

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N

Energy Efficiency Today
in the Pacific Northwest

Presented by:

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Energy Efficiency Defined

- Energy Efficiency is using less energy to provide the same – or *improved* – level of service or performance:
 - For example, replace a 100 watt incandescent light bulb with a 23 watt compact fluorescent light bulb.
 - Seventy-five percent (75%) savings and average measure life improvement by a factor of five.



Energy Efficiency – An Overview

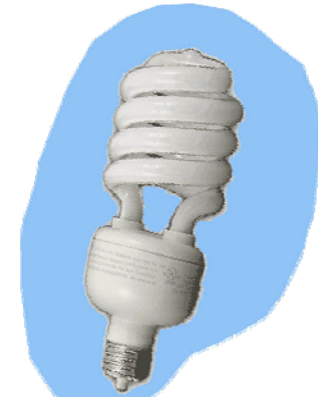
- What is Energy Efficiency and why is it so important?
- Energy Efficiency in the Pacific Northwest
- What's Next

On the Web: <http://www.bpa.gov/Energy/N/>



Energy Efficiency v. Energy Conservation

- Do they mean something different?
 - No, in the Pacific Northwest the terms “Energy Efficiency” and “Energy Conservation” are used interchangeably.
- Energy Conservation is NOT “shivering-in-the-dark.”



Energy Efficiency



Why is Energy Efficiency So Important?

- **Doing Business at the lowest cost is “simply good business.”**
- **But there are other benefits:**
 - Rising energy costs are a drain on our economy.
 - Reliance on imported energy sends dollars overseas and can compromise national security.
 - With our environmental challenges, the more efficient our energy use the better.
 - And Energy Efficiency is typically the least cost resource option.





If Energy Efficiency is So Attractive....

Why don't people do more:

- People typically do not know what to do.
- Energy decisions often have to be made on a real-time basis.
- There is a perception that Energy Efficiency is “sacrificing” comfort or output.





Energy Efficiency Track Record

In the Pacific Northwest:

- There are 20-years of Energy Efficiency accomplishments
- Energy Efficiency is the third-largest source of electricity supply, and is currently meeting approximately 25 percent of the Regional Load Growth
- Energy Efficiency significantly reduced environmental impact in the region





Total Pacific Northwest Energy Efficiency Savings

Since 1980, Utility and BPA programs, Energy Codes and Federal Efficiency Standards have produced over *2,600 aMW* of savings



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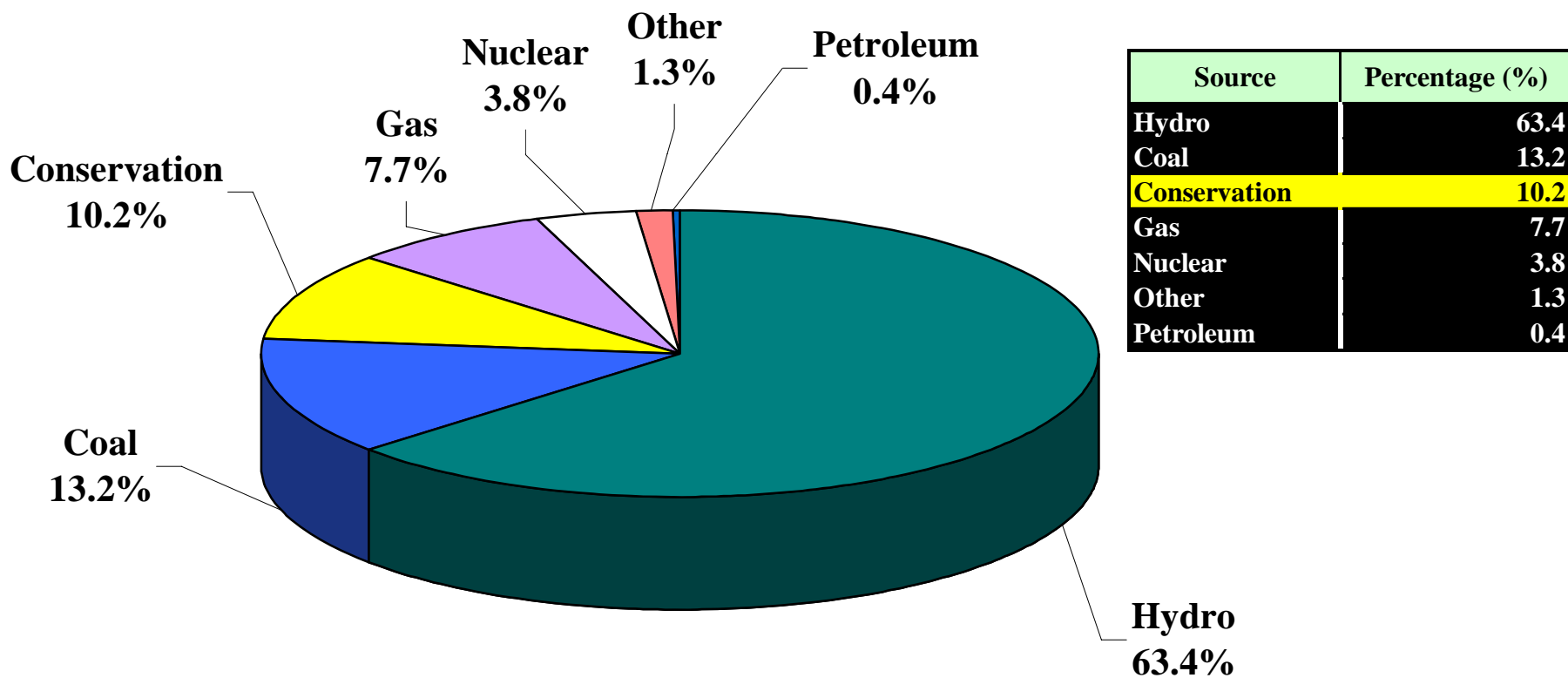
BPA Approach

