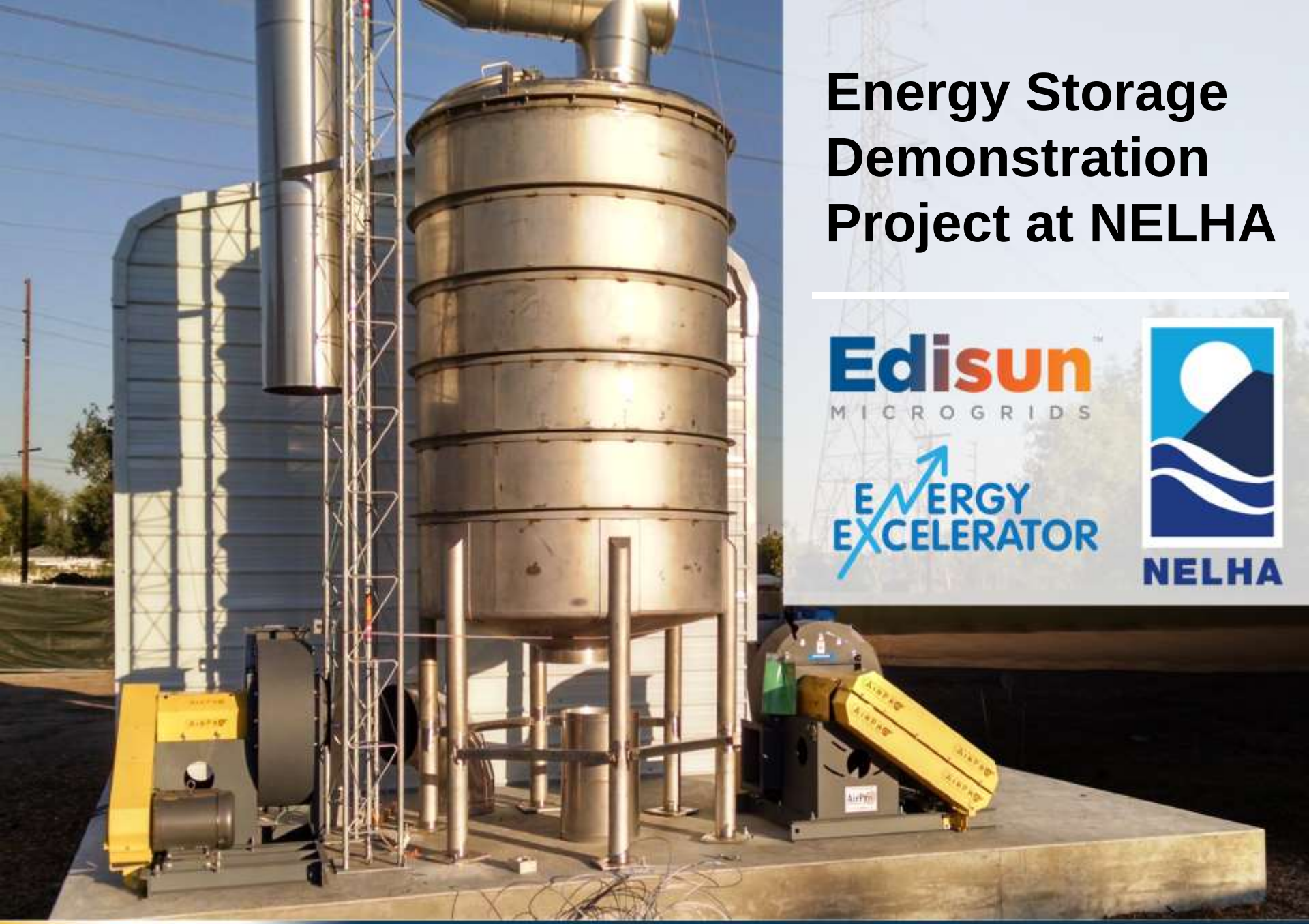


Energy Storage Demonstration Project at NELHA

Edisun MICROGRIDS

ENERGY EXCELERATOR

NELHA

About Edisun Microgrids

- **Baseload Solar**
  Dispatchable renewable energy -day AND night operation

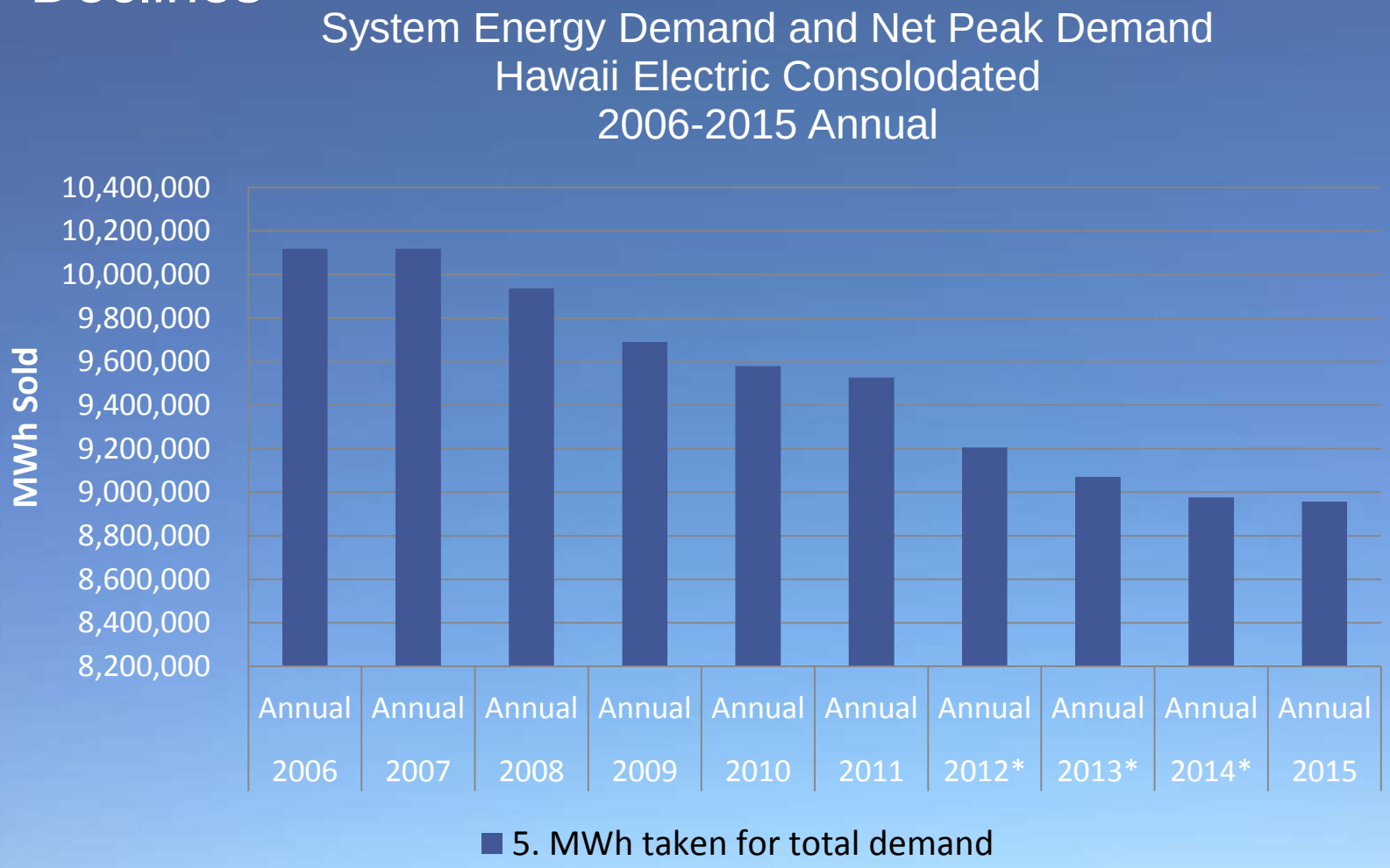
- **PV Booster**
  Dramatically improves rooftop solar economics through dual-axis tracking

- **EnergyShift**
  Extremely low-cost, bulk energy storage technology suitable for grid

