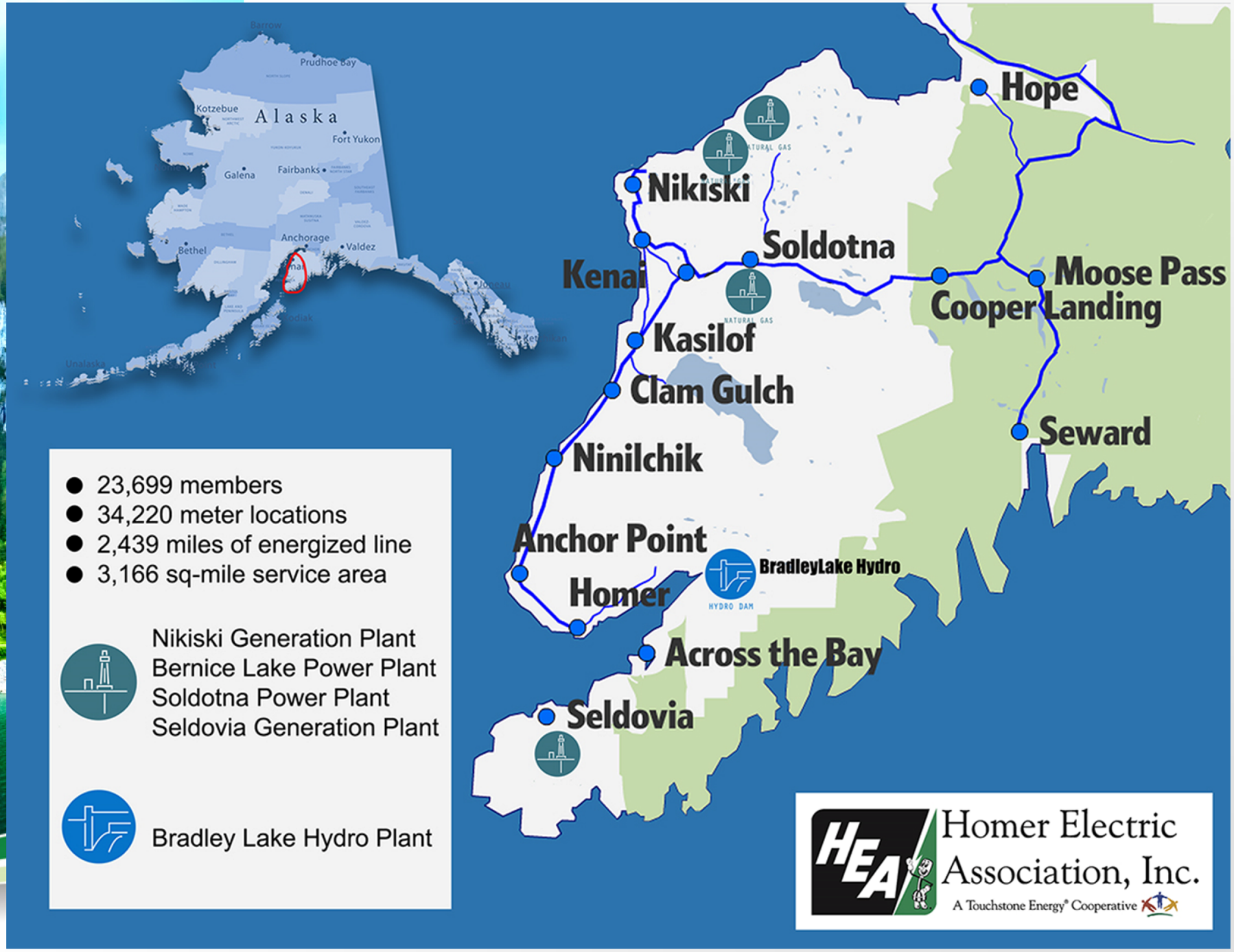
Alaska Energy Storage Workshop

