Joint Energy Division and Stakeholder Workshop for Diesel Alternatives Discussion

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Realities of Developing a Microgrid for a Rural Community

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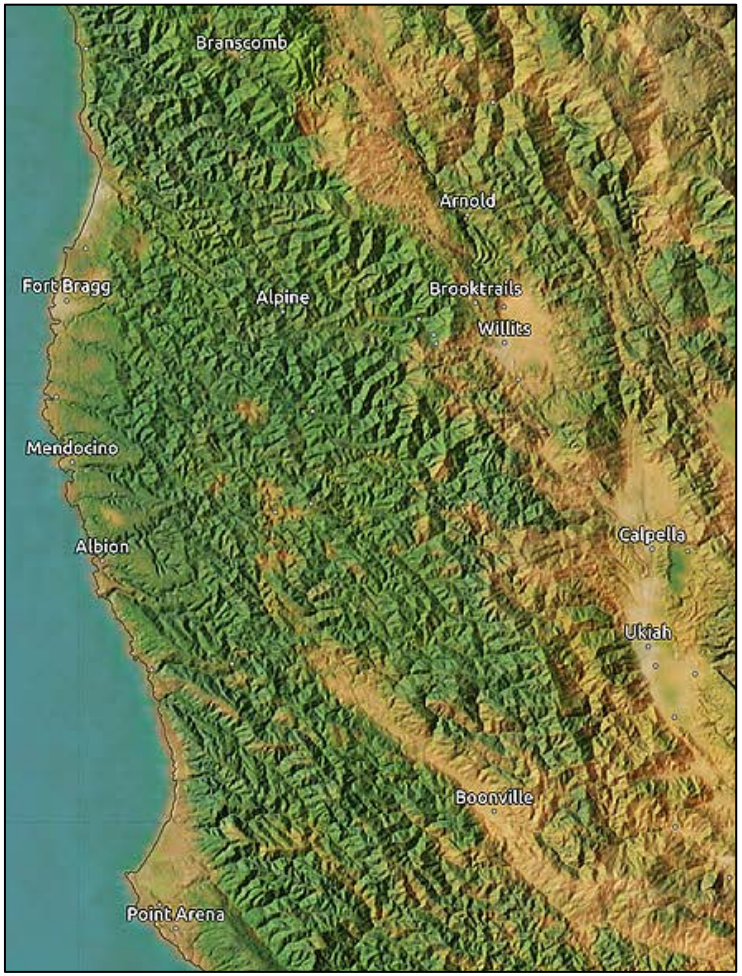
Information about the City of Fort Bragg

Basic Information

- Largest community on the Mendocino Coast
- Physically isolated by coastal mountains
- The only hospital within an hour's drive
- Severely Disadvantaged Community per the American Community Survey
- Served by two 60 kV lines that cross a terrain with trees taller than the lines
- No natural gas

October 2019 PSPS

- Lasted 99 hours
- Had significant health and financial impacts on an economy that was already struggling



How a Plan Took Shape

- Community members with expertise were motivated to mitigate the impacts of future PSPS.
- Submitted a bid for DGEMs
  - Critical loads only
  - Solar and storage.
- Support from a broad range of local stakeholders and government
- Project concept has evolved following informative discussion with equipment suppliers
  - Start with core microgrid and expand
  - Gradually reduce need for diesel generators

The Fort Bragg Critical Loads Microgrid

The Realities of Providing Reliable Service in Fort Bragg

Options	Pros	Cons
Hardening the Grid	Ensures reliability on the coast during a PSPS without using diesel generators.	The cost is considered prohibitive.
Diesel Generators	• Serves all the load in Fort Bragg • Less expensive and more immediate than hardening, which may not be feasible	• Tier 3 generators in close proximity to the hospital and senior housing. * • Logistics of renewable fuel. • Only a temporary solution.
Solar plus Storage and a limited amount of LP fired reciprocating engines	• Clean energy preferred by the community • Could use Net Energy Metering that will serve FB facilities in normal conditions.	Doesn't serve all the load in Fort Bragg.
Phased Approach which begins with a Critical Loads Microgrid	• Meets all the load • Gradually reduces need for diesel generators • Clean energy preferred by the community	Finding the money to fund the core microgrid is beyond the ability of local public entities.

* Similarly, the diesel generators installed at the Mendocino Big River substation border an elementary school.

How to Get the Microgrid that Fort Bragg Wants

Short Term

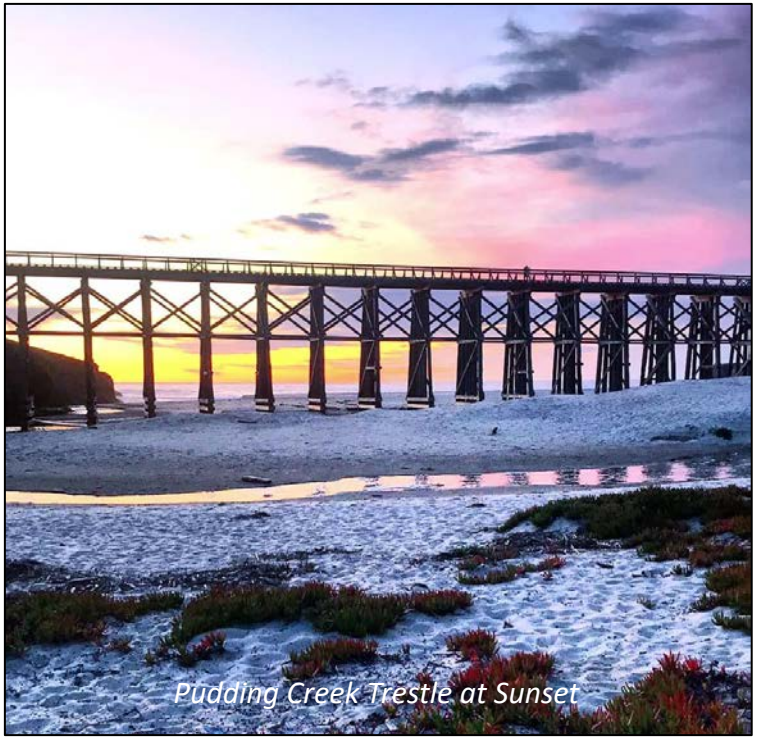
- Prefer Tier 4 (cleanest) diesel generators for temporary service.
- Develop the core microgrid to serve the critical loads with cleaner resources.

Longer Term

- Phase out use of diesel generators by adding more localized microgrids until all the load is served; or
- Develop a large solar plus storage project on the coast.

Next Steps

- Determine ownership
- Secure outside help to pay for the critical loads microgrid.
  - Estimated cost is $2.5M
  - Estimate one year to complete
- Feasibility study on expanding the microgrid



Pudding Creek Trestle at Sunset

Given the realities of providing reliable electric service to our community we would like to be considered for a pilot project.