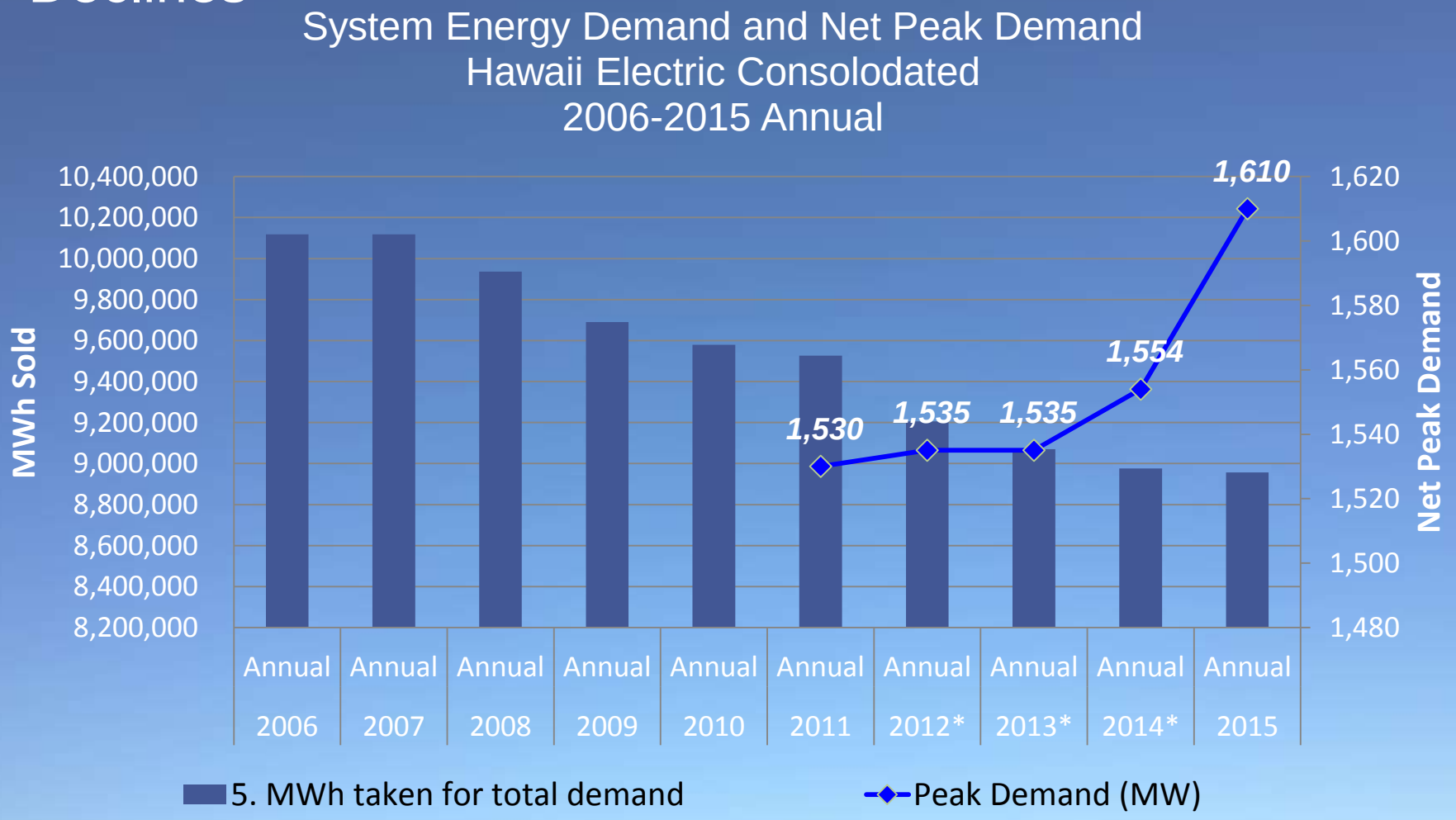
Demand Side Variability Increasing

–

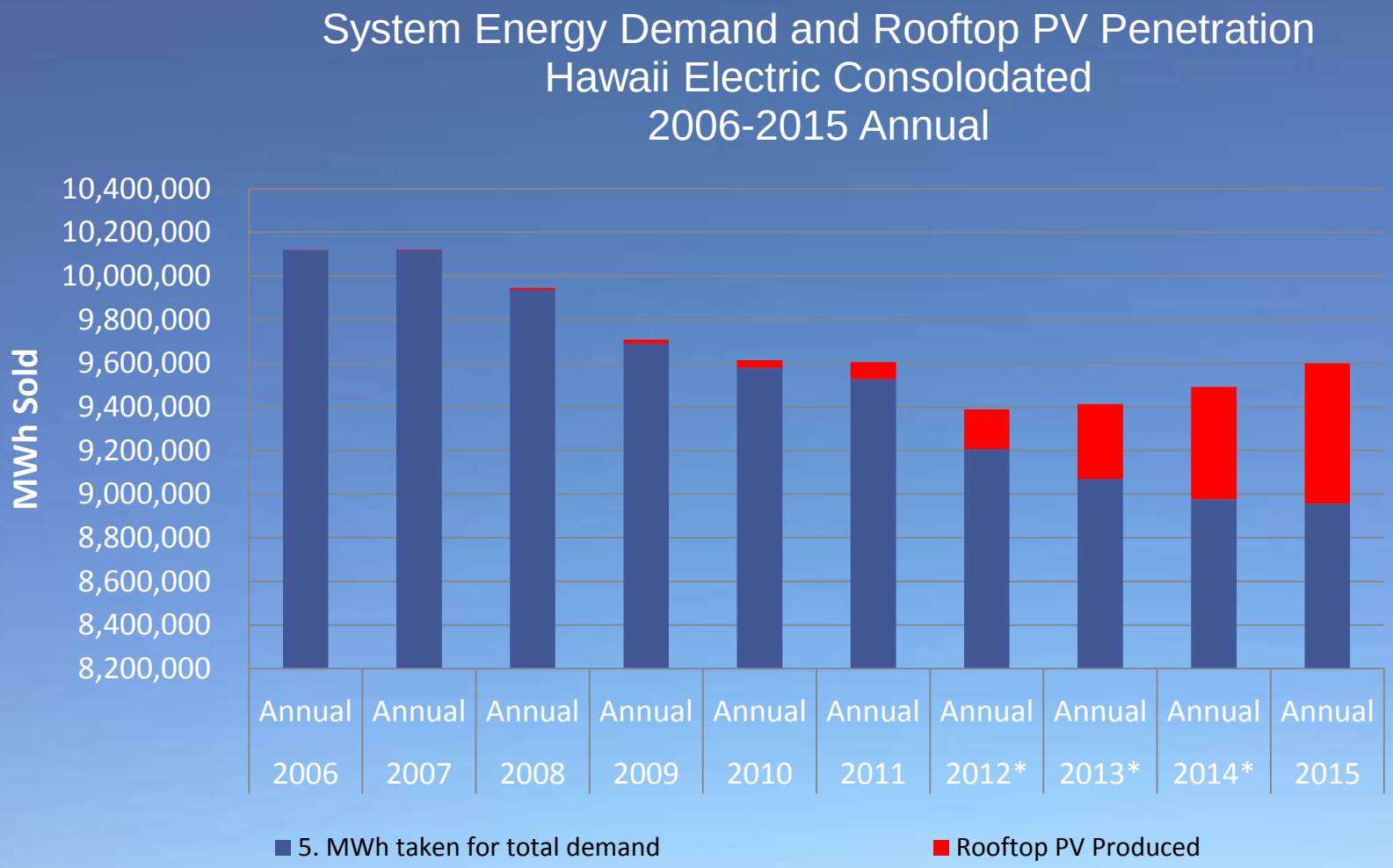
Peak Demand Increasing while Average Demand Declines



