GEOTHERMAL INDUSTRY AND INVESTMENT OPPORTUNITIES IN THE PHILIPPINES

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Department of Energy

OUTLINE

- Where are we before?
  - Historical Geothermal Development in the Philippines
  - Presidential Decree No. 1442 (Law that regulates geothermal exploration and development)
  - Installed Capacity and Generation
- Where are we now?
  - Republic Act No. 9513 (RE Law)
  - Corporate/Industry Reform
  - Awarded (New Geothermal Contracts)
- The Way Forward
  - Energy Reform Agenda
  - Renewable Energy Policy Framework
  - Pending Geothermal RE Contract Applications

HISTORICAL GEOTHERMAL DEVELOPMENT IN THE PHILIPPINES

Geological investigations

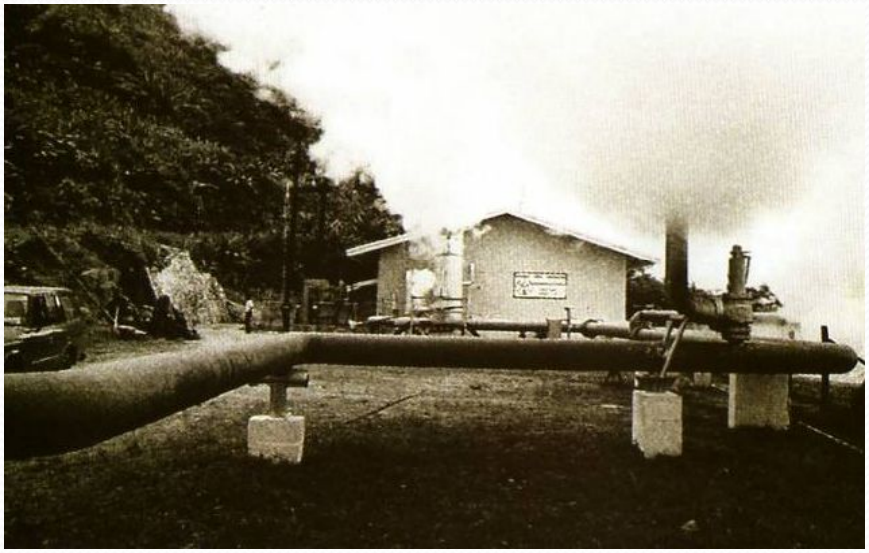
1964 – The then Philippine Commission on Volcanology (COMVOL) did an inventory of hot springs in the country and investigated Tiwi, Albay to determine the country's capability to produce geothermal energy.

HISTORICAL GEOTHERMAL DEVELOPMENT IN THE PHILIPPINES

Pilot Projects

1967 - Philippine Government installed a 2.5kw pilot plant in Barangay Cale, Tiwi, Albay.

1977 - PNOC-EDC (Philippine National Oil Company – Energy Development Corporation) installed a 3 Mw pilot plant in Tongonan, Leyte followed by another 3 Mw pilot plant in Palinpinon, Negros Occidental



The 1.5 Mw Pilot Plant at Negros Occidental installed in 1977

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HISTORICAL GEOTHERMAL DEVELOPMENT IN THE PHILIPPINES

Geothermal Reservations

- for the purpose of exploration, development, exploitation and utilization of geothermal energy and maintenance of watersheds within the reservation

Proc. No. 739 (Aug. 14, 1970) - Province of Albay, Luzon

Proc. No.1111 (Feb. 21, 1973) - Province of Laguna, Quezon, Batangas, Luzon

Proc. No. 1112 (Feb. 21, 1973) - Province of Leyte, Visayas

Proc. No. 1412 (Apr. 8, 1975) - Parcel of land in the Province of Leyte, Visayas

Proc. No. 1413 (Apr. 8, 1975) - Province of Negros, Visayas

Proc. No. 2036A (Nov. 11, 1980) - Provinces of Albay and Sorsogon, Luzon

HISTORICAL GEOTHERMAL DEVELOPMENT IN THE PHILIPPINES

Policy

PRESIDENTIAL DECREE 1442
June 11, 1978

An act to promote the exploration and development of geothermal resources

Concept is that the State owns the resource but may enter into contracts for the provision of financial and technical services for the development of the resource - - Service Contract

