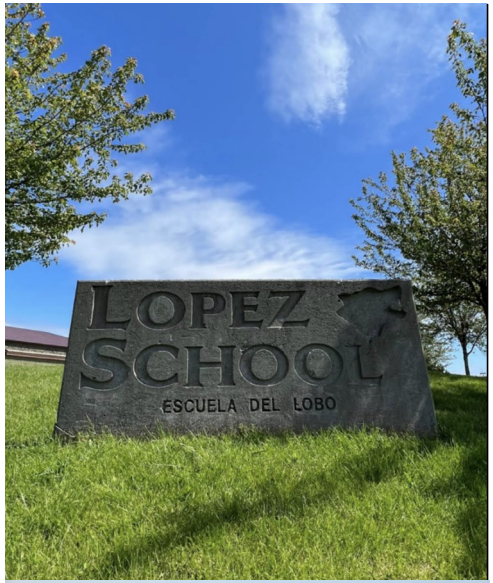
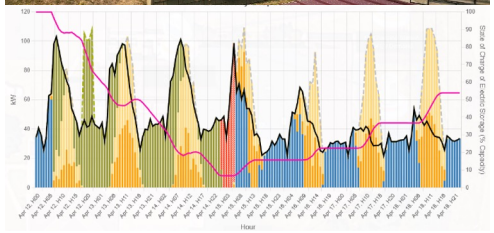






Lopez Island School District
Solar Resilience Microgrid

Climate-Amplified Disaster Emergency Energy Response (CADEER)
Project Workshop

November 20, 2026

Chris Greacen, Ph.D.

Phase 1: grid-tied solar

- **Solar: 181 kWp**
  - 114.24 kWp DC (secondary school)
  - 66.64 kWp DC (primary school)
- **Purpose:**
  - Reduce electricity bills >$30,000 per year
    - If offsetting consumption: $0.1341/kWh
    - If sold to utility: $0.0853/kWh
  - Integrate into curriculum
  - Foundation for expansion (phase 2)
- **Commissioned:** August 2026
- **Cost: $412,200**





Phase 2: resilience microgrid

- **Solar: +93 kWp PV (bringing total to 274 kWp)**
- **Battery: 2.5 MWh LFP Li-ion**
- **Integrate with existing 77 passenger EV school bus**
- **Accommodate emergency generator**
- **Commission (est.): March 2029**
- **Cost (est.): $3.04M**
- **Status:**
  - feasibility study completed
  - Recommended for inclusion in bundle of ~10 solar + storage projects state government appropriations





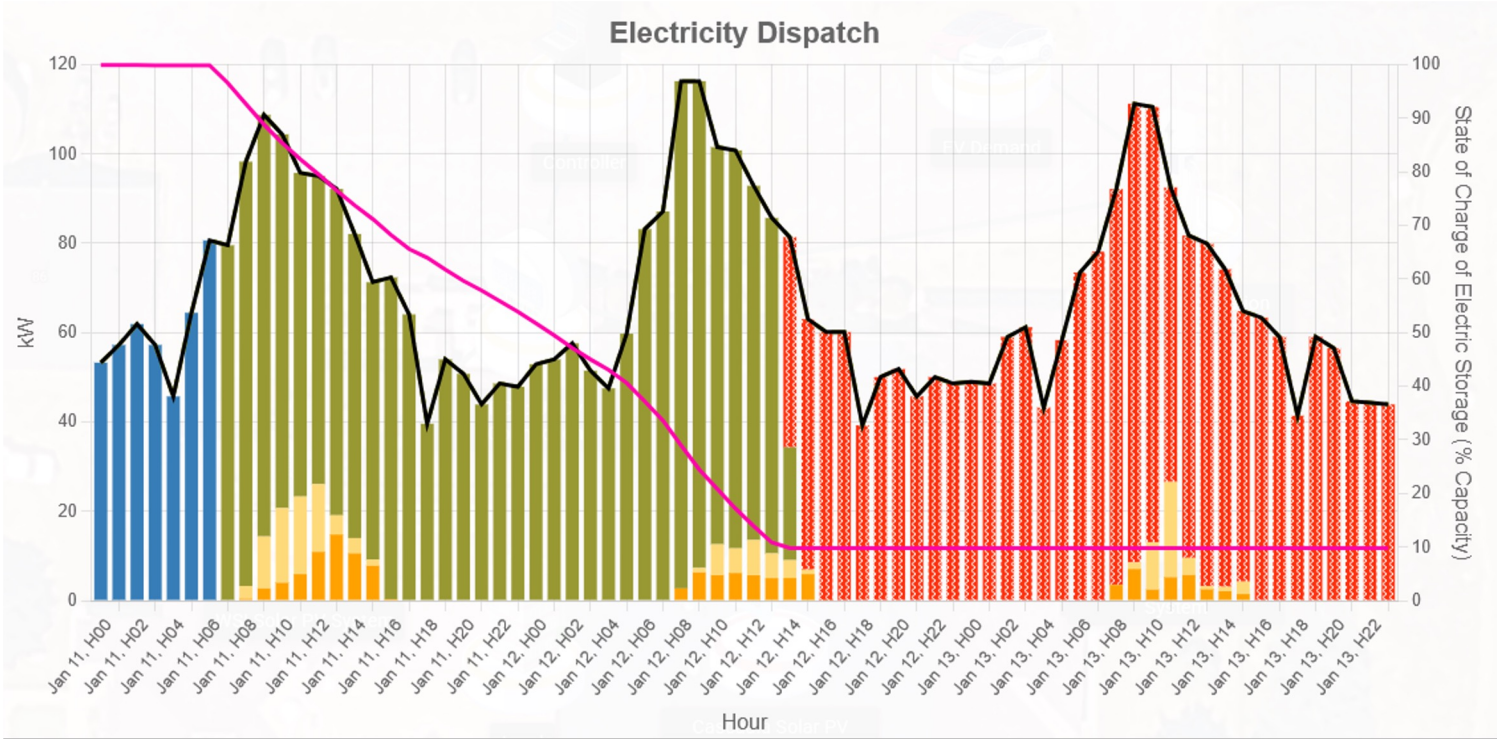
Goals & priorities (inclusive of phase 2)

