OREGON RESILIENCE CASE STUDY
BUSINESS CONTINUITY PLANNING: DERS & MICROGRIDS

A Business Continuity Plan (BCP) ensures an individual organization can continue to perform its **essential functions**, provide **essential services**, and deliver **core capabilities** during a disruption to normal operations.

Oregon utilities have implemented a number of BCP actions related to Distributed Energy Resources (DERs) and microgrids.

Eugene Water & Electric Board

EWEB contractor installs back-up battery power system.

The Eugene Water and Electric Board, which serves about 93,000 electric customers and 53,000 water customers in the Eugene area, has partnered with the two Eugene -area school districts to install back-up power capability and install or upgrade water well equipment at district-owned facilities. Many Eugene-area schools have existing rooftop solar that could provide on-site power for pumping water in addition to the back-up power sources. EWEB is investigating several possible back-up power sources, and is installing a microgrid back-up battery power source at Howard Elementary school in 2018 and a new water well and pump station in the spring of 2019. This microgrid is sized to run the water well pump at the site for up to three weeks, while the existing solar array will be configured to allow for charging of the battery bank. EWEB's project, which is designed to increase resiliency and support research and design, was funded through a grant with ODOE, Sandia National Laboratories, Advanced Grid Research and Clean Energy States Alliance. EWEB's goal is that five schools will be water resource-ready within five years. Within 5-10 years, microgrids may become more cost effective, which may result in penetration of these power sources to the electrical grid, due to an increase in customer-owned battery storage systems. Research from this first project and the following efforts will inform future policies, and will be used for planning purposes to better understand how integration with these systems will benefit the grid and the customer.

Because EWEB is both an electric and water utility, it is also focused on developing distributed emergency

water resources. EWEB plans to identify high-population areas where community members can access water – so locations should be accessible, have a nearby water source, and provisions for backup power capabilities to allow for pumping and filtration of water if the larger grid is down. Ideally, community members will have already stored emergency water at home and at work, and can get through the first few days or weeks after an emergency. This will allow EWEB and fellow responding agencies to get emergency hubs and water distribution centers up and running.

EWEB has partnered with the two Eugene-area school districts to install backup power capability and install or upgrade water well equipment at district-owned facilities. Many Eugene-area schools have existing rooftop solar that could provide onsite power for pumping water in addition to the backup power sources. EWEB is investigating several possible backup power sources, and is installing a microgrid backup battery power source at a school site with already existing water rights in 2018. This microgrid is sized to run the site water well pump for up to three weeks, and the existing solar will be configured to allow for charging of the battery bank. EWEB is using this project for both increasing resiliency and research and design through a grant with ODOE, Sandia National Labs, Advanced Grid Research and Clean Energy States Alliance. EWEB's goal is that five schools will be water resource-ready within five years. Within 5-10 years, the cost of microgrids may become more economic, which may result in penetration of these power sources to the electrical grid due to an increase in customer-owned battery storage systems. Research from this first project and the following efforts will inform future policies, and will be used for planning purposes to better understand how this integration with these systems will benefit the grid and the customer.

Portland General Electric

Dispatchable Standby Generation (DSG) Program: Portland General Electric is involved in several energy projects around the Portland metro area with resilience benefits. First, PGE manages a Dispatchable Standby Generation (DSG) program that partners with large customers, many of them hospitals, that already have on-site diesel generators. Through the DSG program, PGE upgrades the customers' control and communications equipment, assumes most routine maintenance and fuel costs, expands on-site fuel storage capabilities, and regularly tests the generator. In exchange, the customer agrees to allow PGE to rely on the customer's generator to supply extra capacity to meet system needs if there is ever an emergency need for capacity. PGE benefits by having an additional emergency capacity resource, while the customer benefits through a more robust on-site energy resilience solution.

City of Portland Fire Station 1

City of Portland Fire Station 1: PGE is also involved in the deployment of microgrid projects that combine solar and storage to enhance resilience. In 2017, the utility partnered with the City of Portland's Fire Station 1 through its Renewable Development Fund grant program to deploy a solar and storage project that can provide resilient back-up power for the fire station following a grid disruption.

Tillamook People's Utility District

The Tillamook area is known for its dairy production, so the area is well-stocked with animal waste. Part of the PUD's three-year strategic plan is to assess how three local waste digesters could be developed into a microgrid to provide power, particularly after an emergency.

Two digesters are currently operating in the area – one is owned by a local farmer where the power is sold into the grid using BPA transmission lines, and a second is owned by a group of five farmers where the power is purchased by the PUD. A third is currently non-functioning, and owned by the Port of Tillamook. When it's back up and running, Tillamook PUD will likely purchase the power. The three digesters could produce up to 3 MW of power altogether.

Cost remains an issue, as producing power from the digesters includes costs to ship waste and operate the equipment. Tillamook PUD currently offers a "green power" program where customers can buy blocks of the power – but it is still at a margin loss for the PUD. It is reviewing possible changes to the program, and will be working with the creamery co-op to create a marketing plan to see if customers would be interested in buying in to a re-worked waste-produced power program. Tillamook is optimistic about the program – the creamery already plans to use green power to operate its new visitor center, and the local Pelican Brewery would also use it.

Eugene Water & Electric Board

In addition to continuing to implement seismic and preparedness activities, EWEB is actively deploying AMI "smart meter" technology, as well as black starting its generation facilities after an emergency to power critical loads in the Eugene area.

An AMI system is still in the deployment stage at EWEB, with about 4,000 or so smart meters deployed among more than 90,000 electric meters territory-wide. An AMI system would allow EWEB to better respond in an emergency, where the utility could turn on or off specific areas around the city and direct power to critical services. EWEB is currently installing the smart meters as opportunity allows – including new construction, new tenants, or large renovations. EWEB hopes to have the AMI system deployed within three years.

After a large emergency, power systems are likely to experience failure. EWEB is investigating the feasibility of black starting its hydro generators and customer owned local generators to power critical facilities after an emergency. Additionally, EWEB is in plans to launch a study to work with customers to better measure their load, and identify how they could trim energy or water use during emergency situations if curtailment is needed to maintain stability. The process could identify the smallest possible load they can handle and still keep things running – this will help ensure that a black-started generator isn't overloaded with a larger load beyond its capability.

Central Lincoln People's Utility District

Central Lincoln's advanced metering infrastructure (AMI) system has been fundamental to improving reliability and resiliency in day to day operations. Employees are able to view meter data on handheld

devices and operators can determine system status from the substation to the customer meter. After a disaster, having eyes on the system to the meter level means that crews can be directed to specific prioritized outages resulting in more timely repairs and reduced outage times. Central Lincoln will continue to use AMI data to optimize its systems including the communication network that it relies upon to operate. With the AMI system, Central Lincoln is in a position to integrate distributed energy resources as they come available including solar, wind, biomass, battery storage, and wave energy.

National Examples

See our Deep Dive on *Deploying Resilient Microgrid Solutions* for national examples of DERs.