

Cache_{energy}

Long-term Energy Storage

Arpit Dwivedi

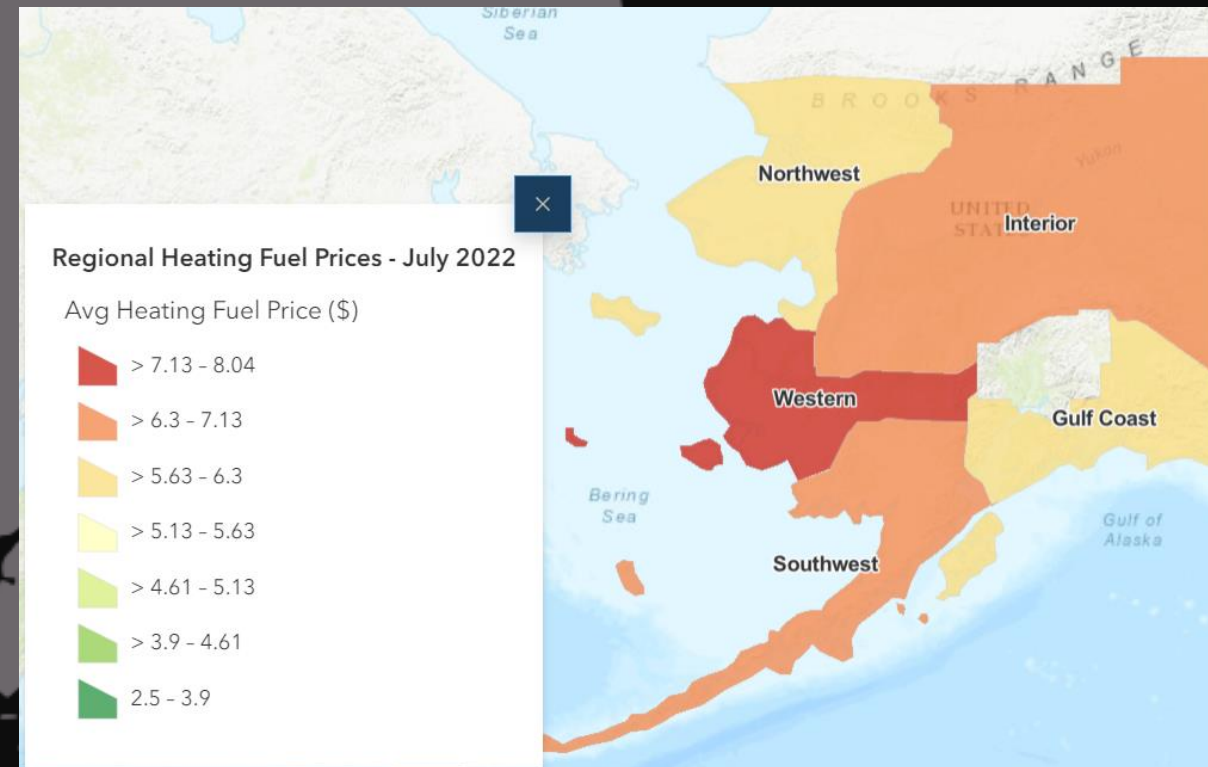
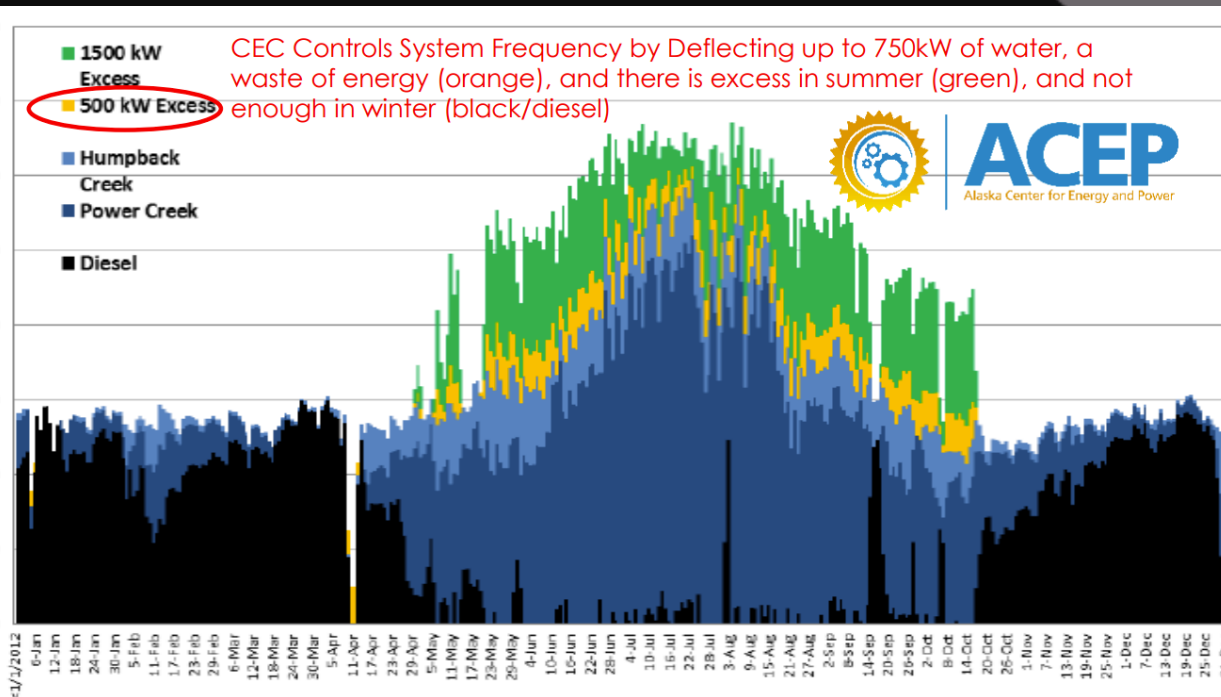
CEO, Cache Energy