HISTORICAL GEOTHERMAL DEVELOPMENT IN THE PHILIPPINES

COMMERCIAL INSTALLATIONS

PLANT	INSTALLED CAPACITY, MW	OWNER	ORIGINAL YEAR COMMISSIONED
LUZON			
Mak-Ban 1	63.20	AP Renewables Inc. (APRI)	April 26, 1979
Mak-Ban 2	63.20	APRI	July 25, 1979
Mak-Ban 3	63.20	APRI	April 22, 1980
Mak-Ban 4	63.20	APRI	June 25, 1980
Mak-Ban 5	55.00	APRI	June 5, 1984
Mak-Ban 6	55.00	APRI	September 10, 1984
Mak-Ban 7 (D)	20.00	APRI	October 16, 1995
Mak-Ban 8 (D)	20.00	APRI	November 12, 1995
Mak-Ban 9 (E)	20.00	APRI	May 22, 1996
Mak-Ban 10 (E)	20.00	APRI	May 27, 1996
Mak-Ban Binary	15.73	APRI	February 28, 1994
Bac-Man I - Unit 1	55.00	National Power Corp. (NPC)	September 10, 1993
Bac-Man I - Unit 2	55.00	NPC	December 12, 1993
Bac-Man II - Cawayan	20.00	NPC	March 15, 1994
Bac-Man II - Botong	20.00	NPC	March 17, 1998
Manito Lowland	1.50	Energy Development Corp. (EDC)	October 1, 1998
Tiwi 1	60.00	NPC	January 11, 1979
Tiwi 2	60.00	NPC	May 25, 1979
Tiwi 3	55.00	NPC	January 8, 1980
Tiwi 4*	0.00	NPC	April 1, 1980
Tiwi 5	57.00	NPC	December 20, 1981
Tiwi 6	57.00	NPC	March 16, 1984
VISAYAS			
Palinpinon I	112.50	Green Core Geothermal Inc. (GCGI)	May / July / August 1983
Palinpinon II	80	GCGI	January 1, 1994 / May 5, 1995
Northern Negros	49.375	EDC	February 2, 2007
Tongonan I	112.5	GCGI	March 10, 1983 / June 18, 1983
Unified Leyte	610.18	EDC	July 1996 / 1997
MINDANAO			
Mindanao I	54.24	EDC	December 15, 1996
Mindanao II	54.24	EDC	June 17, 1999
TOTAL	**1,972.07**		

Note: * The unit was decommissioned on 13 October 2003

GEOTHERMAL ENERGY DEVELOPMENT

	2009	2010	2011
Installed Capacity	1,972 MW	1,972 MW	1,902.69 MW
Generation	10,296 GWh	10,279 GWh	10,494 GWh
Fuel Oil Displacement (MMBFOE)	17.16	17.13	17.49
Foreign Savings in MM US$	1,518.73	1,349.31	1,377.51