Lopez Island is susceptible to wildfire, climate-amplified storms, earthquake and tsunami

1. **Serve as a Community Resiliency Hub during emergencies**
   - Maintain an environment favorable for providing meals and shelter for the 185 students and additional community members as needed
   - Services include: temporary shelter, potable water, food refrigeration, hygiene, emergency power for medical device charging and emergency communications equipment and transportation
2. **Maintain normal Elementary School operations during routine power outages**
3. **Reduce building energy bills ($50k annual savings after $6k annual maintenance)**

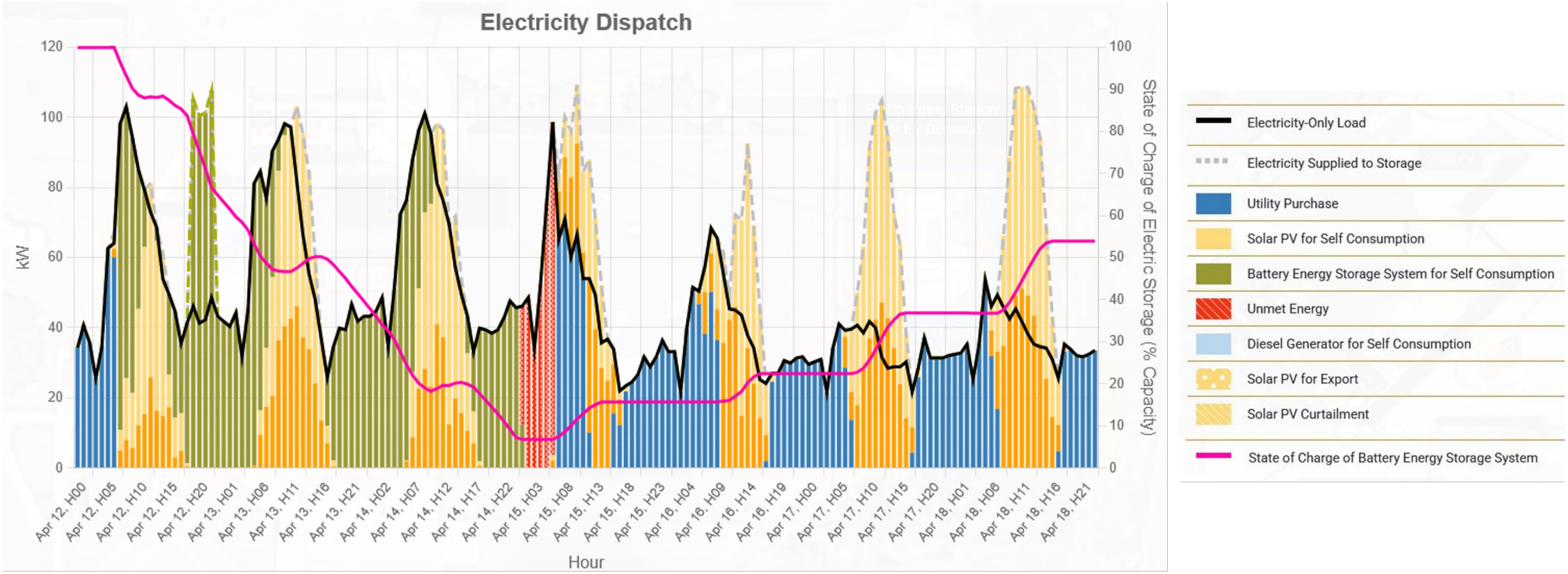
January Dispatch at 100% of Building Demand, 2,502 kWh BESS

