Northwest Power and Conservation Council

December 2, 2010

MEMORANDUM

TO: Council Members

FROM: Ken Corum

SUBJECT: PNGC Panel on Smart Grid Investment Grant

PNGC Power is an electric generation and transmission cooperative with 16 member electric distribution utilities in seven western states. In May of this year PNGC received a grant from the U.S. Department of Energy for investment in smart grid technology. The investment program is separate from the Smart Grid Demo program that Bonneville and Battelle are coordinating and have described to the Council previously. PNGC's grant, which will be matched dollar for dollar by PNGC, will be used to buy and install nearly 100,000 smart meters and other infrastructure equipment.

Kevin Watkins, Vice President of IT and Engineering at the PNGC office in Portland, Dave D'Avanzo, Manager of Member Services at Lane Electric Coop, and Roman Gillen, CEO of Consumers Power Inc., will describe PNGC members' past experience with smart grid equipment and their plans for the future.

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

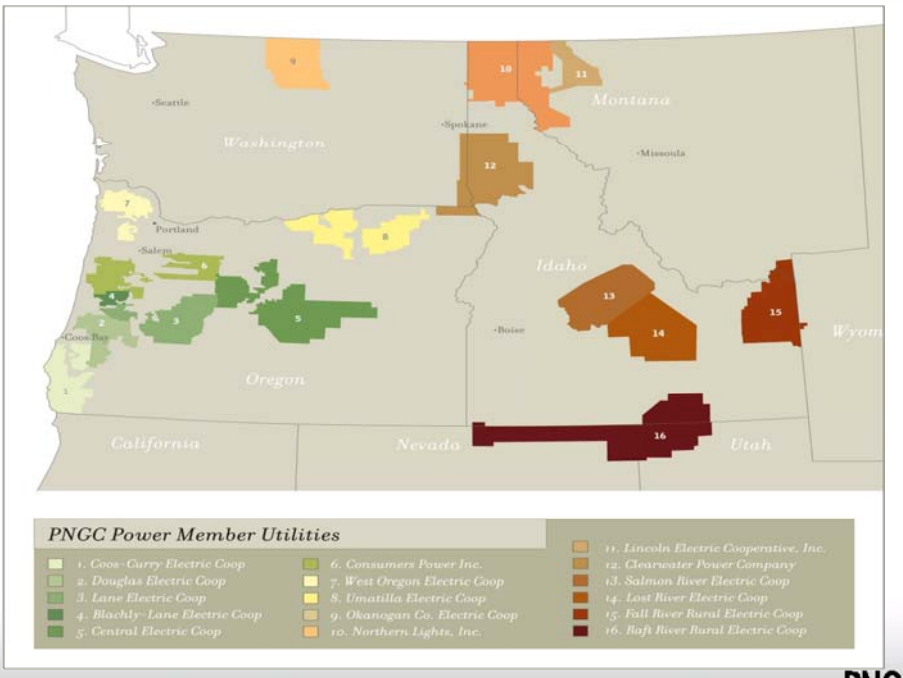
Smart Grid Activities

Northwest Power & Conservation Council

December 15, 2010

PNGC Power
Smart. Local. Connected.

PNGC Power



PNGC Power
Smart. Local. Connected.

About PNGC Power

- Joint Operating Entity (**JOE**)
  - 16 regional cooperative owners ("members")
  - Service areas in seven Western states
  - BPA's **4th** largest customer
  - Operate/manage Slice product

- Smart Grid grant recipient

  Thank You for supporting application!

PNGC Power
Smart. Local. Connected.

Topics

- **Overview:** PNGC Power's Advanced Metering Infrastructure (AMI) Project
  Kevin Watkins, Engineering Vice-President, PNGC Power

- **Focus:** Implementing AMI project at Consumers Power
  Roman Gillen, President/CEO, Consumers Power, Inc.

- **Focus:** AMI experience at Lane Electric
  Dave D'Avanzo, Manager, Member & Regional Affairs, Lane Electric

PNGC Power
Smart. Local. Connected.

What is *Smart Grid???*

- Intelligent transmission & distribution automation?
- Distributed generation & storage?

- Advanced Metering Infrastructure (AMI)?
- Demand response & load control?

PNGC Power
Smart. Local. Connected.

