

DOE Program Review Presentation



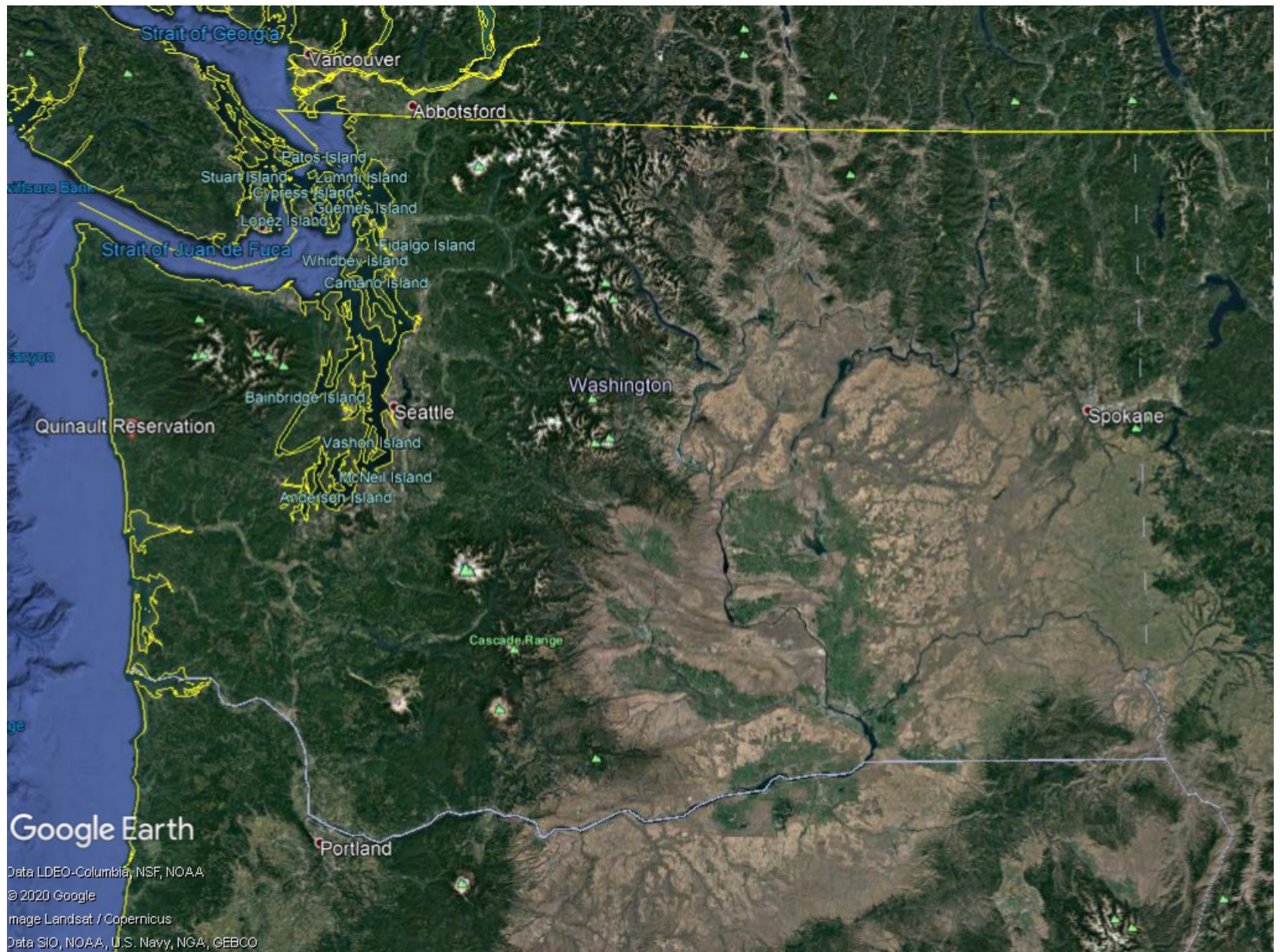
Dr. Kelvin Frank
Planning Manager
November 17, 2021



Quinault Indian Nation

- The Quinault Indian Nation (QIN) consists of the Quinault and Queets tribes and descendants of five other coastal tribes: Quileute, Hoh, Chehalis, Chinook, and Cowlitz.
- Approximately 3,000 members. Village of Taholah has a population of approximately 800



