

Investment Opportunities in the Philippine Energy Sector



Investment Promotion Office
Department of Energy



Investment Opportunities

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



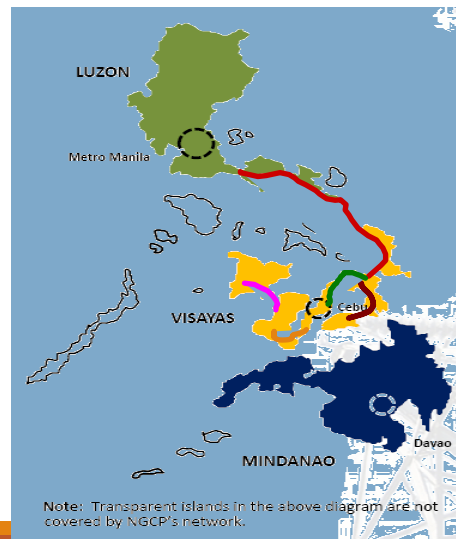
Power

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)



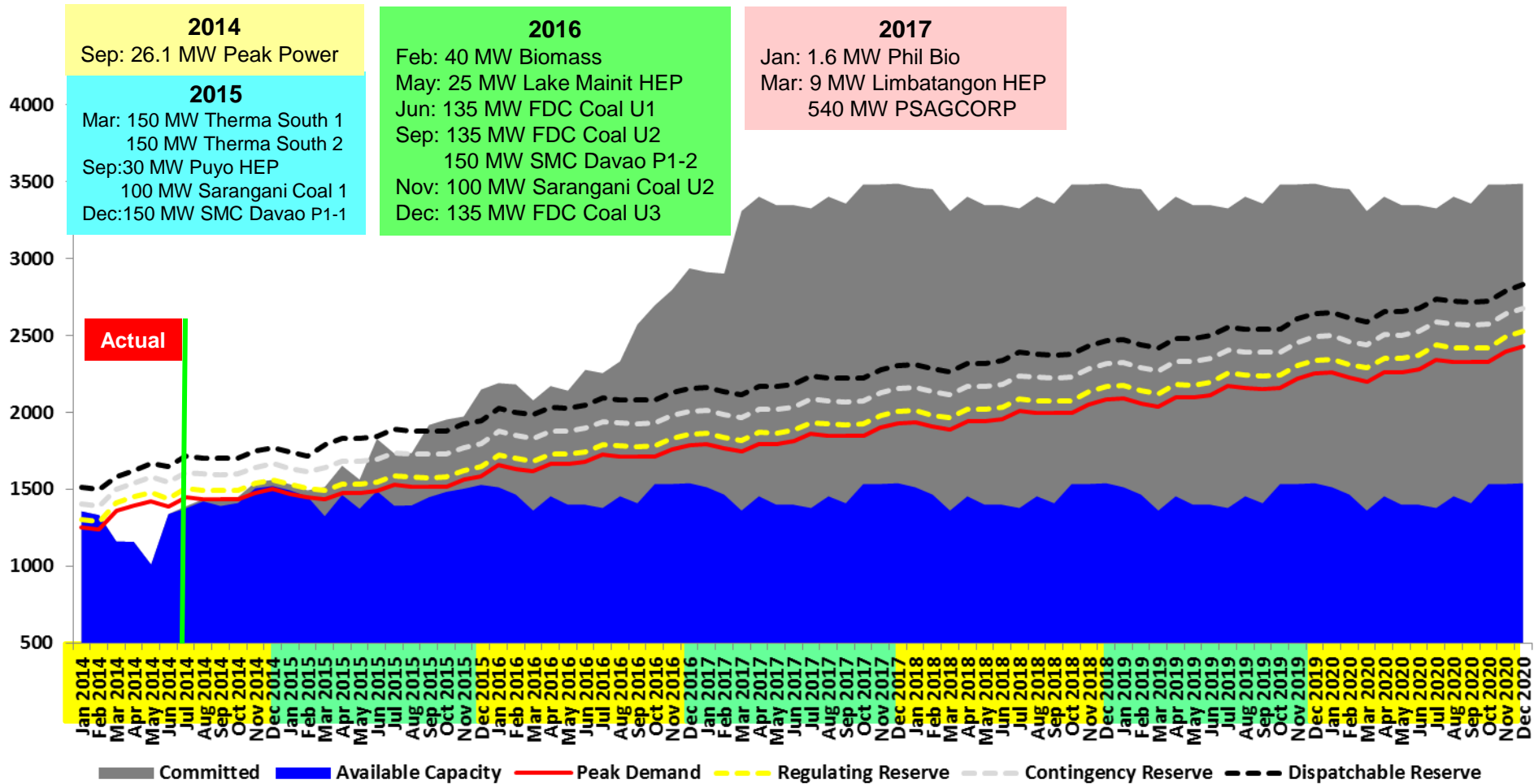
Source: DOE List of Existing Power Plants as of June 2014

- Includes embedded generators
- Excludes off-grid generators

MINDANAO POWER SUPPLY and DEMAND OUTLOOK

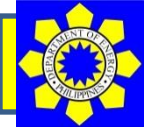
2014-2020

MINDANAO SUPPLY-DEMAND OUTLOOK 2014-2020



Notes

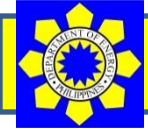
- Required Reserve Margin (RM) i.e. 4% regulating reserve and contingency and dispatchable reserve requirement
- 5.6 % peak demand growth rate resulted from observed 0.8 elasticity ratio of demand for electric power with national economic growth applied to 7 percent GDP growth rate (GR) target for 2014-2015.
- 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
- 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
- Assumed **monthly average forced outage** of the total available capacity
- Factored 2014-2016 Grid Operating and Maintenance Program (GOMP) of NGCP, as submitted to NGCP Q2 2014**