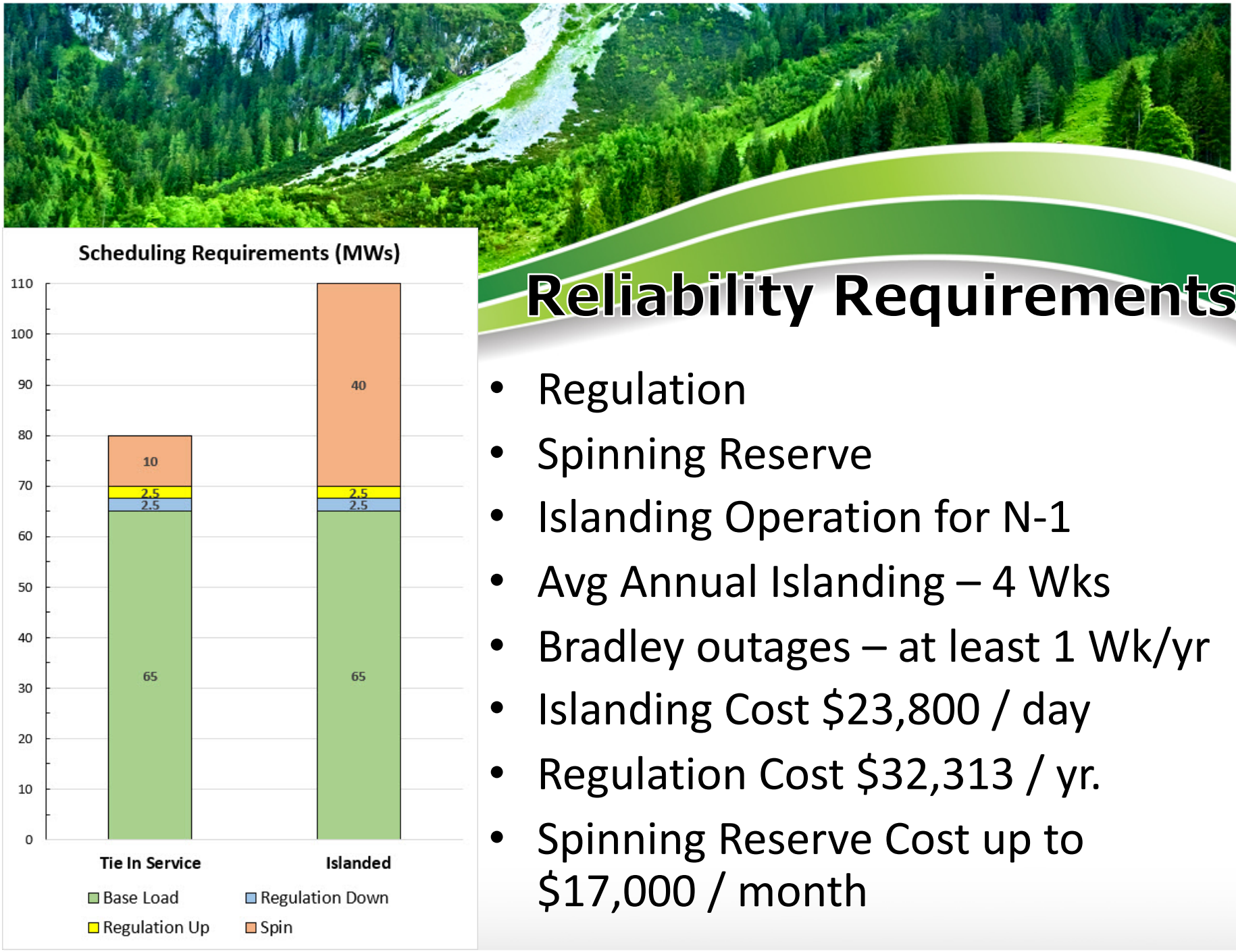
Homer Electric Association, Inc.
A Touchstone Energy® Cooperative