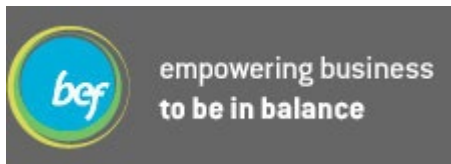


Queets Solar

- Back up life safety systems
- 12 Education hours for North American Board of Certified Energy Practitioners
- Worked Tribal Employment Rights (TERO)
- School Curriculum fundamentals
- Save \$2,000 annually



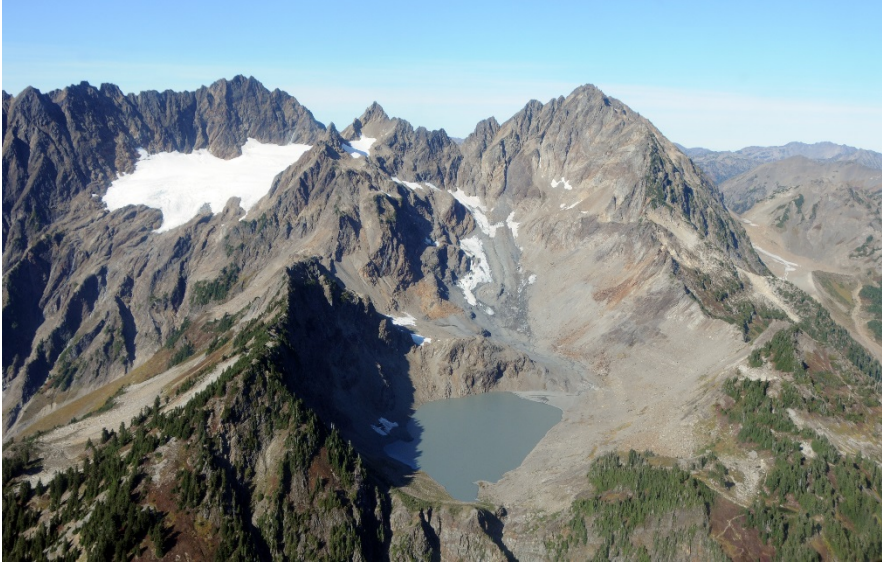
Queets Solar



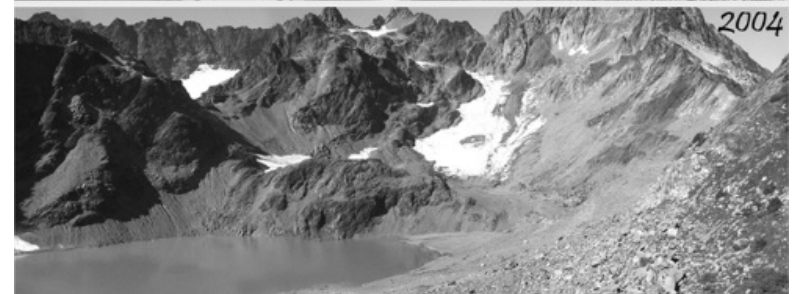
An example for our DOE funded project!



Climate Change and Quinault



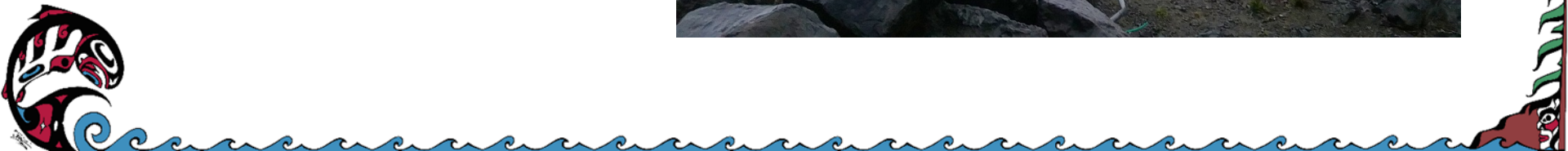
Anderson Glacier, Headwaters of the
Quinault River, Olympic National Park



Climate Change and Quinault

Resources at risk

- Salmon – warm waters, low river flow
- Clams – ocean acidification
- Trees – fire, pests
- The Quinault People



