

Investment Opportunities in the Philippine Energy Sector



Department of Energy



Presentation Outline

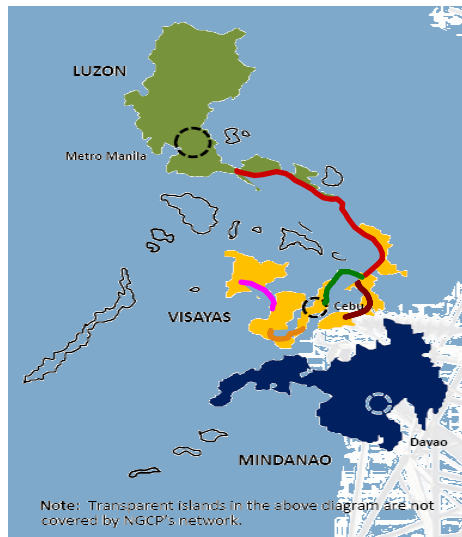
- Power
- Oil & Gas
- Coal
- Natural Gas
- Alternative Fuels
- Renewable Energy



Power

POWER SITUATIONER

FUEL TYPE	LUZON		VISAYAS		MINDANAO		PHILIPPINES	
	MW*	% Share	MW	% Share	MW	% Share	MW	% Share
Coal	4,531	35.42	806	32.74	232	10.87	5,568	32.02
Oil Based	2,020	15.79	670	27.24	697	32.65	3,388	19.48
Natural Gas	2,861	22.37	1	0.04	0	0	2,862	16.46
Geothermal	844	6.60	915	37.19	108	5.08	1,868	10.74
Hydro	2,464	19.26	11	0.46	1,061	49.68	3,536	20.34
Wind	33	0.26	0	0	0	0	33	0.19
Biomass	38	0.30	44	1.80	36	1.68	119	0.68
Solar			13	0.53	1	0.05	14	0.08
TOTAL	12,792		2,461		2,135		17,387	



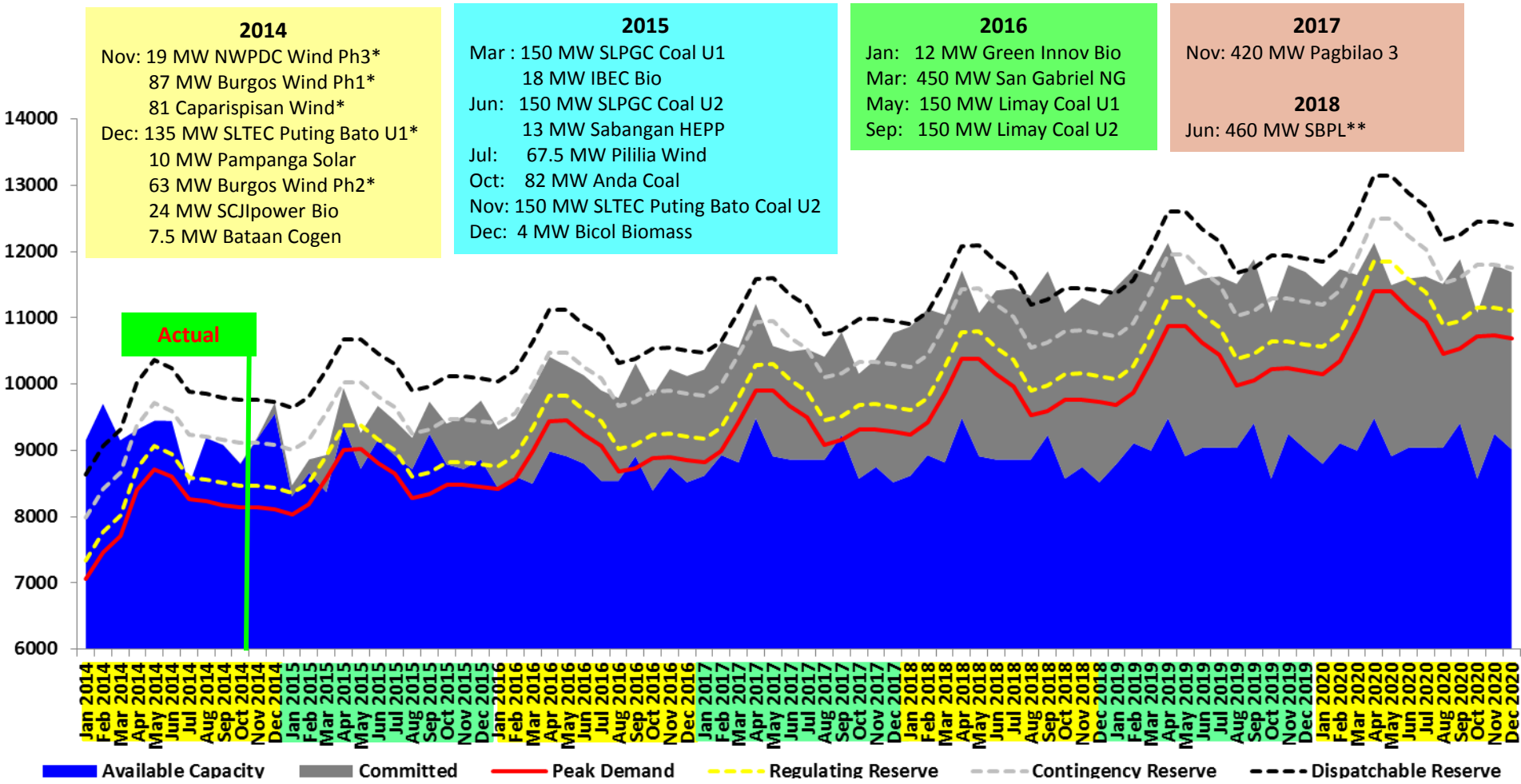
Interconnection Line Capacity

- Leyte-Luzon (440 MW)
- Leyte-Cebu (400 MW)
- Leyte-Bohol (100 MW)
- Cebu-Negros (200 MW)
- Negros-Panay (100 MW)