COMMITTED POWER PROJECTS

Mindanao Grid Committed Power Projects, 1,876.7 MW

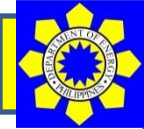
Type	Name of the Project	Project Proponent	Mother/ JV Company	Location	Rated Capacity (MW)	Target Testing & Commissioning	Target Commercial Operation
OIL	3x6.97 PSI MW Bunker-Fired Power Plant	Peak Power Soccsargen, Inc. (PSI)	Peak Power Energy Inc. (subsidiary of A Brown)	National Highway, Brgy. Apopong, General Santos City	20.9	Aug-14	Sep-14
OIL	1x5.2 MW PSFI Bunker-Fired Power Plant	Peak Power San Francisco (PSFI)	Peak Power Energy Inc. (subsidiary of A Brown)	ASELCO Compound, Brgy. San Isidro, San Francisco, Agusan del Sur	5.2	Aug-14	Sep-14
COAL	2 X 150 MW Coal-Fired Therma South Energy Project	Therma South Inc.	Aboitiz Power Corporation	Brgy. Binugao, Toril, Davao City and Brgy. Inawayan, Sta. Cruz, Davao Del Sur	300	U1 – Nov 2014 U2 – Nov 2014	U1 & U2 - Mar 2015
COAL	2 X 100 MW Southern Mindanao Coal Fired Power Station	Sarangani Energy Corporation	Alsons Power Corporation	Brgy, Kamanga, Maasim, Sarangani	200	Feb-15	Unit 1 Sep-15 Unit 2 Nov-16
HYDRO	Puyo Hydroelectric Power Project	First Gen Mindanao Hydropower Corp.	First Gen Power Corporation	Jabonga, Agusan del Norte	30	Jul-15	Sep-15
COAL	SMC Davao Power Plant Project Phase I	San Miguel Consolidated Power Corporation	San Miguel Consolidated Power Corporation	Brgy. Culaman, Malita, Davao del Sur	300	U1 - Oct 2015 U2 - Jul 2016	U1 - Dec 2015 U2 - Sep 2016



COMMITTED POWER PROJECTS

Mindanao Grid Committed Power Projects, 1,876.7 MW

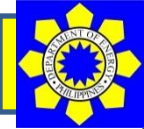
Type	Name of the Project	Project Proponent	Mother/ JV Company	Location	Rated Capacity (MW)	Target Testing & Commissioning	Target Commercial Operation
BIOMASS	10 MW Kalilangan Bio-Energy Corporation Multi Feedstock Power Generating Facility	Kalilangan Bio-Energy Corporation	Kalilangan Bio-Energy Corporation	FIBECO, Anahawan, maramag, Bukidnon	10	Dec-15	Feb-16
BIOMASS	10 MW Don Carlos Bio-Energy Corporation Multi Feedstock Power Generating Facility	Don Carlos Bio-Energy Corporation	Don Carlos Bio-Energy Corporation	FIBECO, Anahawan, maramag, Bukidnon	10	Dec-15	Feb-16
BIOMASS	10 MW Malaybalay Bio-Energy Corporation Multi Feedstock Power Generating Facility	Malaybalay Bioenergy Corporation	Malaybalay Bioenergy Corporation	FIBECO, Anahawan, maramag, Bukidnon	10	Dec-15	Feb-16
BIOMASS	15 MW LPC Biomass Power Plant Project	Lamsan Power Corporation	Lamsan Power Corporation	Maguindanao	10	Dec-15	Feb-16
HYDRO	Lake Mainit	Agusan Power Corporation	Tranzen Group Inc.	Jabonga, Agusan del Norte	25	Mar-16	May-16
COAL	3 X 135 MW FDC-Misamis Circulating Fluidized Bed (CFB) Coal-Fired Power Plant Project	FDC Utilities, Inc.	FDC Utilities, Inc.	Phividec Industrial Estate, Villanueva, Misamis Oriental	405	U1 – Dec 2015 U2 – Mar 2016 U3 – Jun 2016	U1 – Jun 2016 U2 – Sep 2016 U3 – Dec 2016
HYDRO	Limbatangon Hydroelectric Power Project	Turbines Resource & Development Corp.	Turbines Resources and Development Corp. (TRDC)	Cagayan de Oro City, Misamis Oriental	9	Jan-17	Mar-17
COAL	PsagCorp Coal-Fired Power Plant	GN Power Kausawagan	GN Power Ltd. Co.	Kauswagan, Lanao del Norte	540	Dec-16	Mar-17
BIOMASS	3 MW Biomass Cogeneration Facility	Philippine Trade Center, Inc.	Philippine Trade Center, Inc.	Maguindanao	1.6	TBA	TBA
TOTAL					1,876.70		



INDICATIVE POWER PROJECTS

Mindanao Grid Indicative Power Projects, 1,726.6 MW

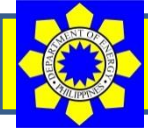
Name of the Project	Project Proponent	Mother/ JV Company	Location	Rated Capacity (MW)	Target Commissioning
Davao del Norte 20 MW Circulating Fluidized Bed Biomass-Coal Fired Thermal Power Plant	FDC Utilities, Inc.	FDC Utilities, Inc.	Maco, Davao del Norte	20	Mar-15
300 MW SMC Davao Power Plant Project Phase I	San Miguel Consolidated Power Corporation	San Miguel Consolidated Power Corporation	Brgy. Culaman, Malita, Davao del Sur	300	150 MW - Oct. 2015 150 MW - March 2016
ZAM 100 MW Circulating Fluidized Bed (CFB) Coal-Fired Power Station	San Ramon Power Inc.	Mapalad Power Corporation	Sitio San Ramon, Brgy. Talisayan, Zamboanga City	100	Dec-15
Sibuguey Power Plant Project	Philippine National Oil Company (PNOC-EC)	Philippine National Oil Company (PNOC)	Sibugay, Zamboanga	100	Sep-16
2x55 MW Balingasag Thermal Power Plant (Circulating Fluidized Bed Combustion (CFBC) Coal-Fired Power Plant)	Minergy Coal Corporation	Minergy	Brgy. Mandangoa, Balingasag, Misamis Oriental	110	Jan-17
600 MW SMC Davao Power Plant Project Phase III	San Miguel Consolidated Power Corporation	San Miguel Consolidated Power Corporation	Brgy. Culaman, Malita, Davao del Sur	600	300 MW - Dec 2019 300 MW - Dec 2020
300 MW SMC Davao Power Plant Project Phase II	San Miguel Consolidated Power Corporation	San Miguel Consolidated Power Corporation	Brgy. Culaman, Malita, Davao del Sur	300	Dec-20
TOTAL COAL				1,530.00	
Mindanao 3 Geothermal	Energy Development Corporation	Energy Development Corporation	Kidapawan, North Cotabato	50	Dec-17
TOTAL GEO				50	