Hazards

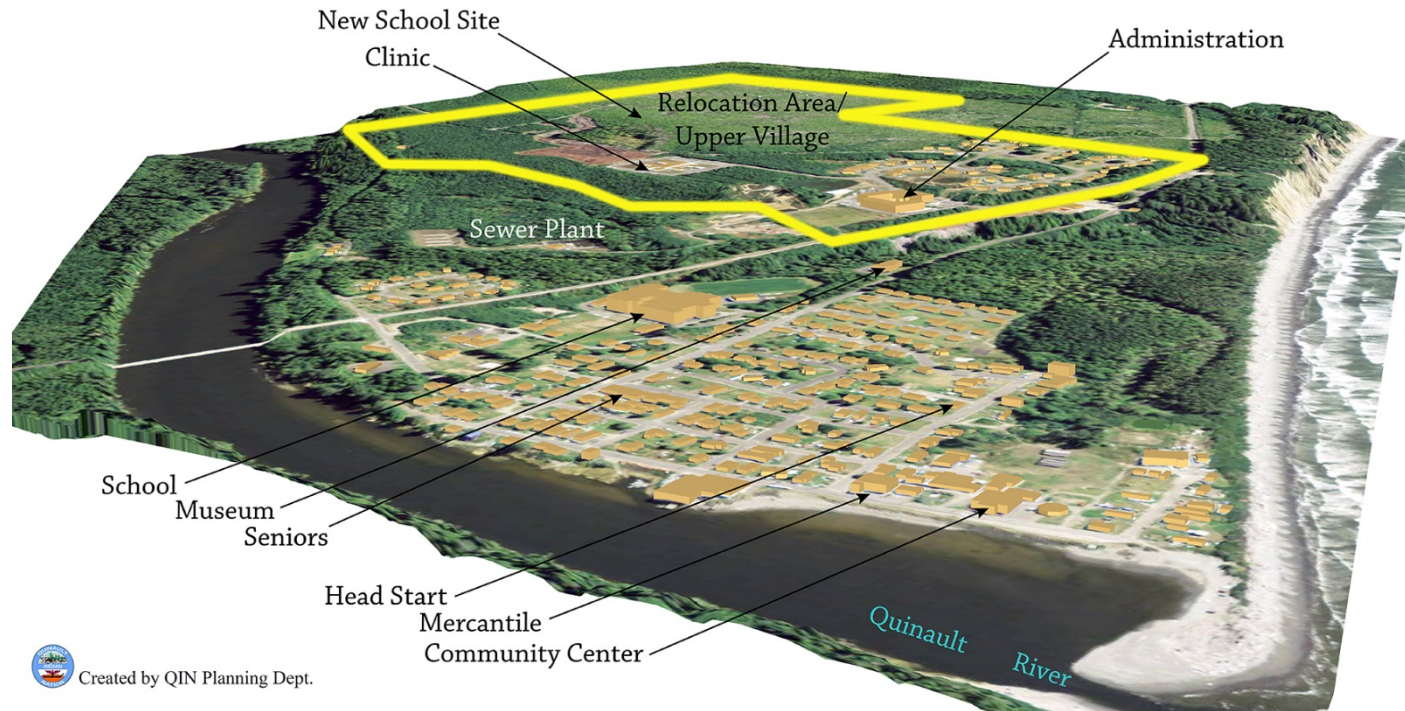
- Dual threats to Taholah lead to Relocation Plan
 - Sea Level Rise
 - Tsunami from 9.0 earthquake
 - Cascadia Subduction Zone similar to tectonics that caused Indonesian tsunami in 2004
 - 5 to 20 minutes escape time (if good conditions)



