

Geothermal Energy Development in the Philippines

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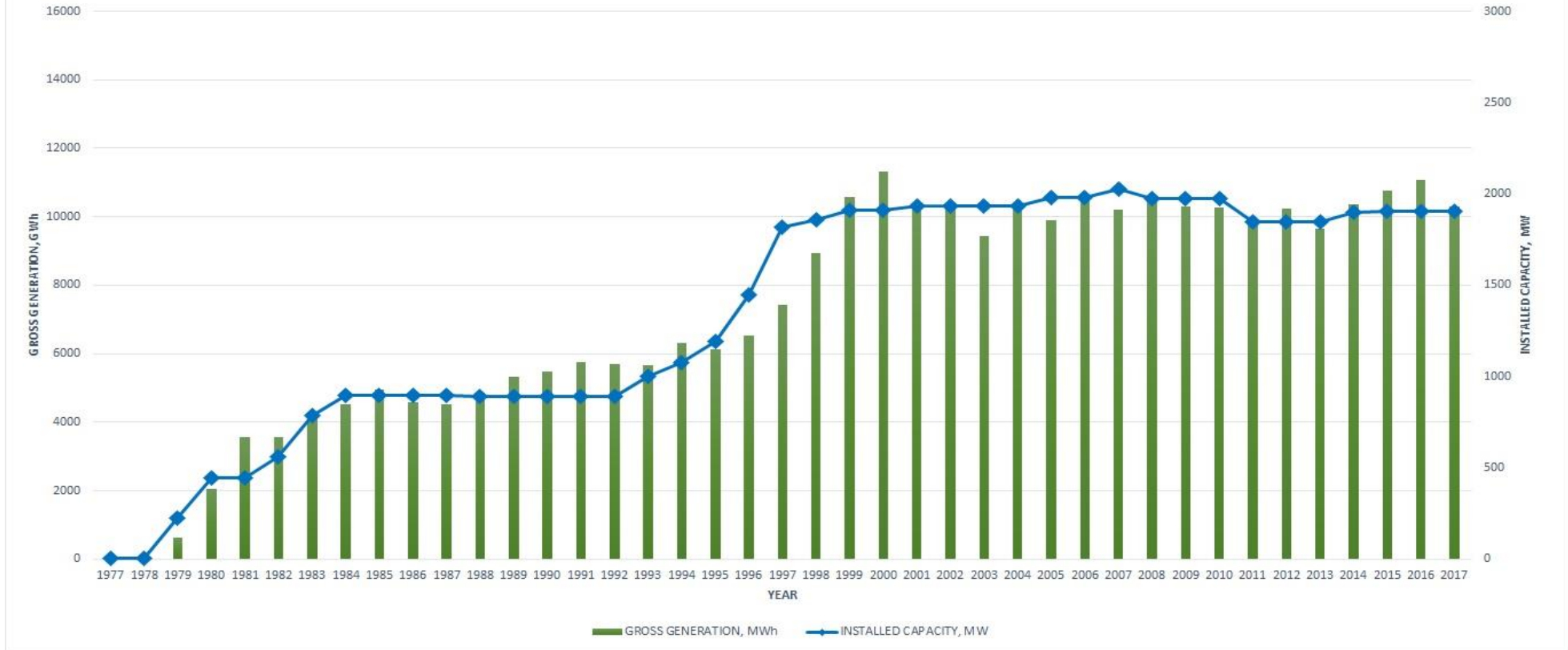
Renewable Energy Management Bureau

Department of Energy



Current Performance / Status

GEOTHERMAL INSTALLED CAPACITY AND GENERATION HISTORICAL TREND
(FROM 1977 TO 2017)



Installed Capacity as of June 2018 – 1,918 MWe



Current Performance / Status

- ❑ Geothermal Capacity additions since RE Law enactment

*Expansion / rehabilitation projects:

30 MW Nasulo Geothermal Power Plant – July 21, 2014

10 MW Bacman 1 rehabilitation project – Feb. 25, 2015

12 MW Maibarara expansion project – April 30, 2018

**actual dates of operation*



Current Performance / Status

□ Summary of Geothermal Service Contracts, June 2018

NATURE OF CONTRACT	Number of Contracts	INSTALLED CAPACITY (MWe)	POTENTIAL CAPACITY, (MWe)
Development / Commercial Stage (Integrated Operations)	7	780.66	50
Development / Commercial Stage (Power Plant Operations)	5	1137.53	0
Development / Commercial Stage (Steamfield Operations)	2	0	0
Pre-Development Stage <ul style="list-style-type: none"> • 15 active GSCs • 11 GSCs recommended for termination 	26	0	505
Exploration Stage (PD 1442)	1	0	20
TOTAL	41	1918.19	575



Current Performance / Status

- Assessment of the current status versus the NREP 2011 targets

Period	Projects	Projected (MW)	Actual (MW)
2011 - 2015	New Areas	70	20
	Expansion areas	150	40
2015 – 2020	New Areas	1,100	-
	Expansion areas	80	12



Current Performance / Status

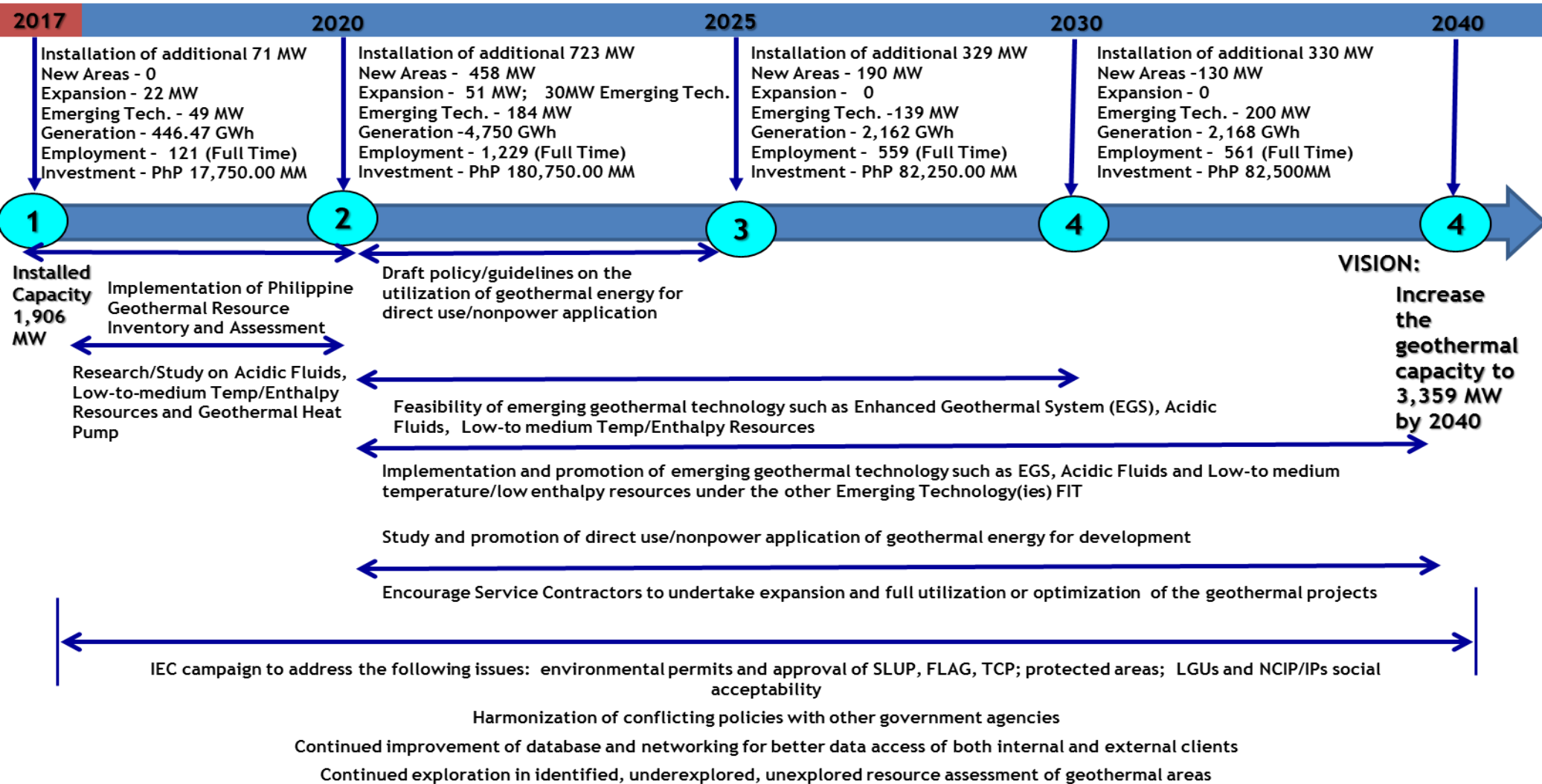
❑ Issues and Challenges

- High development risks due to drilling and unconventional reservoir properties
- Environmental concerns due to overlap with protected areas
- Socio-cultural concerns due to overlap with ancestral domains and limited public awareness
- RE Developers failure to declare commerciality within the set 5 year Work Program due to permitting issues.



ROADMAP for the EXPLORATION, DEVELOPMENT and UTILIZATION of GEOTHERMAL RESOURCES IN THE PHILIPPINES (2017-2040)

Establishment of RPS



Geothermal Energy Development Roadmap 2017-2040

❑ Target Additional Capacity Installations

Period	Projects	Projected (MW)	Generation (GWh)
2017 – 2020	New Areas	-	446.67
	Expansion areas	22	
	Emerging Tech	49	
2020 – 2025	New Areas	458	4,750.00
	Expansion areas	81	
	Emerging Tech	184	
2025 – 2030	New Areas	190	2,162.00
	Expansion areas	-	
	Emerging Tech	139	
2030 - 2040	New Areas	130	2,168.00