INDICATIVE POWER PROJECTS

Mindanao Grid Indicative Power Projects, 1,726.6 MW

Name of the Project	Project Proponent	Mother/ JV Company	Location	Rated Capacity (MW)	Target Commissioning
Tagoloan Hydropower	First Gen Mindanao Hydropower Corp.	First Gen Power Corporation	Impasugong & Sumilao, Bukidnon	39	Oct-15
Bubunawan Hydroelectric Power Project	First Gen Mindanao Hydropower Corp.	First Gen Power Corporation	Baugon and Libona, Bukidnon	23	Oct-15
Tumalaong Hydroelectric Power Project	First Gen Mindanao Hydropower Corp.	First Gen Power Corporation	Baugon, Bukidnon	9	Oct-15
Cabadbaran Hydroelectric Power Project	First Gen Mindanao Hydropower Corp.	First Gen Power Corporation	Cabadbaran, Agusan del Norte	9.75	Dec-15
Pasonanca	Philcarbon, Inc.	Philcarbon, Inc.	Zamboanga City	0.1	Mar-17
Culaman Hydroelectric Power Project	Oriental Energy and Power Generation Corporation	Oriental Energy and Power Generation Corporation	Manolo Fortich, Bukidnon	10	Jun-18
TOTAL HYDRO				90.8	
Digos Solar Photovoltaic Power Project	Enfinity Philippines Renewable Resources, Inc.	Enfinity	Digos City, Davao del Sur	10	Oct-14
Darong Solar Photovoltaic Power Project	PhilNew Energy Inc.	PhilNew Energy Inc.	Sta. Cruz, Davao del Sur	35	September 2015 (Subject to FIT)
TOTAL SOLAR				45	
12 MW Biomass Power Plant Project	Misamis Oriental Bio-Energy Corporations	Misamis Oriental Bio-Energy Corporations	Misamis Oriental	10.8	2015
TOTAL BIOMASS				10.8	
TOTAL				1,726.60	



SUMMARY – Mindanao Power Projects

Summary of Power Projects

Note: Target Commissioning

In **red** – no Target Commissioning

Mindanao - Committed

Plant Type	2014	2015	2016	2017	2018	2019	2020	TOTAL by Type
COAL		550	655	540				1,745.00
OIL-BASED	26.1							26.1
HYDRO		30	25	9				64.00
BIOMASS			40	1.6				41.60
TOTAL by year	26.1	580.0	720	550.6	0.00	0.00	0.00	1,876.7

Mindanao - Indicative

Plant Type	2014	2015	2016	2017	2018	2019	2020	TOTAL by Type
COAL		120	400	310	700			1,530.00
GEO				50				50.00
HYDRO		81		0.1	10			90.80
SOLAR	10	35						45.00
BIOMASS		11						10.80
TOTAL by year	10.00	246.55	400.00	360.05	710.00	0.00	0.00	1,726.60

Oil & Gas



Petroleum Basin Prospectivity Map

Most Prospective Basins

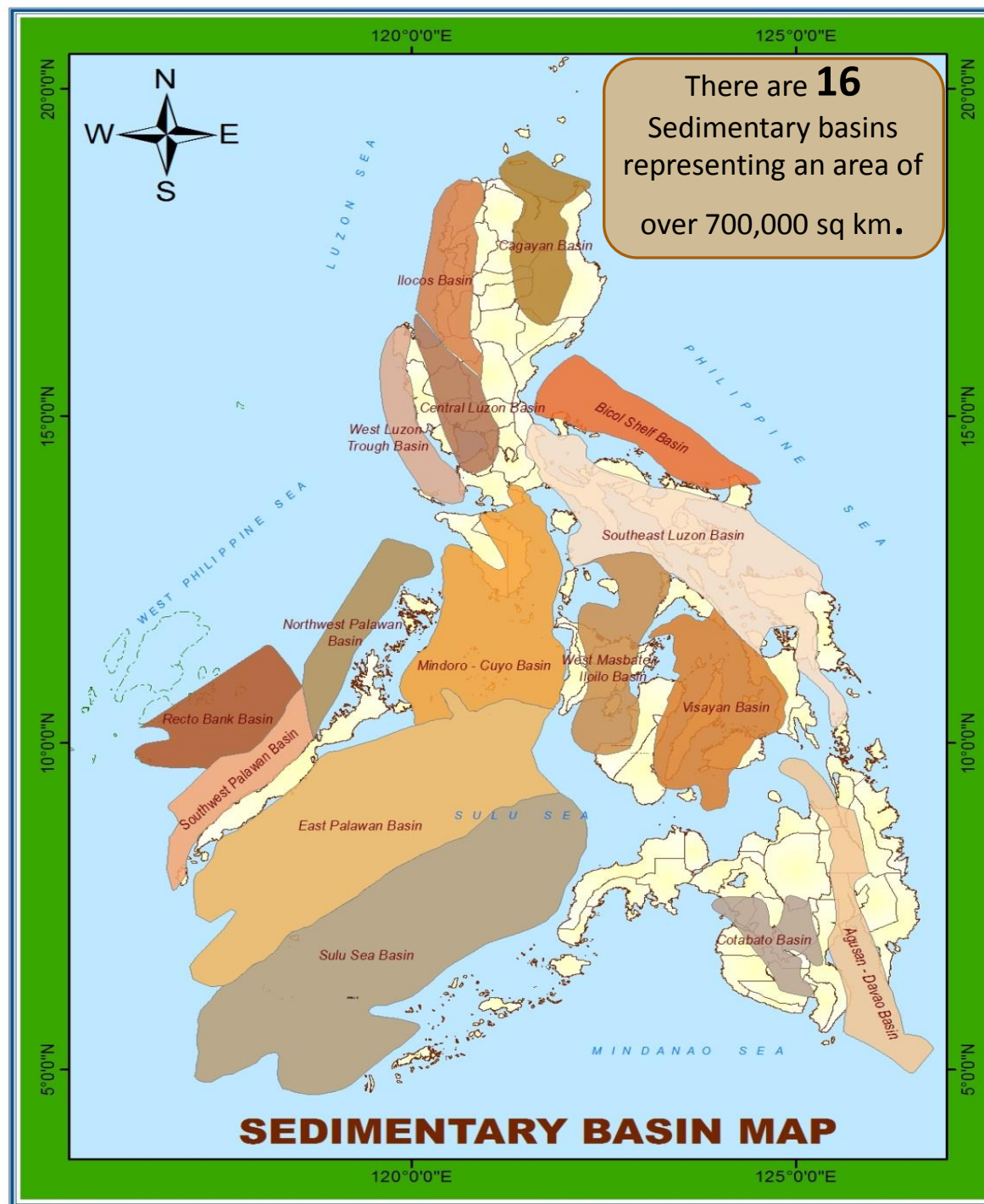
1. NW Palawan Basin
2. SW Palawan Basin
3. Sulu Sea Basin
4. Cagayan Basin
5. Visayan Basin
6. Central Luzon Basin
7. Mindoro-Cuyo Platform

