BONNEVILLE POWER ADMINISTRATION

POWER IN EFFICIENCY

Building the Case For Energy Efficiency

Facilitated by:

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Today's Agenda

- The Debate
- The Proposition
- Our Challenge
- Today's Discussion
- Today's Panelists
- Q&A
- Additional Resources

The Debate

- A public utility's electric rates are typically based on sales volume.
- Because conservation and energy efficiency programs decrease sales, utility revenues also decrease.
- The impact of EE on a utility's rates coupled with the potential for reduced revenues creates a disincentive for utility management and boards to endorse energy efficiency programs.

The Proposition

A well-designed approach to energy efficiency can benefit utilities, customers, and society by:

1. fostering financially healthy utilities,
2. reducing customers' bills over time, and
3. contributing to positive societal net benefits overall.

By establishing and communicating the "business case" for energy efficiency across utility, customer, and societal perspectives, cost-effective energy efficiency can be better integrated into the energy mix as an important low-cost resource.

Source: National Action Plan for Energy Efficiency

Our Challenge

How can we, as energy service professionals grow support for EE from our Management and Boards??

We need to **effectively** demonstrate that successful EE program implementation provides value and long term benefits (both energy and non-energy) that outweigh the negative impact of revenue loss.

Today's Discussion

- Beyond the Basics
  - Lowers customers' utility bills
  - Gives customers greater control over energy costs
  - Increases customer satisfaction
  - Because we have to
- BPA Rate Design and Direct Benefits of EE
- Economics and Determining Measure Value

Today's Panelists

- Ray Grinberg
  Power Resources Director,
  Peninsula Power and Light
- Daniel Fisher
  Rates Design & Implementation Industry Economist
  Bonneville Power Administration
- Andrew Grassell
  Manager-Energy Development/Conservation,
  Chelan County PUD No. 1

Questions?

Additional Resources

- National Action Plan for Energy Efficiency
- Efficiency Works: Creating Good Jobs and New Markets Through Energy Efficiency
- Energy Efficiency: Engine of Economic Growth
- Energy Efficiency: Reduce Energy Bills, Protect the Environment
- The Effect of Energy Efficiency Programs on Electric Utility Revenue Requirements, American Public Power Association
- Best Practices Benchmarking for Energy Efficiency Programs
- Energy Efficiency Benefits Calculator
- California Standard Practice Manual

Peninsula Light Co.

a mutual corporation

Building the Case for Energy Efficiency

PenLight

- Located in Western Pierce County, WA
- Over 26,000 Members
- 112 square miles

Societal Benefits

- Increase member satisfaction
- Helps disadvantaged members
- Saving money on their monthly bill allows consumers to spend money in more productive ways

Economic Development

Local Jobs Promote the Local Economy

The Political Research Institute found that $1 million spent on energy-efficient measures, such as building retrofits, produces 16.7 jobs

Conservation is a Least Cost Resource

Cost of Doing vs. Not Doing Conservation

Helps meet future load growth

Distribution Efficiencies

What can we do at the utility level?

System Improvements

Voltage Optimization

Reconductoring

Transformer Replacement

Load Management

Lost Opportunities

An Opportunity Missed is an Opportunity Lost

Indentify what can be supported and recognize the opportunity is obtainable

Community Awareness

Collaborate with local programs, community action groups and agencies

Questions?

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POWER IN EFFICIENCY

BPA Rate Design and Direct Benefits of EE

Presented by:

Daniel Fisher, Industry Economist

BPA Rates Design & Implementation

Scenario 1:

- An Energy Efficency measure reduces peak the same amount as it reduces average HLH energy use. In other words, average HLH energy use is reduced by 1 aMW and the customer's peak is reduced by 1 MW.

Net Benefit		
	Tier 1 HLH $/MWh	Tier 1 LLH $/MWh
October	$10.15	$3.49
November	$10.66	$3.69
December	$13.39	$5.68
January	$12.32	$3.99
February	$13.22	$5.46
March	$11.86	$4.62
April	$9.82	$2.70
May	$7.35	($3.31)
June	$8.26	($4.69)
July	$14.36	$2.20
August	$16.64	$4.44
September	$15.74	$5.88

- What is happening in this scenario?
  - Peak is being reduced at the same speed as aHLH energy use. This keeps the customer's capacity shaping requirement (Peak less aHLH energy) to remain constant. The customer does not see any adverse demand charge impacts.