Smart Grid??? (cont.)

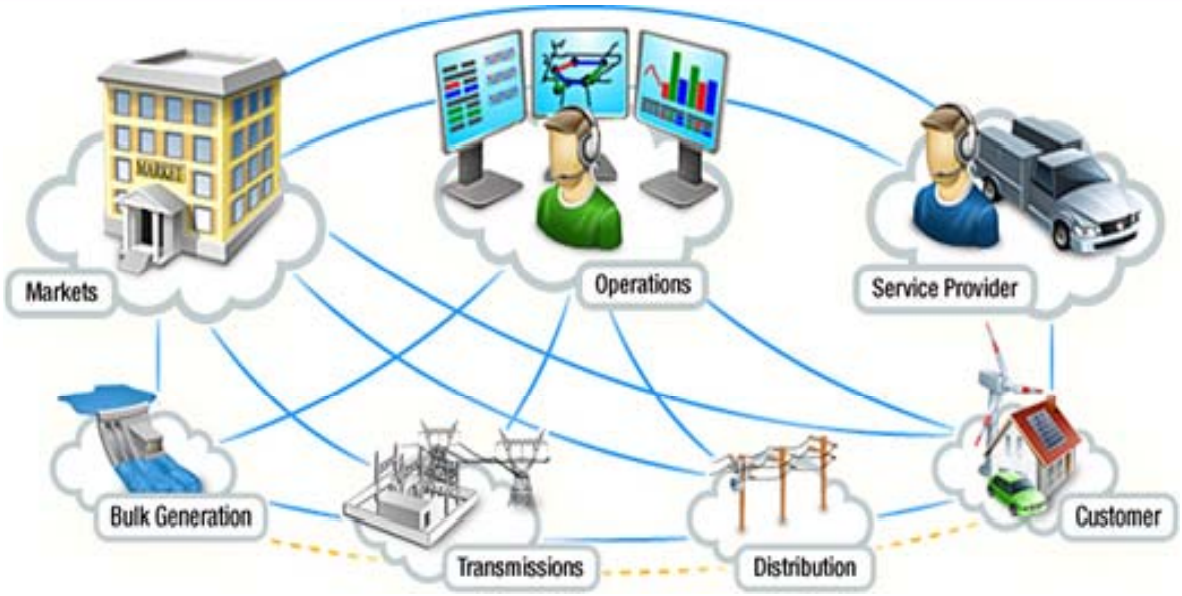
- ***Answer → Entire electrical power system from generation to end-use***

  ("generator ←→ refrigerator")

- Features
  - Sensors
  - Two-way communications
  - Information management
  - Intelligence ("smart")

PNGC Power
Smart. Local. Connected.

Elements of Smart Grid



PNGC Power
Smart. Local. Connected.

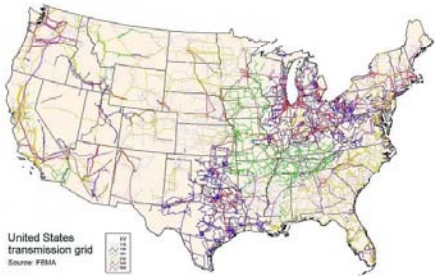
ARRA statutory background

- Two types of Smart Grid projects funded
- Smart Grid Regional Demonstration Initiative
  Example: Pacific Northwest Smart Grid Demonstration Project
- Smart Grid Investment Grant (SGIG) Program
  Example: PNGC Power's AMI Deployment Project

PNGC Power
Smart. Local. Connected.

SGIG Program

- Overview: $3.4B program to *“spur Nation’s transition to a smarter, stronger, more efficient and reliable electric system.”*
- Categories *(100 recipients total)*
  - Transmission Systems
  - Distribution Systems
  - Customer Systems
  - Equipment Manufacturing
  - Integrated/Cross-Cutting Systems
  - ***Advanced Metering Infrastructure (AMI)***



PNGC Power
Smart. Local. Connected.

PNGC Power’s AMI Project

- Scope
  - 10 Members participating
  - 97,600 metering points & 120 substations integrated
  - **$39.2M total cost** *(50% reimbursement)*
- Equipment details
  - 3 vendor systems
  - Power-line carrier (PLC) technology

PNGC Power
Smart. Local. Connected.