Source: DOE List of Existing Power Plants as of June 2014

- Includes embedded generators
- Excludes off-grid generators

LUZON SUPPLY-DEMAND OUTLOOK 2014-2020



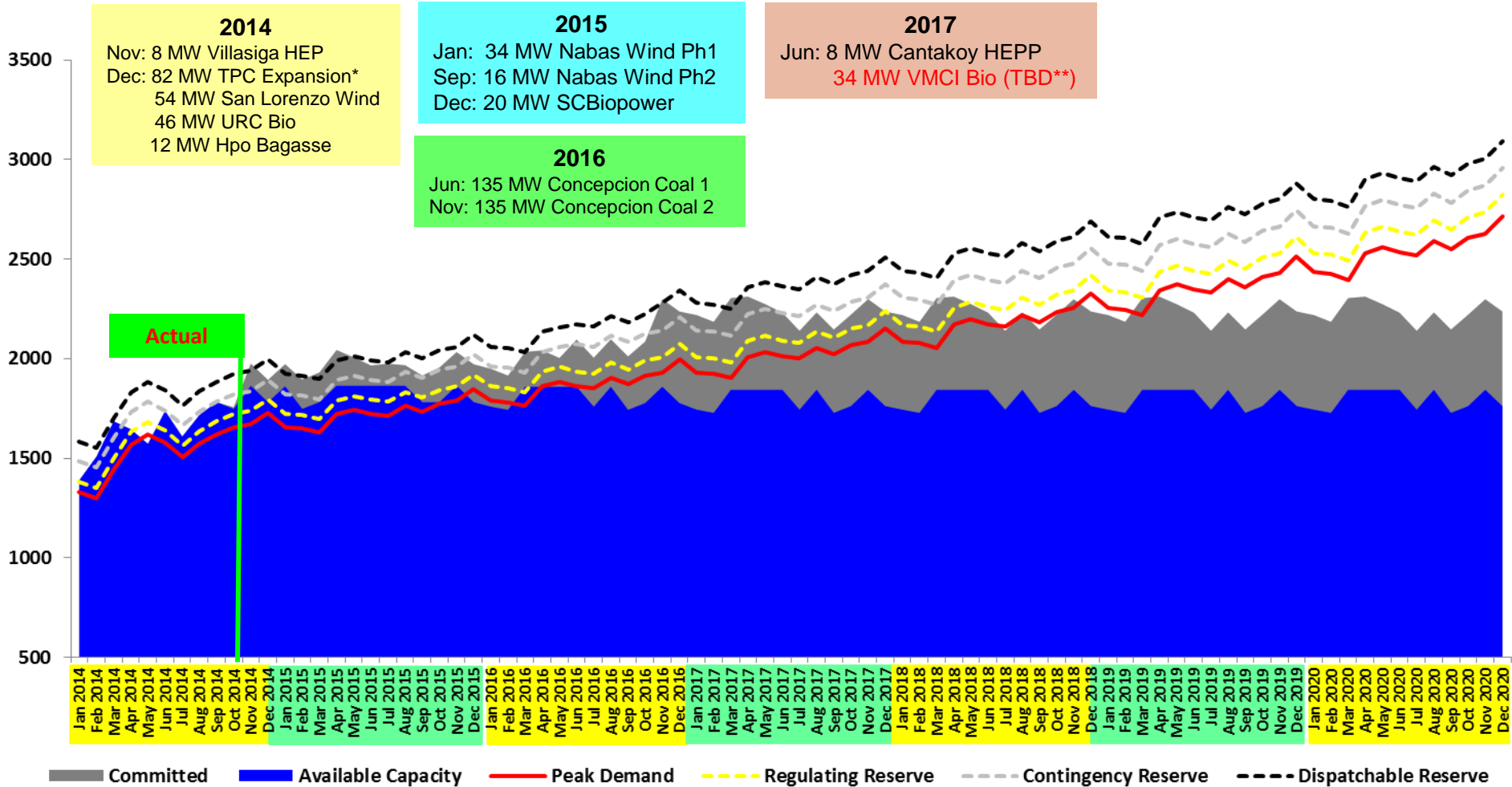
Notes

- a. Required Reserve Margin (RM) i.e. 4% regulating reserve and contingency and dispatchable reserve requirement
- b. 4.2 % peak demand growth rate resulted from observed 0.6 elasticity ratio of demand for electric power with national economic growth applied to 7 percent GDP growth rate (GR) target for 2014-2015.
- c. 4.8 % peak demand growth rate resulted from observed 0.6 elasticity ratio of demand for electric power with national economic growth applied to 8 percent GDP growth rate (GR) target for 2016-2020.
- d. Assumed average forced outage of the total available capacity

* On-going testing and commissioning
 ** Upon Secretary's consideration
 Note: 100 MW Avion and 40 MW Majestics considered as additional capacity (not in the committed power projects)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(%)	5.3	6.2	6.3	4.9	7.7	7.0	6.3	4.7	5.5	8.2	5.89	5.6
MW	677	794	801	621	983	888	800	601	708	1041	738	716

VISAYAS SUPPLY-DEMAND OUTLOOK 2014-2020



Notes

- Reserve Margin (RM) i.e. 4% regulating reserve and largest online unit for contingency and dispatchable reserve requirement (100 MW to increase by 135 MW in 2016)
 - 7% peak demand growth rate resulted from observed 1 elasticity ratio of demand for electric power with national economic growth applied to 7 percent GDP growth rate (GR) target for 2014-2015.
 - 8% peak demand growth rate resulted from observed 1 elasticity ratio of demand for electric power with national economic growth applied to 8 percent GDP growth rate (GR) target for 2016-2020.
 - Assumed 4.35 percent average forced outage of the total available capacity
- * On-going testing and commissioning
 ** TBD – To be determined (target commercial operation)

