Welcome

Cascadia Electrical Power Resilience Symposium

Sept. 12–13, 2019

Rates Hearing Room • 1201 NE Lloyd Street • Portland, Oregon 97232

The Cascadia Region Earthquake Workgroup (CREW) Lifelines Committee has partnered with Bonneville Power Administration

- Regional earthquake hazards update
- ShakeAlert and power utilities
- Best practices & information sharing
- Cost benefit analysis of mitigation for utilities: A business case
- Resources for funding mitigation

Space is limited • No registration fees • Additional sponsorship is highly appreciated

For questions or follow-up please email Bill Steele at wsteele@uw.edu.
Profile

The Bonneville Power Administration is a nonprofit federal power marketing administration based in the Pacific Northwest. Although BPA is part of the U.S. Department of Energy, it is self-funding and covers its costs by selling its products and services. BPA markets wholesale electrical power from 31 federal hydroelectric projects in the Northwest, one nonfederal nuclear plant and several small nonfederal power plants. The dams are operated by the U.S. Army Corps of Engineers and the Bureau of Reclamation. The nonfederal nuclear plant, Columbia Generating Station, is owned and operated by Energy Northwest, a joint operating agency of the state of Washington. BPA provides about 27% of the electric power generated in the Northwest, and its resources — primarily hydroelectric — make BPA power nearly carbon free.

General information

BPA established .................. 1937
Service area size (square miles) .... 300,000
Pacific Northwest population ....... 13,932,397
Transmission line (circuit miles) ... 15,209
BPA substations .................. 261
Employees (FTE) ................ 2,793

1Note: FTE stands for Full-Time Equivalent.
COOP & Emergency Management (NNC)

Sarah Laylo, Chief Security Officer
John Nguyen, Manager, COOP and EM (NNC)

COOP & Emergency Management Description

**Continuity of Operations and Emergency Management:** Responsible for developing plans, training, and exercises to ensure BPA is able to quickly recover and continue to perform its mission essential function in the event of an emergency or disaster.

<table>
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<tr>
<th>Stakeholders</th>
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<tr>
<td>• Federal Partners; FEMA, DOE, DOD, USACE, BOR</td>
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<td>• State Partners</td>
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<td>• OFEB / Crisis Continuity Coalition (C3)</td>
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<td>• Policy Group</td>
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<td>• T, P, J, L, F, several N orgs</td>
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<td>• IC / IMT members</td>
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<td>• ESF 12 Responders</td>
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<td>• Wardens</td>
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<td>• Consortiums</td>
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<td>• Mutual Aid Agreements</td>
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Preparation through Plans

• Individual and Family Preparedness
  – https://www.ready.gov/
  – https://www.oregon.gov/oem/Pages/default.aspx
  – https://mil.wa.gov/preparedness

• Policy and Procedures

• Plans
  – Wildland Fire Prevention / Mitigation Plan (Vegetation Management and Maintenance Programs)
  – Transmission Restoration Plans
  – COOP Plan (Physical and Cyber Security Plans are separate)
  – Business Continuity Plans
  – Information System Contingency Plans
  – Disaster Recovery Plans (data centers)
  – Incident Management and Response Plans (BPA Incident Response Playbook, Supply Chain Logistics Management Plan)
  – FCRPS Coordinated Continuity Plan (USACE, USBR, BPA)
  – WRMAG/Mutual Aid Agreements
  – Pre-scripted Mission Assignments (in progress)
Preparation through Training

• Test, Training, & Exercises
  – Incident Management Team (adopted ICS)
  – WPS/GETs monthly drills
  – EOP 008 annual exercise (control center loss of functionality)
  – Policy Group Exercises
  – FCRPS CCP exercise (fail over to Spokane, relocation)
  – GRIDEX V exercise

• Emergency Notification System (ENS)
  – Accountability drills (quarterly)
  – Notifications
  – Activations
Resiliency through Redundancy