Peak Demand Increasing while Average Demand Declines

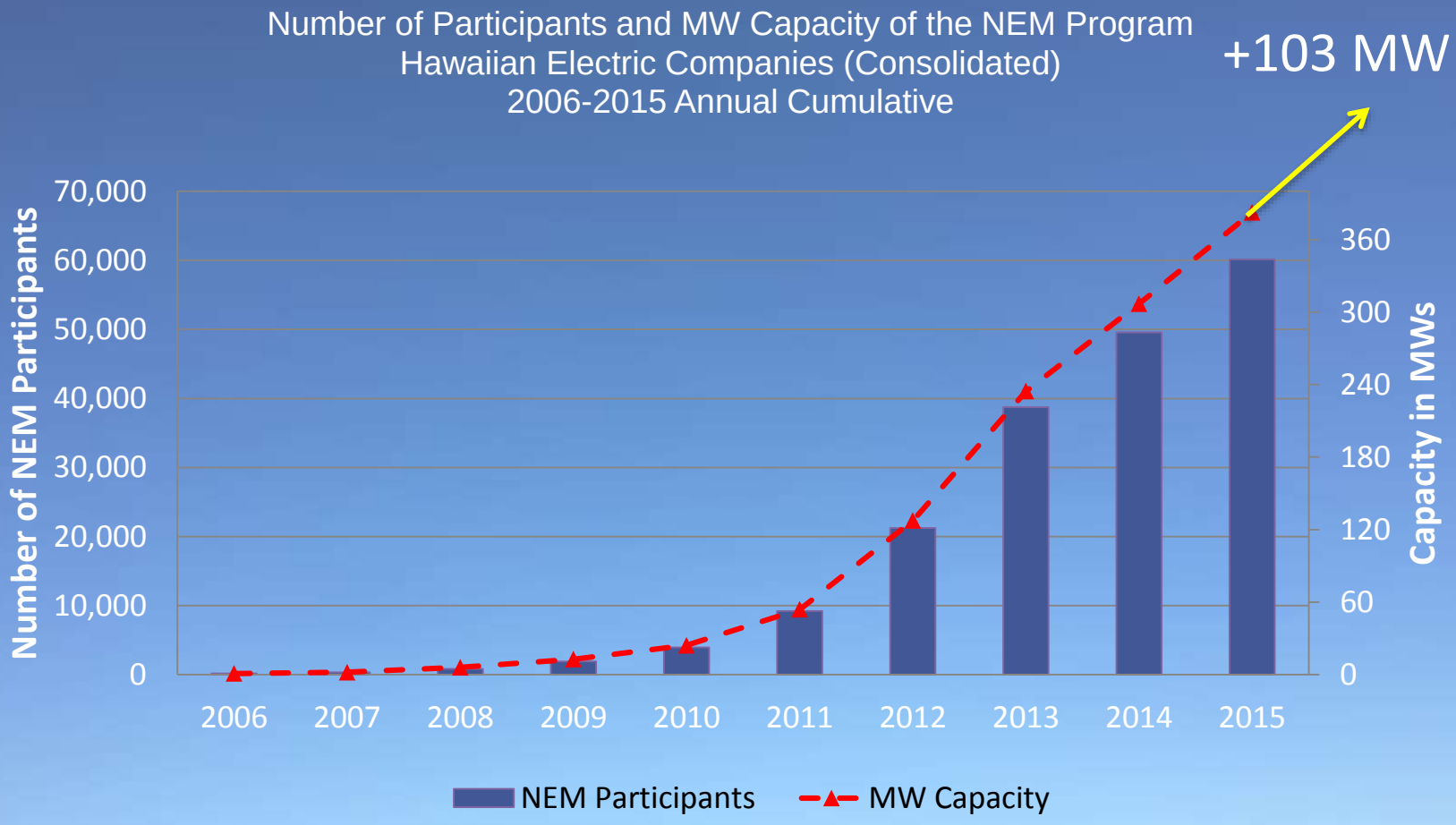


Demand Side Variability - Increasing



Demand Side Variability

Plus an additional 103MW approved but not installed



Supply Side Variability – Increasing

Supply Side Variability – Increasing

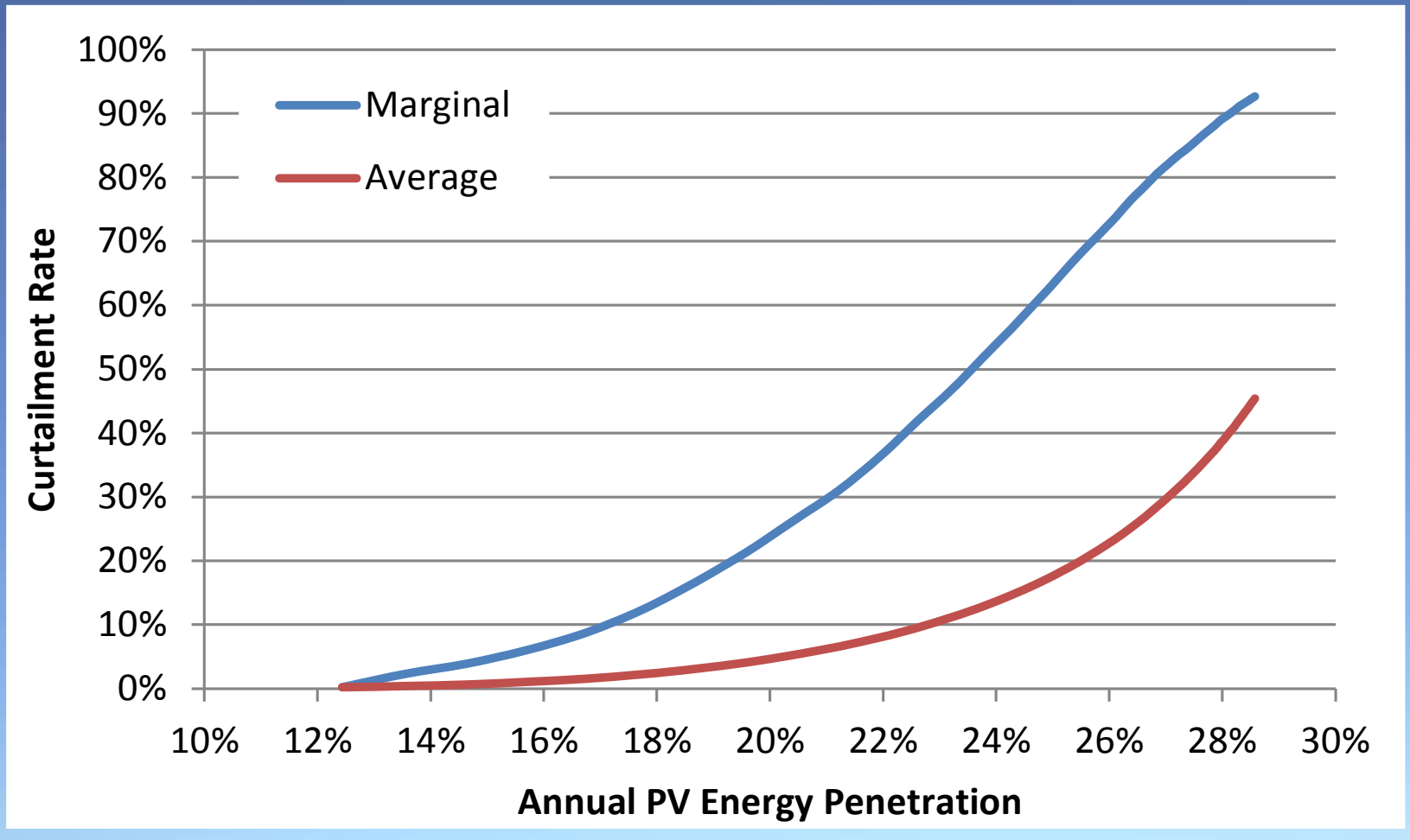
RPS Requirements

10% of its net electricity sales by December 31, 2010;
15% … by 2015;
30% … by 2020;
40% … by 2030;
70% … by 2040;
100% of its net electricity sales by December 31, 2045

Actual 2015 = 23.2%

Supply Side Variability - Increasing

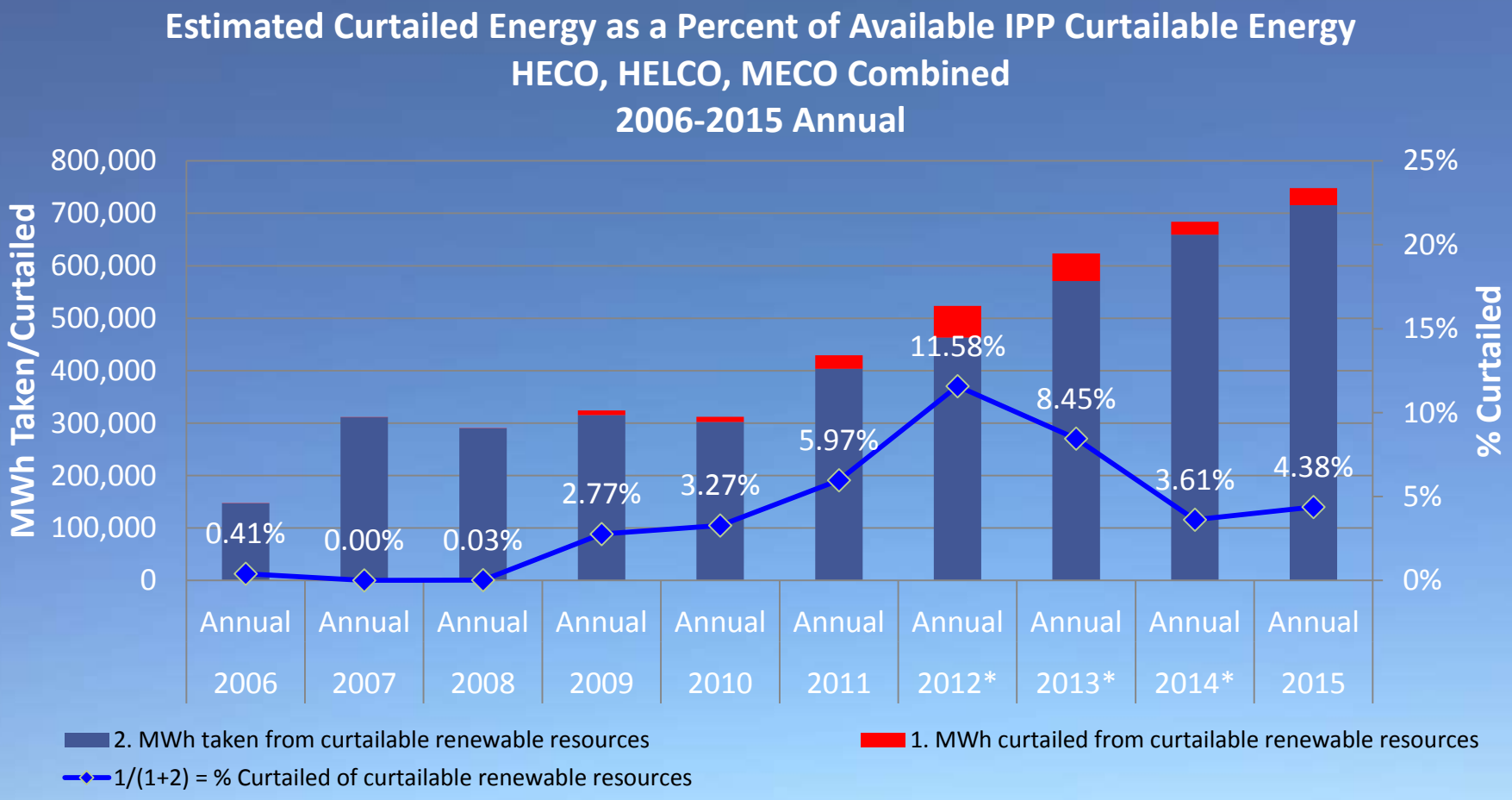
NREL – “Energy Storage Requirements for Achieving 50% Solar PV Energy Penetration in California”; Figure 4, p11.



