

# *Kaheawa Wind Power*

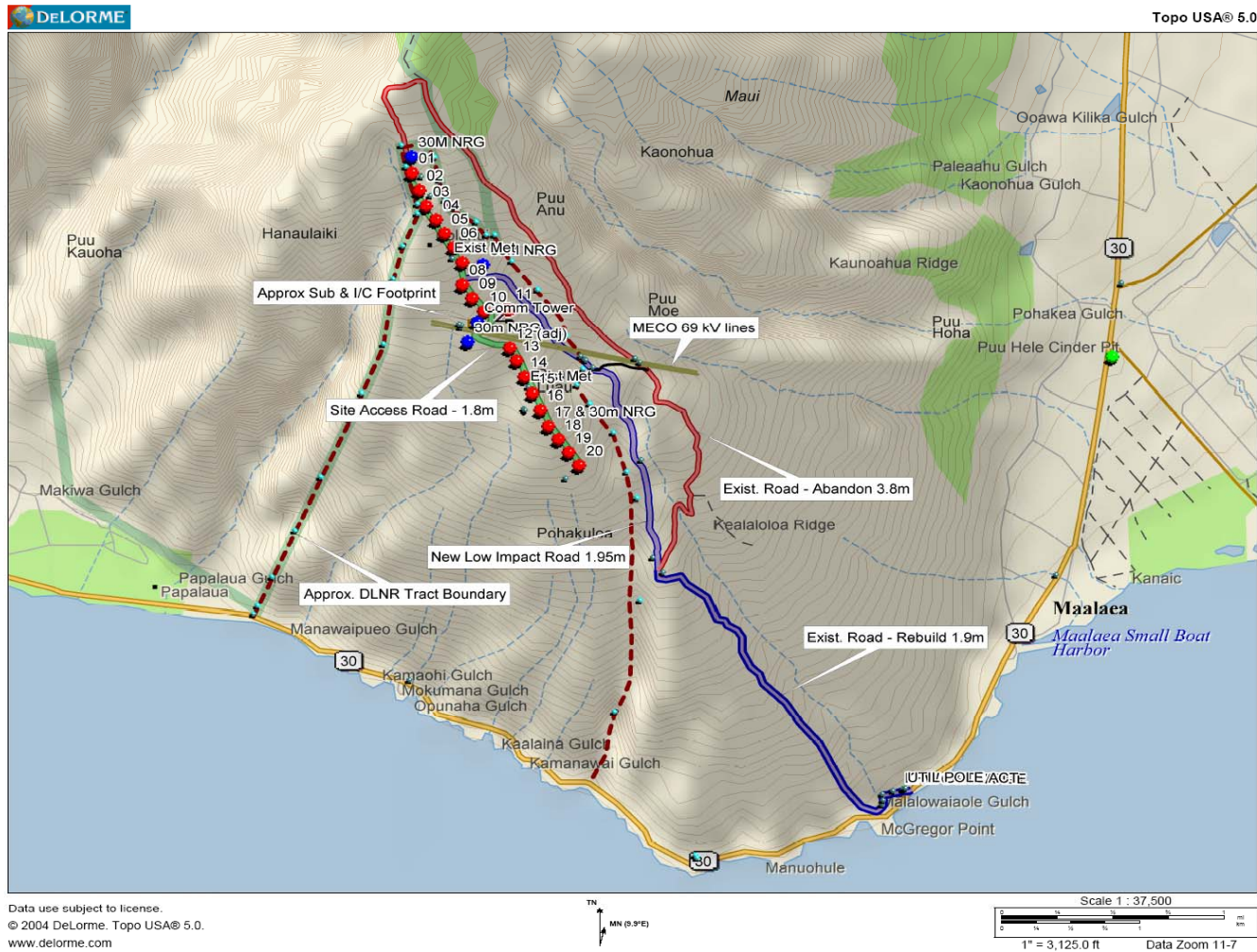
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firstwind<sup>SM</sup> 

- The “Kaheawa Pastures” project is a commercial scale renewable energy project. It consisted of the design, engineering, construction and operations of a 30 MW renewable wind energy generation facility.
- The project includes 20 wind turbines arranged in a single row, an operations & maintenance building, communications system, substation, and an interconnection to MECO’s transmission lines.
- The project includes the construction of a 5 mile access road over difficult terrain.
- The turbines are located between 1700 – 3200 feet above sea level, well away from the central population areas.
- The project has an EIS and a Habitat Conservation Plan designed to minimize the incidental injury or death of four federally listed species that may occur when these species fly in the vicinity of the project.
- The site is located on State Conservation Lands.