Prospective Basins

1. East Palawan Basin
2. Reed Bank Basin
3. SE Luzon Basin
4. Agusan-Davao Basin
5. Cotabato Basin

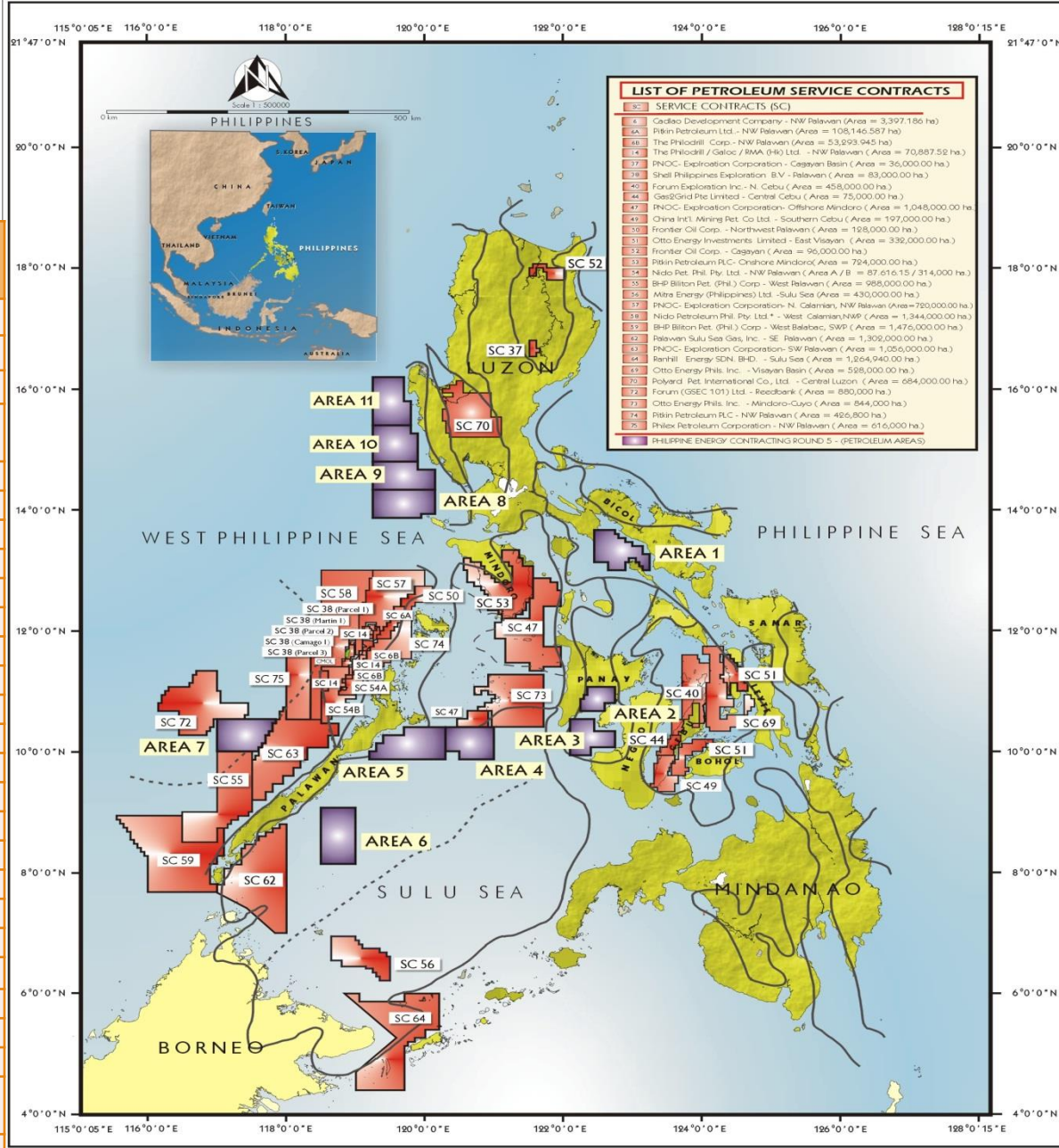
Frontier Basins

1. West Luzon Basin
2. West Masbate-Iloilo Basin
3. Ilocos Basin
4. Bicol Shelf Basin



Petroleum Service Contacts

SERVICE CONTRACT (SC) NO.	LOCATION	AREA COVERAGE (has)	OPERATOR
SC-6	NW Palawan	3,397.186	CADCO
SC-6A	NW Palawan	108,146.58	Pitkin Petroleum Plc.
SC-6B	NW Palawan	53,293.945	The Philodrill Corp.
SC-14	NW Palawan	70,887.52	The Philodrill / Galoc / RMA (Hk.) Ltd.
SC-37	Cagayan Basin	36,000	PNOC-EC
SC-38	NW Palawan	83,000	SPEX BV
SC-40	North Cebu	458,000	Forum Exploration Inc.
SC-44	Central Cebu	75,000	Gas2Grid
SC-47	Offshore Mindoro	1,048,000	PNOC-EC
SC-49	South Cebu	265,000	CIMP
SC-50	NW Palawan	128,000	Frontier Energy Ltd.
SC-51	East Visayan	332,000	Otto Energy
SC-52	Cagayan Basin	96,000	Frontier Energy
SC-53	Onshore Mindoro	660,000	Pitkin Petroleum
SC-54A	NW Palawan	401,616.15	Nido Petroleum
SC-54B	NW Palawan	312,000	Nido Petroleum
SC-55	West Palawan	900,000	Otto Energy
SC-56	Sulu Sea Basin	684,000	Mitra Energy
SC-57	NW Palawan	712,000	PNOC-EC
SC-58	NW Palawan	1,344,000	Nido Petroleum
SC-59	SW Palawan	1,476,000	BHP-Billiton Petroleum
SC-62	East Palawan	1,302,000	PSSGI
SC-63	SW Palawan	1,056,000	Nido Petroleum
SC-64	Sulu Sea Basin	1,264,940	Ranhill Energy
SC-69	Visayan Basin	528,000	Otto Energy
SC-70	Central Luzon Basin	684,000	Polyard Petroleum
SC-72	Recto Bank Basin	1,063,000	Forum (GSEC101)
SC-73	Mindoro-Cuyo Basin	844,000	Otto Energy
SC-74	NW Palawan	424,000	Pitkin Petroleum Plc.
SC-75	NW Palawan	616,000	Philex Petroleum Corp.



PETROLEUM SERVICE CONTRACT MAP
with PECS5 AREAS for OFFER

DEPARTMENT OF ENERGY PETROLEUM RESOURCES DEVELOPMENT DIVISION	
PREPARED BY	DEVALINE ANTONIO
VERIFIED BY	BOO JIM
DATA SOURCE	PRDD
LAST UPDATE	28 February 2014