- BESS + PV system support the entire building for ~31 hrs



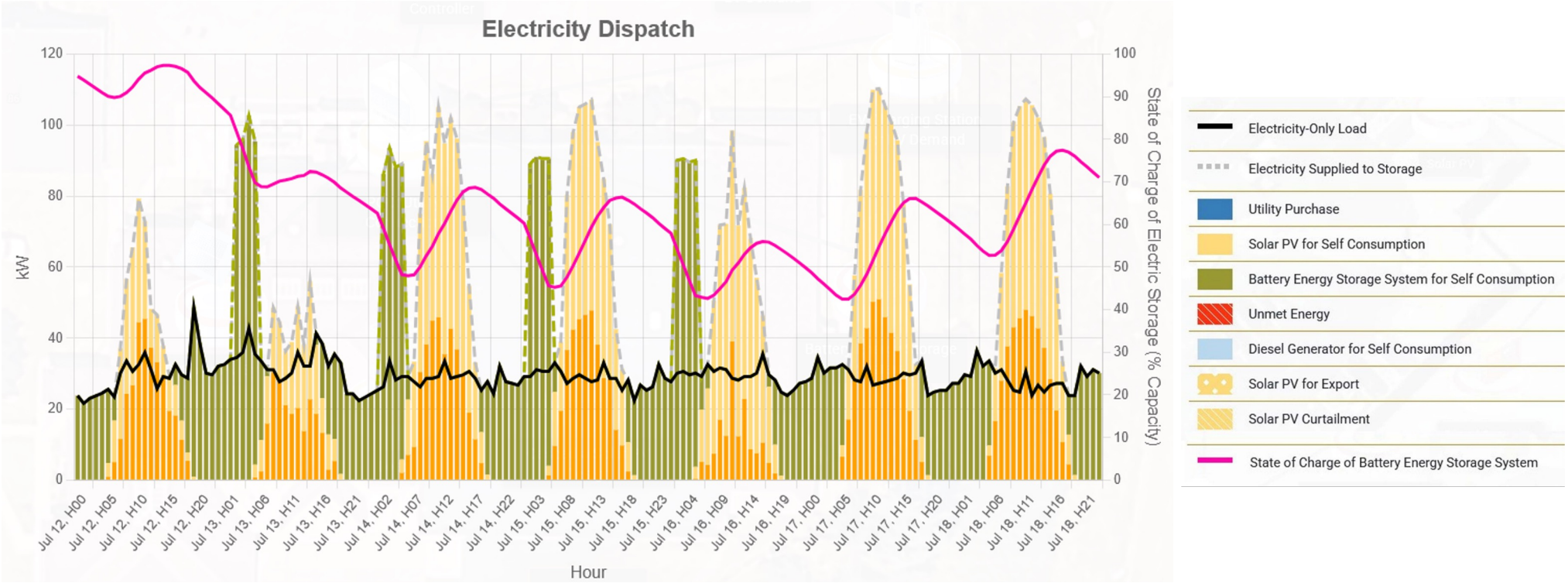
April Dispatch at 125% of Building Demand + (1) EV Charge, 2,502 kWh BESS

- BESS + PV system support the entire building for ~64 hours



July Dispatch at 125% of Building Demand + (4) EV Charges, 2,502 kWh BESS

- BESS + PV system support the entire building for 7+ days



Challenges and innovations



Challenges:

1. School district has no upfront funds for project; grant only pays after commissioning

2. In bidding process, school cannot risk underestimating cost or leave $ on table.



Innovations:

1. OPALCO on-bill finance until grant disbursement

2. RFP designed bidding based on max kWp for fixed cost

Thank you!



LOPEZ ISLAND SCHOOL DISTRICT

Washington State Department of Commerce

WSU Energy Program

Western Solar INTEGRITY & CRAFTSMANSHIP

Spark Northwest

CASCADIA RENEWABLES

OPALCO Co-op Run. Community Powered.

