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BPA Refrigeration and Refrigerants

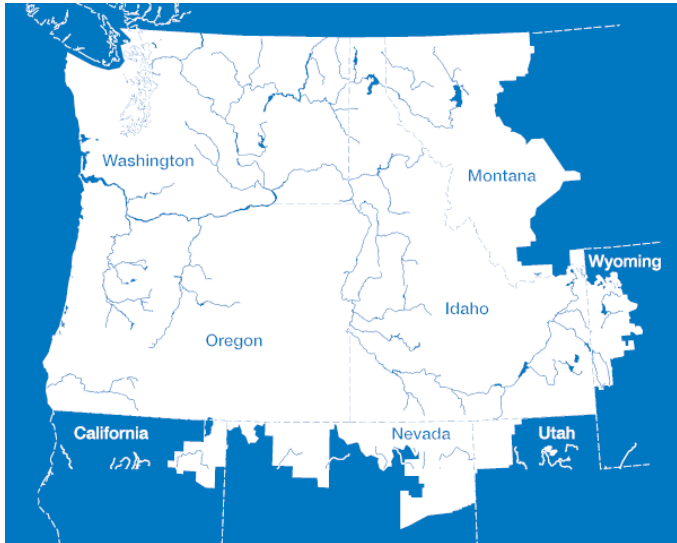
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Refrigeration and
Refrigerants Subject Matter
Expert

Agenda

- Bonneville Power Administration
- Past and present programs
- Hurdles to overcome
- Available resources
- Example projects
- Ongoing research

Bonneville Power Administration



Energy Efficiency

In FY 2015, based on preliminary figures, BPA acquired more than 138 average megawatts of new energy efficiency savings. That brings the cumulative total savings to 2,153 aMW since 1982.

Federal Hydro Projects

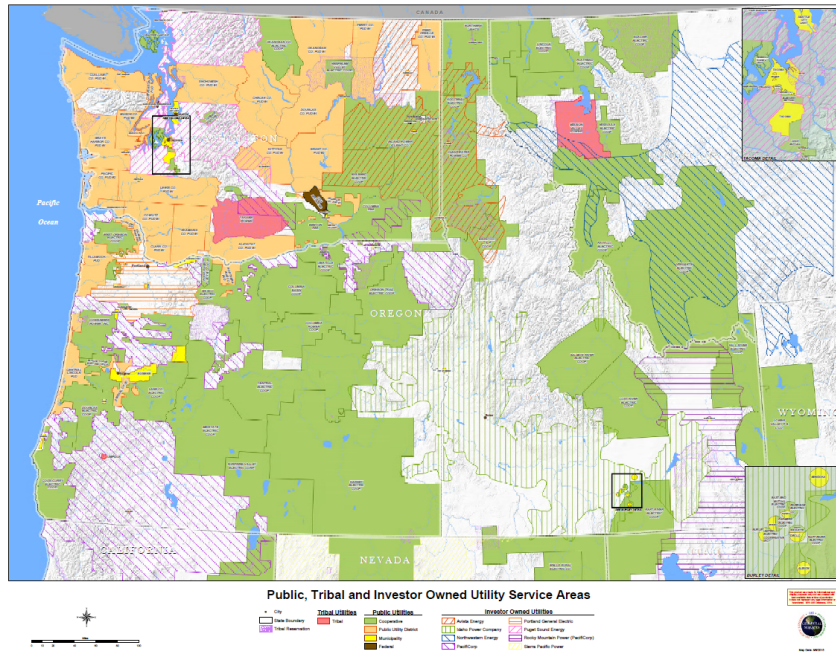
31 federal dams (max. capacity) 22,458 MW

Projects owned and operated by:

U.S. Army Corps of Engineers (14,651 MW) 21 dams

Bureau of Reclamation (7,807 MW) 10 dams

Bonneville Power Administration



Customers

Cooperatives	54
Municipalities	42
Public utility districts	28
Federal agencies	7
Investor-owned utilities	6
Direct-service industries	2
Port districts	1
Tribal utilities	2
Total	142

Past and Present Programs

- Past: Energy Smart Grocer – PECl / CLEAResult
- Present:
 - Commercial: Deemed and Custom
 - Energy Smart Industrial: Cascade
- Future: Single Commercial – In review

Hurdles to Overcome

- We only incentivize energy savings
- What refrigerant / system combos are best?
- Early Contact and Coordination
 - Who is your Pacific Northwest Energy Manager?
- Defining Base and Post:
 - Who has and will share your drawings?

Available Resources

- T.I. Funding – look to T.I. Roadmap
- Custom Projects
- Existing Measures
- New BPA Qualified Measures

Example Projects

- Grocery Refrigeration Cx
- Add Doors
- Deemed: ECM, Lights, ASHC, etc.
- Pilot Custom Project:
 - Refrigerant Changeout: R404a to R448a

Ongoing Research

- EPRI Refrigerants Collaborative
- Climacheck Performance Monitoring
- Permanent Magnet Synchronized Motors
- BPA “Demystifying Alternative Refrigerants”



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Thank you

- Derek Hamilton - Shecco
- Ammi Amarnath – EPRI
- Ryan Fedie - BPA

Thank you very much!

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