Bulk Energy Storage System

Presented by: Larry Jorgensen

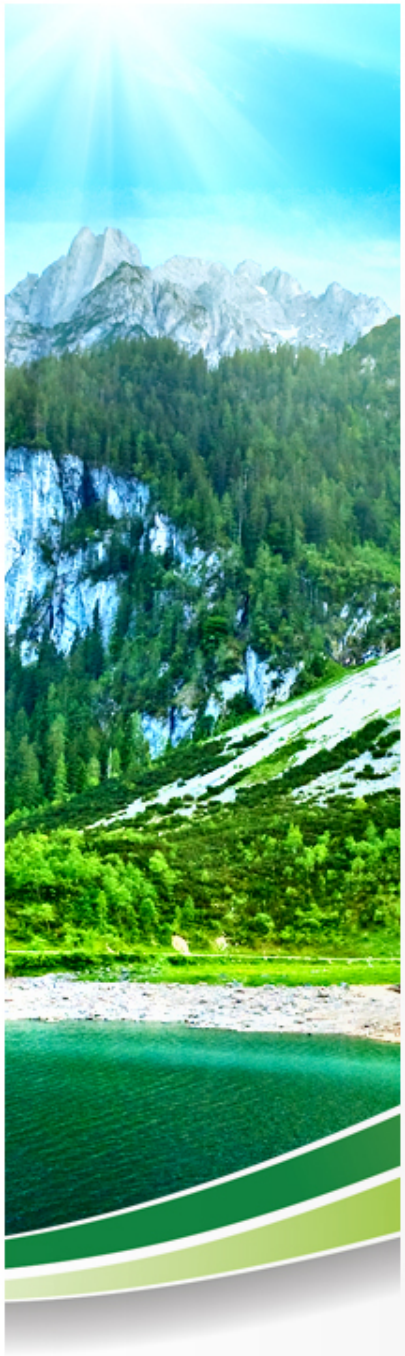
January 12-13, 2021


Barrow
Prudhoe Bay
Kotzebue
Alaska
Fort Yukon
Galena
Fairbanks
Bethel
Anchorage
Valdez
Juneau
Kodiak
Unalaska
Hope
Nikiski
Soldotna
Kenai
Moose Pass
Cooper Landing
Kasilof
Clam Gulch
Seward
Ninilchik
Anchor Point
BradleyLake Hydro
HYDRO DAM
Homer
Across the Bay
Seldovia
NATURAL GAS
23,699 members
34,220 meter locations
2,439 miles of energized line
3,166 sq-mile service area
Nikiski Generation Plant
Bernice Lake Power Plant
Soldotna Power Plant
Seldovia Generation Plant
Bradley Lake Hydro Plant
HEA
Homer Electric Association, Inc.
A Touchstone Energy® Cooperative