Immediate benefits

- Better customer information
- Streamlined billing process
- Improved reliability → Integration with outage management systems, etc.
- More efficient operations → Better information regarding distribution system status

PNGC Power
Smart. Local. Connected.

Major Challenges

- Customer acceptance & usage
- Two-way data communications
- Interoperability *("plug and play")*
- ***Cyber Security!***

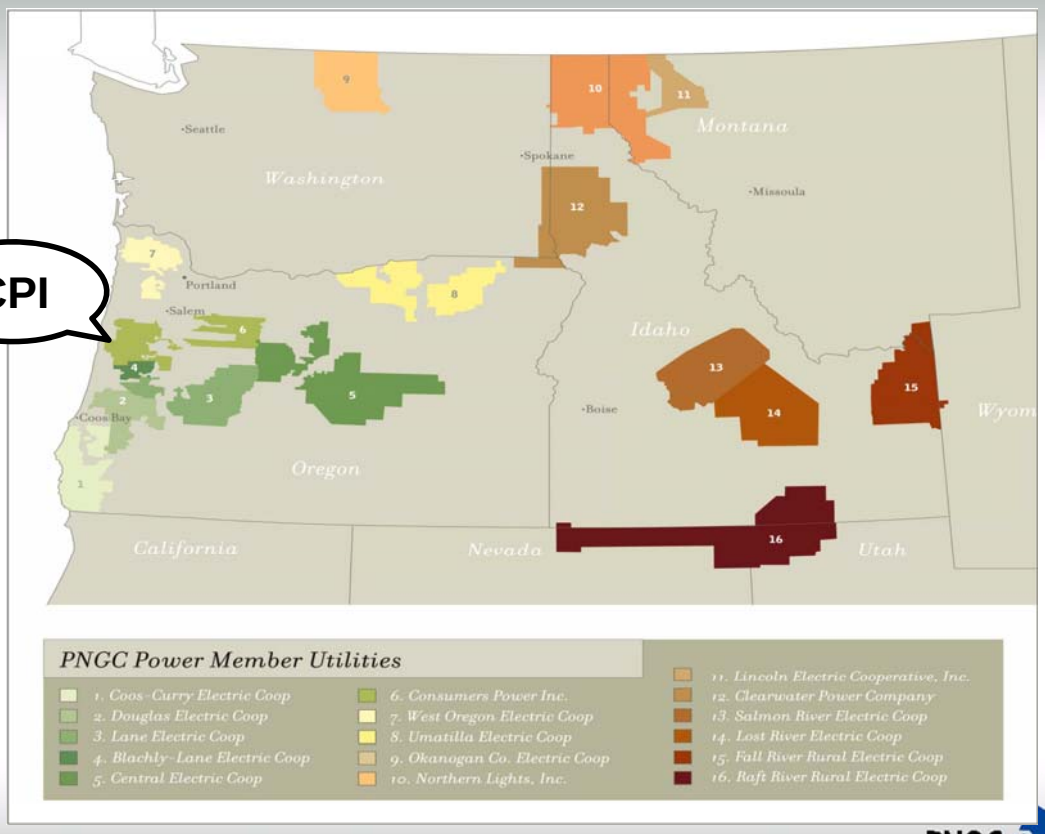
PNGC Power
Smart. Local. Connected.

Future applications

- Seamless integration of intermittent renewable resources (P/V, wind)
- Optimize capability of plug-in electric vehicles
- More customer service choices
- ***Others?***

PNGC Power
Smart. Local. Connected.

CPI



PNGC Power
Smart. Local. Connected.

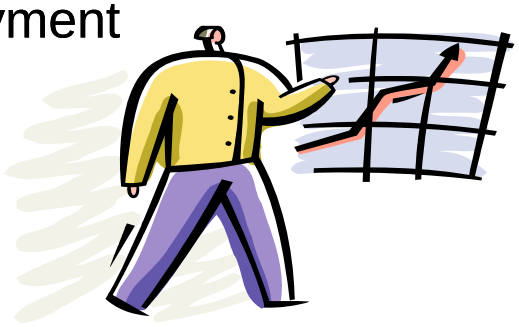
About Consumers Power

- 17,500 Members; 22,000 meters; 60 employees
- 3,500 sq. mi. service area
  (Lincoln, Benton, Linn, Polk, Marion, & Lane Counties)
- 4th largest Oregon-based cooperative
- 45 aMW sales in 2009