Wholesale Tier 1 economics of $21.26/MWh Energy Efficiency solely from the perspective of the utility. BPA may also receive a benefit, which would reduce BPA's Tier 1 Composite Customer Rate

Scenario 2:

- Energy Efficency measure does not reduce peak. In other words, average HLH energy use is reduced by 1 aMW and the customer's peak is not reduced.

Net Benefit		
	Tier 1 HLH $/MWh	Tier 1 LLH $/MWh
October	($11.92)	$3.49
November	($12.62)	$3.69
December	($10.58)	$5.68
January	($11.93)	$3.99
February	($11.58)	$5.46
March	($10.37)	$4.62
April	($12.93)	$2.70
May	($13.09)	($3.31)
June	($12.71)	($4.69)
July	($11.14)	$2.20
August	($8.25)	$4.44
September	($11.69)	$5.88

- What is happening in this scenario?
  - Peak is not being reduced which is causing the customer's capacity shaping requirement (Peak less aHLH energy) to increase. The customer observes adverse demand charge impacts caused by increased shaping capacity need.

Wholesale Tier 1 economics of $21.26/MWh Energy Efficiency solely from the perspective of the utility. BPA may also receive a benefit, which would reduce BPA's Tier 1 Composite Customer Rate

Scenario 3:

- Energy Efficency measure reduces peak by 125% of the reduced average HLH energy use. In other words, average HLH energy use is reduced by 1 aMW and the customer's peak is reduced by 1.25 MW.

Net Benefit		
	Tier 1 HLH $/MWh	Tier 1 LLH $/MWh
October	$15.66	$3.49
November	$16.47	$3.69
December	$19.38	$5.68
January	$18.38	$3.99
February	$19.42	$5.46
March	$17.41	$4.62
April	$15.50	$2.70
May	$12.45	($3.31)
June	$13.50	($4.69)
July	$20.73	$2.20
August	$22.86	$4.44
September	$22.59	$5.88

- What is happening in this scenario?
  - Peak is being reduced by more than the aHLH energy use. This reduces the customer's capacity shaping requirement (Peak less aHLH energy) and provides capacity savings as well as energy savings.

Wholesale Tier 1 economics of $21.26/MWh Energy Efficiency solely from the perspective of the utility. BPA may also receive a benefit, which would reduce BPA's Tier 1 Composite Customer Rate

A Tale of Three Utilities:

Customer A: RHWM headroom - Observes Savings at Tier 1

Customer A Net Benefit	$/MWh
Cost of Conservation/1	$ (21.26)
TOCA Savings (critical shape)	$ 29.75
Load Shaping Credit/(Cost)/2	$ (0.53)
Customer Net Benefit	$ 7.96
BPA Savings	$/MWh
TOCA Revenue Change	$ (29.75)
Load Shaping Revenue Change	$ 0.53
Forecast Mkt Value of Flat Block/3	$ 35.67
BPA Net Benefit/4	$ 6.45
Total Net Benefit	**$ 14.41**

Customer B: Net Requirement equal to RHWM - Observes Savings through Load Shaping Credits

Customer B Net Benefit	$/MWh
Cost of Conservation/1	$ (21.26)
TOCA Savings (critical shape)	$ -
Load Shaping Credit/(Cost)/2	$ 35.67
Customer Net Benefit	$ 14.41
BPA Savings	$/MWh
TOCA Revenue Change	$ -
Load Shaping Revenue Change	$ (35.67)
Forecast Mkt Value of Flat Block	$ 35.67
BPA Net Benefit/4	$ -
Total Net Benefit	**$ 14.41**

Customer C: Net Requirement above RHWM - Observed Savings at Tier 2

Customer C Net Benefit	$/MWh
Cost of Conservation/1	$ (21.26)
Above RHWM Savings/5	$ 47.55
Load Shaping Credit/(Cost)/2	$ -
Customer Net Benefit	$ 26.29
BPA Savings	$/MWh
TOCA Revenue Change	$ -
Load Shaping Revenue Change	$ -
Tier 2 Costs	$ 47.55
Tier 2 Revenue	$ (47.55)
BPA Net Benefit/4	$ -
Total Net Benefit	**$ 26.29**

/1 Assumes cost of conservation is $1.8 million per aMW ammortized over 12 years at 3.5% financing. /2 Assumes conservation is observed as a flat block with peak reduction. /3 Valued at Load Shaping rates. Savings could be observed through reduced augmentation costs which is a slighly different value. /4 This benefit would be shared with all PF customers through a lower Composite Customer Rate or through increased cash reserves and the Slice True-up. /5 Assumes savings at average Tier 2 rate for BP-12. Actual observed savings would depend on Above-RHWM