MZ Solar Consulting

U.S. DEPARTMENT of ENERGY

Avisen

Types of mini grids and microgrids



Mesh-grids

Distributed solar and batteries at homes share electricity locally.



Conventional rural mini grids

One central power plant supplies a village through an isolated network.



Interconnected mini grids

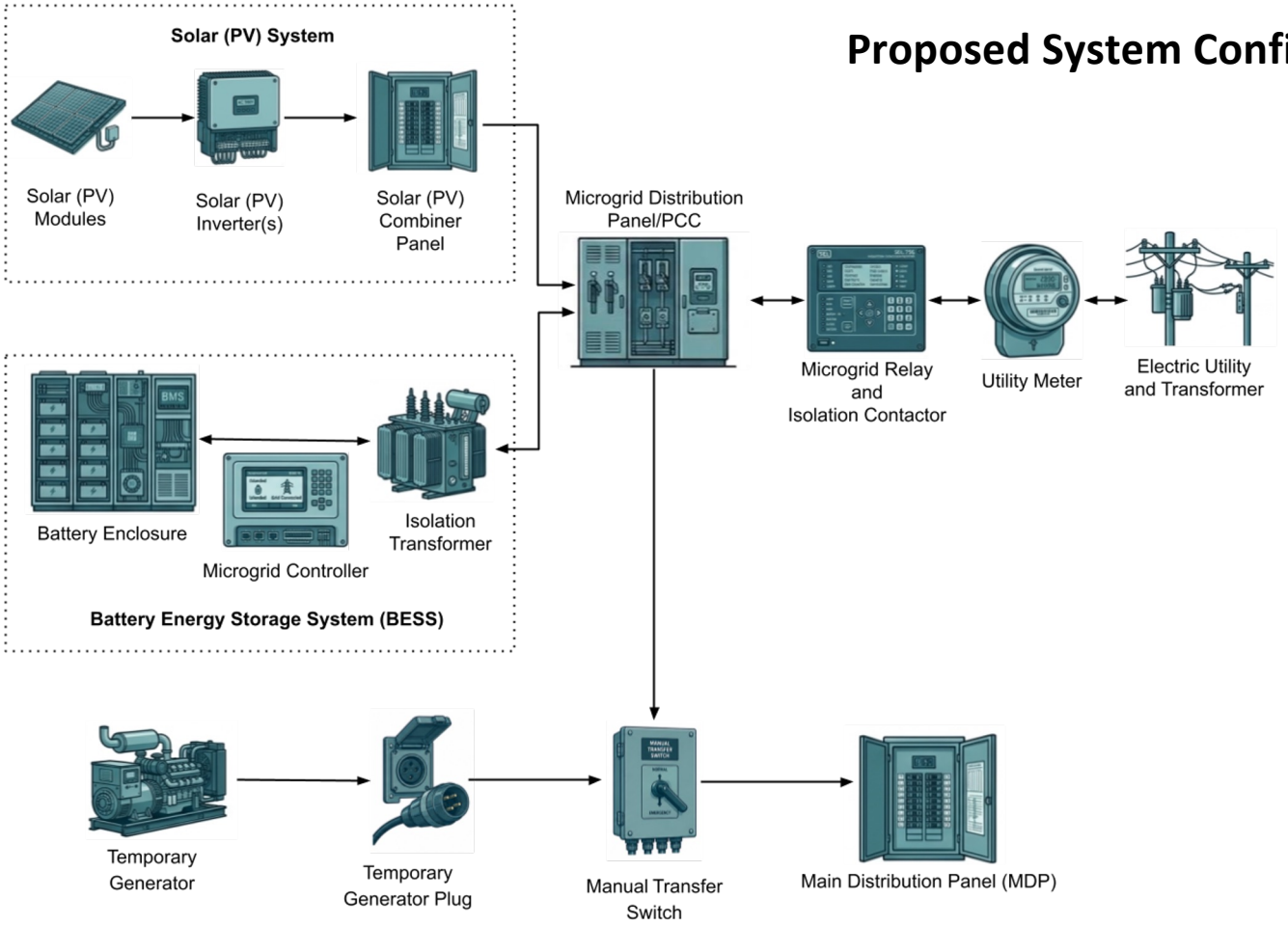
Local generation works with the main grid to improve community supply.



Microgrids for resilience

Local generation and storage keep critical services running during grid outages.

Proposed System Configuration



Phase 2 Timeline

