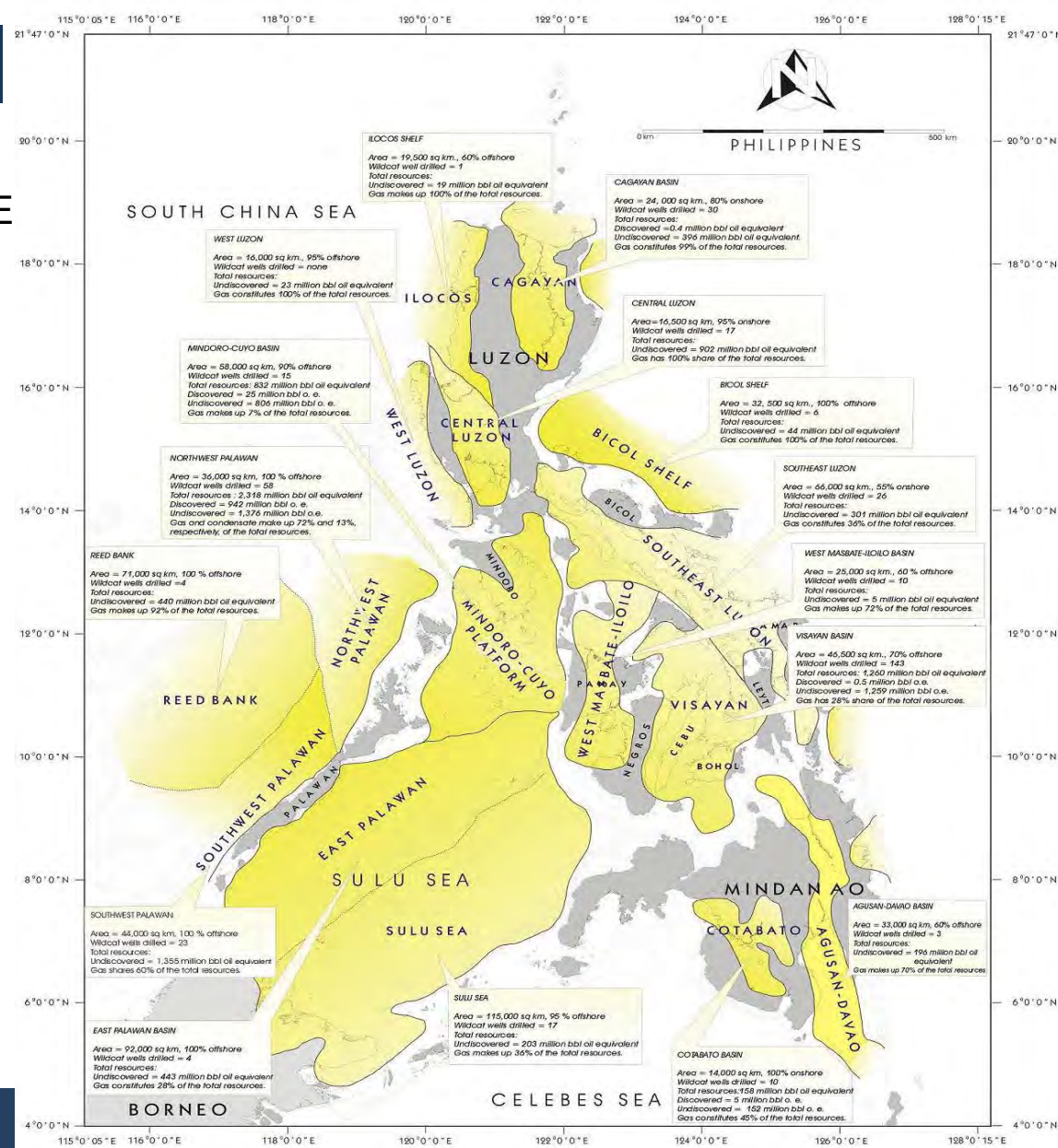
Upstream Oil & Gas

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

Sedimentary Basin in Visayas

West Masbate – Iloilo Basin

Area: 25,000 Sq. Km. 60% Offshore

Wildcat Wells Drilled: 10

Total Resources:

