

# **Hawaiian Electric and Hawaii's Energy Future**

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# **Hawaiian Electric Company Maui Electric Company Hawaii Electric Light Company**

- 93% of Hawaii's customers
- Each island is an independent grid
- Vertically integrated, fully regulated, investor-owned
- 119 years in existence



# What Led to the “Clean Energy” Commitment?

- \$147 barrel of oil
- 90% reliance on oil in economy
- 90% import reality
- Economic opportunity
- Renewable energy is the only Hawaii-based option



# What is the Clean Energy Plan?

- Solar + wind + geothermal + biomass + (small) hydro
- Biofuels in place of petroleum
- Ocean energy as available
- Proceed on all forms of renewable energy
- Maintain multiple paths to achieve goals
- Increase generation and delivery efficiencies



# What About the Grid?

- Aggressive asset management program
- Smart grid activities on all islands
- The Japan/U.S. (Hawaii/Okinawa) project



# The Smart Grid Issues List

- Customer engagement in the uses and benefits of smart meters
- Coordinated and localized monitoring and control
- EV charge management
- Power output variability
- Over/under-voltage and frequency ride-through
- Anti-islanding of distributed generation
- Cyber security



# Conclusion

- The pace of technological change is staggering
- We don't know enough to make decisions that foreclose options
- The answer is most likely to be a combination of lots of answers

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**Mahalo**