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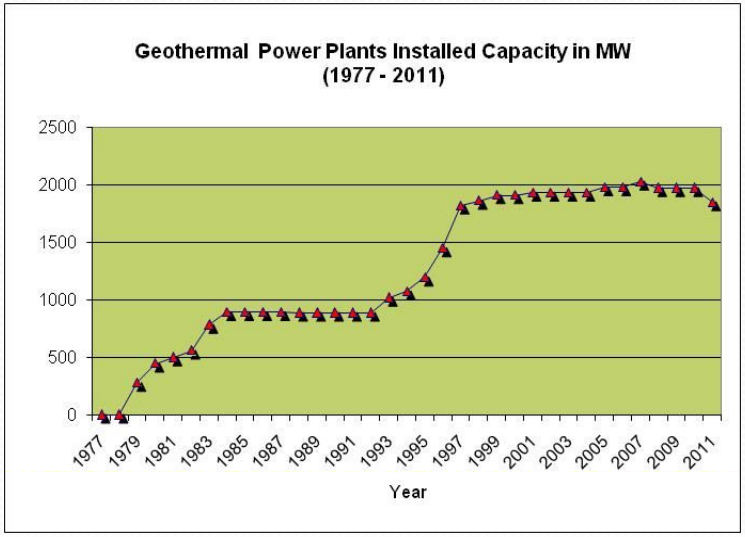
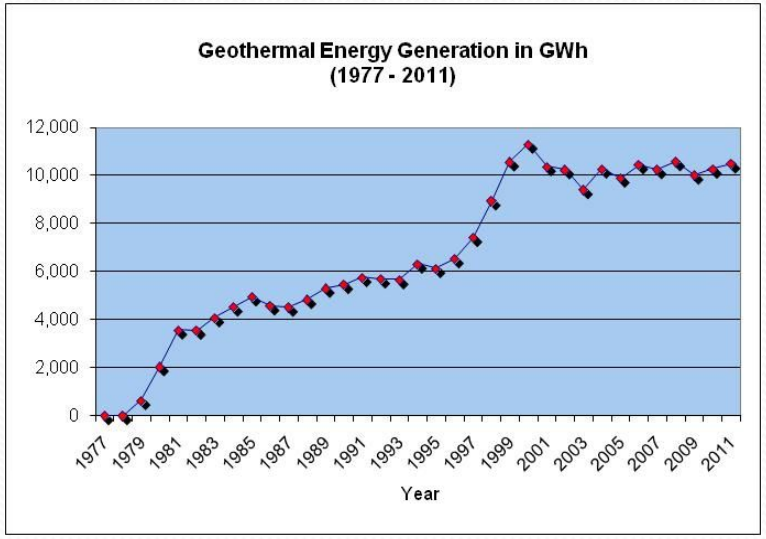
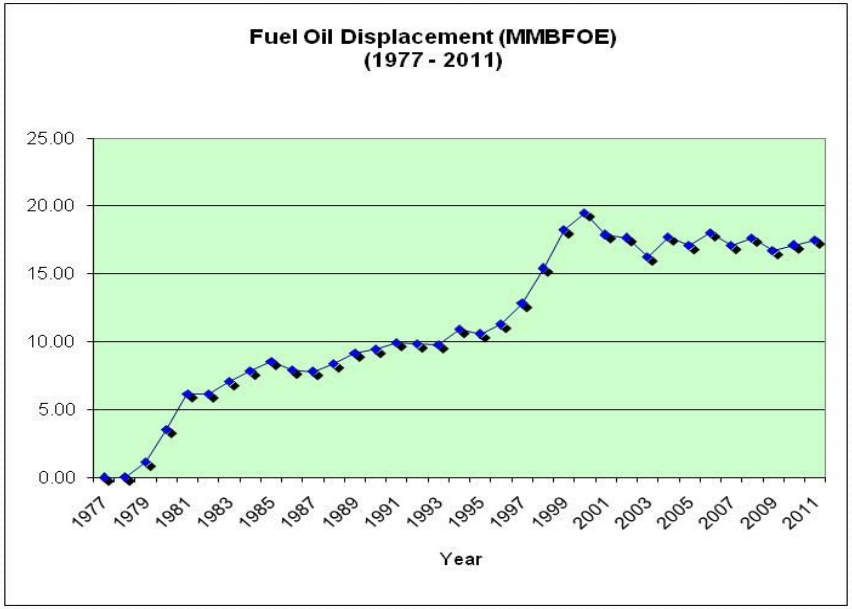
HISTORICAL PERFORMANCE