Undiscovered: 5 million BBL equivalent

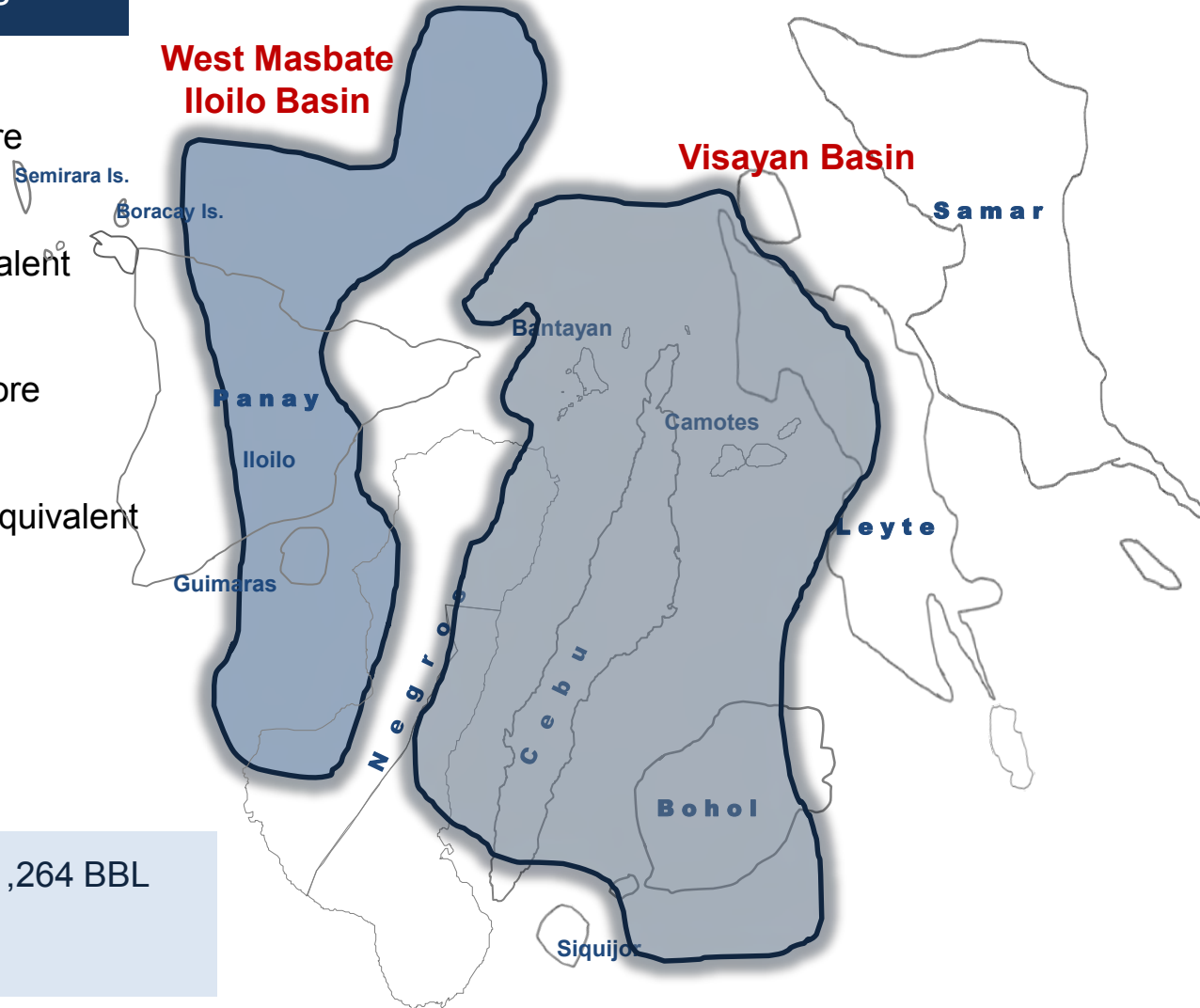
Visayan Basin

Area: 46,500 Sq. Kms. 70% Offshore

Wildcat Wells Drilled: 145

Total Resources

Undiscovered: 1,259 million BBL equivalent



Total Resources Undiscovered = 1,264 BBL

Equivalent

Total Area = 71,500 Sq. Kms.