- **Two Implementation Threads:**
 - Retail utility based consumer retrofit
 - Market transformation
- **Policy choices**
 - Legislative basis – PNW Power Act 1981
 - Least societal cost basis for resource investment
 - Least utility cost basis for incentives
- **20 year build-up of capacity**
 - Energy Auditor training
 - Specifications
 - Building Codes
- **Tracking & reporting via Internet accessible database**
- **Periodic program evaluations (accomplishments and procedures)**



Source of Electricity Supply

Energy Efficiency is the Pacific Northwest's third-largest source of electricity supply in 2000:



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Tell Me More

- What are the benefits of Energy Efficiency?



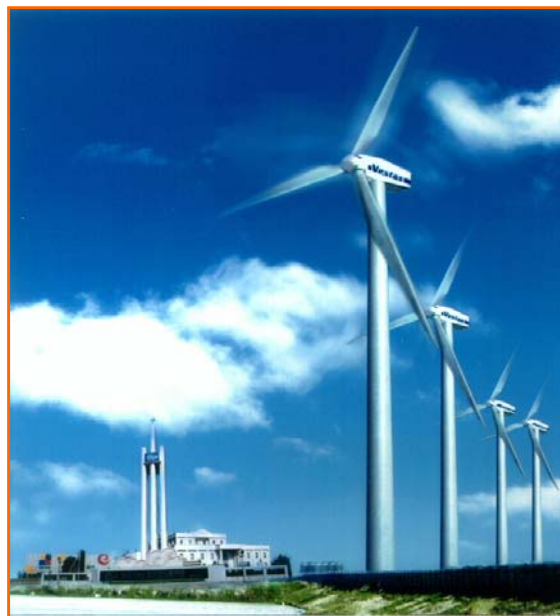
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The Least Cost Resource



- The Northwest Power and Conservation Council Five-year plan states that Energy Efficiency is the least-cost resource for electricity in the Pacific Northwest and at the core of meeting our future electrical needs.



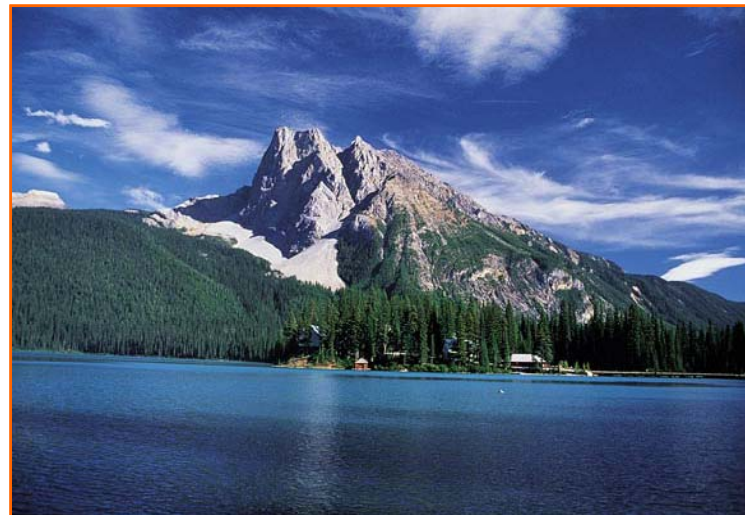
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Pollution Avoidance