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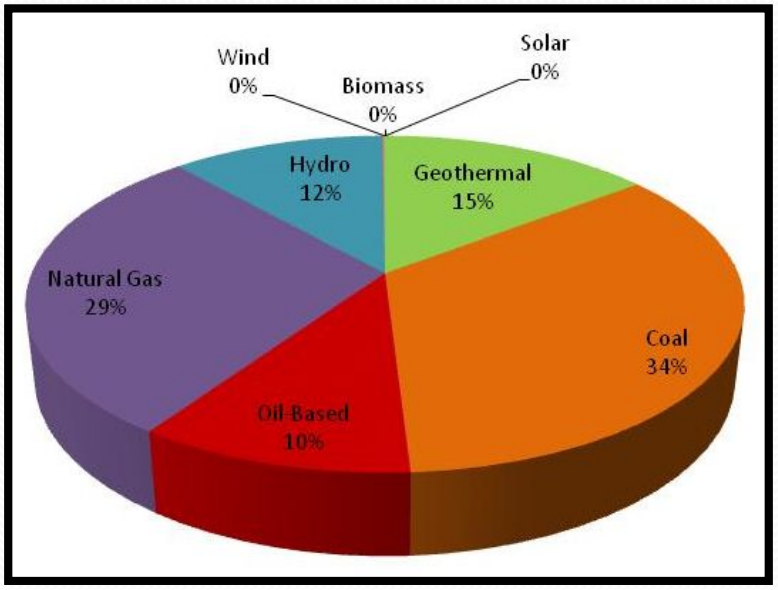
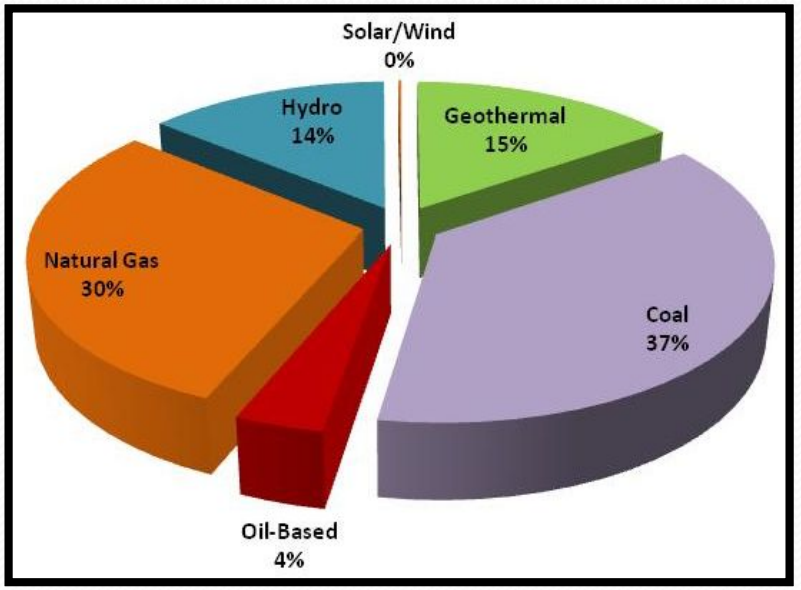
PRIMARY POWER MIX

2010



Total Generation: 67,743 GWh

2011



Total Generation: 68,279.07 GWh

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LANDMARK LAWS

Republic Acts No. 9513

RA 9513: RENEWABLE ENERGY ACT OF 2008

An act promoting the Development, Utilization and Commercialization of Renewable Energy Resources

Provides for additional incentives in geothermal development aside from establishing incentives for other RE development. Geothermal resource is the banner resource in the campaign for the Act

RA 9513: RENEWABLE ENERGY ACT OF 2008

- ACCELERATE THE EXPLORATION AND DEVELOPMENT OF RENEWABLE ENERGY RESOURCES
  - Achieve energy self-reliance
    - To reduce the country's dependence on fossil fuels
    - Minimize the country's exposure to price fluctuations
  - Adoption of clean energy to mitigate climate change
  - Promote socio-economic development in rural areas
- INCREASE THE UTILIZATION OF RENEWABLE ENERGY BY PROVIDING FISCAL AND NON FISCAL INCENTIVES

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RA 9513: RENEWABLE ENERGY ACT OF 2008

FISCAL INCENTIVES: *Renewable Energy (RE) Projects & Activities*

- Duty-free importation of RE machinery, equipment and materials
- Special realty tax rates on machinery, equipment and other improvements
- Income tax exemption – first 6 years
- Net Operating Loss Carryover (NOLCO) – First 3 years
- Accelerated Depreciation
- Exemption from the universal charge
- VAT Zero-rated on the sale of power generated from RE resources

RA 9513: RENEWABLE ENERGY ACT OF 2008

POLICIES IMPLEMENTATION

- Establishment of the Renewable Energy Management Bureau
  - DOE's lead unit in the implementation of the Act
  - Operationalized on 14 July 2009
  - Creation of the Interim Negotiating Panel for the RE Service/Operating Contracts on 09 September 2009
- Creation of the National Renewable Energy Board
  - Created Sub-committee and working groups to facilitate the formulation of mechanism, rules and guidelines on the following;
    - Renewable Portfolio Standard/Feed in Tariff
    - Net Metering
    - Green Energy Option
    - Renewable Energy Trust Fund

