



Philippines: RE Development

Marissa P. Cerezo
Director III

Renewable Energy Management Bureau
Department of Energy



Department of Energy

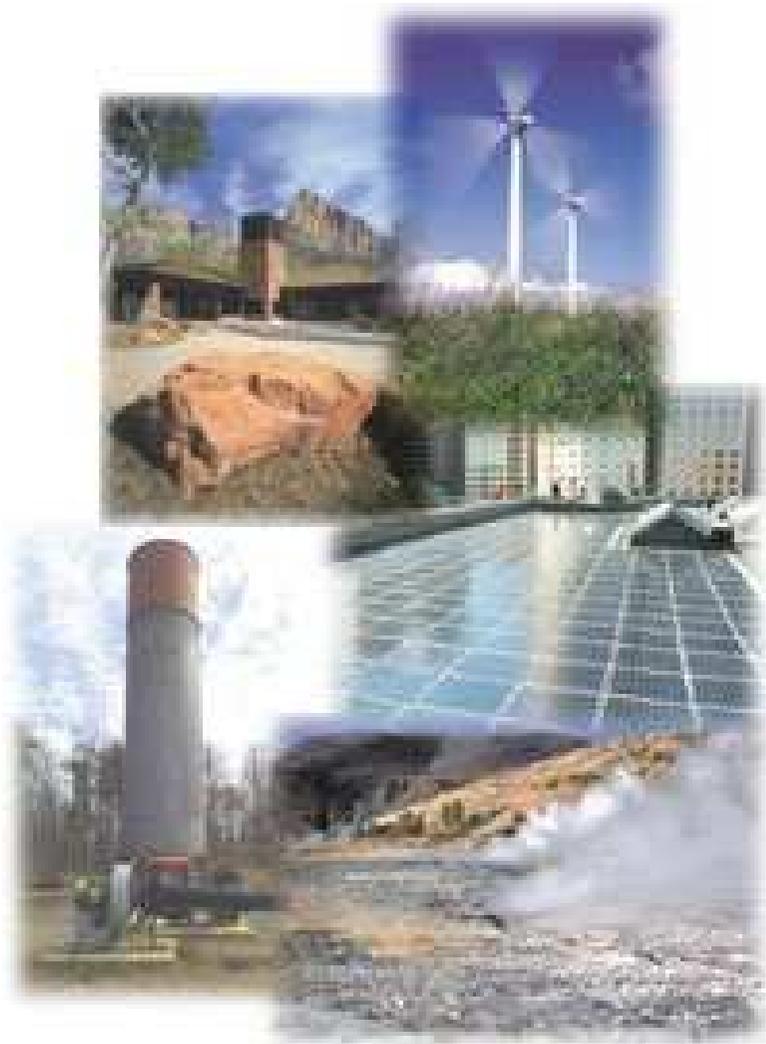


Outline of Presentation

- I. Government Policy – National Renewable Energy Program
- II. Status of Renewable Energy Development
 - Renewable Energy Policy Updates
 - Where are we now
 - Renewable Energy Projects
- III. Challenges
- IV. Way Forward



Renewable Energy



- Biomass / Biofuels
- Geothermal
- Solar Power
- Hydropower
- Ocean
- Wind Power



Potential RE Resources

- Geothermal Resource – 1,200 MW
- Hydropower - 10,500 MW
- Wind resources – 76,600 MW
- Micro-hydro – untapped vast potential
- Solar Energy – Average potential 5kWh/m²/day
- Ocean energy - 170,000 MW
- Biomass (bagasse) total potential of 235.7 MW



Landmark Law

R. A. No. 9367: The Biofuels Act of 2006

Provide fiscal incentives and mandate the use of biofuel-blended gasoline and diesel fuels



BIODIESEL

- 2008 consumption of 91 million liters (CME)
- 1% biodiesel blend sold in all gasoline stations
- 2% biodiesel blend by Feb. 6, 2009

BIOETHANOL

- Start of 5% by total volume mandate on Feb. 6, 2009
- 10% bioethanol blend to all gasoline on Feb. 6, 2012



Landmark Law

RA 9513: Renewable Energy Act of 2008



Accelerate the development of the country's renewable energy resources by providing fiscal and non-fiscal incentives to private sector investors and equipment manufacturers / suppliers.