- **The Pacific Northwest benefits from less pollution through Energy Efficiency; some examples include:**
 - 18.8 million tons of CO₂
 - 34,000 tons of NO_x
 - 33,000 tons of SO₂
 - 1,300 pounds of mercury



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Good Business Sense



- **Conservation accomplishments:**
 - Energy Efficiency helps keep BPA from going to the open market to purchase power at a higher price than investing in conservation.



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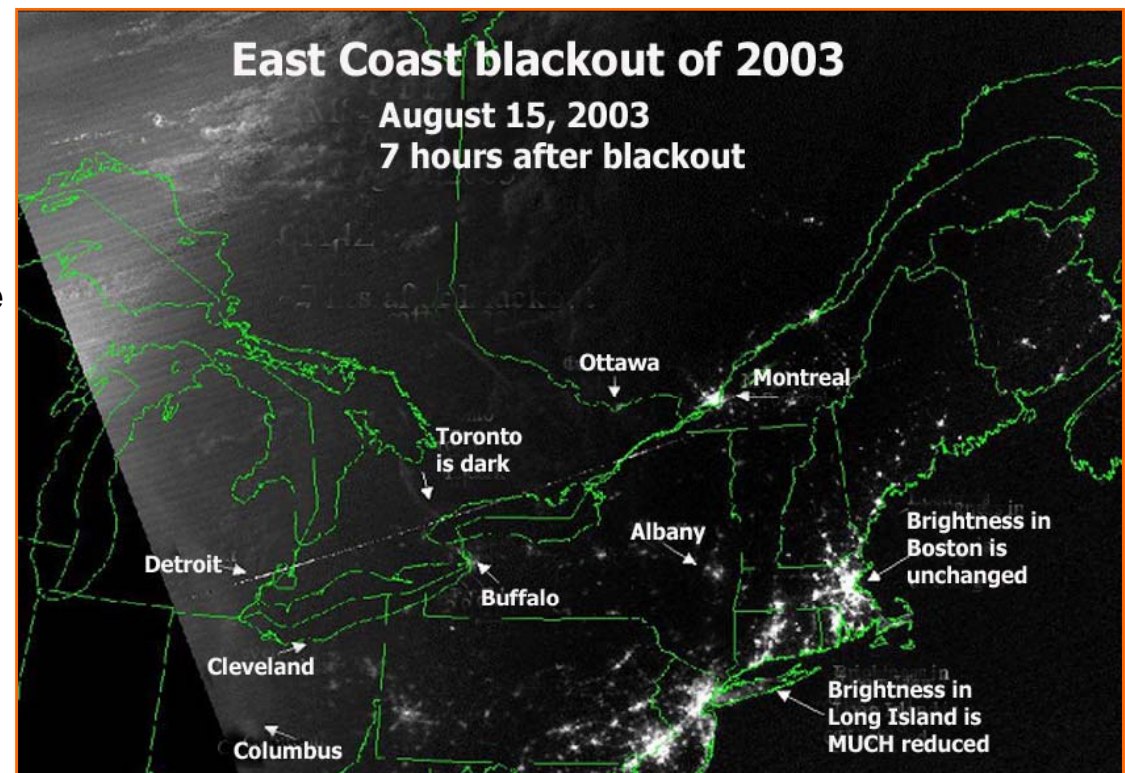
Brownouts and Blackouts



- Energy Efficiency helps the region avoid both brownouts and blackouts associated with peak energy demand periods:

Blackouts come with major financial losses: “The August 14, 2003 blackout was estimated to have cost in the range of \$4 billion and \$10 billion in the United States.

- *Improving Dynamic Load* , LBNL-59192, November 2005, page 14.