RA 9513: RENEWABLE ENERGY ACT OF 2008

FISCAL INCENTIVES FOR THE RE RESOURCE DEVELOPERS

- Government Share
  - 1.5% of gross income on geothermal resources
- Duty-free Importation
  - 10 year exemption from tariff duties
- Tax Credit on Domestic Capital Equipment and Services
  - Equivalent to 100% of custom duties and value-added tax
- Income Tax Holiday (ITH)
  - 7-year tax holiday, including new investments but not to exceed 3 times
- Corporate Tax Rate
  - 10% of net taxable income after ITH

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RA 9513: RENEWABLE ENERGY ACT OF 2008

FISCAL INCENTIVES FOR THE RE RESOURCE DEVELOPERS

- Net Operating Loss Carry Over
  - 3-year losses carried over 7-year, except those resulting from availment of other incentives.
- Accelerated Depreciation
  - Non-availment of ITH
  - Depreciation rate not exceeding twice the normal
- Zero Percent Value Added Tax Rate
  - 0% on sale of fuel or power generation from RE sources
- Special Realty Tax Rate on Equipment and Machinery
  - Not to exceed 1.5% of original cost

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RA 9513: RENEWABLE ENERGY ACT OF 2008

FISCAL INCENTIVES FOR THE RE RESOURCE DEVELOPERS

- Cash incentives for Missionary Electrification
  - 50% of the universal charge due
- Exemption from Universal Charge
  - Generator's own consumption
  - Free distribution in off-grid areas
- Payment of Transmission Charges
  - Average per kWh rate of all other electricity transmitted through the grid
- Tax Exemption on Carbon Credits
  - Exemption from the sale of CER

RA 9513: RENEWABLE ENERGY ACT OF 2008

FISCAL INCENTIVES FOR THE RE COMMERCIALIZATION

- Tax and Duty –free importation of Components, Parts and Materials
  - Exemption from importation tariff and duties and value added tax
- Tax Credit on Domestic Capital Components, Parts and Materials
  - 100% equivalent of custom duties and value added tax
- Income Tax Holiday
  - 7-year tax exemption
- Zero-rated Value Added Tax Transacions
  - 0% VAT on transactions with local suppliers of goods, properties and services

RA 9513: RENEWABLE ENERGY ACT OF 2008

NON-FISCAL INCENTIVES

- Renewable Porfolio Standard (RPS)
  - Mandatory (percentage) utilization of RE generation system in on-grid systems
- Feed-in Tariff
  - Priority connection to the grid
  - Priority purchase and transmission of and payment for by grid system operators
  - Fixed tariff for at least 12 years
  - To be applied for generation utilized in complying with RPS

RA 9513: RENEWABLE ENERGY ACT OF 2008

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SALIENT FEATURES OF P.D. 1442 vs. RA 9513

	P. D. No. 1442	R. A. 9513
Contract Term	5 years exploration period + 2 years exploration period extension + 25 years production period + 18 years production period extension	2 yrs explo + extendible for two (2) years, + further extendible for one (1) year (pre-development stage) 25 years, maximum of 50 years (Development/commercial stage)
Ownership	60% Filipino, 40% Foreign	Can be 100% foreign, provided the President sign the contract
Annual Cost Recovery (% of Gross Proceeds)	Maximum 90%	1.5% from the sale of electric power for geothermal energy
Share of Net Proceeds		
National	60%	-do-
LGU	40%	
Depreciation of Capital Equipment	10 Years straight line	Accelerated depreciation
Exemption from payment of Taxes	All taxes except income tax	7 years Income Tax Holiday (ITH)
		1.5% Special Realty Tax Rates on Equipment and Machinery
		7 years Net Operating Loss Carry-Over (NOLCO)
		10% Corporate Tax Rate after seven (7) years of ITH
		Zero Percent Value-Added Tax Rate
		Tax Exemption of Carbon Credits
		100% Tax Credit on Domestic Capital Equipment and Services
Importation	Exemption from payment of tariff duties and compensating tax on the importation of machinery, equipment, spare parts and all materials for geothermal operations during contract duration	10 year Duty-free Importation of RE Machinery, Equipment and Materials
Other incentives		Cash inventive of Renewable Energy Developers for Missionary Elecrification
		Exemption from the Universal Charge
		Payment of Transmission Charge
		Hybrid and Cogeneration Systems