Senate Resources Committee

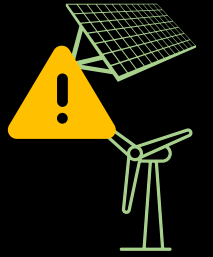
2 Major Energy Challenges in Alaska

Long term, inter-seasonal
energy storage

Natural Gas Shortage



X **THE PROBLEM:** “LONG-TERM” STORAGE of Energy



Hydro/Solar/Wind are not always present
Leads to overbuilding & under utilization

EXISTING
STORAGE SOLUTIONS

X **CANNOT SCALE**
to long durations

X **LOSE CAPACITY**
with time

Alaska needs unique features
in batteries – unlike others.



U.S. DEPARTMENT OF
ENERGY

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Long-term Energy Storage
in a Solid Fuel



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Like Coal,
without the
Consequences.

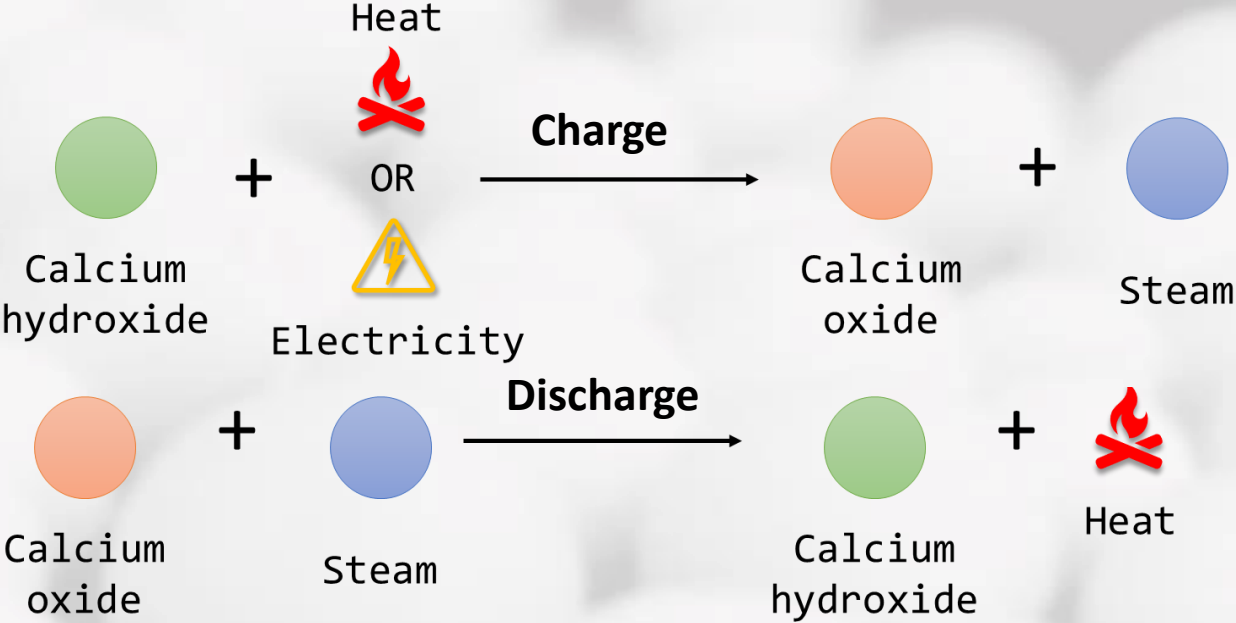


CLEAN/SAFE

LOW COST

USES EXISTING
INFRASTRUCTURE

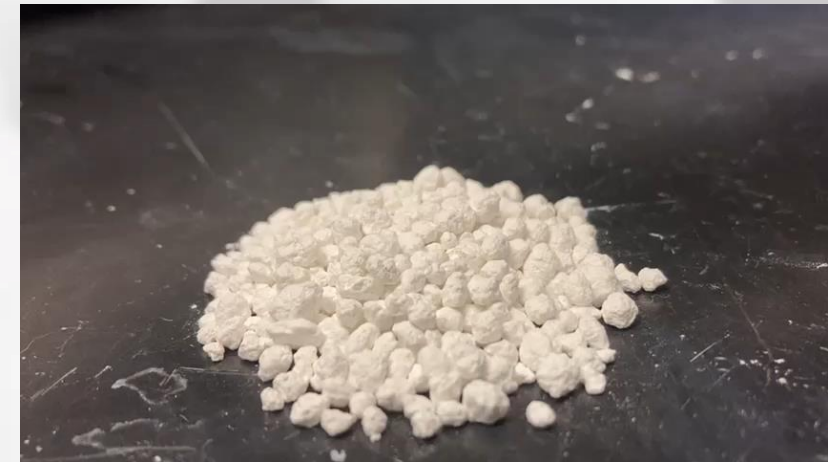
Technology



Energy Storage By Removing Water

