



Xtreme Power

ERCOT Board Strategic Planning Event

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Xtreme Power Highlights

- **Pioneer in Large Scale Power Systems**
 - Proprietary technology integrating energy storage, power electronics and controls
 - Capable of utility scale load leveling
- **Overview**
 - Founded November 2004
 - Headquarters in Austin, TX
 - Venture Backed with experienced management
 - TX Governor's ETF Fund Recipient \$2 million
 - 10+ years of R&D on technology
- **Milestones**
 - Operating Unit 3rd year at NSF South Pole
 - Ongoing Wind Farm Projects
 - Ongoing Utility Scale Projects
 - Large Scale Manufacturing capability

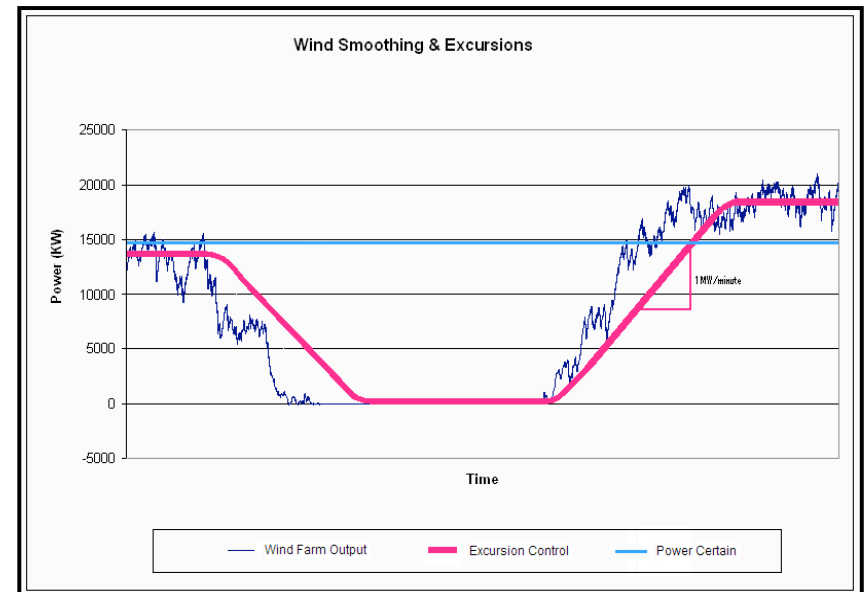
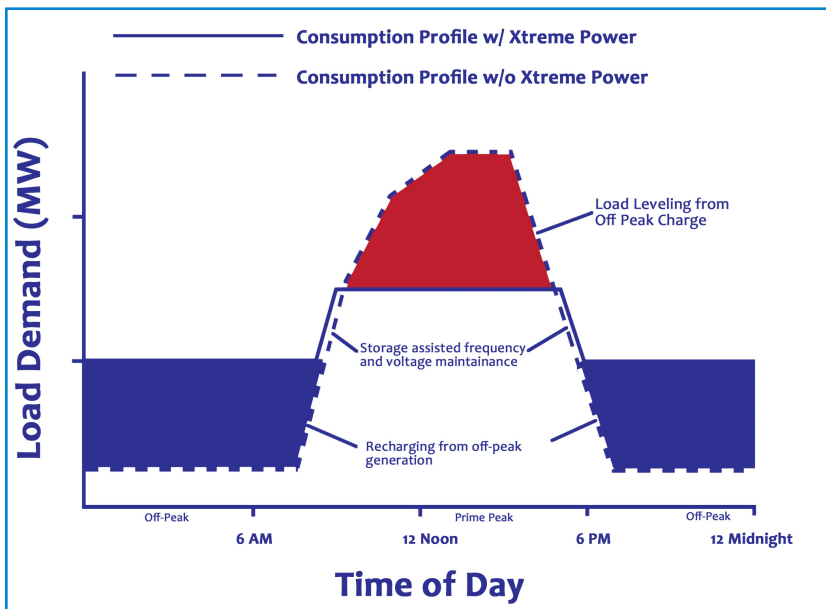