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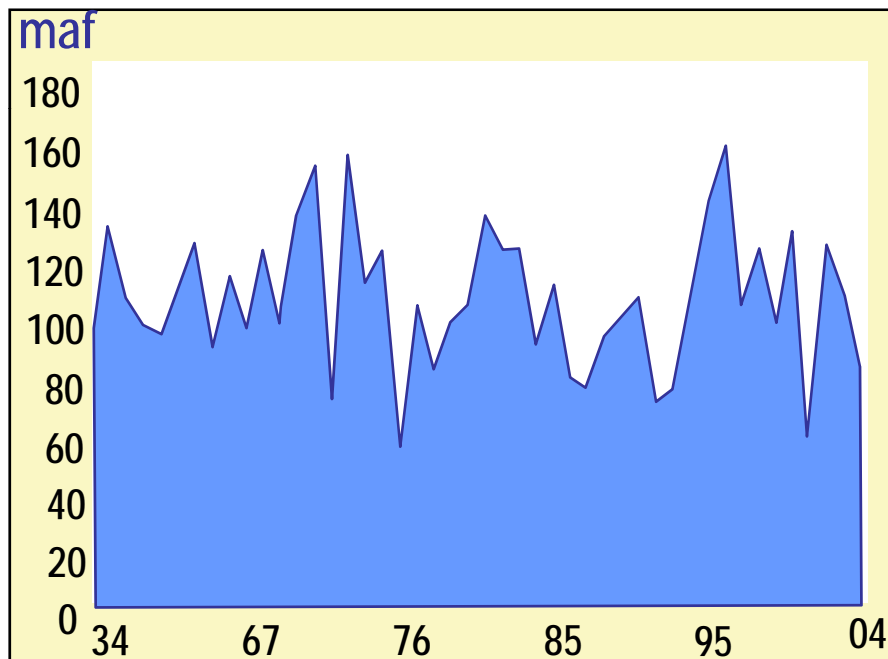


Market Volatility

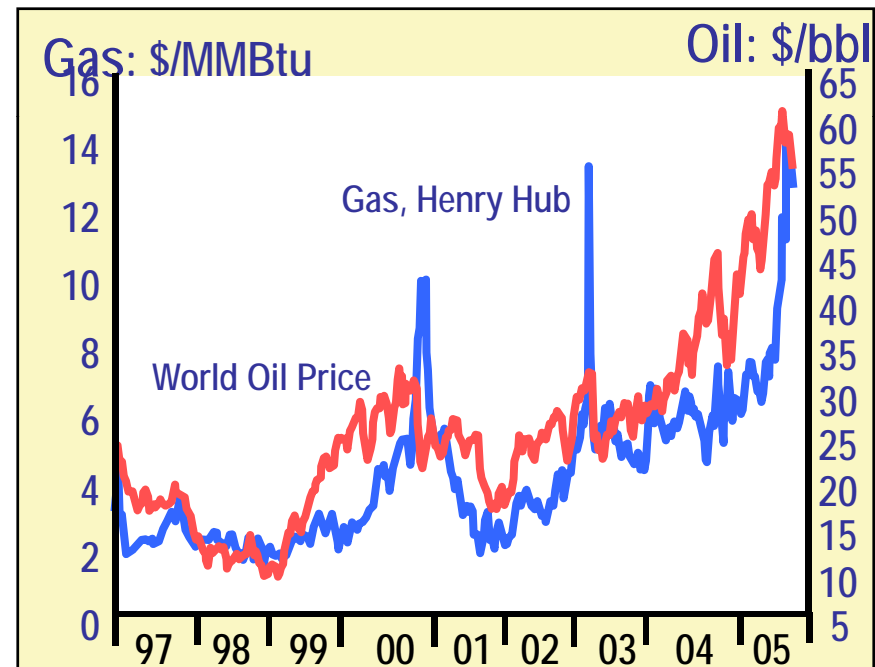


- Energy Efficiency acts as a “Shock Absorber” for market volatility:

Water Year History



Gas and Oil Prices





Effects Regional Economy



- Energy Efficiency creates jobs and stimulates the Pacific Northwest economy:
 - Energy Efficiency creates more jobs than energy curtailment or energy construction.
 - For each million dollars invested, energy efficiency programs employs approximately 53 people, compared to 33 people for each million spent constructing alternate thermal projects.