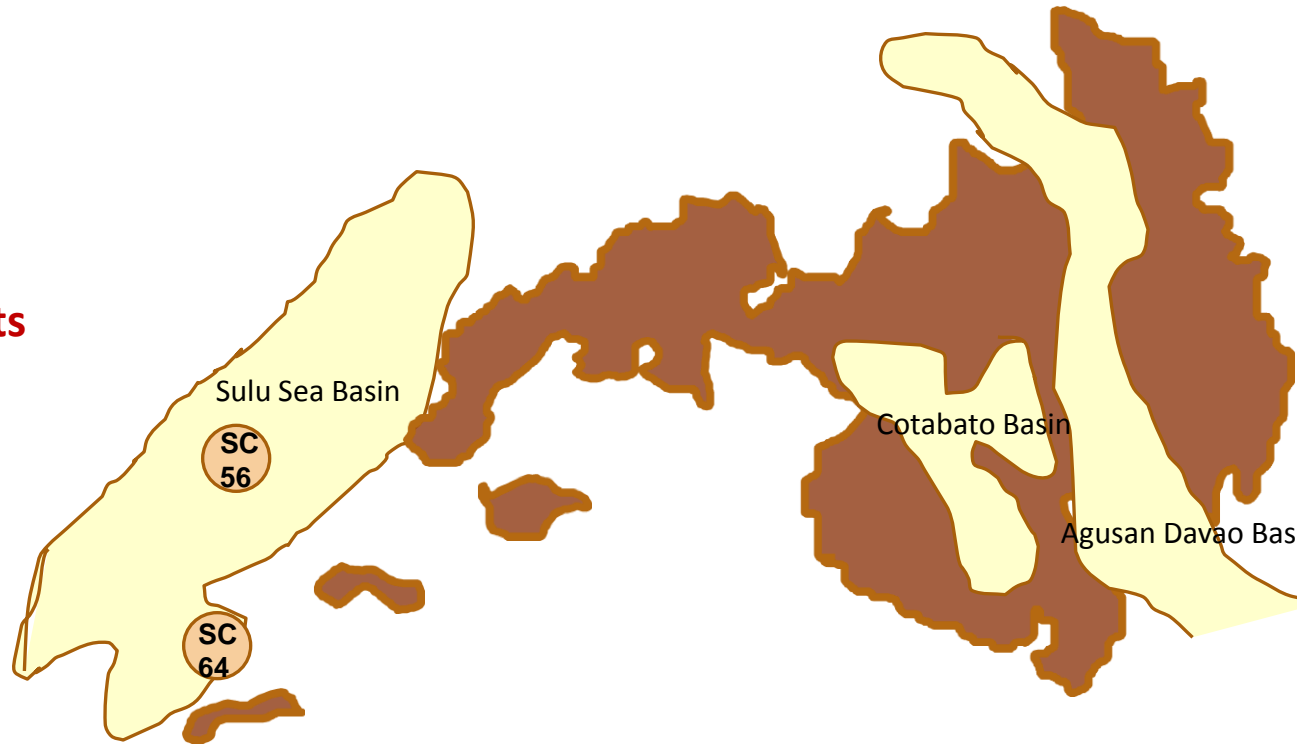
Oil & Gas Petroleum in Mindanao

Sedimentary Basins

1. Sulu Sea Basin
2. Agusan-Davao Basin
