



## PACIFIC NORTHWEST ECONOMIC REGION

### ENERGY AND ENVIRONMENT WORKING GROUP SESSION

2016 ECONOMIC LEADERSHIP FORUM

Boise, Idaho

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Speaker Presentations and more online at [www.pnwer.org/2016wintermeeting](http://www.pnwer.org/2016wintermeeting)

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Welcome and Introductions

Co-chairs **Rep. Deb Boone**, Oregon and **Paul Manson**, CEO, DC Grid Development Corporation

### **PNWER Roadmap to resilient, Ultra-Low Energy Buildings in the Pacific Northwest: Release of Case Study Report: [PRESENTATION](#)**

Elyse Henderson, MSc, LEED Green Associate, Energy and Sustainability Analyst, RDH Building Science

*PNWER is advancing the development of a "Roadmap" to improve resilience and energy efficiency for new and existing buildings through "net zero" emissions construction targets and deep energy retrofits of existing buildings by 2030. Super-efficient buildings encourage job creation, affordability, competitiveness, and resilience. Through consultations with all levels of government and the private sector, the Roadmap will develop market-driven strategies to promoting energy efficiency in each jurisdiction by focusing on policy options; market driven solutions; best practices; innovative technologies and construction materials; industry capacity building; and workforce developments.*

- Benefits from addressing Energy in Buildings
  - Affordability
    - Reduced energy costs to consumers
  - Comfort
  - Healthfulness
  - Lower carbon emissions
  - Durability
  - Resilience to extreme weather events and natural hazards
- PNWER Roadmap to Resilient, Ultra-Low Energy Buildings
  - A document that will seek endorsement by legislators and private sector leaders from 10 PNWER jurisdictions
- Average energy Savings
  - Houses- 64%
  - Educational- 76%

- Multi-Unit Residential Buildings- 50%
- Offices: 84%
- Resilience Features account for:
  - Extreme Weather
  - Seismic resistance
  - Water Savings
  - Improved acoustics
  - Comfort
  - Community benefits
  - Transportation
- Home Energy Rating System (HERS) and EnerGuide Home- Challenges
  - In both the Idaho home and B.C. home these systems don't account for occupancy behavior.
- Case example 1: The Bullitt Center
  - Net Positive energy building in Seattle
  - Strategy: Create a new paradigm for 21st century buildings
- Case example 2: Hood River Middle School
  - Strategy: Fuse sustainable design with teaching curriculum
  - PV Panels- Net Zero
  - Rainwater collection minimized potable water by 89%
  - Greenhouse for food production
- Case example 3: Single-family home in Alaska
  - Strategy: Small 590ft<sup>2</sup>, airtight, use passive design principles
  - 0.05 ACH<sub>50</sub>
- Case example 4: The Beardmore
  - Strategy: Reach LEED Gold while maintaining Historical register
  - Solar ready when the cost goes down
- The two most common features for retrofit is high performance enclosure and high performance windows.
- Future work- Extrapolation: Use the case study analysis, extrapolate to entire PNWER
- Questions:
  - Have you look at the sick building syndrome?
    - Answer: Allow air to come in and out of the building
  - Do you know the construction method for the Alaska House?
    - He built two frames for the house and He air sealed on the outside frame.

## Idaho Power and Energy Efficiency: [Presentation](#)

Quentin Nesbitt, Energy Efficiency Program Leader, Idaho Power

- Idaho Power is a fully integrated system from generation→ Step up station→ Transmission→ Substation→ Distribution lines→ Customers.
- A reliable Supply Portfolio:
  - System peak on July 2, 2013 - 3,307 Megawatts
    - Coal
    - Wind
    - Hydro

- Langley (Gas Plant)
  - Purchased
  - Demand Response - Work with customers to drop low
- Idaho Power's Energy Efficiency Programs
  - Energy Star Homes
  - Energy Efficient Lighting
  - Rebate Advantage
  - Energy House calls
  - Home Energy Audit
  - Demand Responses
  - Who uses energy efficiency programs
    - Commercial: 33%
    - Residential: 17%
    - Irrigation: 10%
    - Industrial: 39%
  - Questions?
    - What can we all do to lower demand for energy in the irrigation sector?
      - Build another plant to offset what is happening with irrigation systems
    - What's the best way to do energy efficiency?
      - Incentive and educational programs
    - How does someone find out about these programs?
      - We have customer and programs reps and it is posted on our website.
    - Do you have a guess of how much more we can save in energy costs?
      - We have a general idea. Potentially 1% of our system sales.
    - Are there are private system contracts for energy saving?
      - There are some consultants that do exists but we don't do it and instead we have direct incentives to our customers.