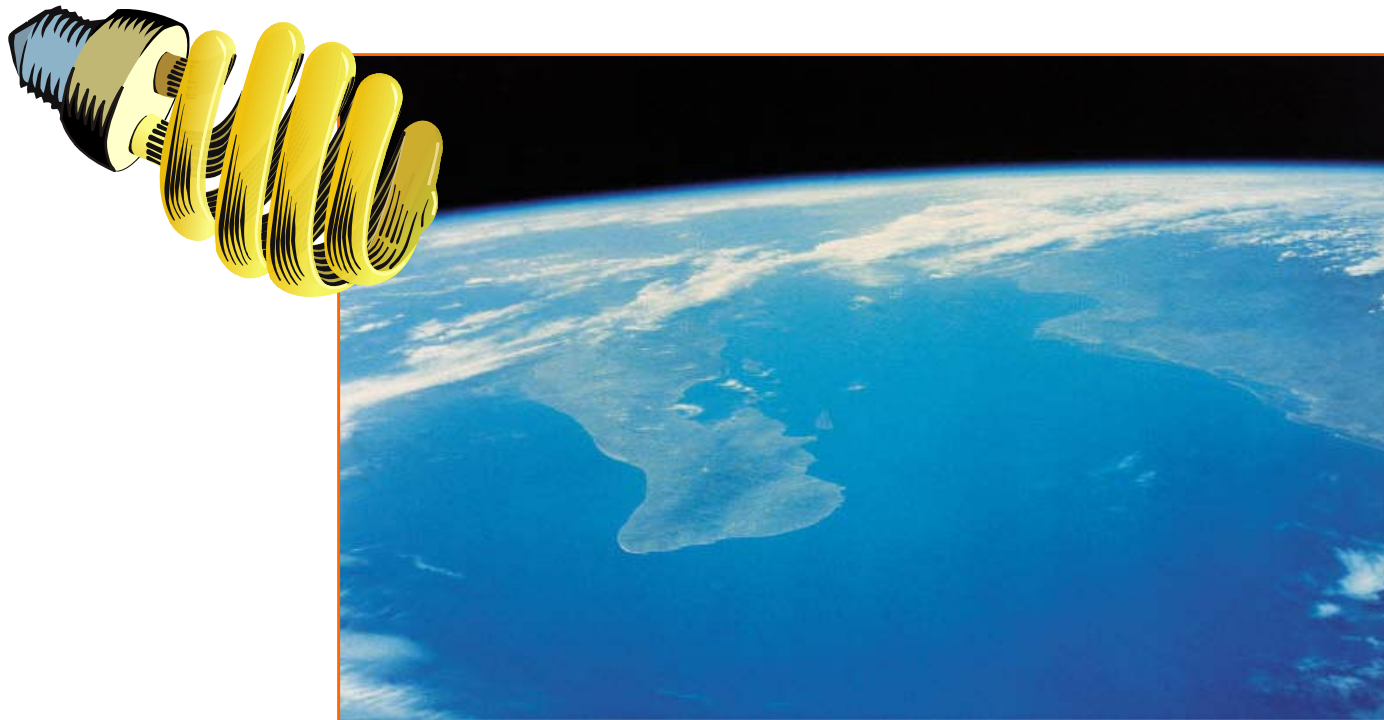
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Energy Dependence



- **Energy Efficiency helps to build energy self-sufficiency:**
 - For example, Fairchild Air Force Base in Washington state buys nearly 100 percent green power, electricity from regional wind farms.