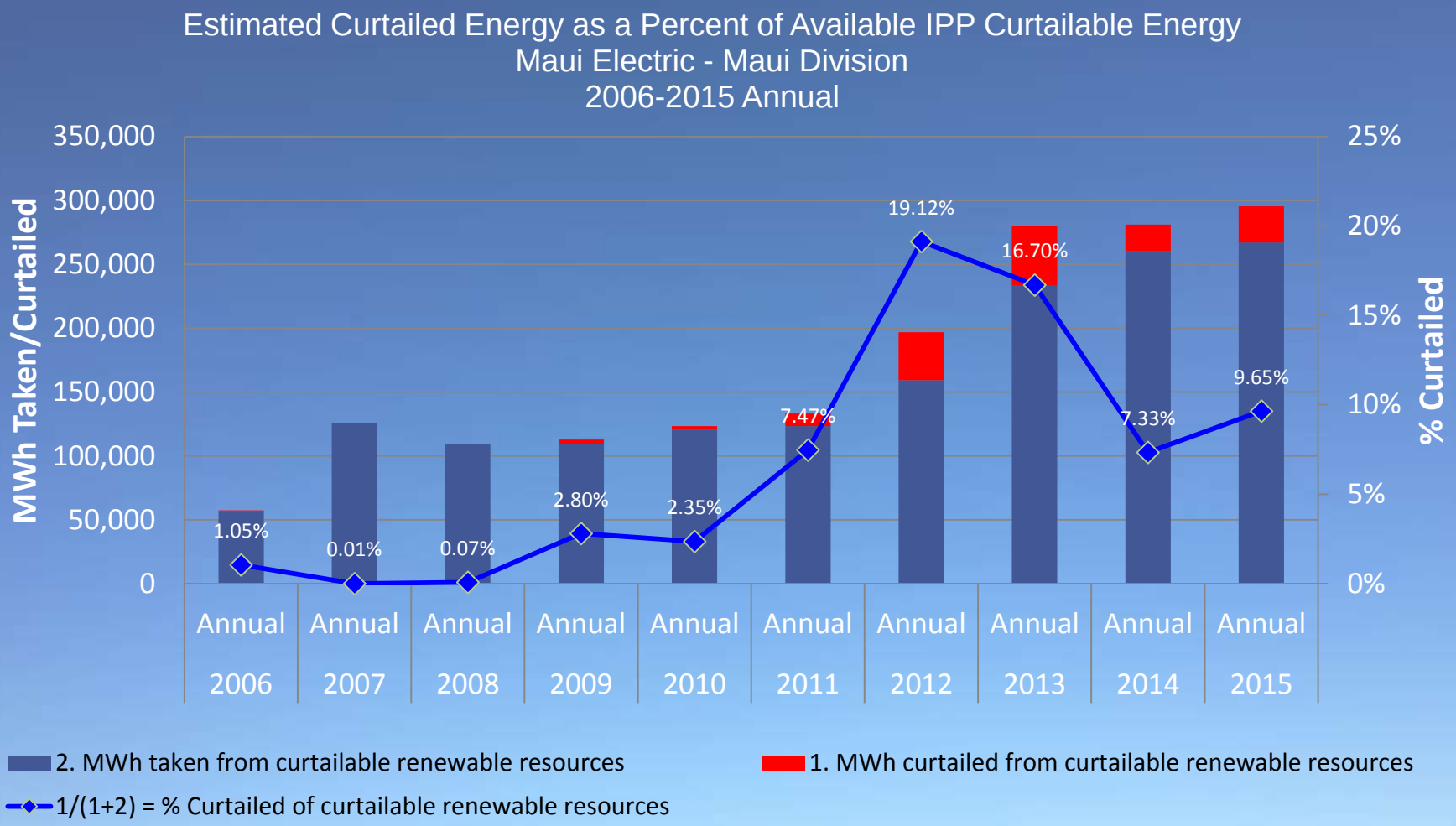
The result?

- Increased curtailment
- Need for flexible generation
- Need for storage

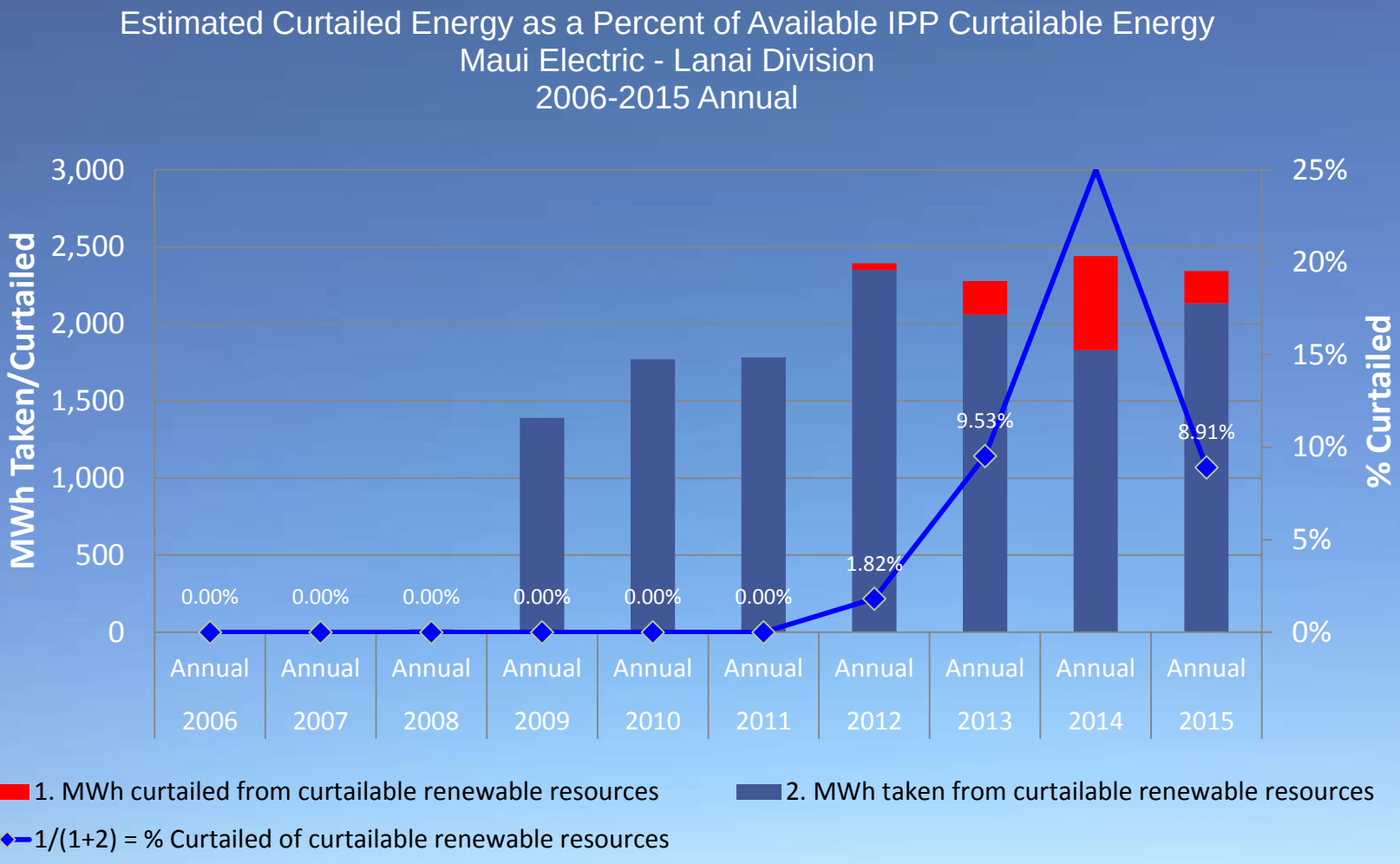
Curtailment Profiles – 32.8 GWh lost in 2015