MINDANAO SUPPLY-DEMAND OUTLOOK 2014-2020

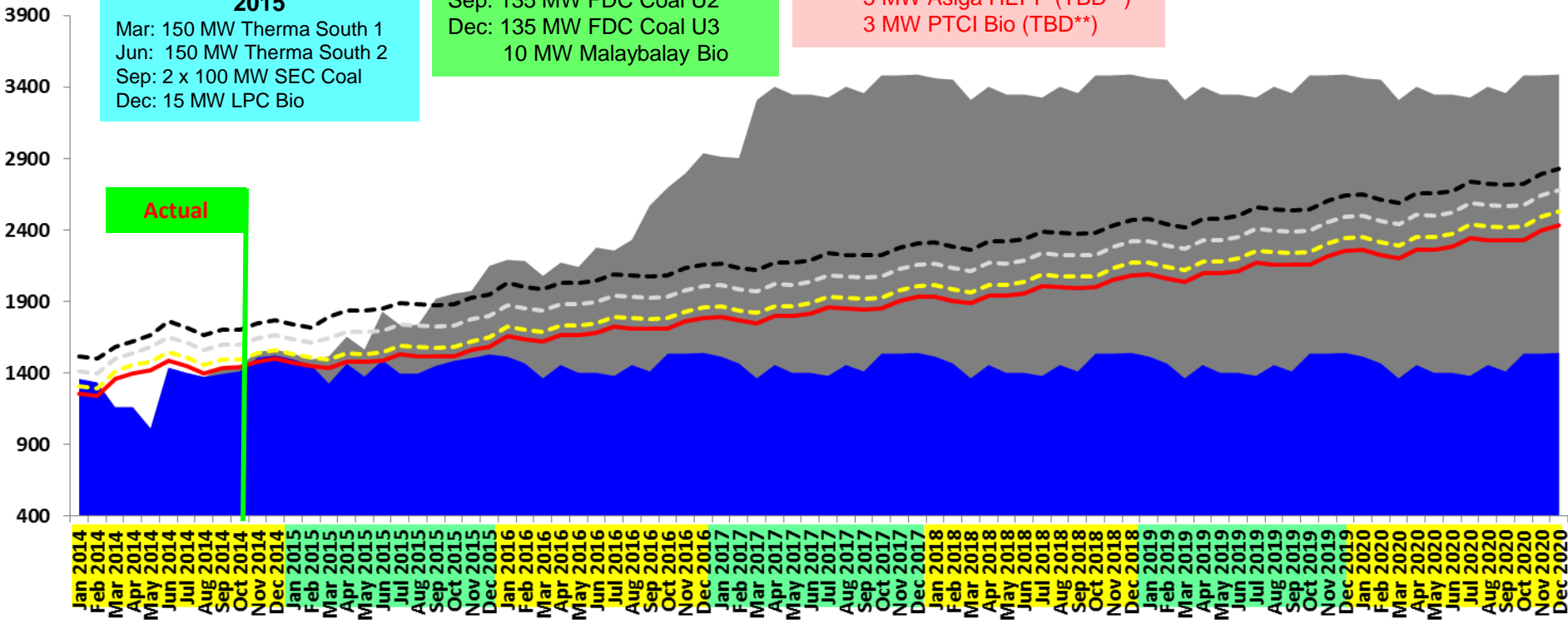


2014
 Nov: 15 MW MEGC DPP*
 21 MW Peak Power PSI
 5.2 MW Peak Power PSI

2016
 Feb: 150 MW SMC Davao U1
 Mar: 25 MW Lake Mainit
 Jun: 135 MW FDC Coal U1
 Jul: 150 MW SMC Davao U2
 Sep: 135 MW FDC Coal U2
 Dec: 135 MW FDC Coal U3
 10 MW Malaybalay Bio

2017
 Jan: 9 MW Limbatangon HEPP
 Jul: 30 MW Puyo HEP
 Dec: 540 MW GNPower Kauswagan
 5 MW Asiga HEPP (TBD**)
 3 MW PTCI Bio (TBD**)

2015
 Mar: 150 MW Therma South 1
 Jun: 150 MW Therma South 2
 Sep: 2 x 100 MW SEC Coal
 Dec: 15 MW LPC Bio



Notes

- a. Required Reserve Margin (RM) i.e. 4% regulating reserve and contingency and dispatchable reserve requirement
- b. 5.6 % peak demand growth rate resulted from observed 0.8 elasticity ratio of demand for electric power with national economic growth applied to 7 percent GDP growth rate (GR) target for 2014-2015.
- c. 12.8 % peak demand growth rate resulted from observed 1.6 elasticity ratio of demand for electric power with national economic growth applied to 8 percent GDP growth rate (GR) target for 2016
- d. 8 % peak demand growth rate resulted from observed 1 elasticity ratio of demand for electric power with national economic growth applied to 8 percent GDP growth rate (GR) target for 2017-2020
- e. Assumed 3.3 percent average forced outage of the total dependable capacity

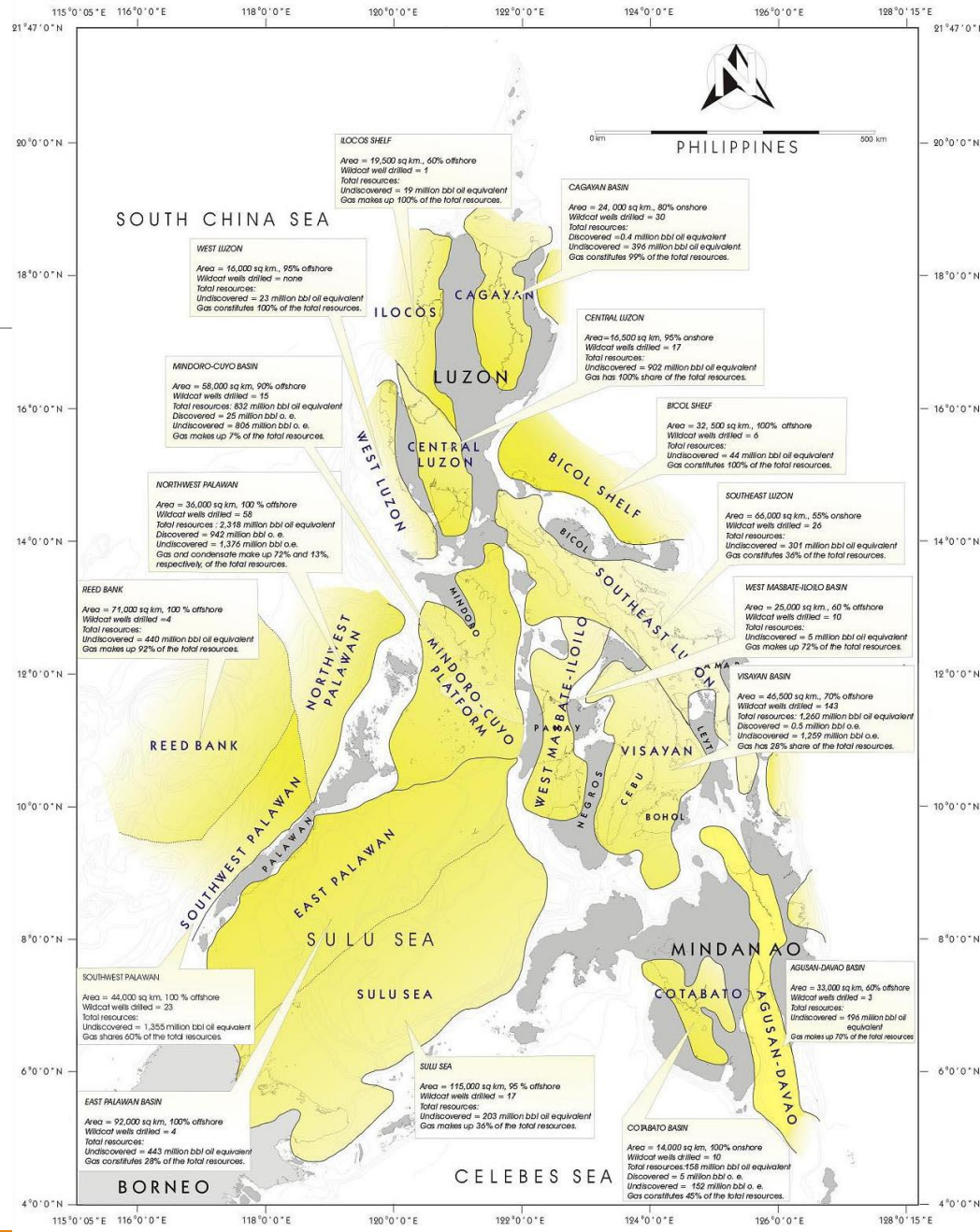
* On-going testing and commissioning
 ** TBD – To be determined (target commercial operation)