# Site Layout & Access



## Kaheawa Wind Power History

- The project was first proposed in 1996.
- An Environmental Impact Statement was completed and approved in 1999.
- A Conservation District Use Application was approved by the Board of Land and Natural Resources in January 2003.
- Kaheawa Wind Power, LLC purchased the rights to the project in June of 2004 and began generating electricity in June of 2006.
- In 2007 Kaheawa generated approximately 125,000MWh of electricity which is the equivalent of about 9% of Maui's consumption.
- Under the Power Purchase Agreement, wind energy produced by Kaheawa is purchased by MECO under a hybrid pricing structure. A portion of the output is fixed cost and a portion of the output is priced at avoided cost.
- The fixed price component of energy sales provide a large discount to today's avoided costs.

**The purpose of the Habitat Conservation Plan is to:**

- Minimize the incidental injury or death of four federally listed species that may occur when these species fly in the vicinity of the project



Nene, Hawaiian Goose

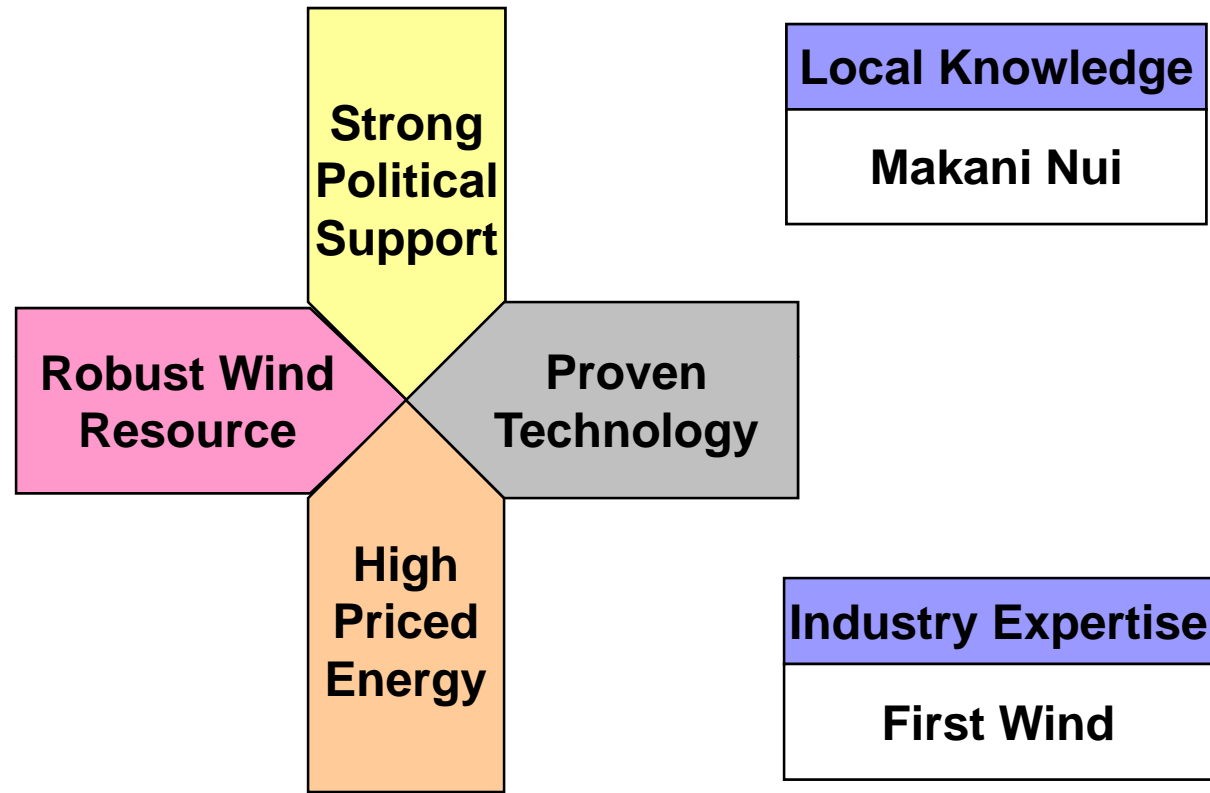
- Kaheawa began implementation in August of 2005.
- The cost of implementing the plan is estimated to be approximately \$1 million over the life of the plan.
- Kaheawa employs two full time biologists and two part time technicians on site to assist in compliance with the HCP.