Policies under RA 9513

- 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;



Government Policy

National Renewable Energy Program

- Increase RE-based capacity by 200% within the next 20 years (2011-2030)
- 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 1,495 MW)
 - Be the number one wind energy producer in Southeast Asia (up to 2,500 MW)
 - Double hydro capacity (additional 5,400 MW)
 - Expand contribution of;
 - biomass - 265 MW
 - solar - at least 280 MW
 - ocean energy – at least 10 MW



NREP ROADMAP (2010-2030)

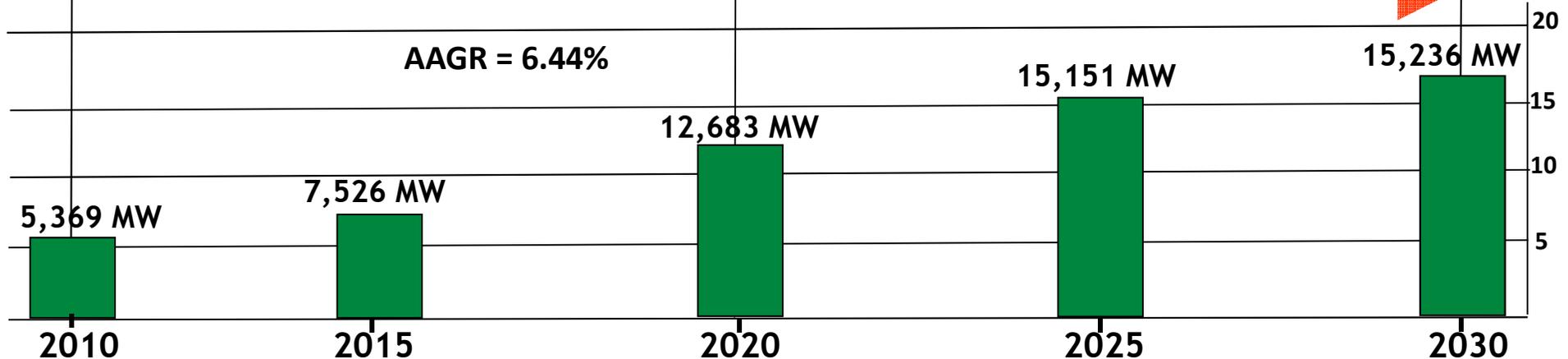
- 2012 - Full implementation of RA 9513
- 2015 - Target additional biomass capacity of 277 MW is reached
- 2018 - Commissioning of the 1st OTEC facility
- 2020 - Solar grid parity is attained

- Target additional RE capacities are reached by:
 - 2022 - Wind : 2,345 MW
 - 2023 - Hydro : 5,398 MW
 - 2025 - Ocean : 75 MW
 - 2030 - Solar : 284 MW*
 - Geothermal : 1,495 MW
- 2025 - Wind grid parity is attained

2010

IMPLEMENTATION OF NREP SECTORAL SUB-PROGRAMS

2030



Note: The National Renewable Energy Program (NREP) is a live document and will be subjected to public consultations. Figures presented may change based on regular updates of the NREP.