3. Cotabato Basin

Petroleum Service Contracts

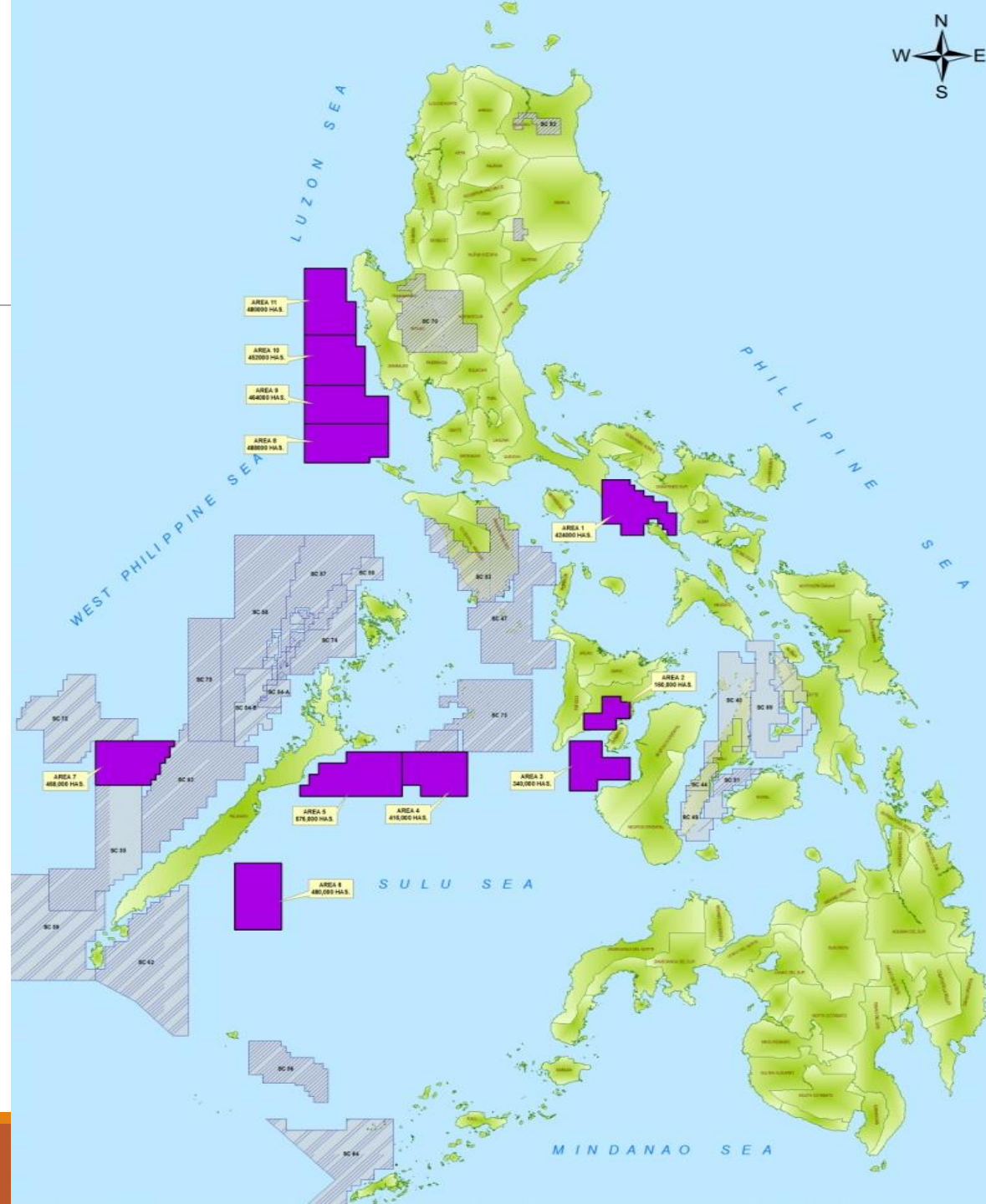
1. SC 56 – Mitra Energy
2. SC 64 – Ranhill Energy