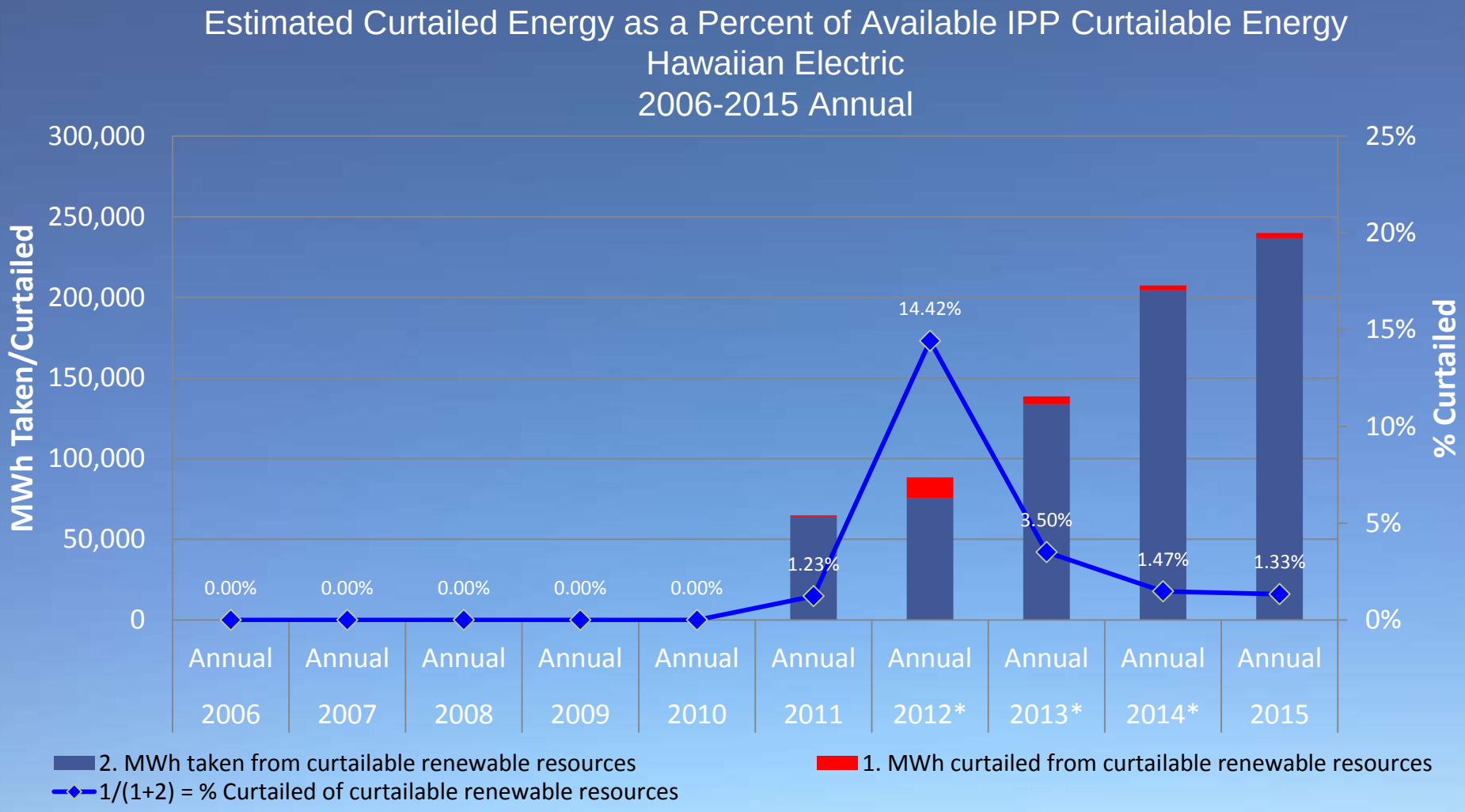
Curtailment Profiles – Maui



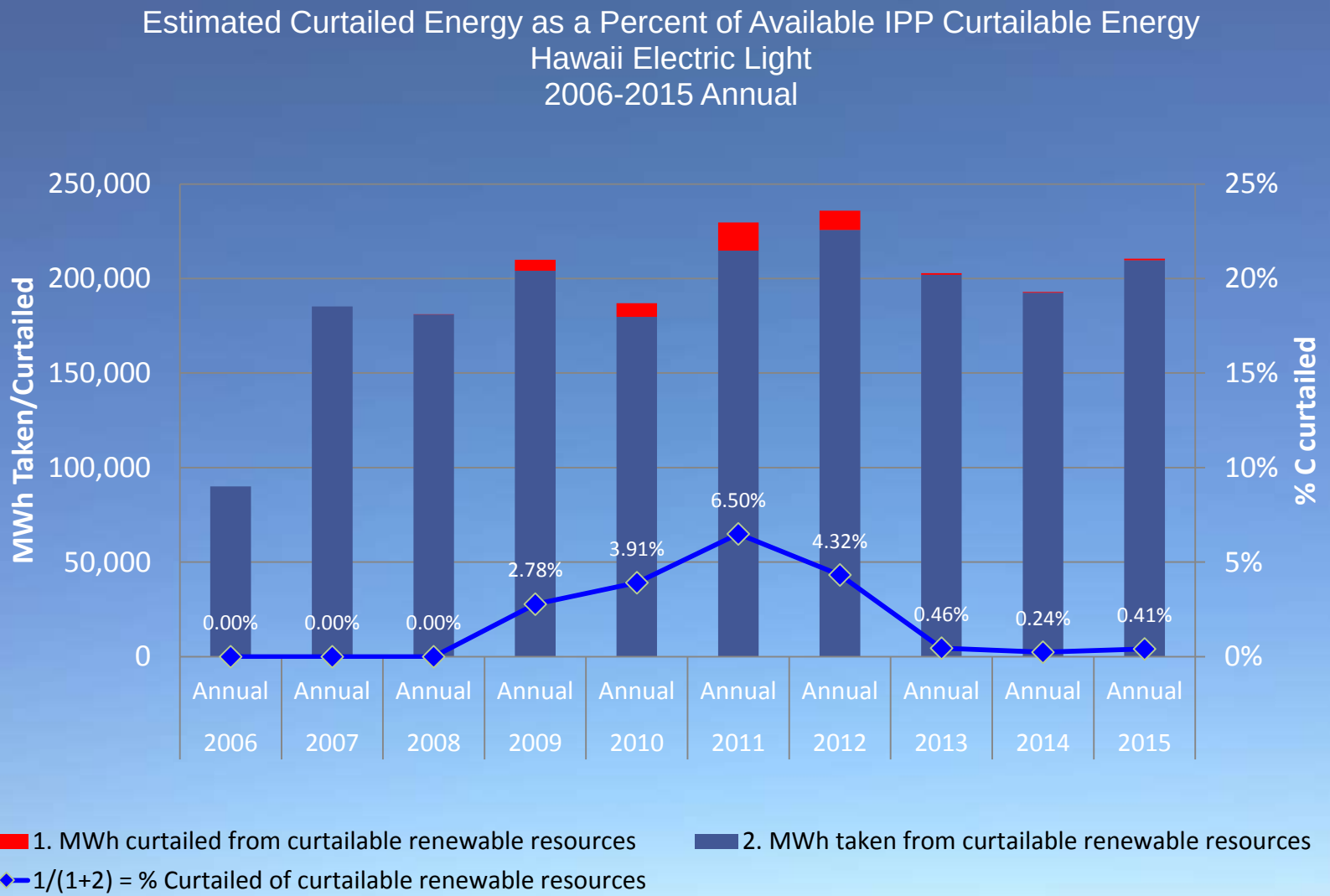
Curtailment Profiles - Lanai



Curtailment Profiles - Oahu

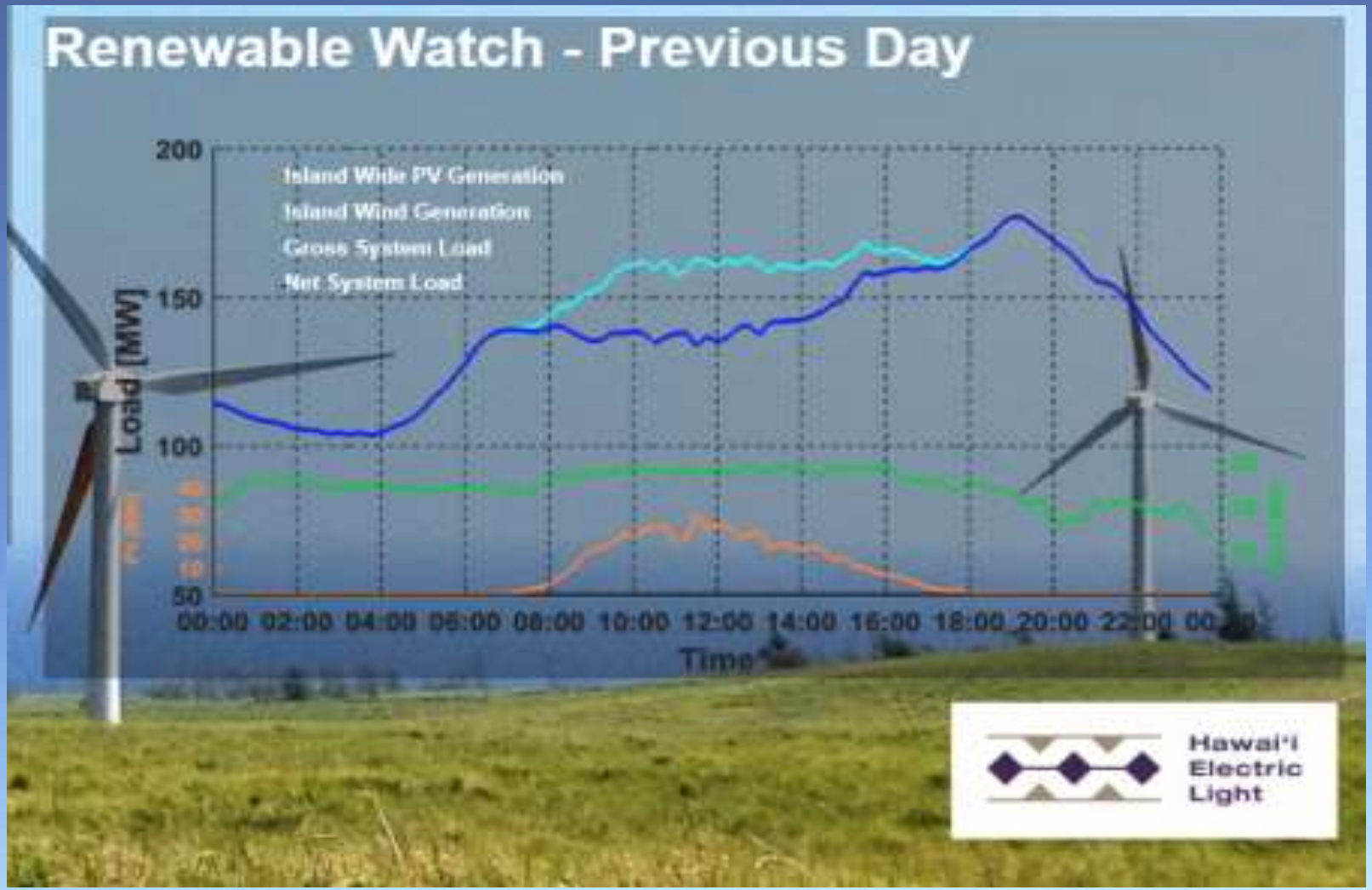


Curtailment Profiles – Big Island



HELCO – Renewable Watch

(https://www.hawaiielectriclight.com/clean-energy-hawaii/integration-tools-and-resources/renewable-watch