Upstream Oil & Gas

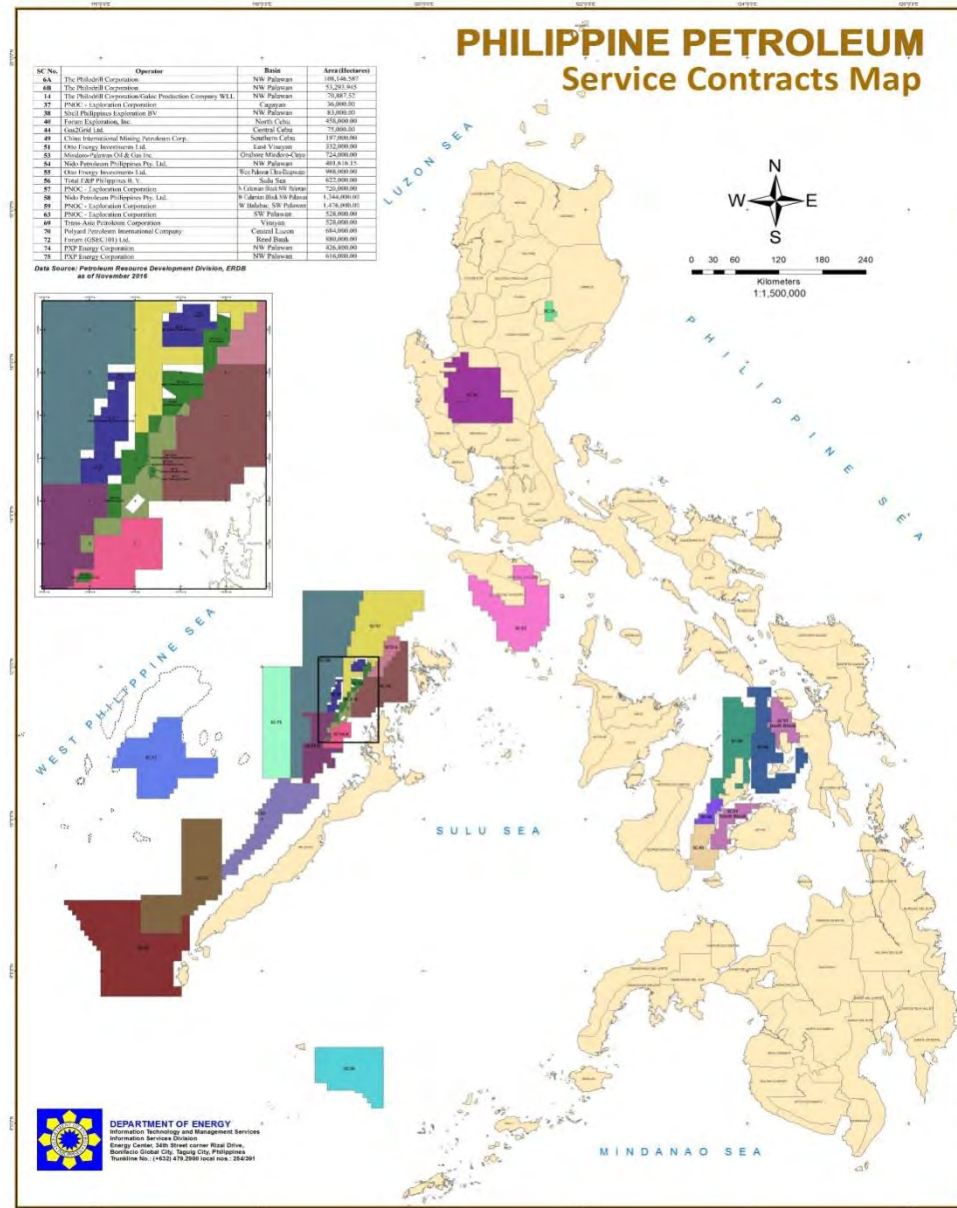
Petroleum Service Contracts Exploration & Development

22 Petroleum Service Contracts (PSCs) As of June 2018

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

5 Petroleum Service Contracts (PSCs) in the Visayas Region

- 3 PSCs in the Production Stage
- 2 PSCs in the Exploration Stage



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 - 550.00
In-situ Reserves - 96.19