Oil & Gas



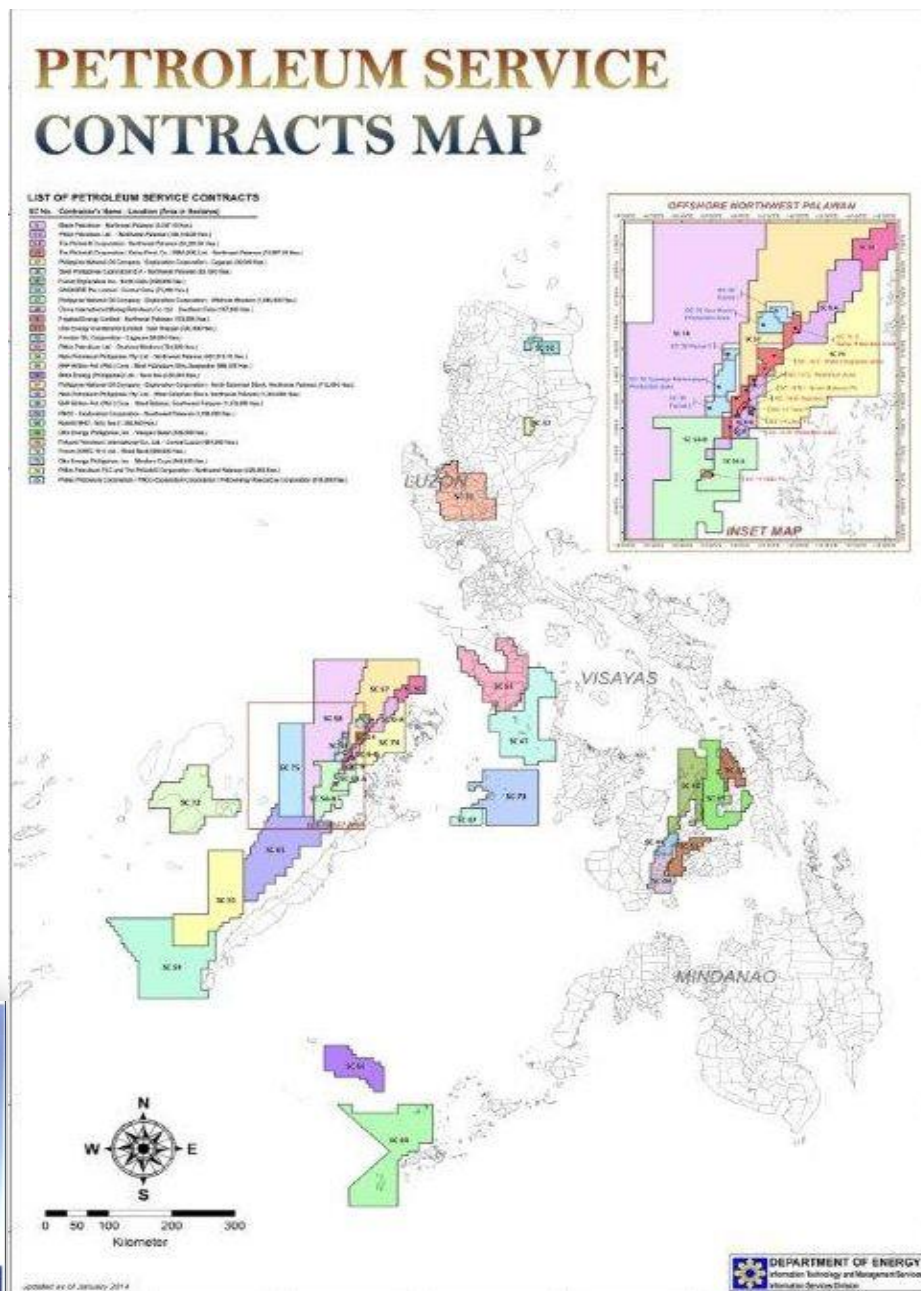
Areas of Opportunities

- **16** Sedimentary basins representing an area of over 700,000 sq km
- Combined potential of 4,777 million barrels of fuel equivalent (MMBFOE)



Upstream Oil & Gas Exploration

- 29 existing petroleum service contracts
- Produced 1.44 MMB, 112 BCF of gas & 3.82 MMB condensate