## Energy Developments in Idaho: Center for Advanced Energy Studies: [Presentation](#)

Prof. John Gardner, Boise State University

- What is the Smart Grid?
  - Factories, Nuclear Power Plant, Thermal Power Plant, Hydraulic Power Generation, Photovoltaic, Wind Generator, Electric Vehicles, Homes
  - Advanced Meter Initiative (Smart Meters)
    - Ease of Reading
    - Interval (Hourly) data
    - Opens new billing regimes
    - Peak Shaving Demand Response
      - AC Cool Credit
- Enter the Prosumer: A utility customer who not only consumes energy but is also willing to alter consumption patterns to support the larger goals of balancing and stabilizing the grid
- Micro/Nano Grids: Grid Defection
  - The combination of the Tesla Powerwall, cheap PV and growing opposition to residential net metering will be a compelling nexus.
- Questions:
  - How do you dry energy out of cold mass frozen warehouses?

- You stop drawing energy out

## Energy Legislation in Upcoming Legislative Sessions: [Carbon Policies Review](#)

- Upcoming Sessions in Washington: Rep. Jeff Morris
  - There is currently split control in the legislature
  - There are no more goals after 2020 for sustainable energy - 15% goal
  - We have 64 electric utilities and 64 different customer bases.
  - There is an agreement on carbon goals.
  - Consumption per meter will go down and our business model for power will change.
  - Moving pathways to performance based regulation and create reliability
  - We are trying to avoid reacting to costly solutions.
  - Questions?
    - What is the next step for the Carbon Tax bill?
      - The environmental groups in Washington did not support it.
      - They may or may not bring the Carbon Tax back to tax the 100 biggest Carbon emitters.
- Upcoming Sessions in Oregon: Rep. Deb Boone
  - We are looking to use more reliable sources such as ocean energy.
  - Desalination plant powered by a wave device is in development
  - Fisherman are against utilizing the ocean because they do not want it to affect their fishing.
  - Whether we go cap and trade or tax and invest, the emitters should decrease their pollution.
    - The tax and invest bill would limit the amount of carbon emissions individual businesses are allowed to produce. Pollution beyond the limit would be taxed, and revenue would be invested in helping the state adapt to climate change.
- Upcoming actions in BC: Dan Ashton, MLA
  - How do we work together as a region?
    - Our climate action plan introduced the first Carbon Tax to use revenue to return it to taxpayers.
    - 2015 University researchers had 7 independent studies that reduced carbon emission between 5-15%.
    - We have created more jobs without creating more emissions.
    - 1.9 Billion dollars has been devoted to reducing carbon emissions in B.C.
  - Our new climate energy plan will create 66 million new jobs.
  - B.C. is going to ensure our carbon tax is neutral.
  - 98% of the energy in B.C. came from clean energy.
  - B.C has the 3rd lowest electric cost in North America
  - Climate action is a threat but it's also an opportunity to create new technology.
- Upcoming Sessions in Idaho: Sen. Steve Vick
  - We have no renewable energy portfolio
  - We have a lot of hydroelectric power in Idaho
  - Idaho has the second lowest prices for energy
  - We do not use coal as a resource and we face challenges for using natural resources for energy
  - Idaho is 60% of federal land so it makes it hard for energy plants to be built.
  - We want to potentially build small nuclear reactors

- Upcoming actions in Alberta: Robyn Luff, MLA
  - There is a high level of potential for pipelines, but there are very real concerns about environmental impacts
  - The legislature implemented a climate leadership plan that brings in the Carbon Tax
    - 20\$ a ton starting this January for all fuels
    - We are capping oil sands production
      - We are capping a 120 megatons a year by 2030.
  - We have a targeted methane emissions plan to reduce emissions by 25% by 2030.
  - Renewable energy plan by 2030
  - Carbon Tax creates 3 incentives
    - Rebates
      - Under 100,000\$ a year you get a full rebate.
    - Energy Efficient Alberta:
      - Some of the money from our Carbon level is going to be used to create new programs t save energy.
    - Diversify the economy
- Questions?
  - In B.C. is there a direct correlation between energy programs and economic growth?
    - There is potential for this.
  - Has Alberta explored air quality and looking at energy in China?
    - Luff: We are looking at creating relationships. China is trying to take Carbon out of their admissions
    - Ashton: PNWER needs to show others what we can do and what opportunities there are.
    - We need investments from others.