NEGROS
Resource Potential - 4.50
In-situ Reserves - 2.01

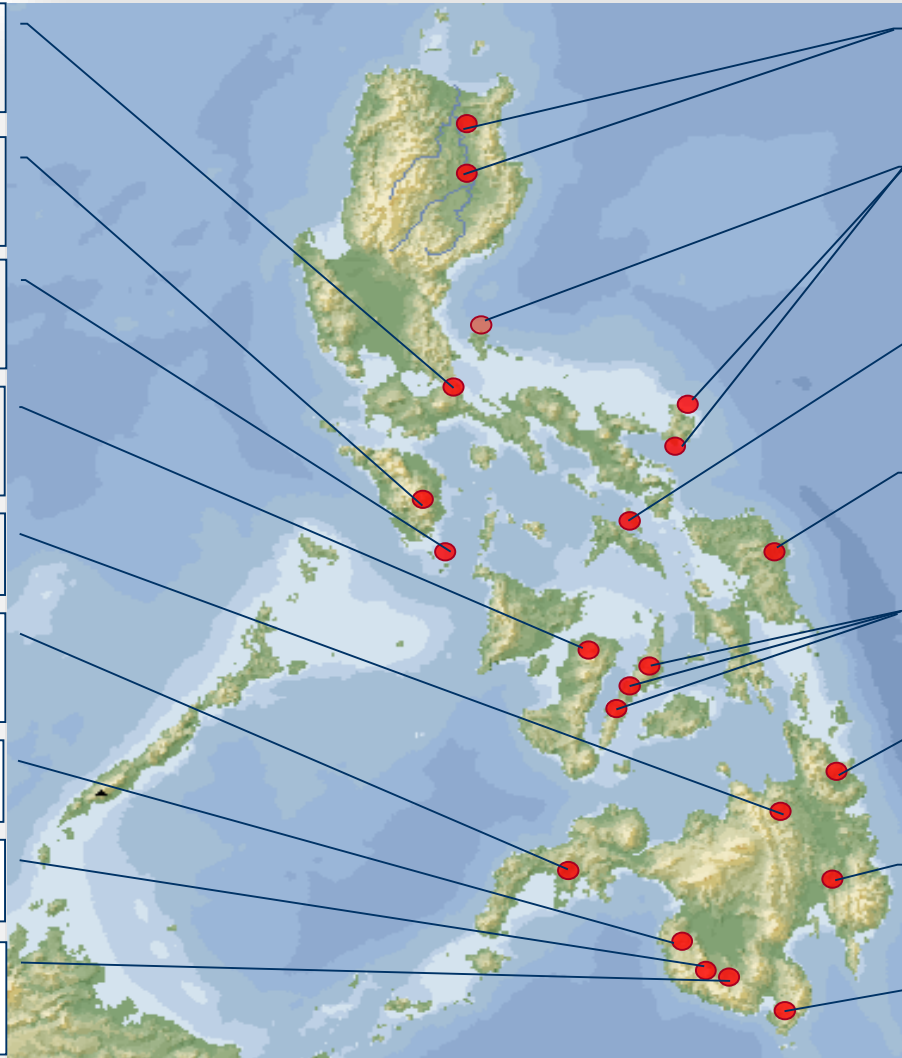
BUKIDNON
Resource Potential - 50.00

ZAMBOANGA
Resource Potential - 45.00
In-situ Reserves - 38.05

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 - 6.77

MASBATE
Resource Potential - 2.50
In-situ Reserves - 0.07

SAMAR
Resource Potential - 27.00
In-situ Reserves - 8.59

CEBU
Resource Potential - 165.00
In-situ Reserves - 11.84

SURIGAO
Resource Potential - 209.00
In-situ Reserves - 69.73

DAVAO
Resource Potential - 100.00
In-situ Reserves - 2.37

SARANGANI
Resource Potential - 120.00



Upstream Coal

Areas for Investments in Coal

- Setting up of coal preparation plants
- Expansion of production of volumes of higher rank Philippine Coals
- Putting up of coal-fired power plants using Clean Coal Technologies
- Putting up of mine-mouth power plants
- Exploration of the Philippine Coal Basins and development of local coals

Coal Basins in Visayas:

Semirara

Resource Potential: 550 million MT
In-situ Reserves: 96.19 million MT

Negros

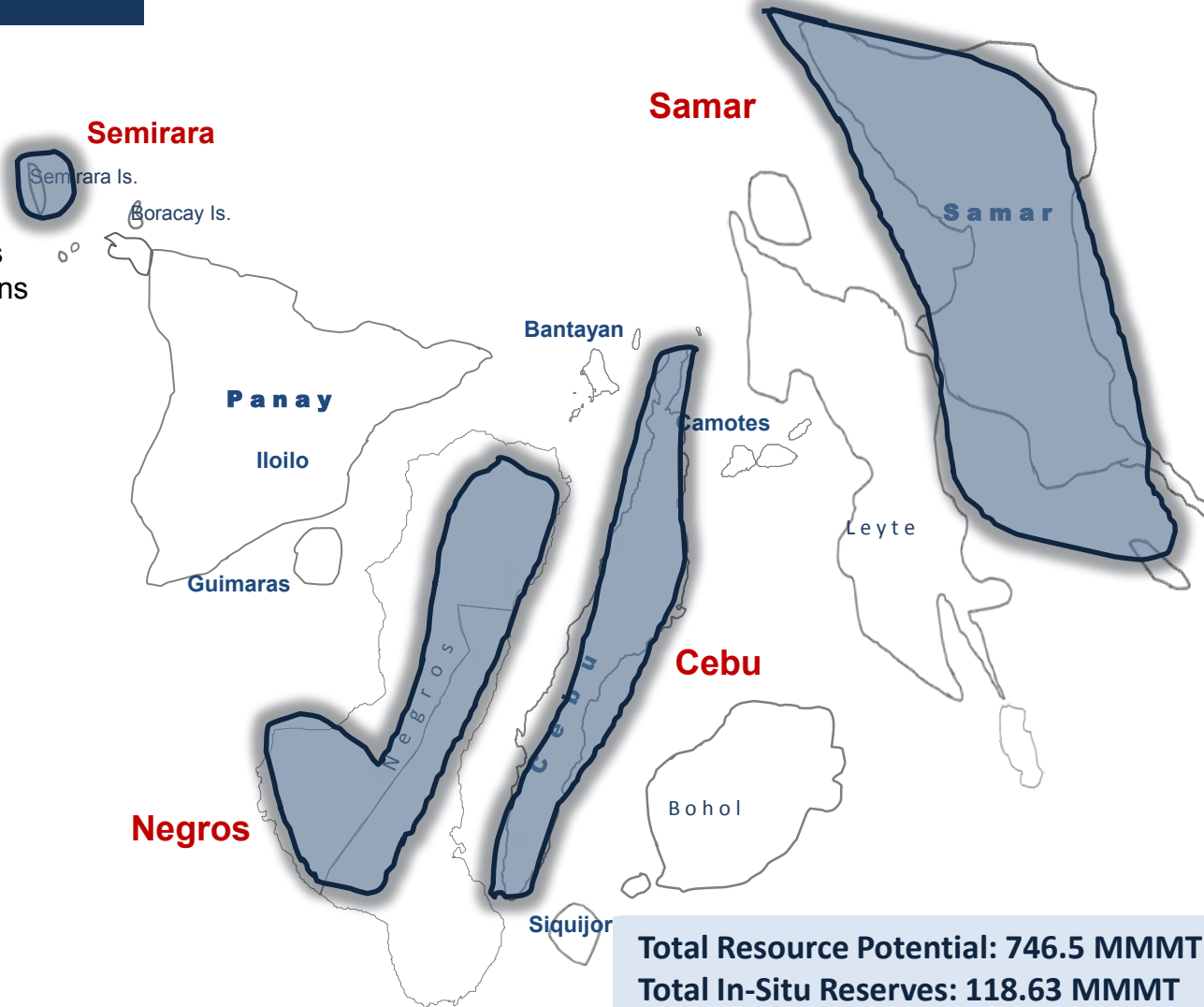
Resource Potential: 4.50 million MT
In-situ Reserves: 2.01 million MT

Cebu

Resource Potential: 165 million MT
In-Situ Reserves: 11.84 million MT

Samar

Resource Potential: 27 million MT
In-Situ Reserves: 8.59 million MT



Total Resource Potential: 746.5 MMMT
Total In-Situ Reserves: 118.63 MMMT



Upstream Coal

Coal Operating Contracts Exploration & Development

73 Active Coal Operating Contracts (COCs) As of June 2018

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

17 Active Coal Operating Contracts (COCs) in the Visayas Region

- 7 COCs in the Exploration Stage
- 10 COCs in the Development and Production Stage



Downstream Oil

Total Number of Gasoline Stations

Region	Majors	With Bulk Supply / Facilities New Players	Independent	Total
Region VI	340	228	219	787
Aklan	36	15	17	68
Antique	40	25	2	67
Capiz	31	12	24	67
Guimaras	6	12	7	25
Iloilo	113	81	84	278
Negros Occidental	114	83	85	282
Region VII	338	170	174	682
Bohol	82	4	43	129
Cebu	199	128	97	424
Negros Oriental	55	38	33	126
Siquijor	2	0	1	3
Region VIII	150	47	93	290
Leyte	109	40	66	215
Samar	41	7	27	75
Total Visayas	828	445	486	1,759



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**



ALTERNATIVE FUELS AND ENERGY EFFICIENCY

Areas for Investments

- Energy efficient appliances & equipment
- High efficiency motors
- Fuel efficient & low-carbon vehicles
 - ✓ Hybrid, electric, etc.
 - ✓ Charging stations for Alternative Energy Vehicles
- Energy efficient building technologies
 - ✓ Green building
 - Building Energy Management Systems Design and Architecture
- Energy Service Companies (ESCOs)



Thank you!

For inquiries, please contact

***Investment Promotion Office
Department of Energy***



(+632) 479-2900 local 371



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<https://web.facebook.com/doe.gov.ph>



@doe_ph