Energy Discharge By Adding Water

Our innovation: Make a well-known chemical cyclable at <20 ¢/kWh



Office of Electricity

DOE Announces Energy Storage Innovations Prize Winners

FEBRUARY 27, 2023

Office of Technology Transitions

Introducing the Winners of the EPIC DC Pitch Competition

MAY 15, 2024

Providing Low-Cost Heat in Anchorage

Hosted > 200 Alaska
Energy leaders on site

Hired, trained local
non-engineer operators
in Alaska

>12 months of operation
under cold climate

AlaskaBusiness

Magazine News Industry ▾ Spotlights Events ▾ Right Moves Li

Cache Energy Heat Storage Pilot Project Launches in Anchorage

AUG 20, 2024 | ENERGY, NEWS

CURRENT ISSUE

[Link](#) to Alaska Pilot

Cache
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ALTERNATIVES



Cost - \$/kWh

\$100/kWh

\$20/kWh

\$10/kWh

Li-ion

Hydrogen

Other Novel
Technologies

Cache
nergy

hours

days

months

Duration of continuous energy supply



Charged Pellets in Prudhoe Bay Stored Outside in Simple Oil Barrels



Alaska Projects in Pipeline

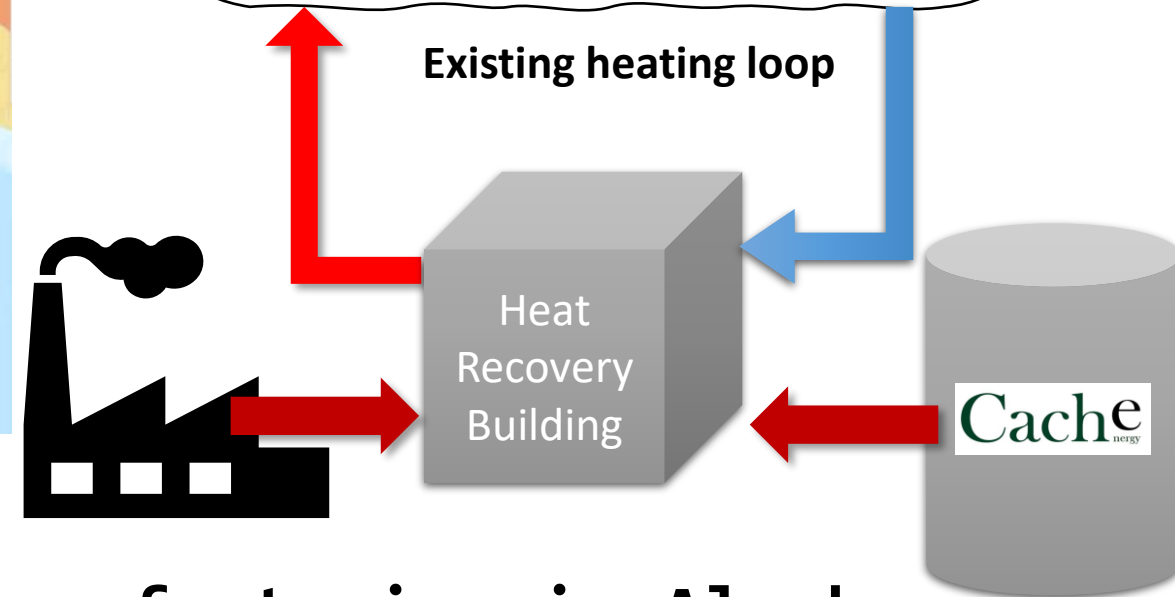
High heating cost

Excess Generation



Regional Heating Fuel Prices - July 2022

Avg Heating Fuel Price (\$)



2025 Goal: Setup 1 ton/hour manufacturing in Alaska

TRACTION

Funding



Partners

HALLIBURTON



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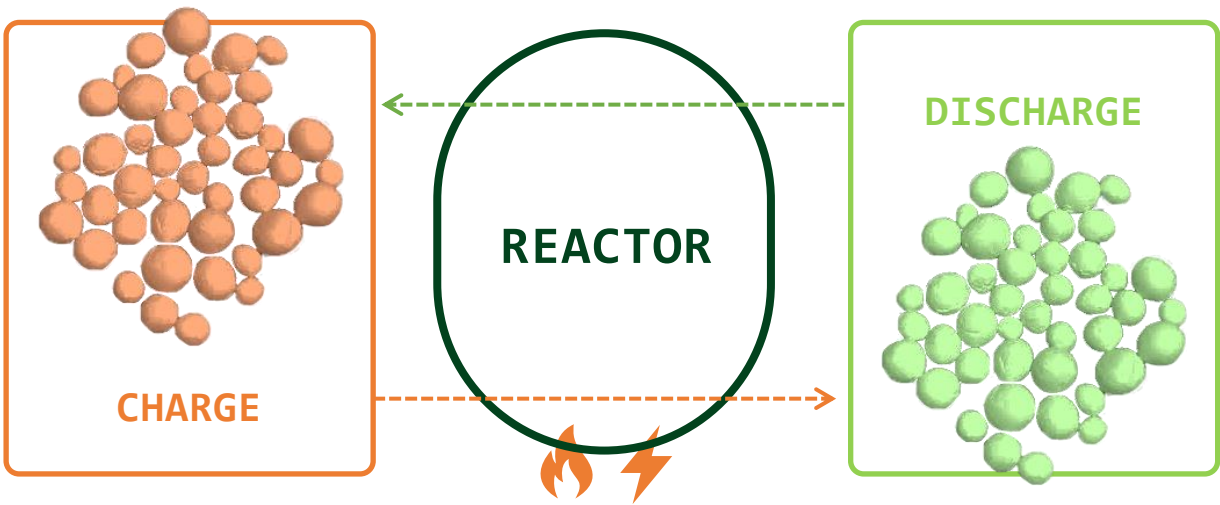
There are low cost/low risk steps that leverages existing
resources/labor-force and can start moving the Alaska
Energy needle NOW

Cache is ready to deploy NOW

Contact: arpit@cache-energy.com

APPENDIX

THE TECHNOLOGY
KEY DIFFERENTIATORS



- ✓ Scales to long durations at **~\$100-200/ton**
- ✓ Indefinite time storage under ambient