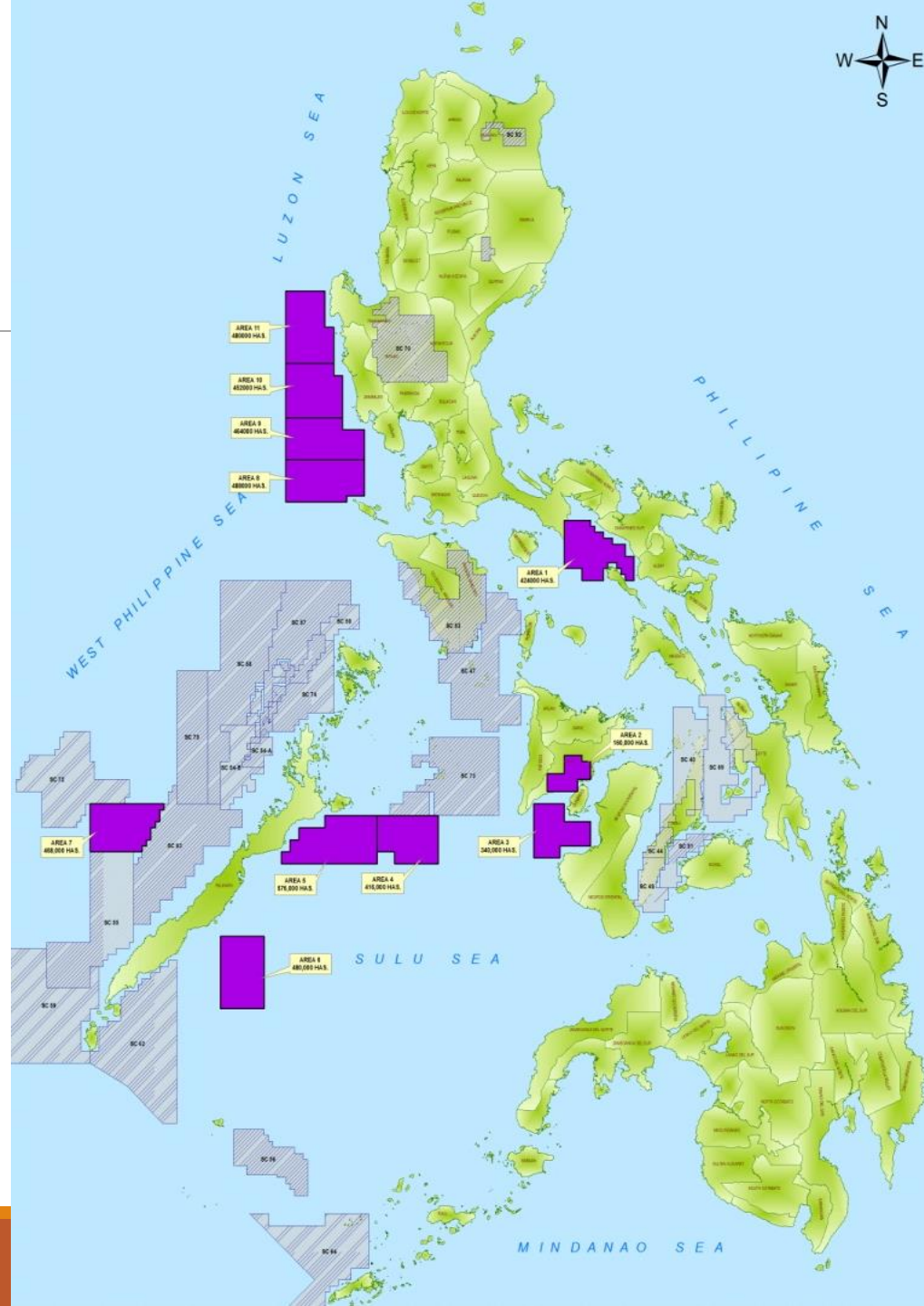


Existing Petroleum Service Contracts

Operator	PSC NO.	Location	Area (hectares)
Cadlao Development Corporation	6	NW Palawan	3,397.19
Pitkin Petroleum Ltd.	6A	NW Palawan	108,146.59
The Philodrill Corporation	6B	NW Palawan	53,293.95
The Philodrill Corporation / Galoc Production Co./ RMA (HK) Ltd	14	NW Palawan	70,887.52
Philippine National Oil Co. – Exploration Corp.	37	Cagayan	36,000.00
Shell Philippines Exploration B. V.	38	NW Palawan	83,000
Forum Exploration Inc.	40	North Cebu	458,000.00
Gas To Grid Pte. Ltd.	44	Central Cebu	75,000
Philippine National Oil Co. – Exploration Corp.	47	Offshore Mindoro	1,466,700
China International Mining Petroleum Co., Ltd.	49	South Cebu	265,000
Frigstad Energy	50	Calautit, NW Palawan	128,000
Otto Energy Investments Ltd.	51	East Visayan Basin	332,000
Frontier Oil Corp.	52	Piat San Jose, Cagayan	96,000
Pitkin Petroleum Ltd.	53	Onshore Mindoro	660,000
Nido Petroleum Phils. Pty. Ltd.	54	NW Palawan	(Area A = 401,616.15 Area B = 312,000)
BHP Billiton Pet. (Phil.) Corp.	55	West Palawan Ultra-Deepwater	900,000
Mitra Energy Ltd.	56	Sulu Sea	430,000
Philippine National Oil Co. – Exploration Corp.	57	Calamian Block, NW Palawan	712,000
Nido Petroleum Phils. Pty. Ltd.	58	West Calamian Block, NW Palawan	1,344,000
BHP Billiton Pet. (Phil.) Corp.	59	West Balabac, SW Palawan	1,476,000
Philippine National Oil Co. – Exploration Corp.	63	SW Palawan	1,056,000
Otto Energy Phils. Inc.	69	Visayan Basin	704,000
Polyard Petroleum International Co. Ltd.	70	Central Luzon Basin	684,000
Forum (GSEC(101) Ltd.	72	Recto Bank	
Otto Energy Phils. Inc.	73	Mindoro Cuyo	
Pitkin Petroleum Ltd.	74	NW Palawan	
Philex Petroleum Corporation	75	NW Palawan	

Petroleum areas offered in PECR5

BASIN	AREAS
SOUTHEAST LUZON	AREA 1
MASBATE-ILOILO	AREAS 2 & 3
NORTHEAST PALAWAN	AREAS 4 & 5
SOUTHEAST PALAWAN	AREA 6
RECTO BANK	AREA 7
WEST LUZON	AREAS 8,9,10 & 11



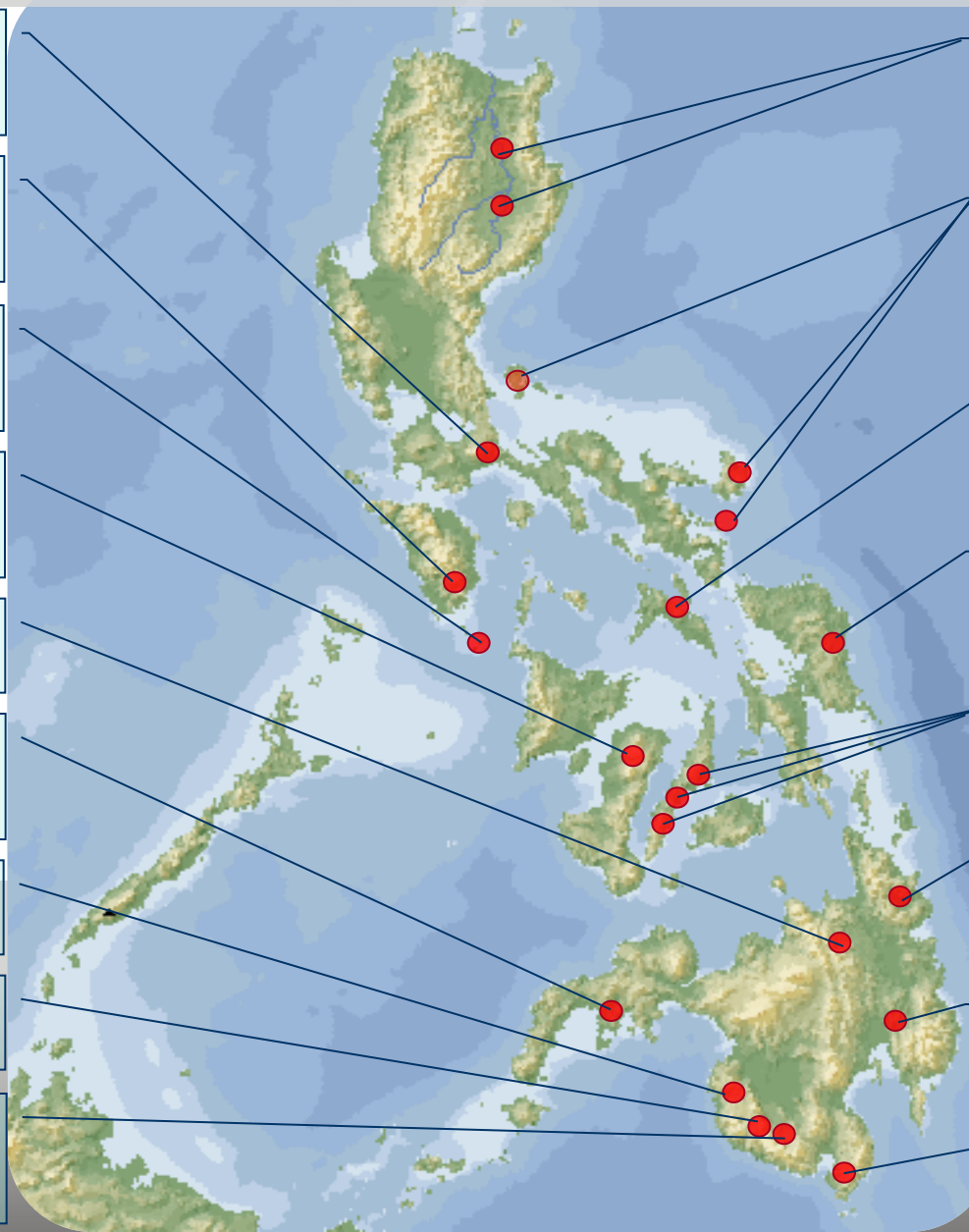
PECR Timeline

DATE	ACTIVITY
09 May 2014	Official launch of PECR 5
13 May 2014 (PM)	Pre-submission Conference
02 June 2014	Start of PECR application submission
	Last day of acceptance of PECR Application (1100 hours, Philippine Standard Time)
27 February 2015	Opening of PECR Application (1330 hours, Philippine Standard Time)
04 May 2015	Endorsement of winning applicants

