



# Legislative Briefing on Energy Storage Committee on Energy and Environment

December 4, 2012



# About Kahuku Wind Power

- Kahuku Wind Power
  - Achieved commercial operation on March 23, 2011
  - 30 MW of wind turbines supplied by Clipper Wind Power
  - A 15 MW / 10MWh Battery Energy Storage System (BESS) supplied by Xtreme Power (XP)
- Interconnected to HECO's 46 kV Waialua-Kahuku circuit
- Financed by the US Department of Energy
- The BESS was installed to help integrate the wind generation into the Hawaiian Electric system
  - To smooth the wind generation that fluctuates with gusts in the wind
  - To divert wind generation off the HECO grid when it might damage HECO equipment
- The BESS experienced two fires in spring 2011 which damaged several AC/DC inverters, but did not spread throughout the building
  - The subsequent investigation led to a redesign of portions of the inverters
  - All ten inverters were upgraded and the BESS had been operating normally since then

# BESS Fire

- Events
  - Fire Alarm sounded at 04:20 HST on August 1
  - First Wind Personnel on site at 04:45
  - Kahuku Fire Department on site at 05:00
  - Request made for HECO to assist. HECO arrived at 09:00
  - Fire declared out at 11:35 on August 2, jurisdiction transferred to HI Department of Health
- Environmental testing performed in coordination with HI Department of Health
  - Extensive sampling analysis conducted by ENPRO Environmental and LVI Environmental Services
  - Conducted pursuant to HI Department of Health protocols
  - Measured levels consistent with background
  - Measured lead levels much lower than standards established by USEPA and the State of Hawaii
- Community outreach
  - First Wind provides updates to the Kahuku Community Association, Ko'olauloa Neighborhood Board and other local organizations
  - Included a letter sent from First Wind CEO Paul Gaynor on August 9

# Fire Investigation

- Extent of damage left the BESS building structurally unsound
  - A building entry plan was required before personnel could begin inspecting the BESS
- Root Cause investigation in progress
  - Exponent, Inc. – Failure analysis and prevention
  - John A Kennedy & Associates – Fire and explosion investigation experts
  - Some materials and equipment have been secured and moved off-site for analysis
  - Additional materials have been tagged and are awaiting removal for analysis
- Site demolition is waiting until the investigators release the site

# Restoration of Kahuku Wind

- There was no damage to the wind turbines, the collector system or substation
- BESS was destroyed along with the First Wind and HECO substation control rooms
- Kahuku is fully insured
  - 12 months of Business Interruption insurance
  - Comprehensive Casualty and Liability Insurance
- Kahuku is not in default of the HECO PPA or project financing
  - Continuing to make principal and interest payments
  - Working collaboratively with HECO and US DOE on restoration efforts
- First Wind and HECO have established two teams to rebuild the substation control rooms and to study modifications to Kahuku to ensure performance specifications can be met
  - HECO has been very responsive
  - We have funded more than \$3,000,000 towards the restoration efforts
  - Targeting 3Q 2013 restoration
- First Wind and HECO are collaborating on whether or not to replace the BESS subject to lender approval from the US DOE.
  - During Kawaihoa negotiations, HECO decided to forego a BESS in favor of modifications to its operating practices and generating units

# Efforts at KWP II

- First Wind developed Kaheawa Wind Power II on Maui
  - Commercial Operation on July 2, 2012
  - 21 MW of wind turbines supplied by GE Wind
  - A 10 MW / 20 MWh BESS supplied by Xtreme Power
- Xtreme Power is performing walk-through monitoring with infrared sensors every 15 minutes 24x7
- Awaiting the results of the Root Cause investigation to identify recommended changes to the KWP II BESS

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