PECR 5

Areas for Offer

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



Coal



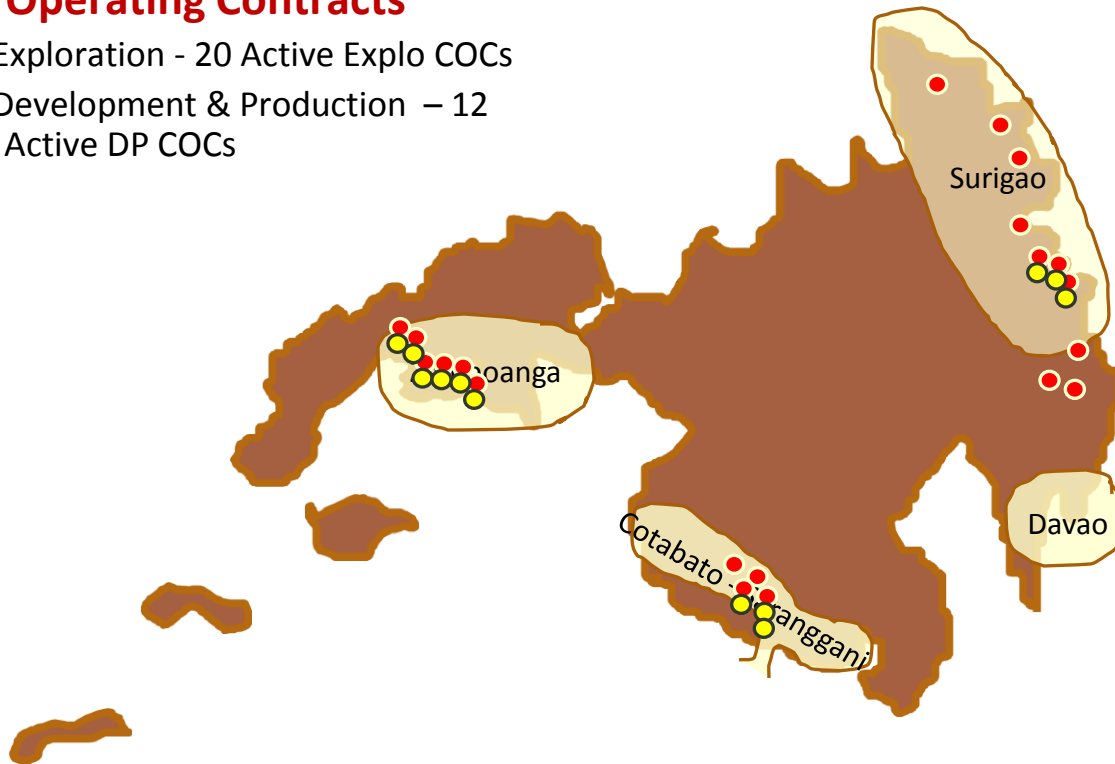
Coal in Mindanao

Coal Basins

- 1. **Surigao Coal Basin**
 - 1. Resource Potential: 209.00
 - 2. In Situ Reserves: 69.55
- 2. **Davao Coal Basin**
 - 1. Resource Potential: 100.00
 - 2. In Situ Reserves: 0.21
- 3. **Zamboanga Coal Basin**
 - 1. Resource Potential: 45.00
 - 2. In Situ Reserves: 37.98
- 4. **Cotabato - Sarangani Basin**
 - 1. Resource Potential : 758.70
 - 2. In Situ Reserves: 81.06

Coal Operating Contracts

- Exploration - 20 Active Explo COCs
- Development & Production – 12 Active DP COCs



COAL OPERATING CONTRACTOR (EXPLORATION)



COAL OPERATING CONTRACTOR DEVELOPMENT / PRODUCTION



PECR5 Areas for Offer

- 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)

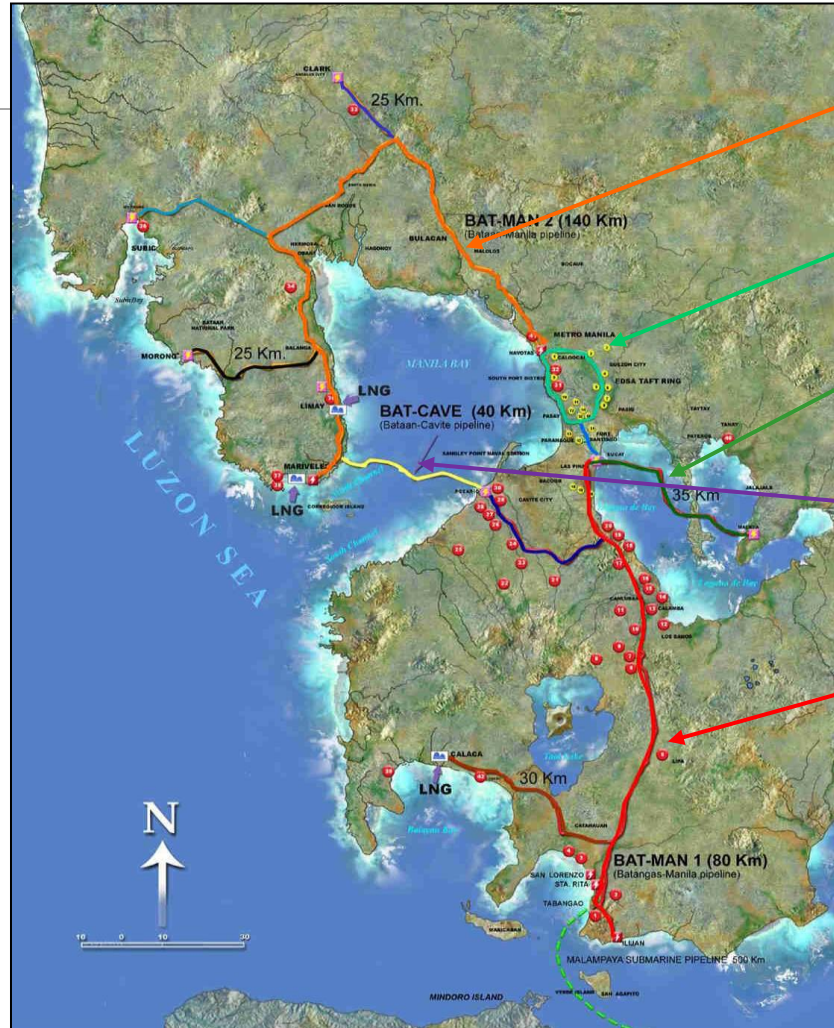
- 200 buses in the Southern Luzon-Manila route
- serviced thru the South Expressway NGV Refueling Station
- at a fixed/discounted price for 7 yrs.

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)