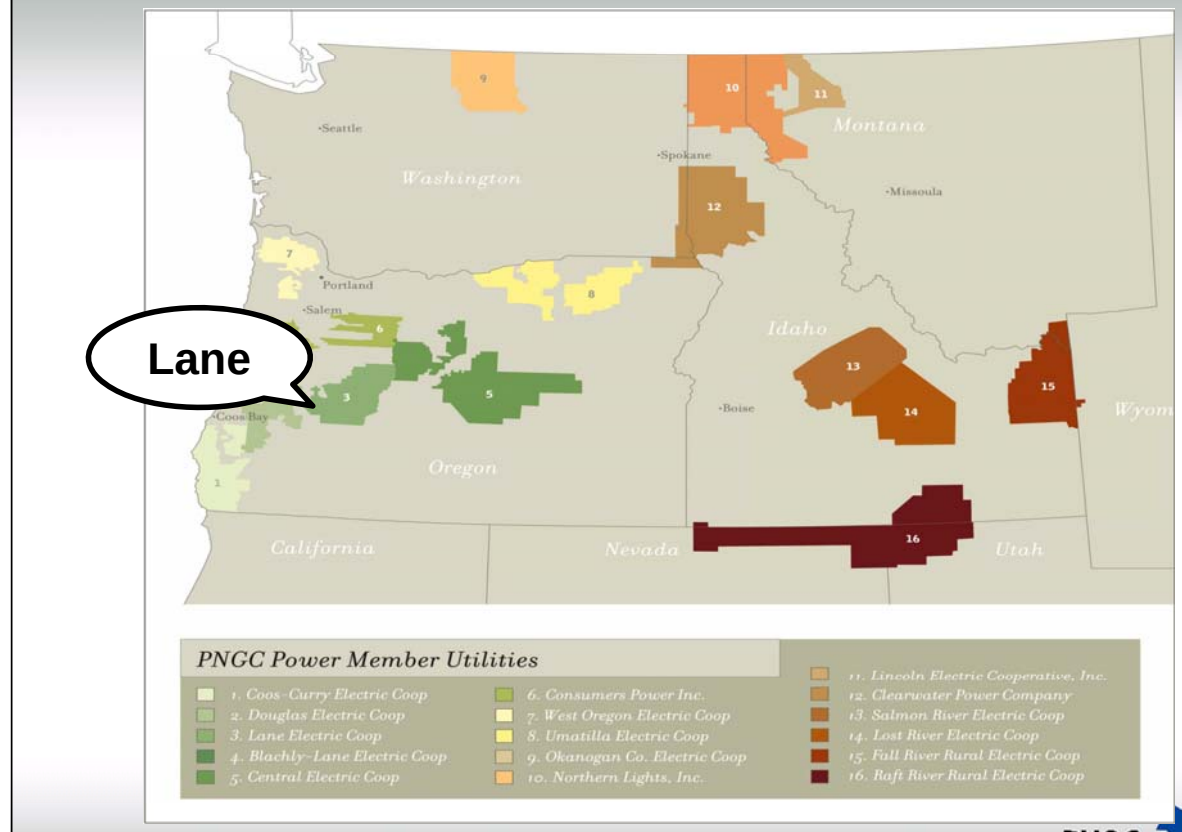
PNGC Power
Smart. Local. Connected.

Implementing AMI project at Consumers Power *(cont.)*

- ***Strategy***
- System-wide AMI deployment
  - Over 22k metering points
  - 22 substations
  - Total capital cost: $8.7M
- Challenges



PNGC Power
Smart. Local. Connected.



PNGC Power
Smart. Local. Connected.

About Lane Electric

- 27 aMW sales in 2009
- Lane County service area: 2,600 square miles
- 12,741 meters & 1,473 mi. of transmission lines
- 50 employees & 10,500 members

PNGC Power
Smart. Local. Connected.

AMI Experience at Lane Electric

- Program background
- Current & future uses
- Customer acceptance
- Challenges
- Future components?

PNGC Power
Smart. Local. Connected.