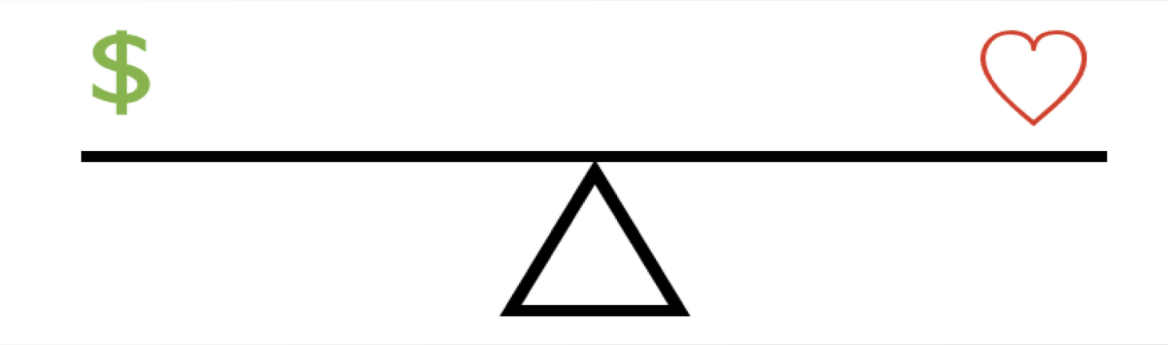


Reliability Requirements

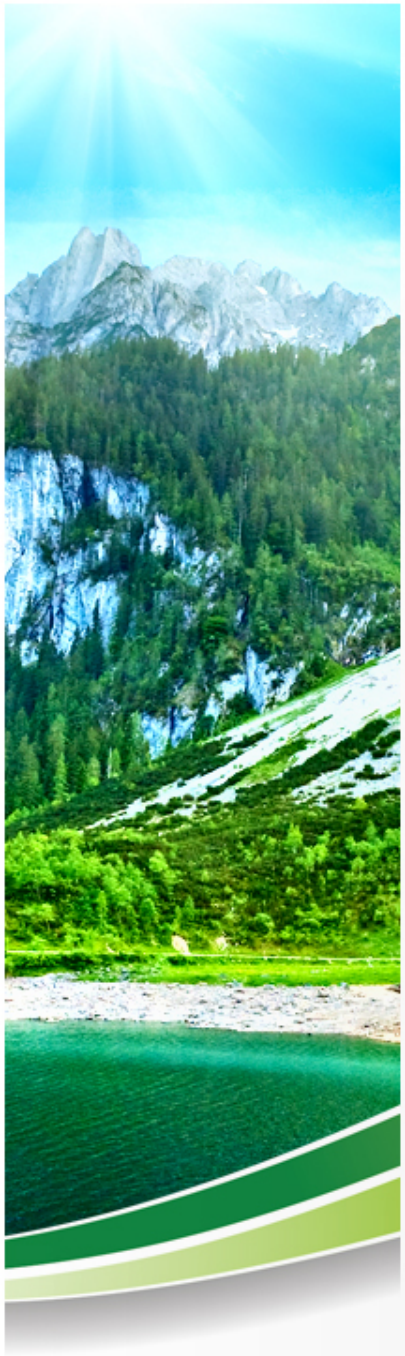
- Regulation
- Spinning Reserve
- Islanding Operation for N-1
- Avg Annual Islanding – 4 Wks
- Bradley outages – at least 1 Wk/yr
- Islanding Cost $23,800 / day
- Regulation Cost $32,313 / yr.
- Spinning Reserve Cost up to $17,000 / month



Rates / Reliability Balance

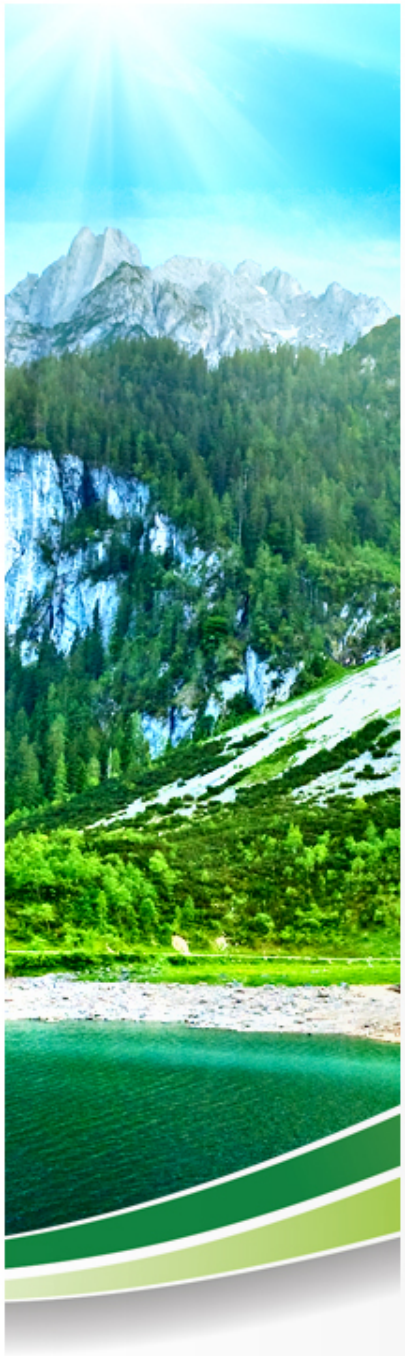


- In order to respond to a N-1 event, HEA must balance between economics and reliability.
- HEA operates with 3 generation sources (generating units or tie) for reliability.