Xtreme Power

- **Replace Peaking Power Plant**
- **Renewable Enabler**
- **Key Feature Smart Grid**
- **Precision Ancillary Services**
- **Large Scale Load Leveling**

What We Do

We build large scale power systems, to “load level” megawatts of power and Convert Variable Renewable Power to Firm Dispatchable Power



Proprietary Technology

■ Energy Storage

- ❑ PowerCell Technology
- ❑ Massive Parallel & Serial Matrix



■ Controls

- ❑ Hardware/Software
- ❑ Three-Tiered Safety Level

■ Power Electronics

- ❑ High Power, High Efficiency
- ❑ One Cycle Control

■ Complex System Integration

- ❑ Optimized for System Performance
- ❑ Designed for Long Life



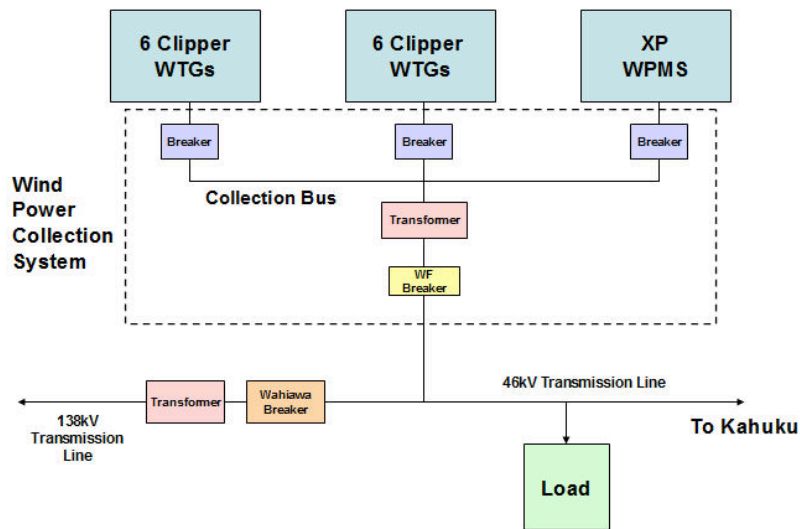
Hawaii Project

- 30 MW Wind Farm
- 15MW/10MWH XP System
- Wind Smoothing
- Wind Excursions
 - Ramp Up & Ramp Down Control to 1MW per min
- Master Controller for Wind Farm Site
- Voltage Regulation & VAR Support
- “Islanding” Protection
- Project Cost = 10% of total Wind Farm Budget

