AboitizPower

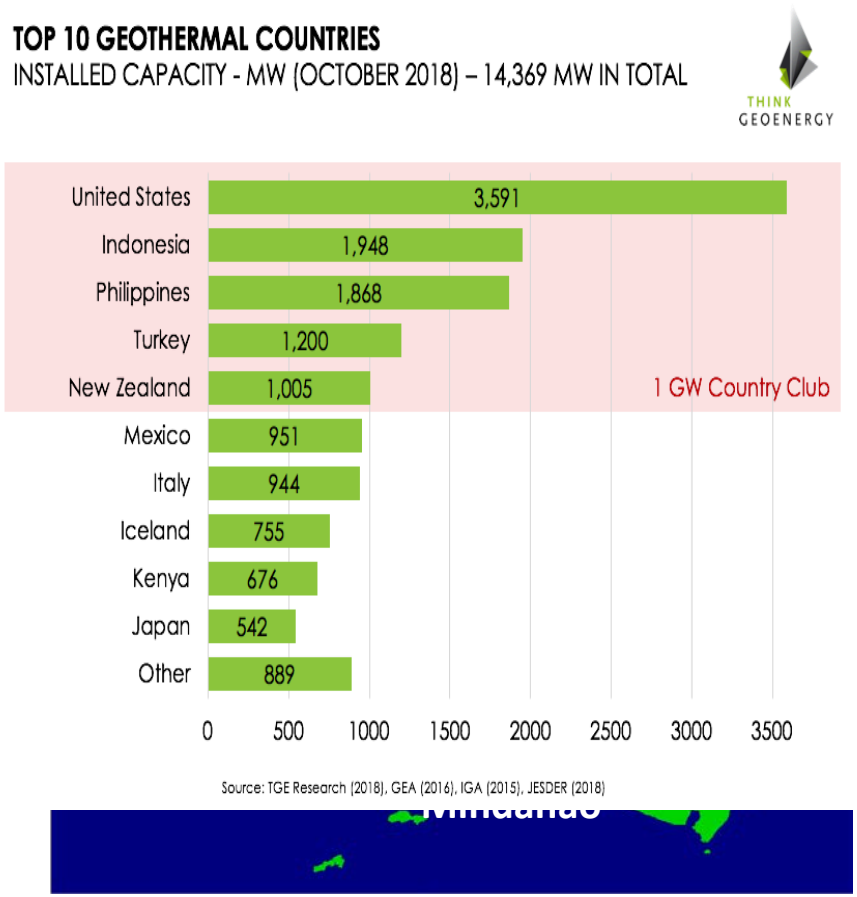
GEOTHERMAL DEVELOPMENT IN THE PHILIPPINES

AP Renewables Inc.'s Perspective

2018 Geothermal Resources Council Annual Meeting

ABOUT THE PHILIPPINES

- **1,868 MW** of Installed Geothermal Capacity
- Represents **18%** of Country's Energy Supply
- **7 Producing Geothermal Fields:** Luzon (4), Visayas (2) and Mindanao (1)
- **3rd Position** in World Geothermal Installed Capacity



ABOUT AP RENEWABLES INC.

Acquired the **Tiwi and MakBan** Facilities in 2009

- Rehabilitation of 7 plants (14 units) in 2013
- Rehabilitation of 1 binary (2 units) in 2016
- Agreement reached with PSPC in 2018 for 12-Well Drilling Program
- Exploration on Negron-Cuadrado and Sibulan-Kapatagan Service Contract Areas

PHILIPPINE ENERGY MARKET ENVIRONMENT

- Challenges for Any Technology:
  Permitting, Opposition, Regulations
- Low margin environment
- Energy demand met by current pipeline of new facilities
- RE growth will be dependent on RPS implementation and other incentives

OPPORTUNITIES FOR GROWTH

- Present Incentives for RE Developers
- Renewable Portfolio Standard expected in 2019
- Clear need for mechanism to de-risk exploration and drilling
- Smaller Projects
- New Technologies

APRI'S FOCUS

Efficiency and Optimization:

- Managing steam rate and efficiency through steam path improvement
- Hybrid Gas Removal Systems
- Waste Heat Recovery via Binary Bottoming Cycles
- Steam Field Optimization (Drilling, De-bottlenecking

Efficiency and Op

IN SUMMARY

Developing geothermal energy in the Philippines continues to remain as a challenge due to changing REGULATIONS, few incentives for GEOTHERMAL, and competition from VRE TECHNOLOGIES.

However, ABOITIZ POWER continues to strive in this challenging environment through INNOVATION, OPTIMIZATION and EFFICIENCY.

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