Corporate/Industry Reform

- Take-over of Chevron Geothermal Philippines Holdings Inc. of Unocal Philippines in 2005
- Sale/Privatization of PNOC-Energy Development Corp., the Government Owned and Controlled Corp., to Energy Development Corp. in late 2007

Corporate/Industry Reform

Sale/Privatization of National Power Corp., government-owned geothermal generating assets under the provisions of the Electric Power Industry Reform Act of 2001 (EPIRA):

- Makban Geothermal Steamfield and Power Plants in Laguna/Batangas
- Tiwi Geothermal Steamfield and Power Plants in Albay
- Palipinon I and II Geothermal Power Plant in Negros Oriental
- Tongonan I Geothermal Power Plant in Tongonan, Leyte
- Bacman I and II Geothermal Power Plant in Sorsogon

Awarded (NEW) Geothermal RE Contracts

- Seven (7) existing Geothermal Service Contracts under PD 1442 were converted to Geothermal RE Service Contract s under RA 9513
- Five (5) Geothermal RE Operating Contracts for the operation of geothermal power plant
- Eight (8) Geothermal RE Service Contracts under the Open and Competitive Selection Process of awarding RE Contract
- Fifteen (15) Geothermal RE Service Contracts under Direct Negotiation for frontier areas


Republic of the Philippines
Department of Energy
Geothermal Service/Operating Contracts
(Development Stage)
LUZON
Baguio City
Manila
VISAYAS
Cebu City
MINDANAO
Davao City
N
W
E
S
Mount Makiling-Banahaw Geothermal Power Plant, Laguna/Quezon
GREOC No. No. 2009-10-007
Total Installed Capacity - 458.53 MWe
Bacon-Manito Geothermal Power Plant, Sorsogon/Albay
GOC No. 2012-04-027
Total Installed Capacity - 151.5 MWe
Bacon-Manito Geothermal Production Field
GRESC No. 2009-10-003
Tiwi Geothermal Power Plant, Albay
GREOC No. 2009-10-006
Total Installed Capacity - 289 MWe
Northern Negros Geothermal Production Field, Negros Occidental
GRESC No. 2009-10-005
Total Installed Capacity - 49.375 MWe
Palinpinon Geothermal Power Plants, Negros Oriental
GOC No. 2012-04-025
Total Installed Capacity - 192.5 MWe
Southern Negros Geothermal Production Field, Negros Oriental
GRESC No. 2009-10-002
Tongonan I Geothermal Power Plant, Tongongan, Leyte
GOC No. 2012-04-026
Total Installed Capacity - 722.68 MWe
Leyte Geothermal Production Field
GRESC No. 2009-10-001
Mindanao Geothermal Production Field, North Cotabato/Davao
GRESC No. 2009-10-004
Total Installed Capacity - 108.48 MWe
LEGEND
Producing Fields
GRESC - Geothermal RE Service Contract/
GSC - Geothermal Service Contract
GREOC - Geothermal RE Operating Contract/
GOC - Geothermal Operating Contract
(for Power Plant operation only)
Data as of July 2012
Source: Geothermal Energy Management