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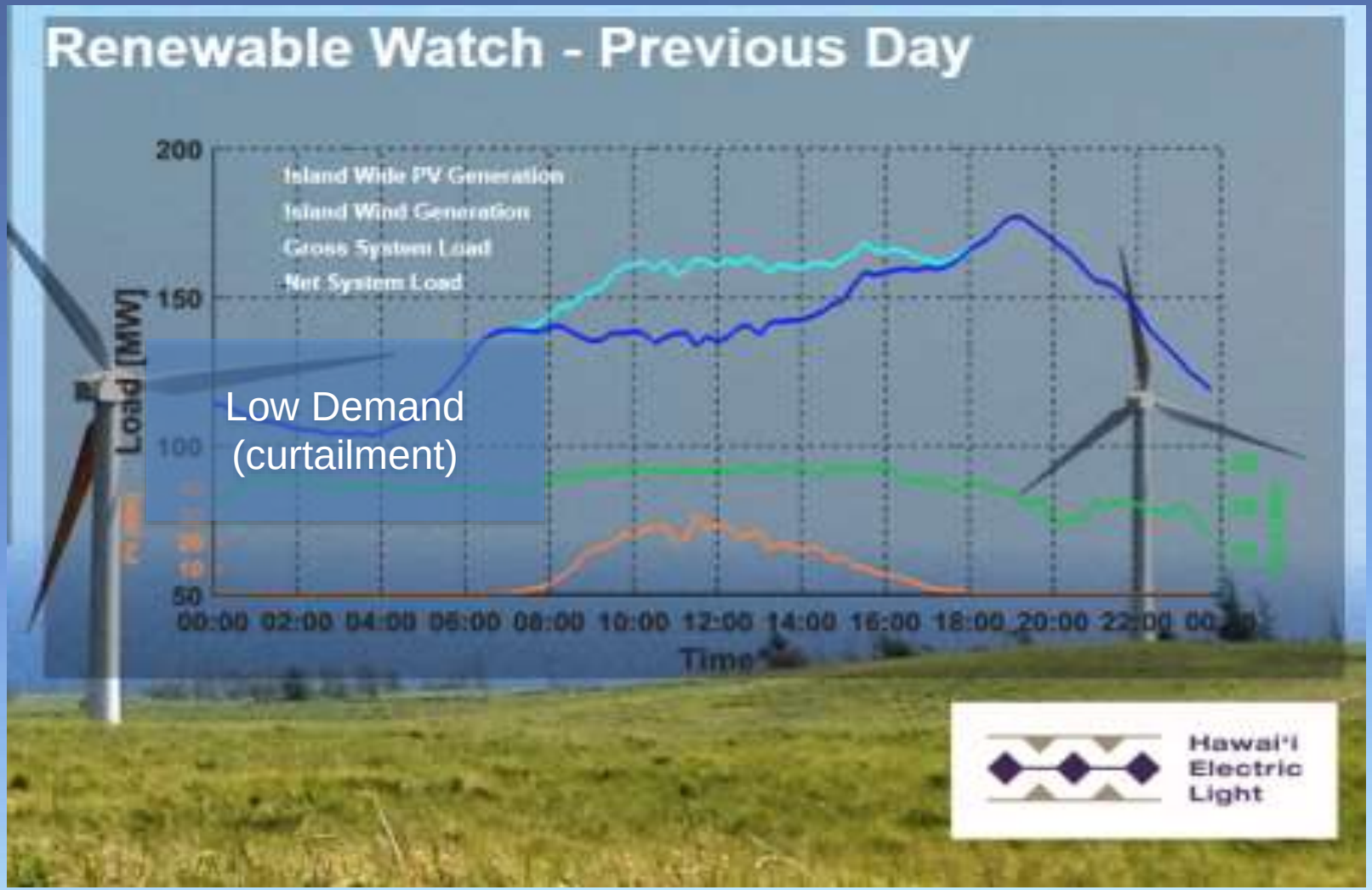

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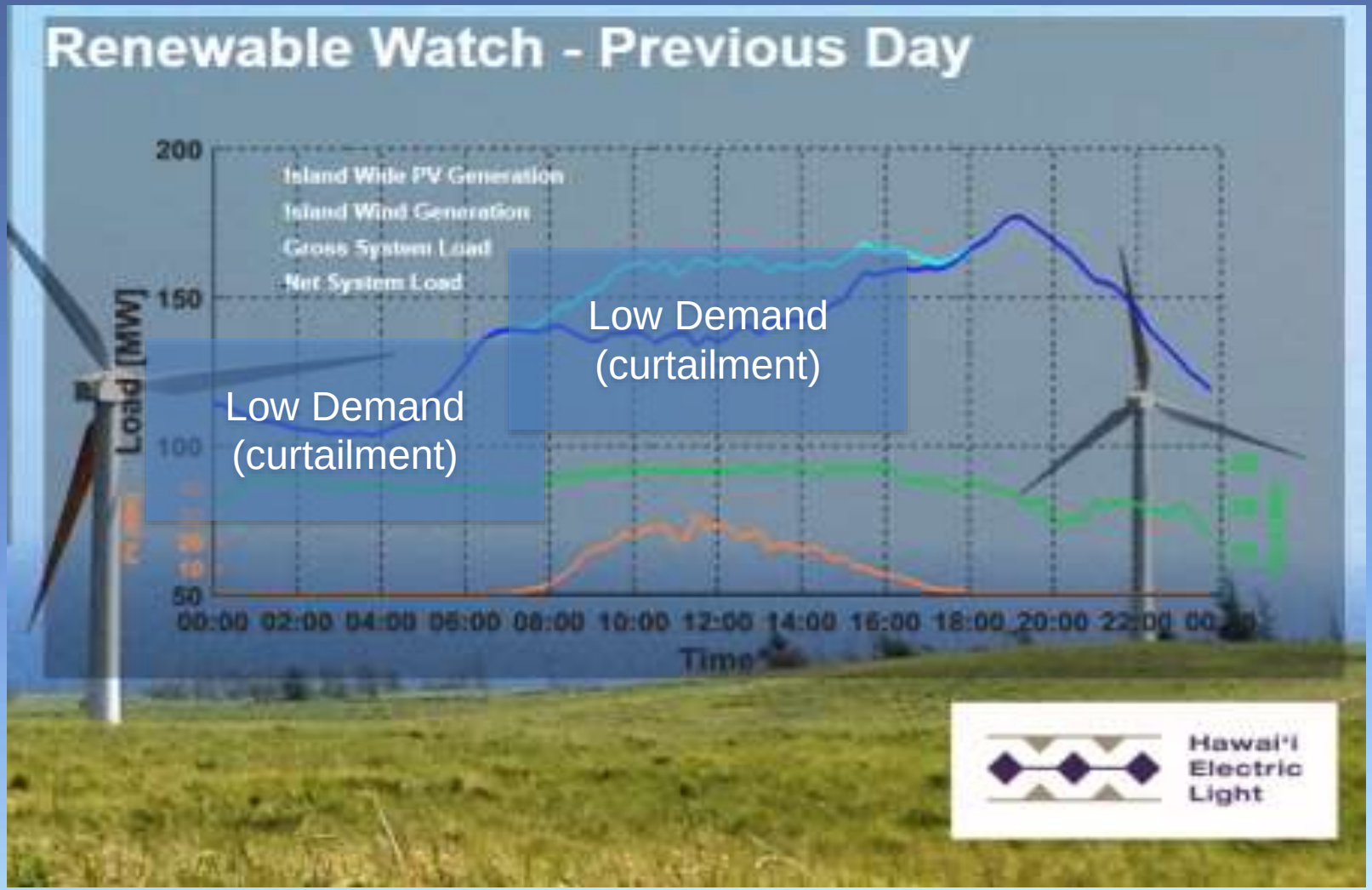