• Two independent Control Centers (ability to fail over to one another; redundant communications)
  – Dispatch Centers (Real Time Operations)
  – Network and System Operation Centers
  – Data Centers
  – Emergency Coordination Centers

• Regional and District Managers
  – Transmission Field Line Crews

• Account Executive / Customer Service Reps
Are You Ready?
Cascadia Subduction Zone

- Subduction Zone: Juan de Fuca and North American plates subducting beneath the North American plate
  - Slide: ~ 3 cm/year
  - Deep of subduction: ~ 12 km

East earthquake history:
- Most Recent Great Earthquake: 1700, Magnitude ~ 9.0
- Approximately 500 years

Historical characteristics:
- Rough estimate from North American crustal history and written records in Japan
- Peak tsunami height in the near-source region ~ 70 feet at the mouth of Redwood Creek, northern California from Yurok stories
- Peak tsunami height in Japan (~7 hours travel time and 5000 miles away) ~ 15 feet

Approximate rupture zone of the last great Cascadia earthquake in 1700 shown in red.

Information compiled by Lori Dengler, Humboldt State University. More details: http://jades.oregonstate.edu/

Subduction Earthquakes

- M9, 2004, Indonesia
- M8.8, 2010, Chile
- M9, 2011, Japan

AS AN EXAMPLE: THE PACIFIC NORTHWEST
BONNEVILLE POWER ADMINISTRATION

EARTHQUAKE MODEL: M9 CASCADIA SUBDUCTION ZONE
(using System Earthquake Risk Assessment - SERA)
The CCP deals with the scenario of a major incident severely impacting all operations west of the Cascade Mountains, such as would be caused by a Cascadia Subduction Zone earthquake. In this scenario, the power system will be “generation rich and load poor,” meaning electricity supply (generation) will exceed electricity demand (load). Most load is west of the Cascade Mountains and will be lost until local distribution utilities can repair their systems and BPA transmission lines and substations are inspected and, if necessary, repaired. Most generation capacity is east of the Cascade Mountains, and therefore no significant impacts to generation capacity are expected.

In a “generation rich and load poor” environment, hydraulic objectives are more critical to coordinate than generation objectives. The CCP calls for USACE to take over providing direction for FCRPS operations from BPA, focusing on hydraulic objectives and suspending generation objectives until load recovers.

*** Relocation of Transmission and Power Mission Essential Personnel required from Portland/Vancouver areas to Spokane
Order of Succession/Transfer of Authority
Senior Leadership (by location)

DCC/ESC
• Richard Shaheen
• Jeff Cook
• Mike Miller
• Tina Ko
• Jason Burt
• Robin Furrer
• Michelle Cathcart

MCC/MSC
• *WAPA Administrator
  • Nancy Schimmels
  • Greg Olesen
  • Dana Wolfe

Grid Operations
• Steve Felker
• Brian Johnson
• *USACE Walla Walla LNO

Key Decisions
• IC/IMT --> ECC activation
• Transfer of Authority
• External Comms (PIO) updates
• Internal Personnel Decisions
• Any strategic in nature key persons – State and Fed Gov’t Officials
• Legal considerations, i.e., declarations docs in scope

Standing Orders
• Continuity Duty Officer (CDO) initiates succession
• Allocation of $5 million for emergency fund

Internal Communications (HR/Comms)
• Event’s Geo impact communications to employees and external stakeholders/authorities.
• Determining personnel required to work, authorize administrative leave or telework for everyone for the remainder of the day.

External Communications (Leader to Leader)
• Bruce Walker, Assistant Secretary, Office of Electricity
• BG Peter Helmlinger, USACE NW Division
• Lorri Gray, USBR Regional Director

HQ/DSC
• Administrator
• Deputy Administrator
• COO
• CAO
• EVP & General Counsel
• CFO
• SVP Power
• CIO

* = External BPA personnel
Questions?