Source: Philippine Department of Energy/NREP



Status of Renewable Energy Development



Updates on RE Policy Mechanisms

Renewable Portfolio Standard (RPS)

- Mandatory (percentage) utilization of RE generation system in on-grid systems
 - *For Department of Energy's finalization*

Feed-in-Tariff (FIT)

- 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
 - The FIT Rules was promulgated on August 12, 2010.
 - The ERC approved the FIT Rates on July 27, 2012.
 - FIT Allowance - FIT-ALL Payment and Collection Guidelines
 - The ERC Approved the Guidelines on December 2013
 - Amendment of DOE's installation target
 - The DOE issued a Certification to amend installation targets of Solar Energy Generation (50mw to 500mw) on April 30, 2014



Updates on RE Policy Mechanisms

Net-Metering Rules and Interconnection Standards

- Connection / sale of customers' RE generation to the grid
 - The ERC approved the Net Metering Rules last May 27, 2013
 - Conducting nationwide IEC for LGUs, DUs, consumers

Renewable Portfolio Standards (RPS) for Missionary Areas

- Mandated minimum percentage of RE generation
 - For NREB's finalization

Green Energy Option Program

- End-users' option to purchase electricity from RE facilities (open access)
 - For Department of Energy's finalization

Feed-In Tariff (FIT) Rates

RE Technology	FIT Rate (Php/kWh)	Degression Rate	Installation Target (MW)
Wind	8.53	0.5% after 2 years from effectivity of FIT	200
Biomass	6.63	0.5% after 2 years from effectivity of FIT	250
Solar	9.68**	6% after 1 year from effectivity of FIT	500*
Run-of-River Hydropower	5.90	0.5% after 2 years from effectivity of FIT	250
Ocean		Deferred	10

* Amended solar energy installation target from 50 MW to 500 MW.

1,210 MW

** Under review by the Energy Regulatory Commission, in reference to its Resolution No. 10, Series of 2012 approving the FIT Rates.



FIT MONITORING BOARD SUMMARY

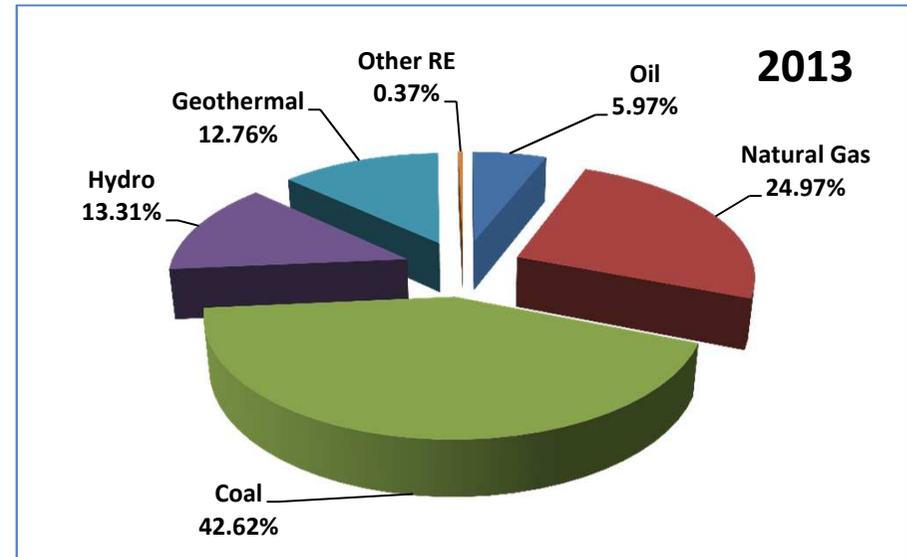
as of 31 December 2014

RESOURCE	FOR NOMINATION / CONVERSION		WITH CERTIFICATE OF CONFIRMATION OF COMMERCIALITY		WITH CERTIFICATE OF ENDORSEMENT TO ERC	
	NO. OF PROJECTS	CAPACITY (MW)	NO. OF PROJECTS	CAPACITY (MW)	NO. OF PROJECTS	CAPACITY (MW)
HYDRO	1	9.00	46	471.80	3	12.60
WIND	1	45.00	11	706.90	3	249.90
SOLAR	8	143.77	9	287.52	1	22.00
BIOMASS	0	-	13	102.78	5	17.916
TOTAL	10	197.77	79	1,569.00	12	302.416