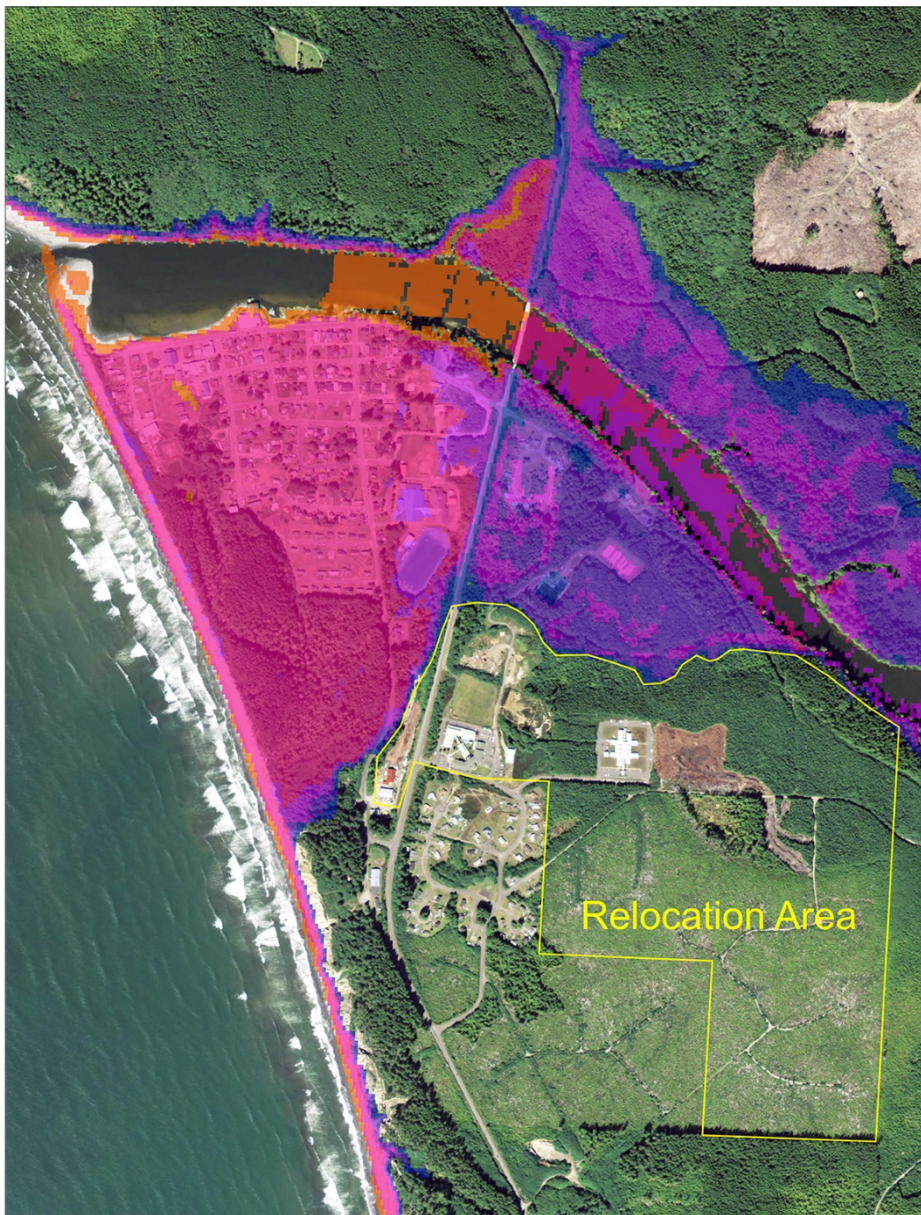
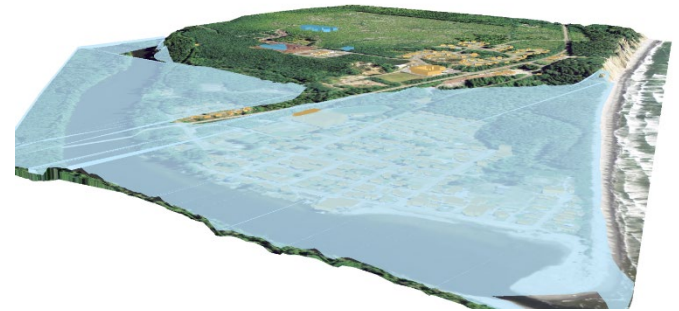
Late 1800's
Sketch of Coastal
Flooding in Taholah



Why Relocate the Village?



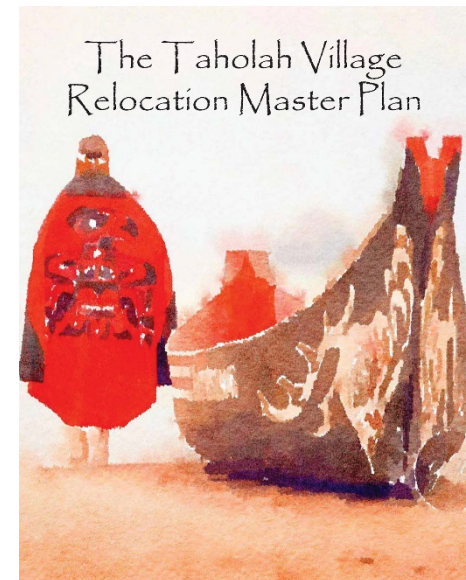
Inundation Depth



Inundation Depths in Taholah from 2015 WaDNR Model

Legend

Relocation boundary 3062	Inundation Depth (meters)	6.1 - 9 (20 to 30 ft)	15.1 - 18 (49 to 59 ft)
		9.1 - 12 (30 to 40 ft)	18.1 - 21 (59 to 69 ft)
		12.1 - 15 (40 to 49 ft)	21.1 - 23.1 (69 to 76 ft)
		0.1 - 3 (<10 feet)	
		3.1 - 6 (10 to 20 ft)	