Coal



2013 Summary of Regional Coal Reserves (in 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

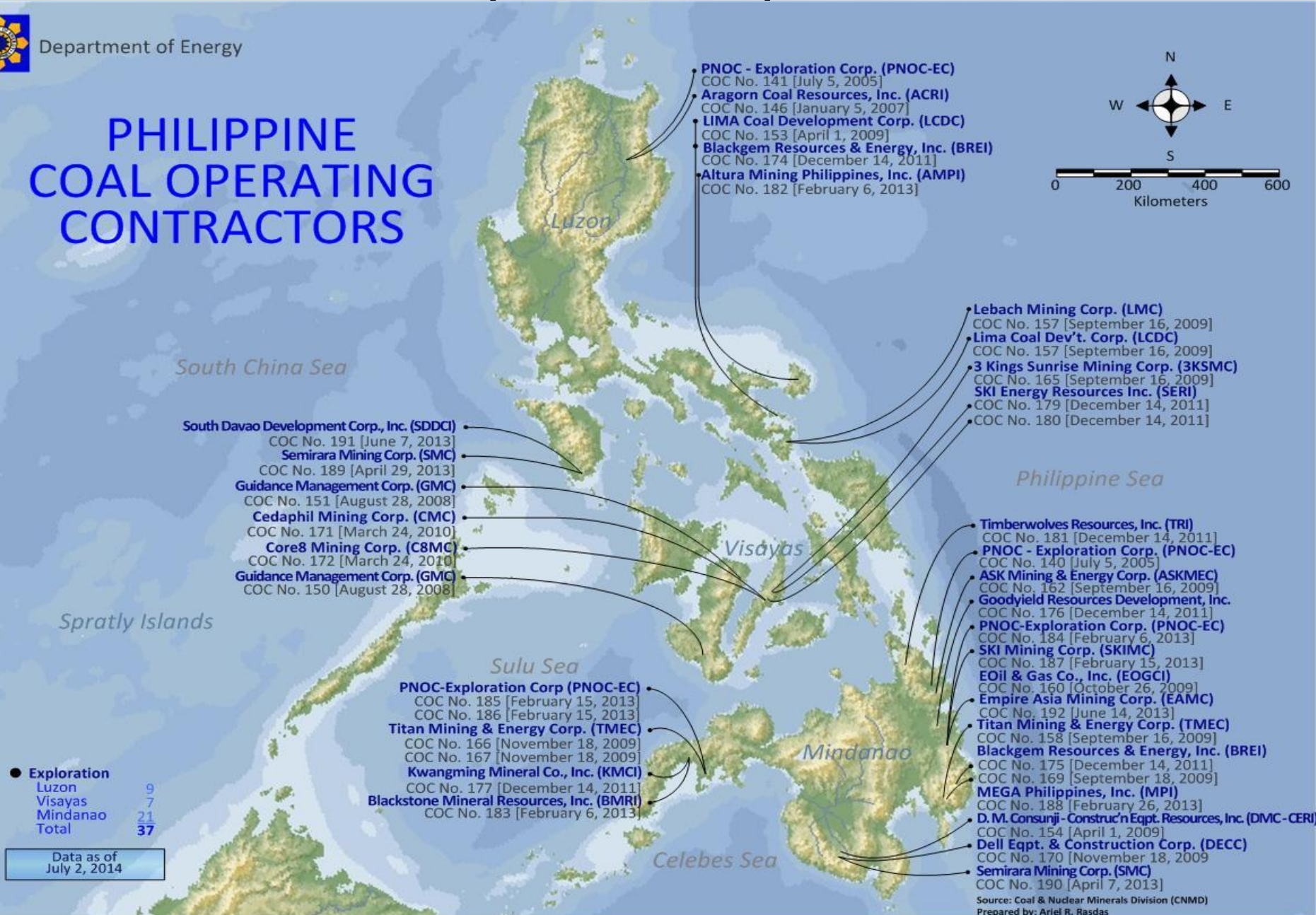
Resource Potential - 120.00

COAL OPERATING CONTRACTORS



Department of Energy

PHILIPPINE COAL OPERATING CONTRACTORS



Data as of July 2, 2014

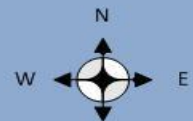
COAL OPERATING CONTRACTORS

DEVELOPMENT / PRODUCTION



Department of Energy

PHILIPPINE COAL OPERATING CONTRACTORS



0 200 400 600
Kilometers

Visayas Multi-Minerals & Trading Corp. (VMMTC)
COC No. 142 [July 5, 2009]
First Asian Resources & Mining Corp. (FARMC)
COC No. 132 [August 28, 2008]
Ibalong Resources & Development Corp. (IRDC)
COC No. 13 [June 27, 1978]

Filsystems, Inc. (FSI)
COC No. 68 [June 11, 1997]
Semirara Mining Corp. (SMC)
COC No. 5 [June 11, 1977]

D. M. Wenceslao & Associates, Inc. (DMWAI)
COC No. 116 [June 24, 2004]
COC No. 123 [June 24, 2004]
PNOC - Exploration Corp. (PNOC-EC)
COC No. 122 [December 22, 2003]

Batan Coal Resources Corp. (BCRC)
COC No. 137 [May 26, 2005]
Ibalong Resources & Development Corp. (IRDC)
COC No. 128 [September 2, 2003]
**Coal Mountain Ventures, Inc./
Rock Energy International Corp. (CMVI/REIC)**
COC No. 104 [May 14, 1991]
LIMA Coal Development Corp. (LCDC)
COC No. 125 [May 20, 2001]
Samaju Corp. (SC)
COC No. 129 [February 4, 2005]

Philippine Sea

Il Rey'c Coal Mining Exploration Corp. (IRCMEC)
COC No. 149 [August 29, 2007]
BBB Mining & Energy Corp. (BMEC)
COC No. 173 [December 14, 2011]
SKI Energy Resources Inc. (SERI)
COC No. 135 [April 10, 2007]
Forum Cebu Coal Corp. (FCCC)
COC No. 131 [February 23, 2009]
Adlaon Energy Development Corp. (AEDC)
COC No. 9 [March 14, 1978]
COC No. 89 [September 28, 1988]

Abacus Coal Exploration & Dev't Corp. (ACEDC)
COC No. 148 [January 5, 2005]
Great Wall Mining & Power Corp. (GWMPCC)
COC No. 145 [December 18, 2008]
Benguet Corp. (BC)
COC No. 83 [June 10, 1988]
Bislig Ventures Construction & Dev't Corp. (BVDC)
COC No. 127 [May 5, 2003]