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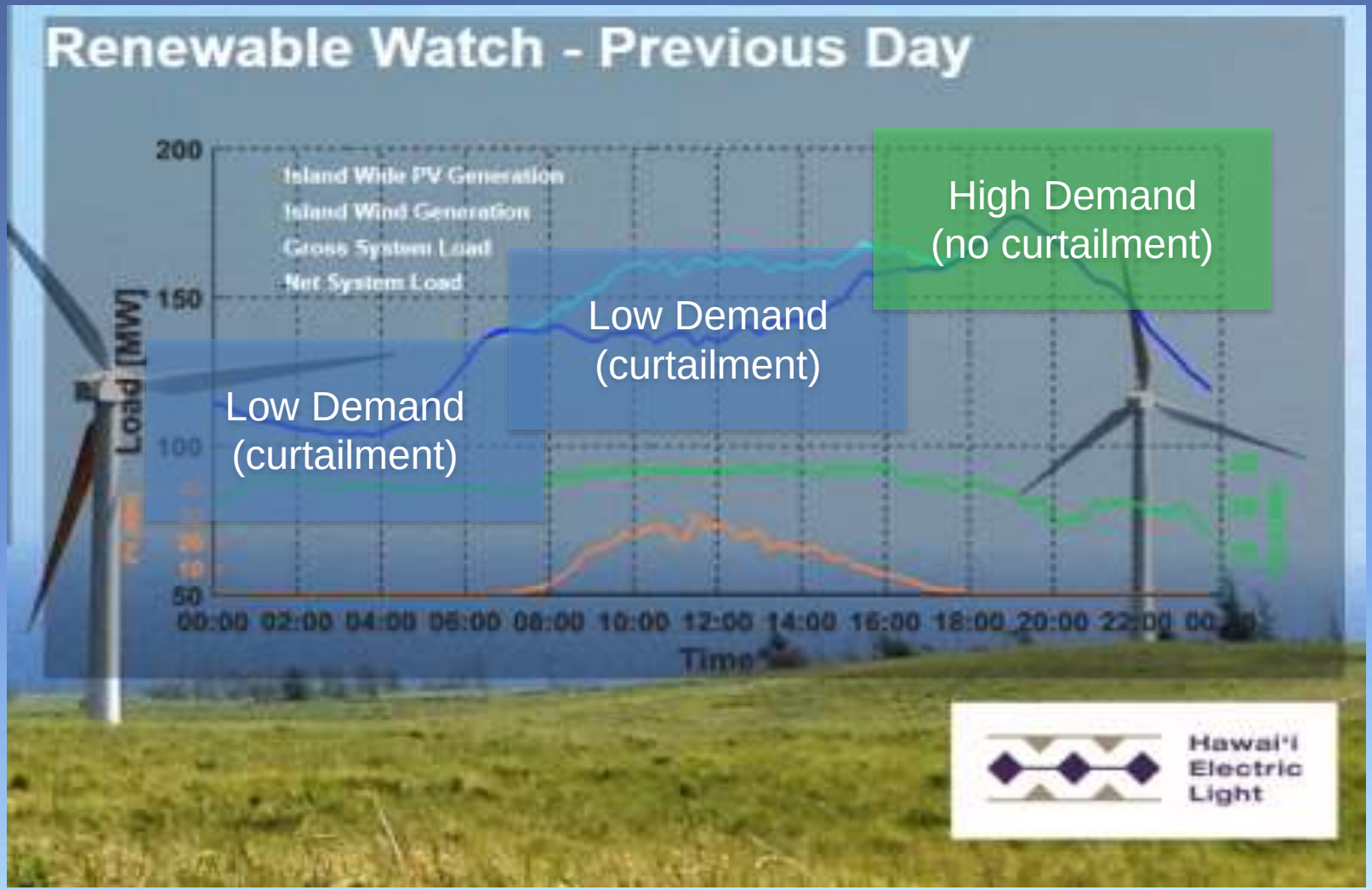
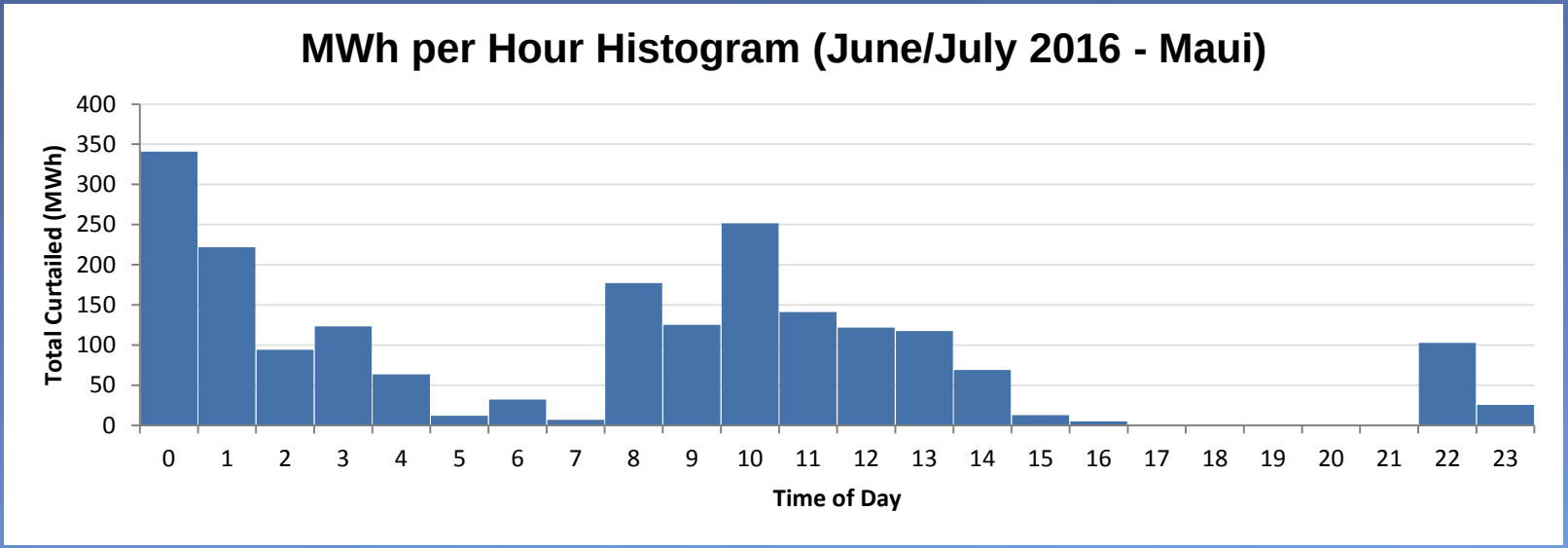
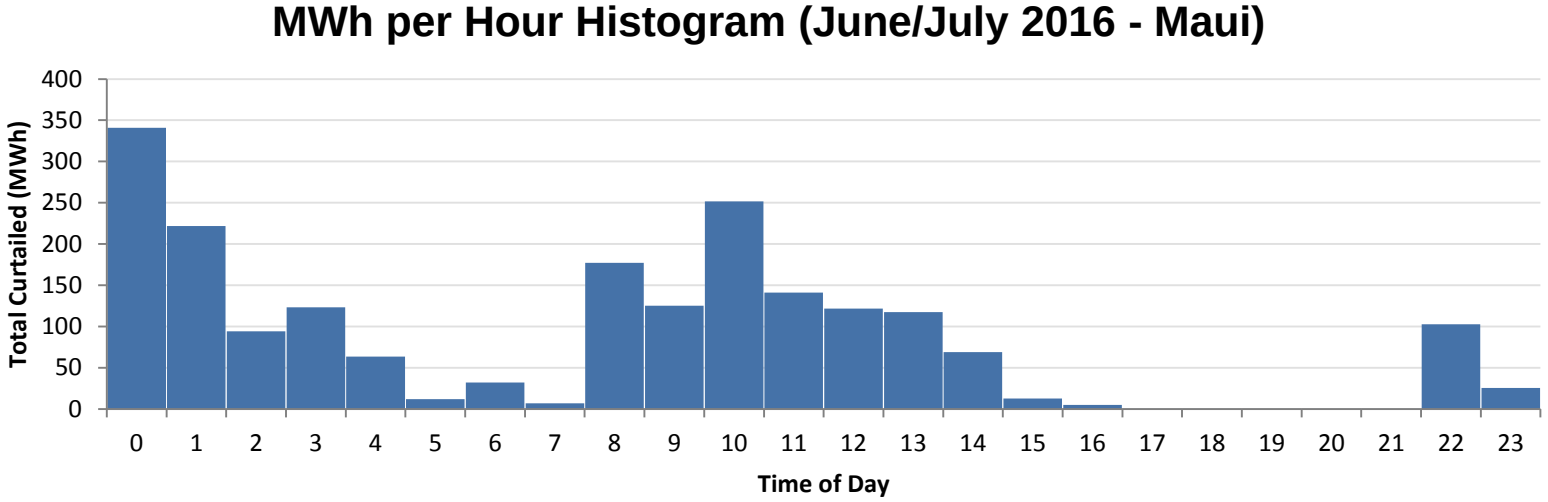
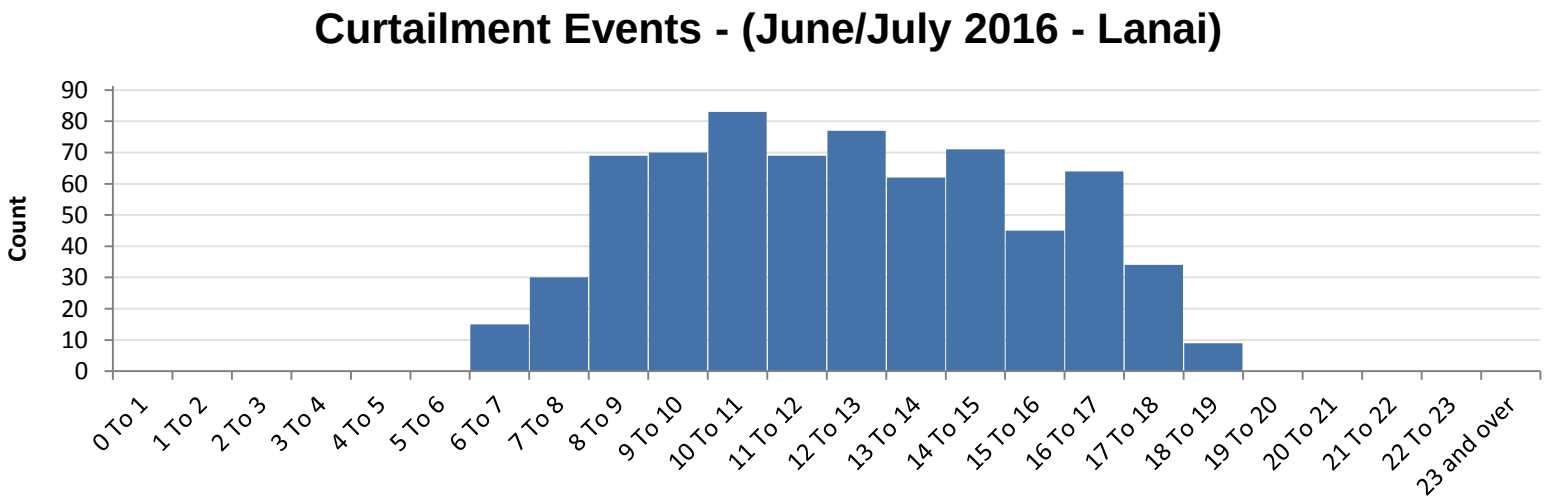


Curtailment Profiles



Curtailment Profiles





We need a solution that is:

24-hour Operation

Available On-Demand

Cost-Effective

Edisun Has the Solution

Chemical batteries are too expensive…

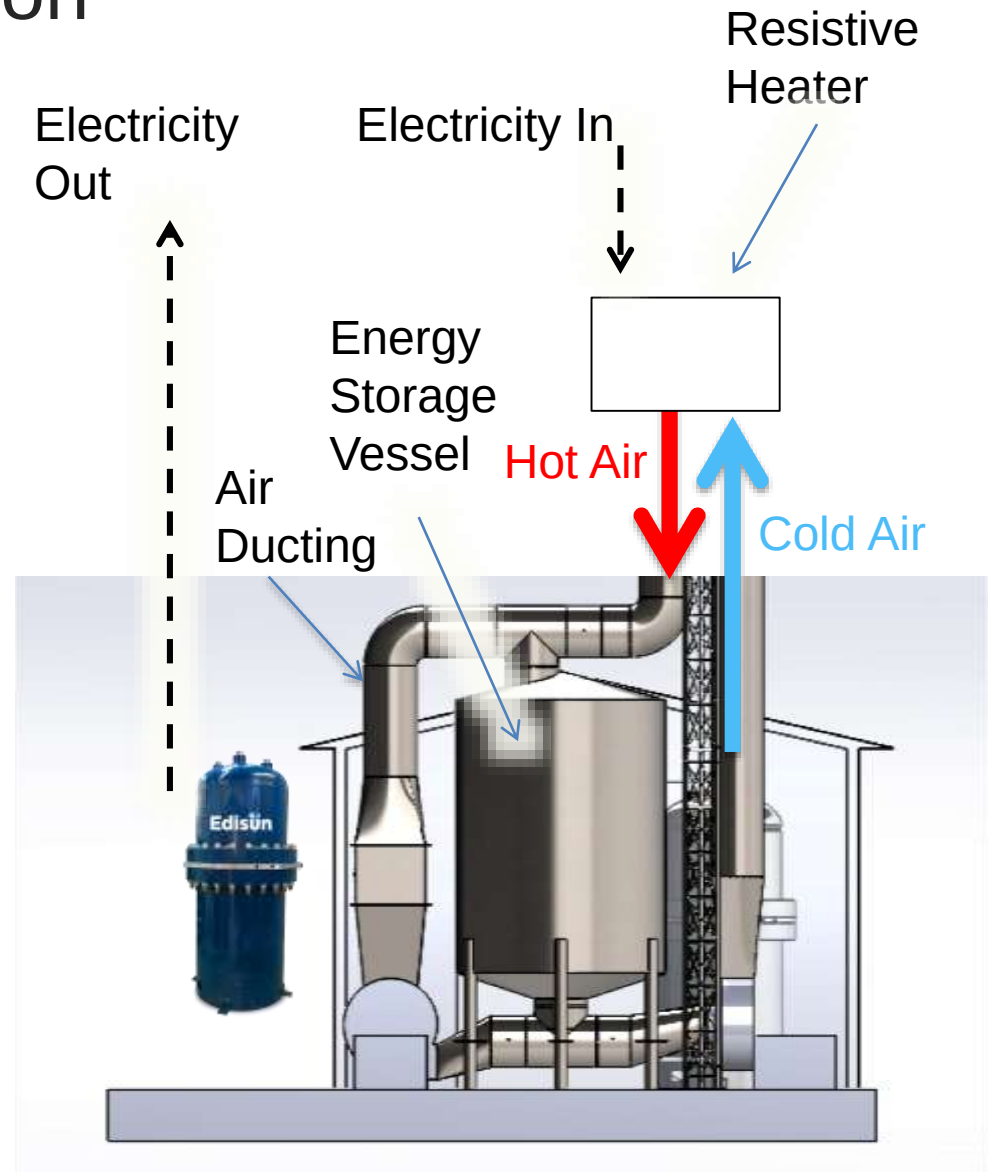
So we invented a “thermal” battery, which uses rocks to store energy.