	Expansion areas	-	
	Emerging Tech	200	
	TOTAL	1,453	



Geothermal Energy Development Roadmap 2017-2040

❑ List of Committed geothermal projects

Name	Potential Capacity in MW	Commissioning Year	Location
Maibarara Expansion	12	April 30, 2018	Batangas
Bacman 3 (Tanawon)	31	2022	Sorsogon
Biliran 1	49	5 MW – Sept 30, 2018	Biliran Province
		5 MW – March 31, 2019	
		7 MW – July 31, 2021	
		11 MW – November 30, 2022	
		14 MW – January 31, 2023	
		7 MW – July 31, 2023	
Tongonan 1 Geothermal Power plant Rehabilitation	10	2017	Leyte
TOTAL	102		



Geothermal Energy Development Roadmap 2017-2040

❑ Policy Recommendations: Short Term (2017-2020)

- Implementation of the Locally-funded project - Philippine Geothermal Resource Inventory and Assessment (2017-2021)
- Proposed DC for a standard reporting and evaluation of submitted geoscientific reports
- Proposed improvement of geothermal resource database accessible via online complete with relevant information on a geothermal area.
- Literature review on acidic and low temperature geothermal resources and geothermal heat pumps as emerging technology.
- Proposal to amend the pre-development stage term from 5 years to 7 years under Section 15 of the DC2009-07-0011.
- Reconsideration on the requirements Area Clearance for Multi-use technology



Geothermal Energy Development Roadmap 2017-2040

- ❑ Plans and Programs: Medium – Long Term (2020-2040)
 - Draft policy / guidelines on the utilization of geothermal energy for direct-use / non-power
 - Feasibility study on emerging geothermal technologies
 - Promotion of emerging geothermal technologies
 - Study / promotion of direct-use / emerging geothermal technologies
 - Encourage expansion and optimization of existing geothermal power projects
 - Harmonization of policies with other government agencies
 - Continued exploration of identified, unexplored, underexplored geothermal areas
 - IEC campaigns for better public awareness of geothermal energy



THANK YOU!