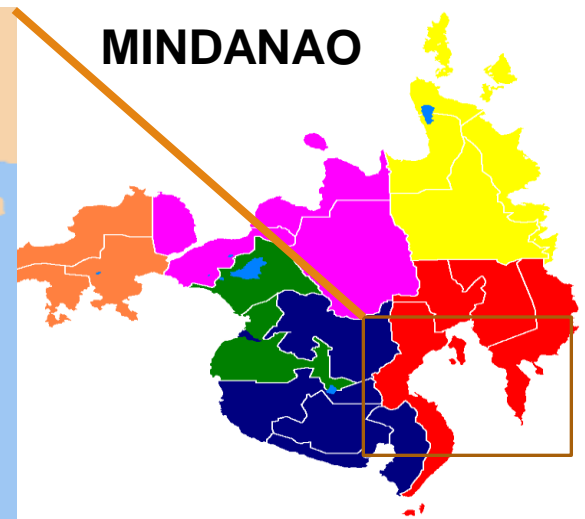
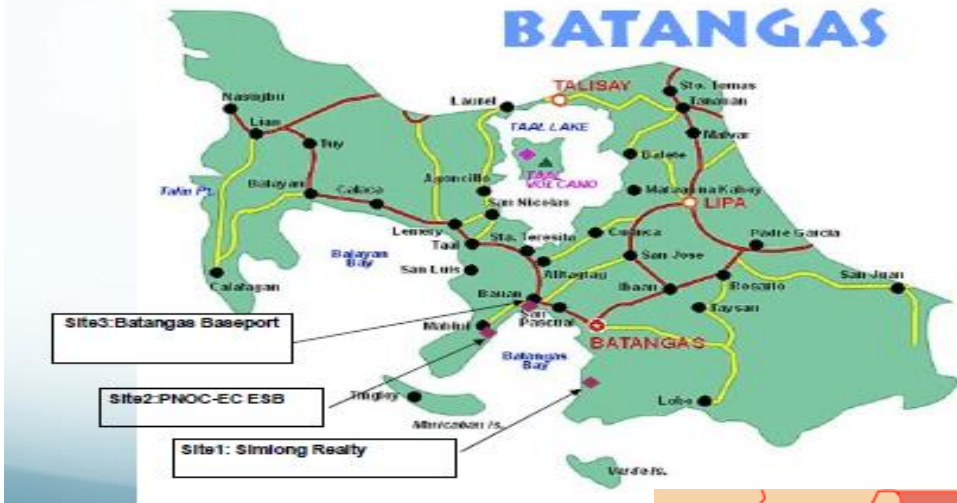
SU-MA
(Sucat - Malaya)
35 kms. (2017)

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

Compressed Natural Gas

	Particulars	Fuel Displacement & CO2 Avoidance	
		2010	2011
CNG	<ul style="list-style-type: none"> 41 CNG fed buses commercially operating along Batangas-Laguna-Manila route 6 Certificates of Accreditation issued CNG Bus Operators (KL CNG, RRCG, BBL, HM Transport, N. dela Rosa Liner and Greenstar Express) 2 Certificates of Authority to Import 10 CNG Buses each issued for RRCG and N. dela Rosa Liner 	<ul style="list-style-type: none"> 2,703,068 liters of diesel equivalent 1,529,823 kg CO2 	<ul style="list-style-type: none"> 3,259,582 liters of diesel equivalent 1,844,787 kg CO2



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

Natural Gas



- **CNG Daughter Station in Mamplasan, Binan, Laguna**
 - 41 buses from 7 accredited bus operators plying Batangas/Laguna to Manila
- **PNOC-EC will install 2 modular Daughter Stations in Laguna and Batangas**



Auto-LPG

Fuel Displacement & CO2 Avoidance

Particulars

2010

2011

- **Auto-LPG**
 - 17,500 units of taxis converted to LPG as of end-2010
 - 19,052 units of taxis converted to LPG as of end-2011
 - 31 LPG conversion shops
 - 222 auto-LPG refilling stations available nationwide

- 127 Million liters of gasoline displacement
- 136 Million liters of gasoline displacement
- 127,160 metric tons (MT) CO2
- 138,437 metric tons (MT) CO2

Area/ Region	Public Stations	Garage Based	Bulk Suppliers
Metro Manila	102	35	0
Luzon	6	2	4
Visayas	26	20	1
Mindanao	16	9	1
Total	150	66	6



E-Vehicles

- 523 existing electric vehicles
- Target: 100,000 e-trikes nationwide through a loan Agreement between the Philippine Government through Department of Finance and the Asian Development Bank
- First batch: 500 e-trikes



Renewable Energy

Awarded RE Projects as of 30 September 2014

RESOURCES	AWARDED PROJECTS		POTENTIAL CAPACITY MW		INSTALLED CAPACITY MW	
	Grid-Use	Own-Use	Grid-Use	Own-Use	Grid-Use	Own-Use
Hydro Power	389	1	6,160.01	1.50	118.93	
Ocean Energy	5		25.00			
Geothermal	41		750.00		1,866.19	
Wind	58	1	2,054.40	0.006	33.00	
Solar	84	5	1,354.15	1.594	22.00	
Biomass	42	25	333.45	5.80	147.80	143.18
Sub-Total	619	32	10,677.016	8.90	2,187.92	143.18
TOTAL	651		10,685.916		2,331.10	

Pending RE Projects as of 30 September 2014

RESOURCES	PENDING APPLICATIONS		POTENTIAL CAPACITY MW		INSTALLED CAPACITY MW	
	Grid-Use	Own-Use	Grid-Use	Own-Use	Grid-Use	Own-Use
Hydro Power	115		920.80		697.80	
Ocean Energy	1		6.00			
Geothermal	2		60.00		-	
Wind	2		-		-	
Solar	11	2	146.50	-		
Biomass	6	1	103.50	1.00	-	
Sub-Total	137	3	1,236.80	1.00	697.80	-
TOTAL	140		1,237.80		697.80	

Renewable Energy FIT Rates & Installation Targets

RESOURCE / TECHNOLOGY	ERC APPROVED FEED-IN-TARRIFF RATES (PhP/ kWh)	ERC APPROVED FEED-IN-TARRIFF RATES (US\$/ kWh)	INSTALLATION TARGETS
Run-of-River Hydropower	5.9	0.14	250
Biomass Energy	6.63	0.158	250
Wind Power	8.53	0.203	200
Solar Power	9.68	0.23	50
Ocean Energy	-	11	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
- Issuance of 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 Development

FIT Monitoring Board (as of August 31, 2014)

RESOURCE	WITH CERTIFICATE OF CONFIRMATION OF COMMERCIALITY	
	NO. OF PROJECTS	CAPACITY (MW)
HYDRO	37	331.35
WIND	12	720.40
SOLAR	7	160.00
BIOMASS	9	126.701
TOTAL	65	1,338.451

Note:

- Department Circular No. 2009-07-0011 entitled “Guidelines governing a transparent and competitive system of awarding renewable energy service/operating contracts and providing for the registration process or RE developers” is currently being revisited to facilitate the processing of RE Applications.
- 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
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THANK YOU