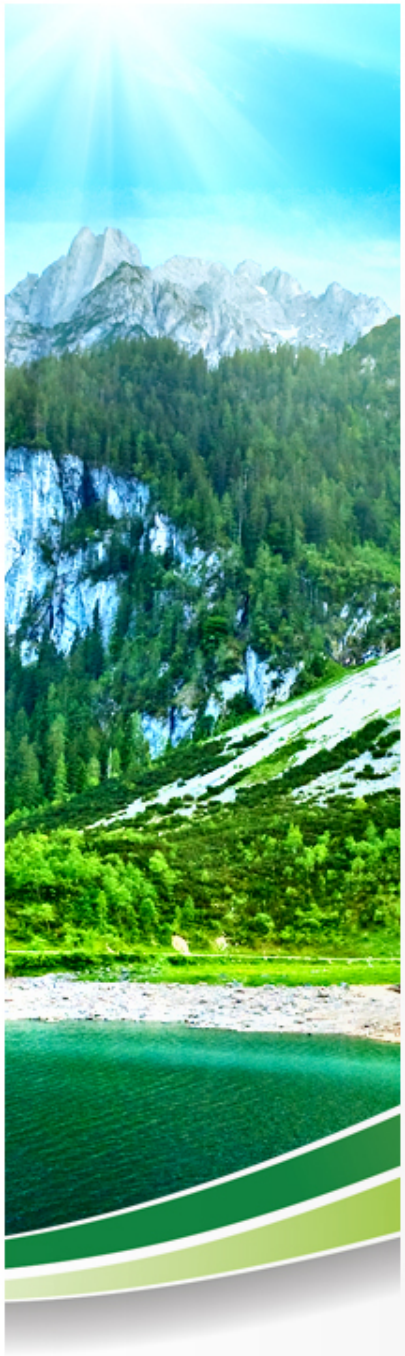
BESS RFP Specification

- System Regulation of ±2.5 MWs
- Spinning Reserve of 10 MWs for 15 minutes.
- Emergency Reserve of 45 MWs for 15 minutes.
- Dispatchable from SCADA.
- EPC (Engineer, Procure, Construct) bid.



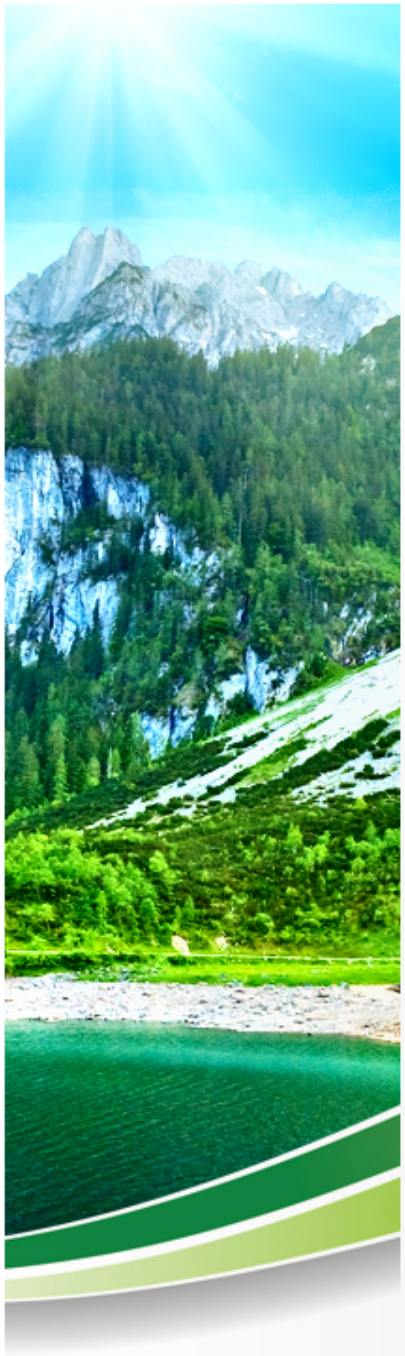
System Operation w/BESS

- Regulation, Spinning Reserve, and Emergency Reserve provided by BESS.
- Islanding or Bradley outages no longer requires starting a second thermal unit.
- Potential to integrate Renewables.
- Potential to sell Spin/Regulation.



Risk Management Tool

- Protects against tie line outages, Bradley outages, wildfires, etc.
- Provides system stability (reducing frequency swings and load sheds).
- Helps to stabilize COPA during island events.

