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

![TOP 10 GEOThermal COUNTRIES
INSTALLED CAPACITY - MW (OCTOBER 2018) – 14,369 MW IN TOTAL](chart)

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 BPC 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
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)
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.