Energy Park - Resilience



Biomass




Future 1 MW array for islanded microgrid



A way to safely shelter in place for months




99kW system w/ battery backup



Integrated Battery Rack

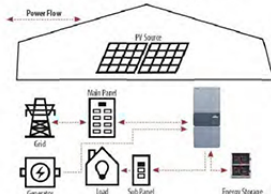
Comprehensive Battery Enclosure Solution with Cell Interconnect



Features:

- Ideal for use with OutBack Radian, FLEXpower and FLEXcoupled systems
- Fast installation
- Supports multiple 48V strings of OutBack EnergyCell and lithium ion batteries
- Overcurrent protection on each battery string provides added safety and flexibility
- Well-ventilated for increased battery safety and longevity
- Protective terminal covers
- Space-saving design with smaller footprint

Typical System Integration



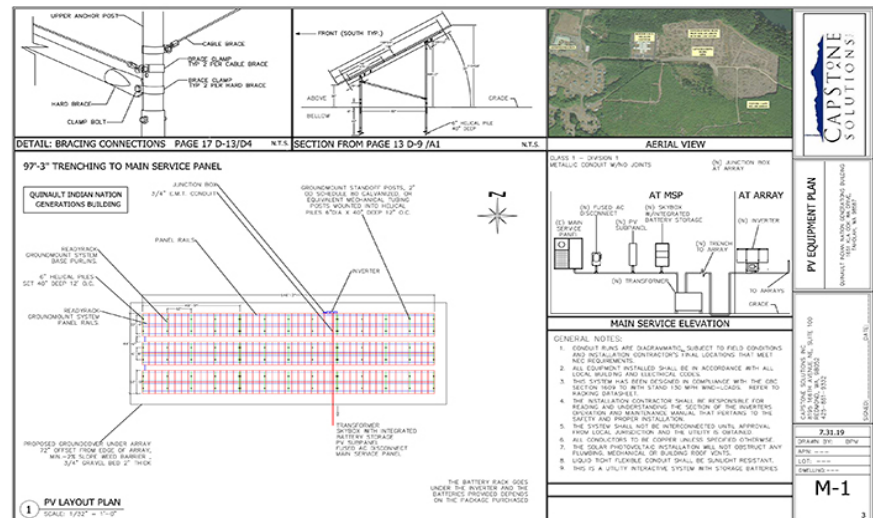
Our line of pre-assembled battery racks are designed to meet the needs of system integrators and installers and provide the best of both worlds.

The innovative OutBack Integrated Battery Rack system is a comprehensive battery enclosure which includes all cell interconnects, cabling and series string over current protection and disconnects. All electrical connections are made at the factory and ship fully assembled with the exception of the batteries, which can be quickly added and connected on the job site, making the Integrated Battery Rack uniquely easy to specify, order and install.

Unlike typical steel racks or sheet-metal enclosures, the OutBack design is crafted of powder coated aluminum, resulting in a cleaner appearance able to withstand the most challenging environments - while weighing less than 90 pounds. The 2-shelf IBR-2 is sized to fit under an OutBack Radian inverter, charger to reduce system component "clutter" and make the best use of installation space. Clear covers on the racks permit visual inspection of internal components while providing additional protection for the batteries and electrical connections.

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- BIA, Indian Energy Grant for design & microgrid study
- DOE grant to fund construction
- Back up of some life safety systems for Generations Building (refrigeration, lights, exit signs)
- Supply power to the grid



Objectives

- Ensure that some life safety systems can remain on in the case of disaster in the building to be used as an emergency shelter
- Reduce net electrical use by the Nation
- Workforce development
- Increase Nation's knowledge of solar power in anticipation of future microgrid

Project Status

- Just starting the project. In the process of hiring contractors



99kW system w/ battery backup





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