Brixton Energy & Mining Corp. (BEMC)
COC No. 130 [May 6, 2008]
A Blackstone Energy Corp. (ABEC)
COC No. 152 [November 13, 2008]
Filsystems, Inc. (FSI)
COC No. 77 [March 6, 1987]
COC No. 78 [March 6, 1987]
PNOC-Exploration Corp. (PNOC-EC)
COC No. 41 [August 18, 1980]

Bonanza Energy Resources, Inc. (BERI)
COC No. 138 [May 25, 2009]
Daguma Agro-Minerals, Inc. (DAMI)
COC No. 126 [October 26, 2005]
Sultan Energy Philippines Corp. (SEPC)
COC No. 134 [February 23, 2005]

South China Sea

Spratly Islands

Sulu Sea

Celebes Sea

● Development/Production	10
Luzon	9
Visayas	12
Mindanao	31

Data as of
July 21, 2014

Source: Coal & Nuclear Minerals Division (CNMD)
Prepared by: Ariel R. Rasdas

Coal Areas for Offer in PECR5

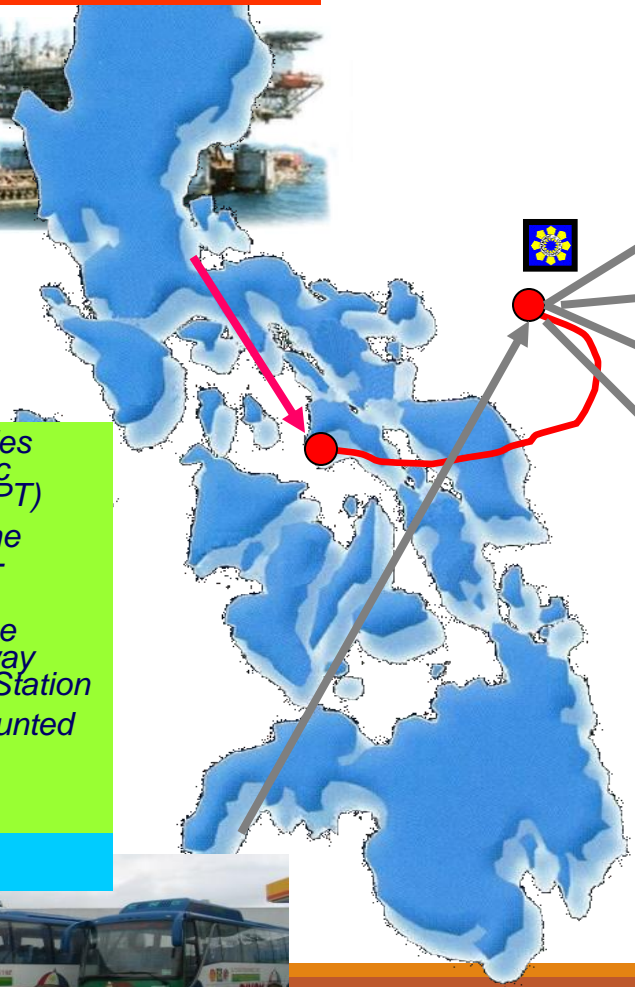
- Nominated by private companies
- Previously offered areas in PECR 4 with no winning applicants
- Located in traditional coal mining provinces in the following Coal Regions in Mindanao:
 - a. Surigao Coal Region
 - b. Agusan-Davao Coal Region
 - c. Zamboanga Coal Region
 - d. Cotabato-Saranggani Coal Region



Natural Gas

Natural Gas Industry

Malampaya Gas Field
2.7 TCF (2001)



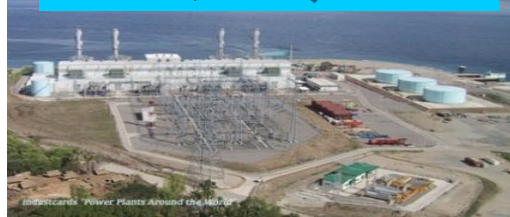
560 MW San Lorenzo First Gen IPP



1,000 MW Sta. Rita First Gen/ IPP



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



Shell Refinery



Natural Gas Vehicles Program for Public Transport (NGVPPT)

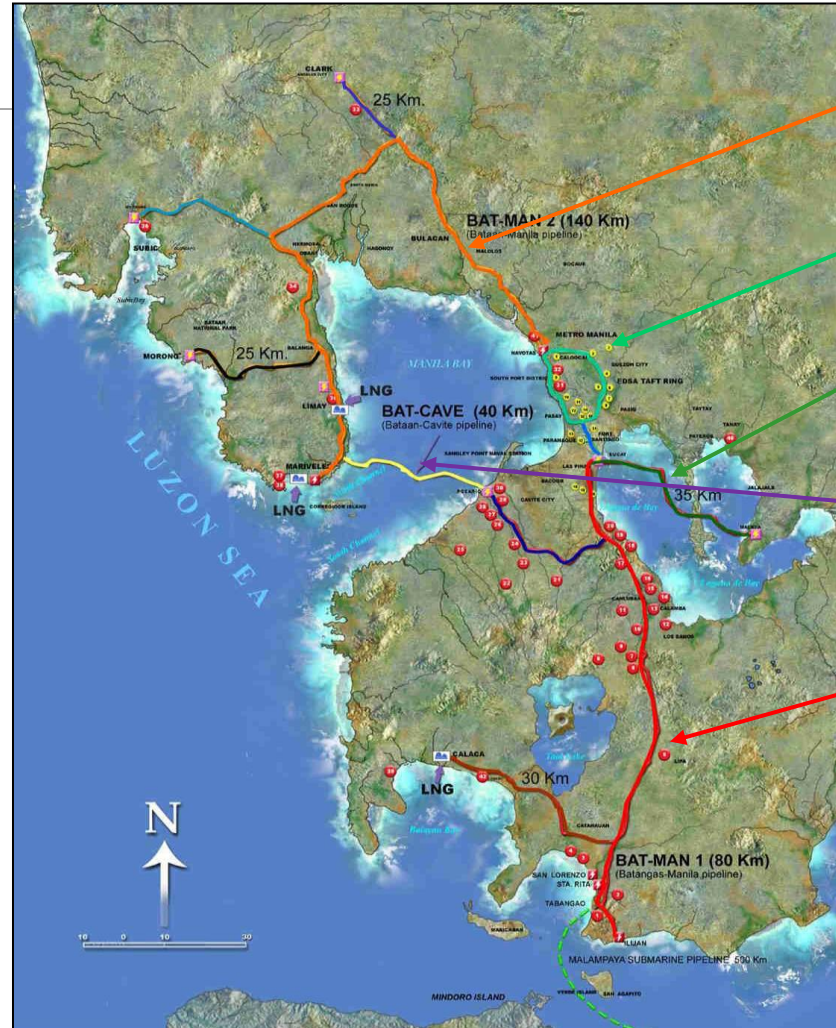
- 200 buses in the Southern Luzon-Manila route
- serviced thru the South Expressway NGV Refueling Station
- at a fixed/discounted price for 7 yrs.