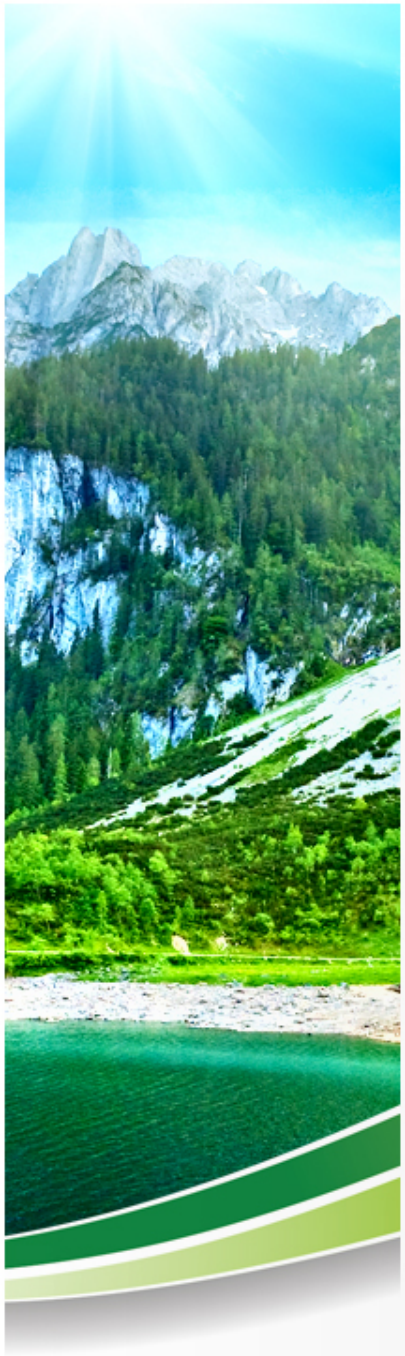


Scope of Work

- Tesla – Megapack Batteries (integrated chargers and inverters, control system and monitoring).
- HEA – Balance of Plant design, procurement & construction (transformers, breakers, interconnection to Soldotna Substation).

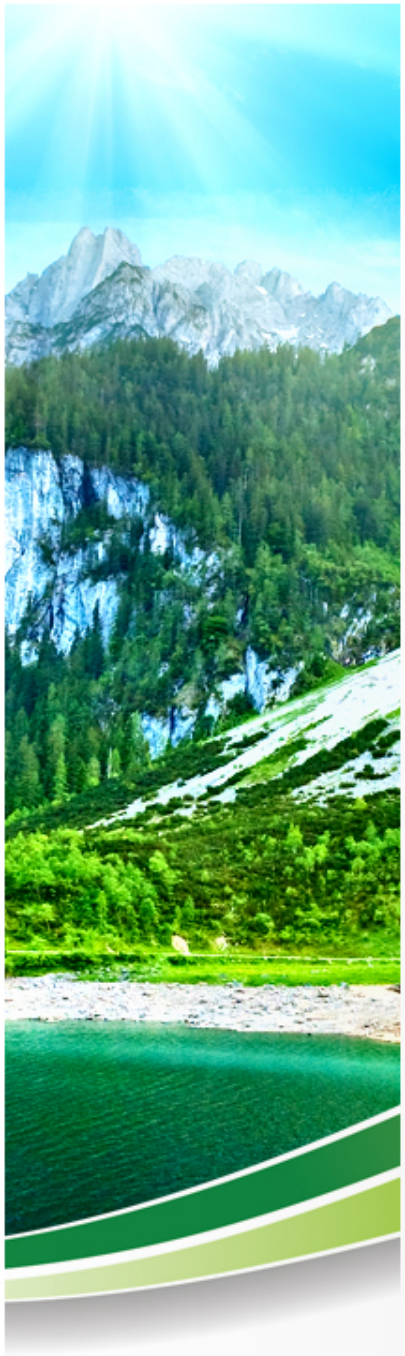
Tesla MegaPack

Site Layout – Oct. 2020



Scope of Supply & Services

- MegaPack (2-hour) Batteries Delivered to Site – 93 MWh total capacity.
- Tesla's Site Controller & PowerHub Pro Control Software with HMI.
- Fire Detection System.
- Transformers (19 – 480/24 kV), (GSU 24 kV/115 kV).
- Power Distribution Center.
- Field Network Enclosures.
- 115 kV Breaker.
- Commissioning, Startup and Testing.



Schedule

- HEA target substantial completion by June 30, 2021.
- BESS testing and commissioning – 30 to 45 days.
- BESS fully operational by mid August 2021.

Thank You !