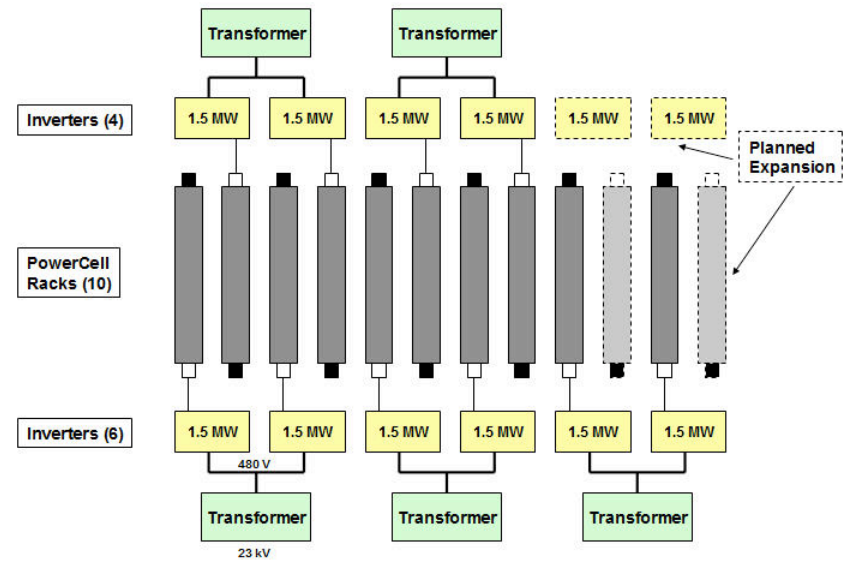


Hawaii One-Line & Layout

Kahuku Wind Farm Simple One-Line

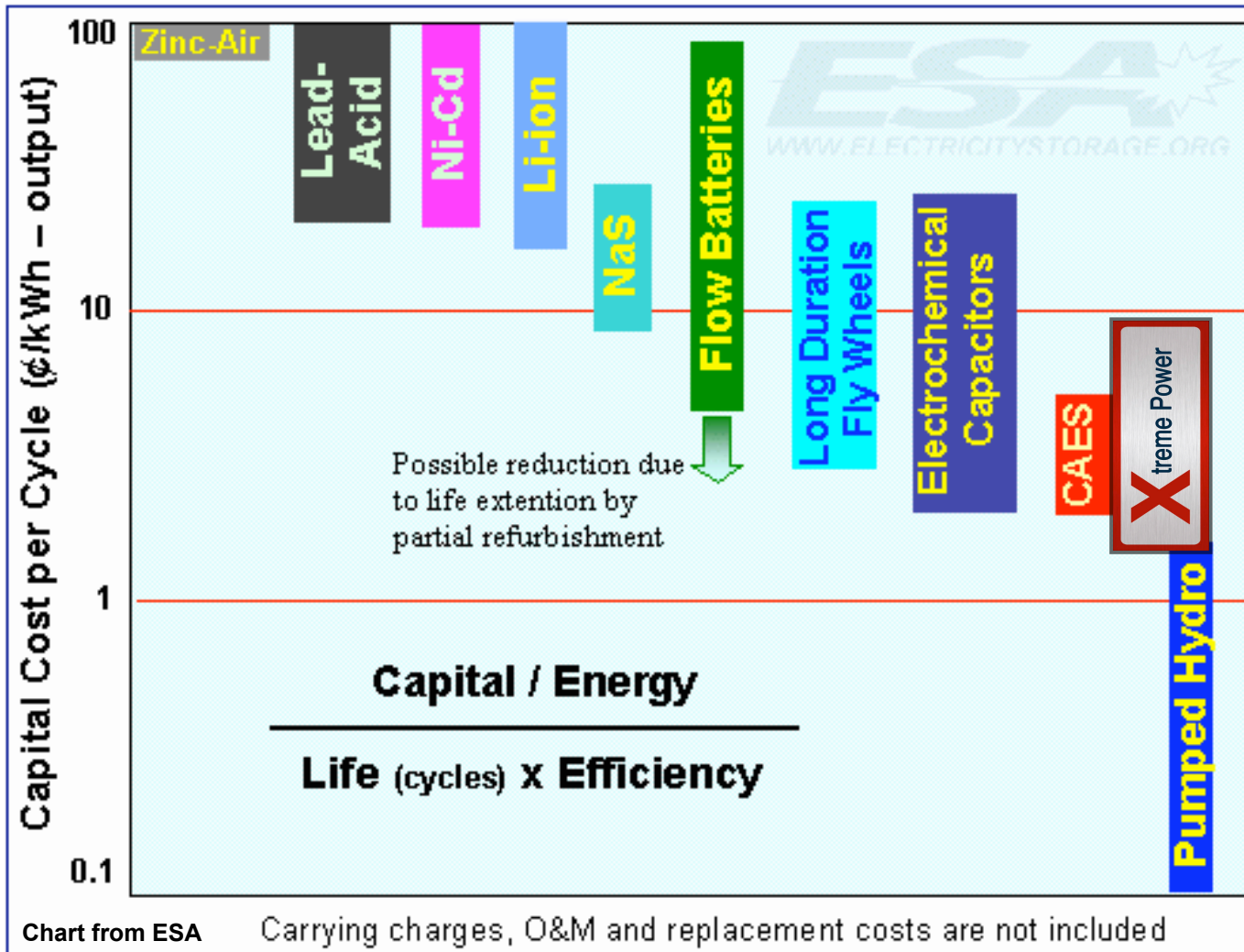


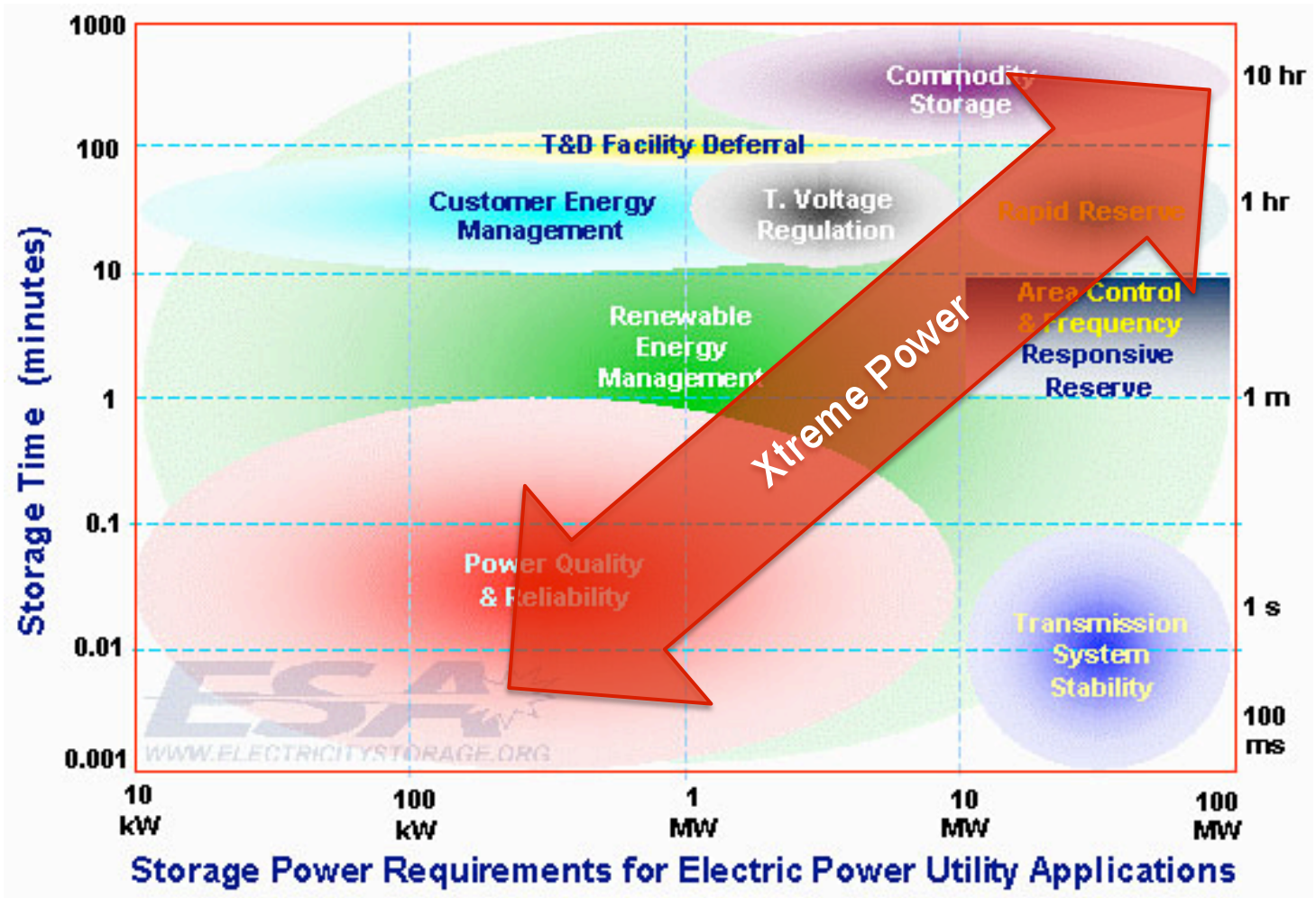
Kahuku XP WPMS



Large Wind Example

- 500MW Wind Farm West Texas
- Major Curtailment Issues
- XP System size:
 - 100MW with 400MWH
- Solution:
 - Capture Curtailed Wind
 - Off Peak Load Shifting
 - Grid Support
 - Precision Voltage Regulation
 - VAR Support
- Project Cost = 15% of total Wind Farm Budget





Data from Sandia Report 2002-1314

Chart from ESA

Multiple Opportunities across the GRID