Republic of the Philippines
Department of Energy
Geothermal Service Contracts
(Pre-Development Stage)
1 Sal-Lapadan-Boliney-Bucloc-Tubo, Abra
Potential Capacity to be determined
GSC No. 2011-12-09
2 Mainit-Sadanga, Mt. Province (80 MW)
GRESC No. 2010-03-023
3 Kalinga, Kalinga Province (60 MW)
GRESC No. 2010-03-024
4 Cagua-Baua, Cagayan (40 MW)
GRESC No. 2010-03-024
5 Buguias-Tinoc, Benguet/Ifugao (60 MW)
GRESC No. 2010-03-022
6 Cervantes, Ilocos Sur/Mt. Province/Benguet
Potential Capacity to be determined
GSC No. 2011-12-030
7 Daklan, Benguet/Nueva Ecija (60 MW)
GRESC No. 2010-02-017
8 Natib, Bataan (40 MW)
GRESC No. 2010-02-016
9 San Juan, Batangas (20 MW)
GSC No. 2011-12-031
10 Mabini, Batangas (20 MW)
GSC No. 08
11 Maibarara, Batangas/Laguna (20 MW)
GSC No. 2011-01-012
12 Montelago, Oriental Mindoro (40 MW)
GRESC No. 2010-02-013
13 Tayabas-Lucban,Tayabas/Quezon
Potential Capacity to be determined
GSC No. 2011-12-032
14 Tiaong, Laguna/Quezon/Batangas
Potential Capacity to be determined
GSC No. 2011-12-033
15 Camarines Sur, Camarines Sur (70 MW)
GRESC No. 2010-02-019
16 Labo, Quezon/Camarines Norte and Sur (65 MW)
GRESC No. 2010-02-020
17 Southern Bicol, Sorsogon
GRESC No. 2010-02-015
LUZON
Baguio City
Manila
VISAYAS
Cebu City
MINDANAO
Davao City
N
W
E
S
18 Cabalian, Southern Leyte (40 MW)
GSC No. 07
19 Mandalagan, Negros Occidental (20 MW)
GSC No. 2012-01-036
20 Biliran, Biliran (50 MW)
GRESC No. 2010-02-010
21 Mainit, Surigao del Norte (30 MW)
GRESC No. 2010-02-021
22 Lakewood, Zamboanga del Sur/Zamboanga del Norte/Zamboanga Sibugay (40 MW)
GSC No. 2012-01-038
23 Ampiro, Misamis Occ./Zamboanga del Norte/Zamboanga del Sur (30 MW)
GSC No. 2012-01-035
24 Balingasag, Misamis Or./Bukidnon (20 MW)
GSC No. 2012-01-039
25 Mt. Zion, North Cotabato/Davao del Sur (20 MW
GSC No. 2012-01-037
LEGEND
GRESC - Geothermal RE Service Contract/
GSC - Geothermal Service Contract
under RA 9513
GSC under PD 1442
Data as of July 2012
Source: Geothermal Energy Management

Pending Geothermal RE Contracts Applications

- Thirteen (13) Geothermal RE Service Contracts under Direct Negotiation for frontier areas.

ENERGY REFORM AGENDA

"Energy Access for More"
Level Playing Field, Walang Lamangan

A key priority of government to mainstream access of the greater majority to reliable energy services and fuel, most importantly, local productivity and countryside development

Good Governance thru stakeholder participation, transparency, multi-sectoral partnership and use of ICT

Ensure Energy Security	**Achieve Optimal Energy Pricing**	**Develop a Sustainable Energy Plan**

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RENEWABLE ENERGY POLICY FRAMEWORK 2009 UPDATES

- Increase RE-based capacity by 100% within the next 20 years (2010-2030)
- Increase non-power contribution of RE to the energy mix by 10 MMBFOE in the next ten years
  - **Be the number one geothermal energy producer in the world (additional 1,475 MW)**
  - Be the number wind energy producer in Southeast Asia
  - Double hydro capacity (additional 3,400 MW)
  - Expand contribution of:
    - Biomass 200 MW
    - solar 30 MW
    - ocean energy 120 MW

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RENEWABLE ENERGY POLICY FRAMEWORK 2012 UPDATES

RESOURCE	EXISTING CAPACITY in year 2008 (MW)	TARGET capacity	TOTAL in 2030
Geothermal	1,848	1,455	3,303
Hydro	3,367	3,400	6,767
Wind	33	515	548
Solar	5	30	35
Biomass	57.2	200	257.2
Ocean	0	120	120
Total	5,310.2	5,720	11,030.2

WAY FORWARD

Development of guidelines for the following mechanisms:

- Renewable Portfolio Standard
- Net metering
- Feed-in Tariff Rates
- RE Financial Program

THANK YOU ! ! !

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