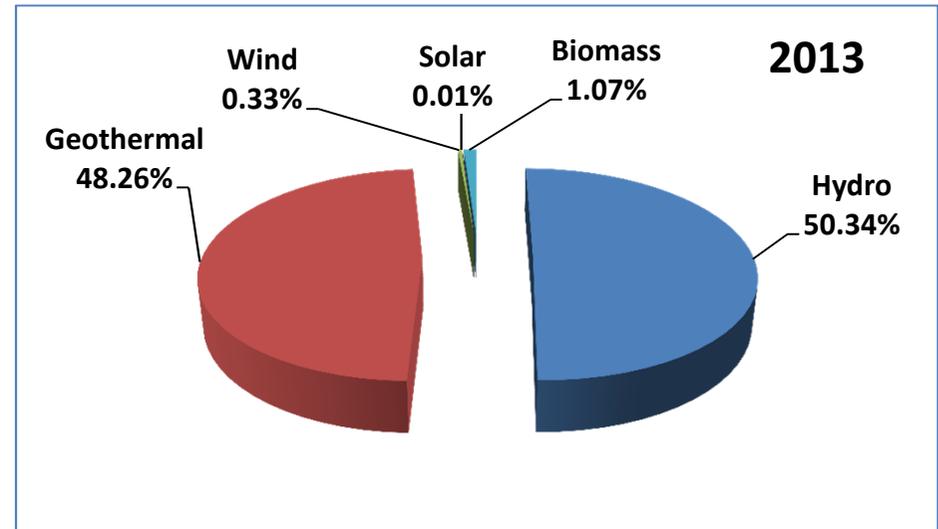
RE Power Generation Mix

	2013	
	MWh	% Shares
Oil	4,490,600	5.97%
Natural Gas	18,791,286	24.97%
Coal	32,081,007	42.62%
Hydropower	10,019,308	13.31%
Geothermal	9,604,598	12.76%
Other RE (Wind, Solar and Biomass)	279,042	0.37%
TOTAL	75,265,841	100 %



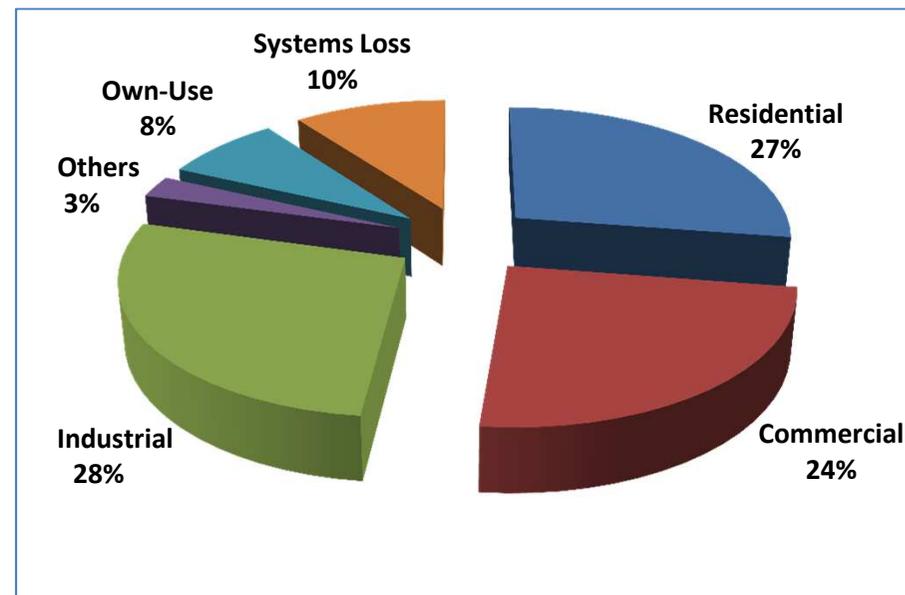
Renewable Energy Power Generation Mix

	2013	
	GWh	%
Hydropower	10,019.30	50.34%
Geothermal	9,604.60	48.26%
Wind	65.66	0.33%
Solar	1.41	0.01%
Biomass	211.97	1.07%
TOTAL	19,902.94	100%