Building the Business Case for Energy Efficiency

BPA EE Summit 2012

Andrew Grassell

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CHELAN COUNTY
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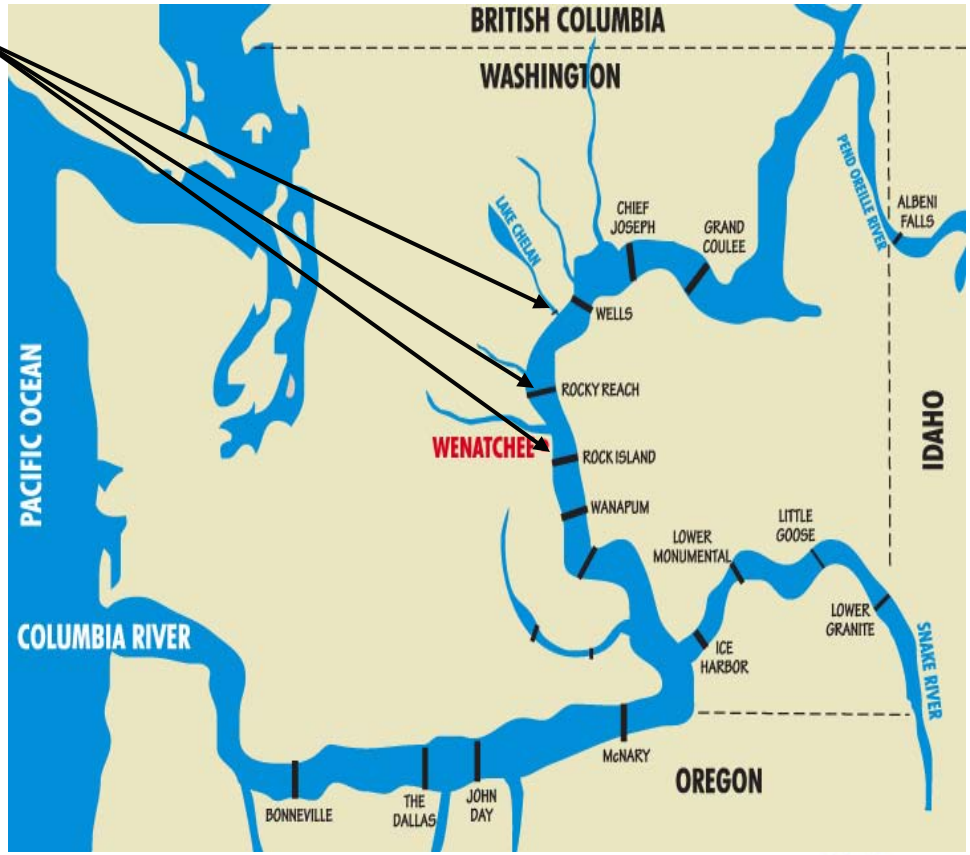
www.chelanpud.org

Overview of Chelan PUD

- Own three hydro projects
- ~10 million MWh of annual generation
- 185 annual aMW of load (winter peaking)
- Rate ~$.03 kWh
- Revenue from net wholesale energy is an important rate driver



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Residential Characteristics

- 28,000 Households
- Median Home Size-1800 sq feet
- 52%Pre-1993 Homes
- 93% Electric Heat
- 98% Electric Water Heating
- 76% Forced Air/ Heat Pump