We heat the rocks to 500 degrees, and we can store energy 50x cheaper than electrochemical batteries.

Edisun Has the Solution

- Solar Power Conversion and Storage System

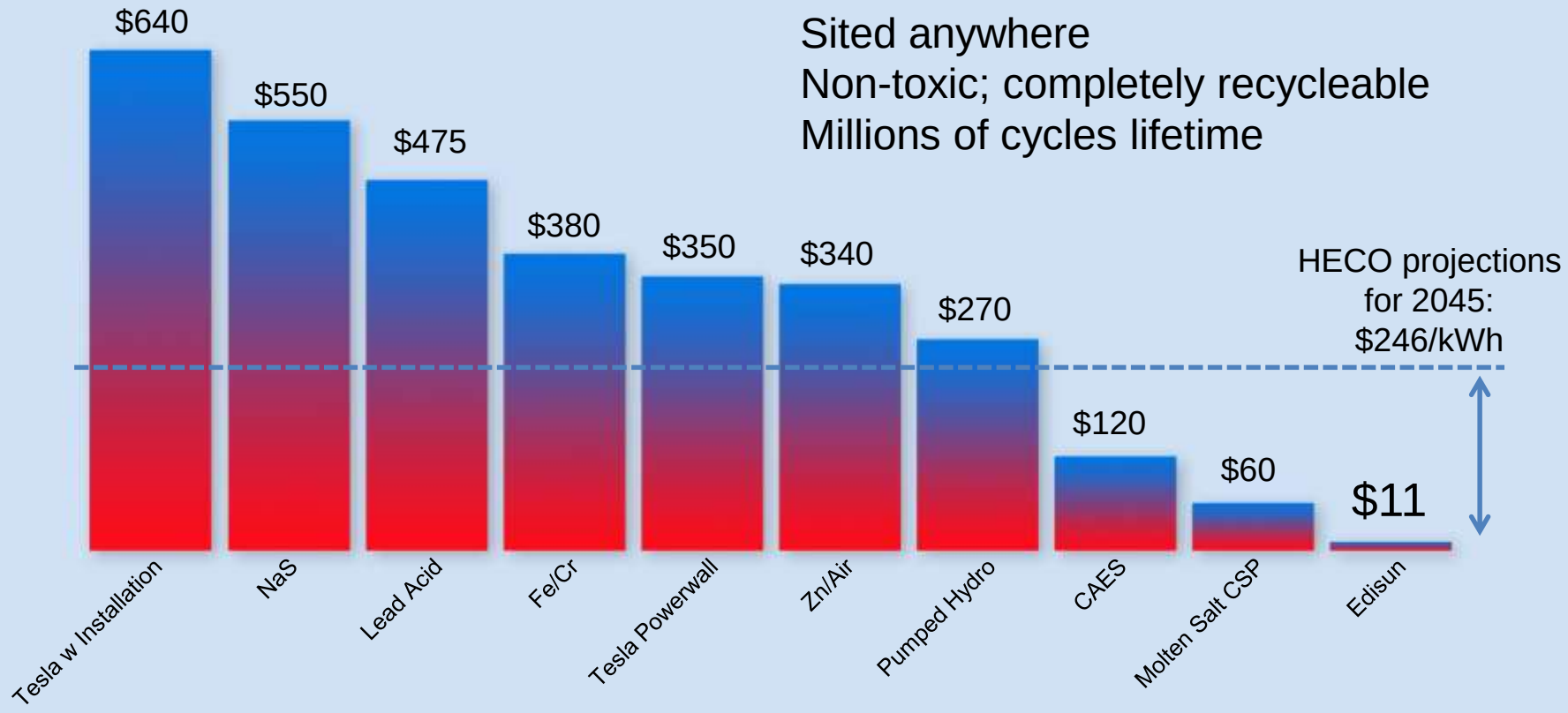
Breakthrough Efficiency Heat Engine



Edisun Storage Breakthrough

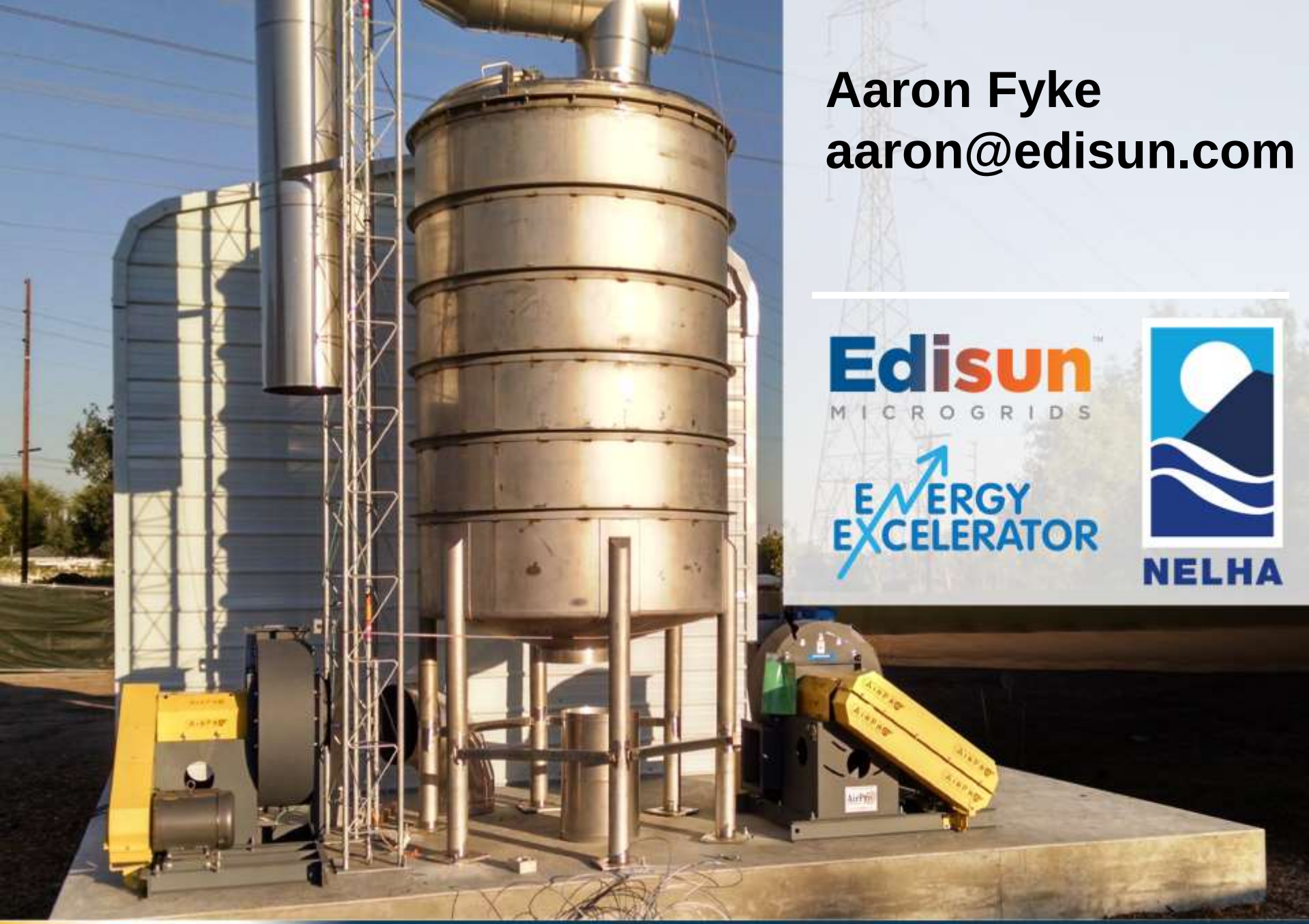
50x Lower Storage Costs Make Microgrid Affordable

- Lowest Cost of Storage by far for any Technology
  ($/kWh Capex)



Status Update

- We've built and tested a demonstration unit in California
- We're building and operating a larger demonstration here at NELHA
- We're looking for:
  - Curtailment partners/grid partners
  - Investors interested in participating in our mission
  - International partners who can help us with expansion



Aaron Fyke
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Edisun MICROGRIDS

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NELHA