	Existing Systems	Cache Energy
Energy density (kWh/ton)	60 - 200	>500

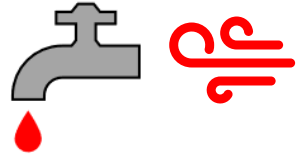


SAFELY
INSTALLED
ANYWHERE



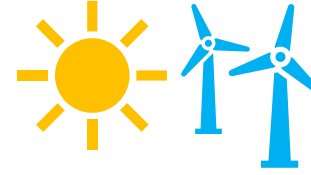
TRANSPORTED
EVERYWHERE

Discharging sequence



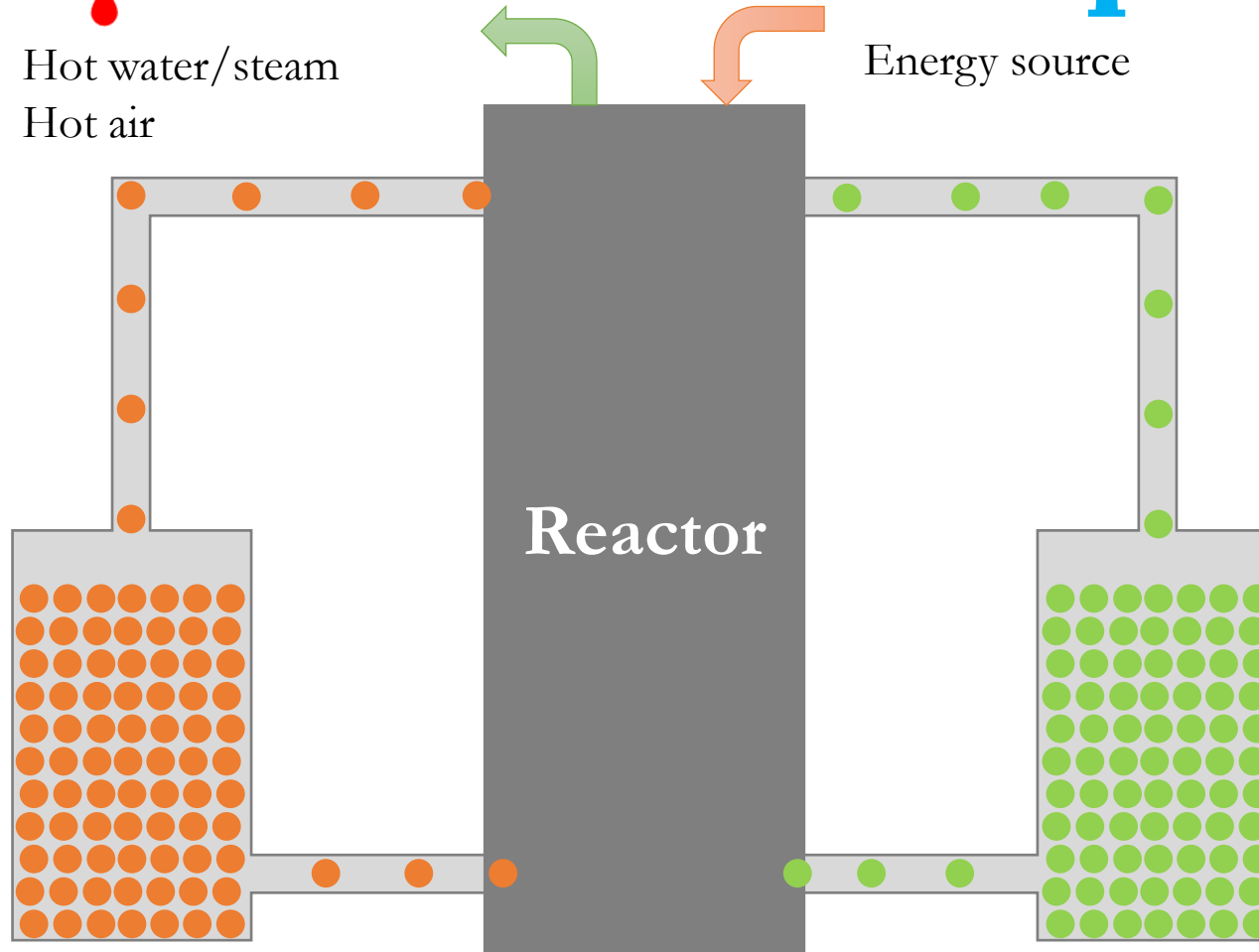
Hot water/steam
Hot air

Charging sequence



Energy source

CaO
(Charged material)



Ca(OH)₂
(Discharged material)

Footprint & Utility

Foot-print per 100 kW module

- 480V, 3 phase, 175 A
- 20 ft x 20 ft footprint
- Access to tap water
- No water purification needed

Volumetric Storage

- 17.5 MWh - 25 MWh
- 50 tons storage



Safety

- Material is non-flammable and has no thermal runaway
- Not classified as a hazardous material by US DOT
- Not regulated by the US Transportation of Dangerous Goods (TDG) when shipped by any mode of transport.

Safe storage in simple barrels or silos



NFPA Hazard Class:
HMIS Hazard Class:

Health: 1
Health: 1

Flammability: 0
Flammability: 0

Reactivity: 0
Reactivity: 0

Personal Protection: E