Industrial/Commercial

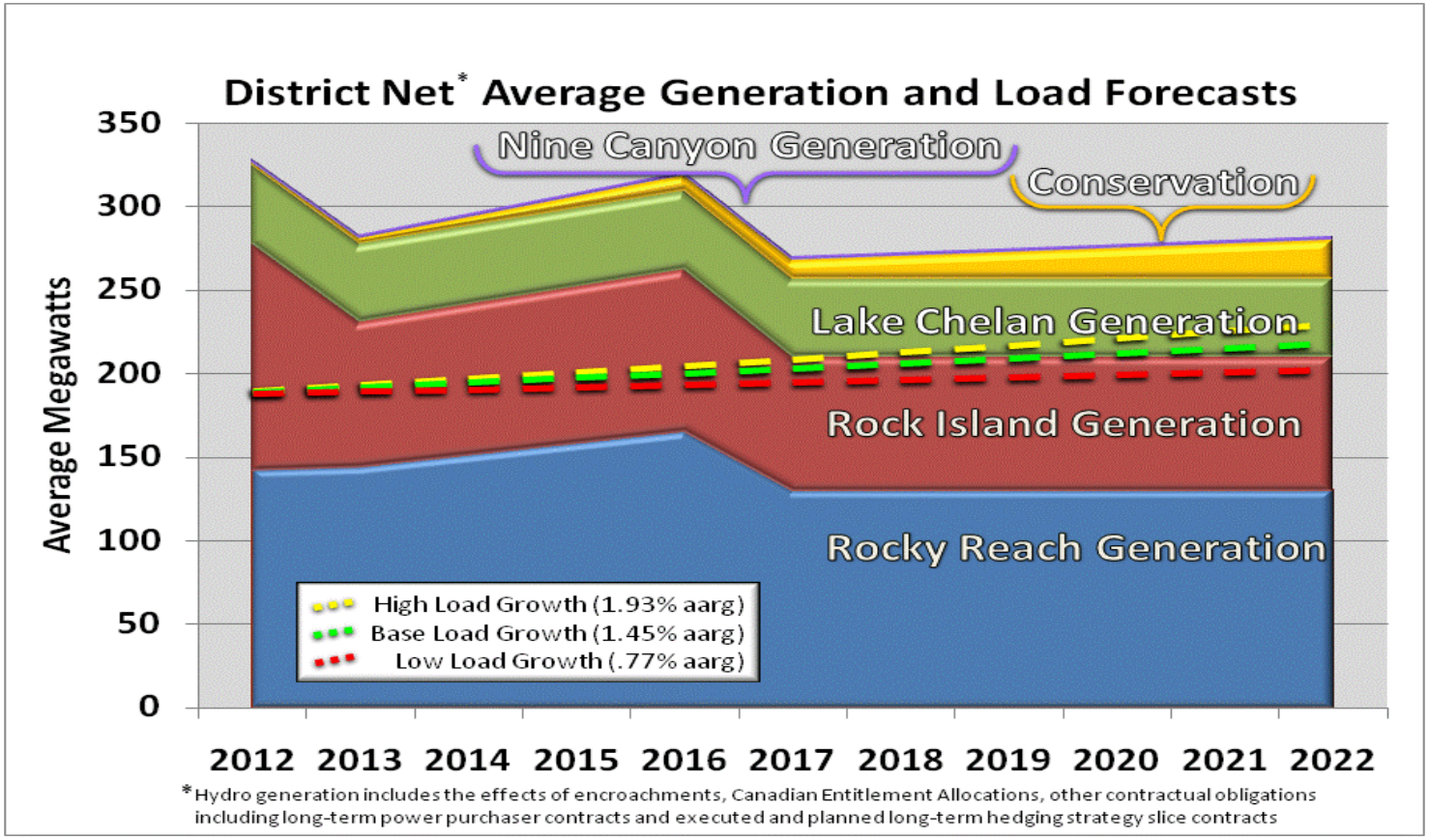
- Industrial
  - Largest Users-Fruit Storage, Foundries, Paper, Other Food
  - 300,000 MWh per year
- Commercial
  - Largest Users-Small office, warehouse, retail, “other”
  - 450,000 MWh

Current Conservation Plan

- 3.38 aMW for 2012 and 2013
- Budget of $4.7M-$5.3M
- Expect a Positive Rate of Return
- 60% from industrial/commercial

Challenges

- Low $/kWh rates
- Net long energy position



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What has worked for Chelan PUD

- Reframe the EE value proposition
  - Take into account opportunity gains and losses
  - Organizationally, EE is now in our Energy Resources business unit
- Create Board and Management buy-in
  - Conservation Incentive Policy
  - Regular communication-no “surprises”
  - Creation of an Incentive Review Committee

Key Points

- Policy was approved through **Board** resolution
  - Creates Board buy-in
  - Sets expectations
  - Create regular communication opportunities
- Sets Authorization and Controls
  - Provides Board and Management comfort
- Establishes a Review Committee
  - Finance, legal, customer service, energy planning and trading, compliance.

Key Points Continued

- Establishes Guiding Principles
  - Positive Return on Investment
  - Achievable
  - Risk Adjusted
  - Diversified
  - Documented
- Demands a robust evaluation process
  - Utilize a modified DCF model
  - Rank and prioritize
  - Key Metrics
  - Benchmark against other programs

Other Things To Consider

- Know your utilities strategic plan and align
- Develop multi-year business plans for EE group (see above)
- Take advantage of savings that come from incremental efforts
  - Distribution efficiencies
  - New construction, building codes, etc.

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The Discussion will Continue on Conduit

Post your comments on the session and let us know what you need to build the business case for energy efficiency