Newell's Shearwater

# A Convergence of Events

**Hard Assets**



**Maui's First Large Scale Wind Power Project**

## Permitting – Lessons Learned

- At one time, we were coordinating with more than 20 government agencies who had some type of jurisdiction over our project.
- A streamlined, coordinated permitting process is ideal for renewable energy projects in Hawaii.
  - Coordinated vs. Consolidated
  - Permitting jurisdiction must remain with the agencies with the experience and expertise to evaluate the project – staffing and funding **MUST** be adequate to handle the wave of renewable energy projects that will be a part of the Hawaii Clean Energy Initiative
  - Public participation and transparency in the process is important

- Communication is key
  - Internally
    - Within levels of government
    - Within government agencies
  - Externally
    - Between government agencies and the developer
    - Between government agencies, developer, and the public
- We all need to be on the same page in terms of believing that additional clean energy is important to Hawaii's sustainability

## *Conclusions & Opportunities*

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## Hawaii's Renewable Energy Future

- RPS mandates 20% renewable generation by 2020
- HCEI goal is 70% clean energy by 2030
- HCEI goal is feasible
  - Hawaii has robust renewable resources that can be harnessed – interconnection of island grids make sense
  - Businesses partnering with each other and policymakers to make HCEI a reality
  - Modification of regulatory framework will assist HEI in making necessary paradigm shift to incorporate the amount of renewable energy to reach 70% goal
  - Win-Win for all

- There needs to be an incentive for the utility to integrate renewable energy projects into isolated electric grids
- Different dynamic for KIUC as it is owned by its ratepayers – already have that incentive on Kauai
- For the rest of the state, however, need to consider how to interconnect more renewable energy into the electric grids
- Substantial Changes are going to be required for HCEI to be a reality
  - Interconnection between island grids
  - Ancillary services such as Battery Energy Storage Systems, forecasting, and firming technologies will be important
- Public-private partnerships will be important

**There are still significant hurdles to overcome for renewable energy projects in Hawaii**

- Siting: anti development, land use issues
- Economically, Hawaii projects are too large for a small company and too small for a large company.
- Because of our island grid system, stringent interconnect requirements which results in high costs and longer lead times.
- Extensive government agency involvement, which increases costs and lead times.
- Difficult and costly logistics for transportation, challenging and expensive access to most sites.
- In short, the issue of project size, location, expensive development and construction create barriers that make Hawaii projects less desirable when compared to others.

## Conclusions

### Catalysts for change/opportunity are present

- Broad awareness and momentum are with us now
- Energy (generation and transportation) prices are a strong motivator. Community support for Renewable Energy is strong
- Supply and demand issues are being openly discussed
- International implications of our dependence on foreign oil is taking hold, especially vulnerable is Hawaii
- Strong recognition of the problem and leadership from state government and other public policy makers and business leaders.
- There is a general understanding within our communities that change is needed, its going to happen, so how do we manage it?
- The State of Hawaii has excellent *dynamics* for small to mid-sized commercial wind farms, as well as other types of renewable energy



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