Electricity Sales and Consumption by Sector

	2013
	GWh
Residential	20,613.72
Commercial	18,303.75
Industrial	20,676.80
Others	1,971.35
Total Sales	61,565.62
Own-Use	5,959.41
Systems Loss	7,740.83
TOTAL	75,265.86



Renewable Energy Projects after Enactment of the RE Law (as of January 2015)

RESOURCES	AWARDED PROJECTS		POTENTIAL CAPACITY MW		INSTALLED CAPACITY MW	
	Grid-Use	Own-Use	Grid-Use	Own-Use	Grid-Use	Own-Use
Hydro Power	391	1	6,288.68	1.50	122.73	-
Ocean Energy	6	-	31.00	-	-	-
Geothermal	41	-	750.00	-	1,896.19	-
Wind	50	1	1,222.00	0.006	336.90	-
Solar	60	9	1,298.53	3.338	22.00	-
Biomass	42	21	352.95	5.80	163.80	142.93
Sub-Total	590	32	9,943.16	10.644	2,541.62	142.93
TOTAL	622		9,953.80		2,684.55	



Renewable Energy Potential Identification

RE Resource Assessment

Hydropower Potential Sites- JICA resource inventory result

- 1,413 Sites with potential capacity of 20,599.05 MW
 - Out of the 1,413 Sites, 188 sites is located in Mindanao with a potential capacity of 912.13 MW.

USAID Biomass Resource Inventory Result

- 4,446.54 Mwe Potential Power Generation Capacity net of Competing uses (MW)
- 17.26 MtCO₂ Potential GHG emission reduction (tCO₂)

On-going detailed resource assessment of selected Low Enthalpy Geothermal Areas

Detailed Wind Resource Assessment Project launched last February 20, 2015



Renewable Energy Targets, 2011-2030

Sector	Short Term	Medium Term	Long Term	Total
	2011-2015	2016-2020	2021-2030	
Geothermal	220 MW	1,100 MW	175 MW	1,495 MW
Hydropower	341.3 MW	3,161 MW	1,891.8 MW	5,394.1 MW
Biomass	276.7 MW	0	0	276.7 MW
Biofuels	<ul style="list-style-type: none"> •DC on E10 in 2011 •Mandatory E10 to all Gasoline by 2012 •PNS for B5 by 2014 •DC on B5 by 2015 •Mandatory B5 to all Diesel by 2015 	<ul style="list-style-type: none"> •PNS for B20 & E85 by 2020 •DC on B10 and E20 by 2020 	<ul style="list-style-type: none"> •DC on B20 and E85 by 2025 	
Wind	200 MW	700 MW	1,445 MW	2,345 MW
Solar	50 MW	100 MW	200 MW	350 MW
Ocean Power	0	35.5	35	70.5
Total	1,088 MW	5,096.5 MW	3,746.80 MW	9,931.3 MW



Challenges

- Awareness and social acceptance
- Streamlining of Administrative Process
- Full implementation of Policy Mechanisms under the RE Law



The Way Forward

- **Full implementation of the Renewable Energy Act**
 - *Finalization / Approval of Guidelines on other RE Policy Mechanisms (Renewable Portfolio Standard, RE Trust Fund, Green Energy Option, etc.)*
 - *Establish Energy Investment Coordinating Center and Linkages with other Government Regulatory Agencies*
 - *Launch of 2nd (OCSP) Contracting Round for 17 sites in Hydro and 4 sites in Geothermal*
 - *Resource Inventory and Establishment of RE Database*



Thank you ! ! !



Department of Energy