CNG Bus (2008)



NATURAL GAS

- 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)

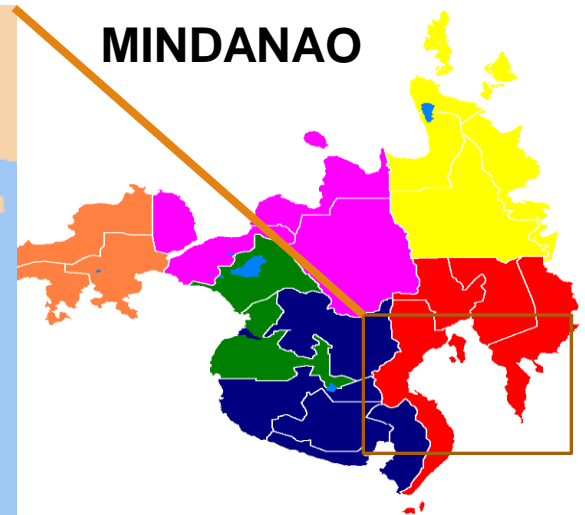
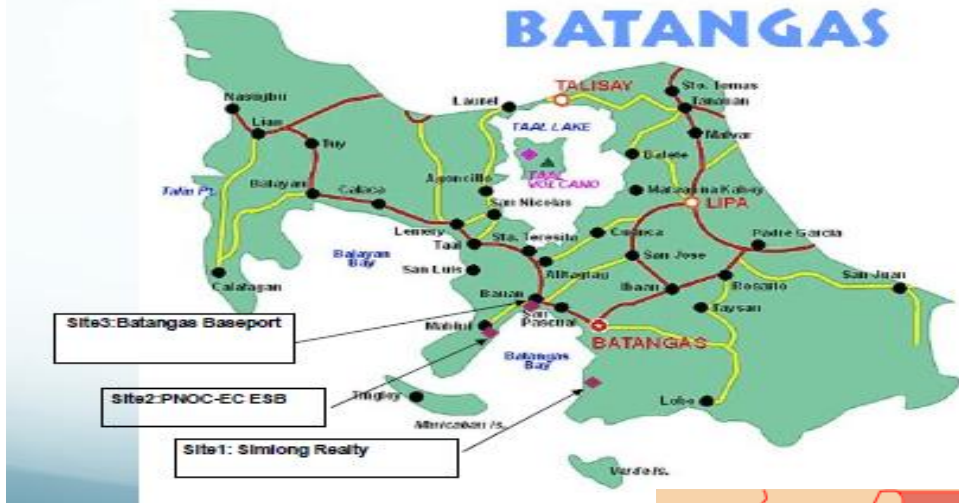
SU-MA
(Sucat - Malaya)
35 kms. (2017)

BATCAVE
(Batangas – Cavite)
40 kms (2022)

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

NATURAL GAS – LNG Terminals

LNG Terminal Candidates in Batangas



Alternative Fuels

ALTERNATIVE FUELS

■ Completed 2014-2030 Road Map for Alternative Fuels and Vehicles

AUTO-
LPG



- 11,977 taxis as of December 2013
- 239 auto-LPG stations (67 garage-based and 172 public)

NGVPPT



- Rebidding of 2 modular CNG stations in Biñan, Laguna and Port Area, Batangas City by PNOC-EC
- Secured DOTC commitment for franchise of the CNG buses to complete the pilot phase

ELECTRIC
VEHICLES



- Ongoing bidding of 3,000 electric tricycles (E-Trikes)
- Business Model for Financing is being enhanced to enable greater access of drivers for the acquisition of E-Trikes

Targets: 15,000 units CNG buses; 16,000 units CNG taxis by 2030; 150 refilling stations nationwide

Renewable Energy

National Renewable Energy Program

Develop Indigenous Energy Resources = Triple RE Installed Capacity by 2030

The estimated capacity addition of 9,865 MW is broken down as follows:

Sector	Installed Capacity, (MW) as of 2010	Target Capacity Addition by				Total Capacity Addition (MW) 2011-2030	Total Installed Capacity by 2030
		2015	2020	2025	2030		
Geothermal	1,966.0	220.0	1,100.0	95.0	80.0	1,495.0	3,461.0
Hydro	3,400.0	341.3	3,161.0	1,891.8	0.0	5,394.1	8,724.1
Biomass	39.0	276.7	0.0	0.0	0.0	276.7	315.7
Wind	33.0	1,048.0	855.0	442.0	0.0	2,345.0	2,378.0
Solar	1.0	269.0	5.0	5.0	5.0	284.0	285.0
Ocean	0.0	0.0	35.5	35.0	0.0	70.5	70.5
TOTAL	5,438.0	2,155.0	5,156.5	2,468.8	85.0	9,865.3	15,304.3

Renewable Energy Development

(as of 31 October 2014)

RESOURCES	NO. OF PROJECTS	POTENTIAL CAPACITY (MW)	INSTALLED CAPACITY (MW)	FOR CONVERSION		WITH CERTIFICATE OF CONFIRMATION OF COMMERCIALITY	
				No. of Projects	Capacity (MW)	No. of Projects	Capacity (MW)
Hydro Power	394	6,199.31	118.93	5	42.0	44	354.75
Grid – Use	393	6197.81	118.93				
Own - Use	1	1.50					
Ocean Energy	5	25.00	-	-	-	-	-
Geothermal	41	750.00	1,866.19				
Wind	55	1,547.51	51.9	1	45.0	12	706.90
Grid – Use	54	1,547.50	51.90				
Own - Use	1	0.006					
Solar	75	1,203.46	22.0	9	215.89	7	162.00
Grid – Use	67	1,201.45	22.00				
Own - Use	8	2.015					
Biomass	68	342.75	147.80	-	-	10	94.51
Grid – Use	43	336.95	147.80				
Own - Use	25	5.80					
TOTAL	638	10,068.03	2,206.82	15	302.89	73	1,318.16

RE Mechanisms

- Issued DO No. 2013-10-0018 on October 2013 mandating that evaluation process of RESCs shall not exceed 45 working days
- Facilitated the issuance of Resolution No. 9 (“A Resolution Adopting the Rules on Net-metering Program for Renewable Energy”) by ERC on July 2013
- Relative to its establishment of the Renewable Energy Market (REM), DOE directed PEMC to conduct the study on “REM Development and Draft Market Design Document”
- Issued DC 2013-05-009 prescribing DOE Guidelines for the Selection Process of Renewable Energy Projects Under FIT System and the Award of Certificate for FIT Eligibility

Renewable Energy – FIT Rates & Installation Targets

Resource / Technology	ERC Approved Feed-in Tariff Rates (PhP/kWh)	ERC Approved Feed-in Tariff Rates (US\$/kWh)	Installation Targets
Run-of-River Hydropower	5.9	0.140	250
Biomass Energy	6.63	0.158	250
Wind Power	8.53	0.203	200
Solar Power	9.68	0.230	50
Ocean Energy	-		10
TOTAL			760

- FIT Rules approved by ERC on 12 July 2010 and took effect on 12 August 2010
- ERC approved the FIT Rates on 27 July 2012

THANK YOU



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