Residential Backup Power

- Ride through power outages
- Additional value from rooftop solar
- Support utility function?
STORAGE BASICS

Commercial and Industrial

- Rate savings
- O&M savings
- Improved reliability

Photo credit: Tesla
### GRID EDGE BATTERY STORAGE DEMONSTRATION
Resilience AT Eugene Water and Electric Board

<table>
<thead>
<tr>
<th>Use Cases</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Energy Arbitrage</td>
<td>Charge during low-price periods, discharge during periods of high prices</td>
</tr>
<tr>
<td>Outage Mitigation</td>
<td>Reduce or eliminate outages</td>
</tr>
<tr>
<td>Reduce Transmission</td>
<td>Reduce the EWEB contribution to the peak on the BPA transmission system, lower network transmission charges (monthly).</td>
</tr>
<tr>
<td>Minimize Balancing</td>
<td>Reduce imbalances in the EWEB system</td>
</tr>
</tbody>
</table>

**Communities Resiliency**

*Exceptional service in the national interest*

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**COMMUNITY RESILIENCY**
COMMUNITY RESILIENCY

“GRID EDGE” BATTERY STORAGE DEMONSTRATION
Resilience AT Eugene Water and Electric Board
COMMUNITY RESILIENCY

“GLACIER” BATTERY STORAGE PROJECT
Puget Sound Energy, Glacier, WA

- 2 megawatt (MW) / 4.4 megawatt-hour (MWh) lithium-ion battery system.
- Provides backup power to city center
- Reduces system load during periods of high demand.
- Supports integration of intermittent renewable energy generation at PSE’s Wild Horse wind and solar Facility
COMMUNITY RESILIENCY

ADDITIONAL STORAGE PROJECTS
Puget Sound Energy

• Customer-sited Energy Storage Demonstration (CSES Demo). 5 houses on Bainbridge Island.

• Commercial Energy Storage Project in Poulsbo, WA

• Community Energy Storage Project. 6 houses near Redmond, WA.
COMMUNITY RESILIENCY

SALEM SMART POWER CENTER
Portland General Electric, Salem, OR

- 5 megawatt (MW) / 1.25 megawatt-hour (MWh) lithium-ion battery system.
- Research center for PGE
- Reduces system load during periods of high demand.
- Supports integration of intermittent renewable energy generation at PSE’s Wild Horse wind and solar Facility
UTILITY SCALE SOLAR
UTILITY SCALE SOLAR

10 Megawatt Solar Project in Merrill, OR
UTILITY SCALE SOLAR

Gala Solar, Prineville

56 megawatts, 319 Acres
Energy sold directly to Apple
Oregon's Largest!
Boardman Solar Energy Facility

- First to exceed 320 acres in Oregon
- 798 acres
- 75 megawatts
Obsidian Solar Center

- Notice of Intent submitted to Energy Facilities Siting Council
- 400 megawatts with storage
The NV Energy contracts (bottom right) continue the trend of plummeting solar prices, which have fallen comfortably below the price of gas generation. (Image credit: GTM Research)


Idaho Power claims one of lowest-priced solar deals at 2.2 cents/kWh

Dive Brief:

- Idaho Power last week announced it has entered into a deal to purchase 120 MW of solar energy at a price the utility believes is among the lowest publicly reported to date. The utility signed a 20-year power purchase agreement (PPA) with Jackpot Holdings, with an initial price of $21.75/MWh — or less than $0.022/kWh.
• January 2017 - Kauai Island Utility Cooperative signed a solar-plus-storage PPA at $0.11/kWh. This project at 28 MW of solar and 100 MWh of batteries — will displace the utility's current oil-fired baseload generation.
Thank You!