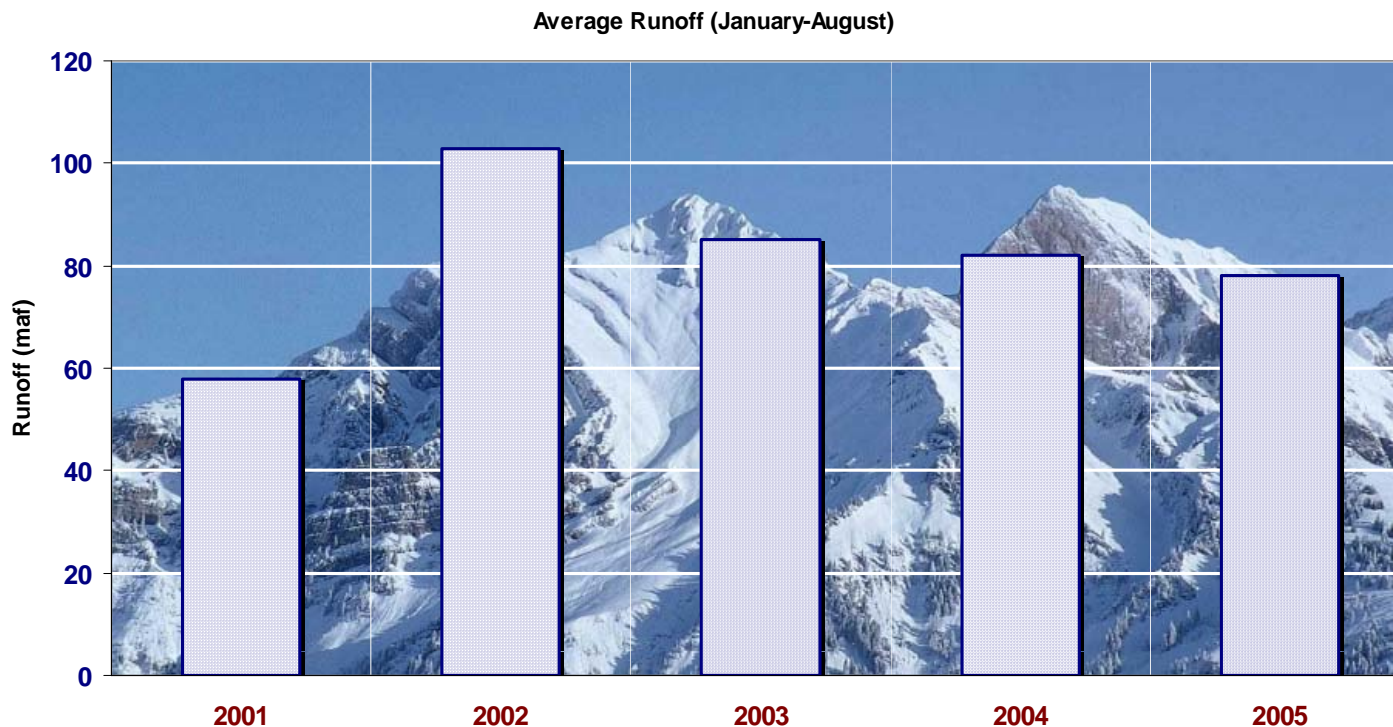
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Defense Against Drought



- Energy Efficiency crafts a defense against drought in the Pacific Northwest:
 - Low winter snow pack reduces summer water runoff through dams.
 - Energy Efficiency is a smarter choice compared with higher-priced power that would be purchased on the open market.



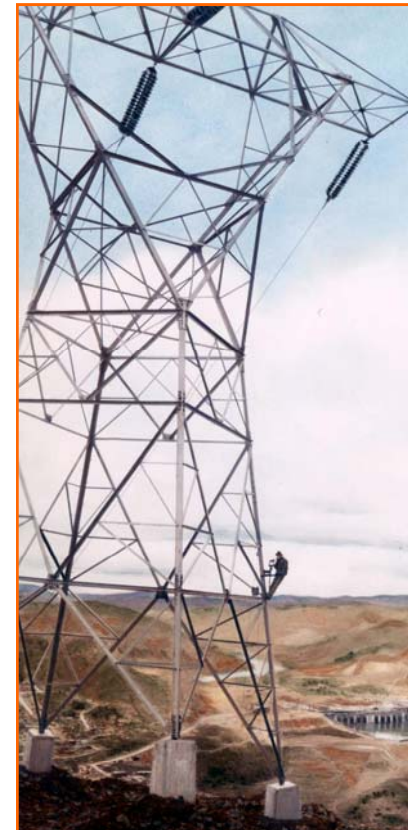
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Transmission Lines



- Energy Efficiency can help avoid the high cost of new transmission lines:
 - With the advent of more tools to manage and shape electric use, infrastructure projects can be deferred.



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Market Transformation



- The Northwest Energy Efficiency Alliance (NEEA) Market Transformation efforts are changing the market so the most efficient options are part of everyday business:
 - NEEA's successes in the Pacific Northwest include:
 - ENERGY STAR ® window installation is twice the national average.
 - Energy efficient clothes washers and compact fluorescent bulb sales exceed the national average.

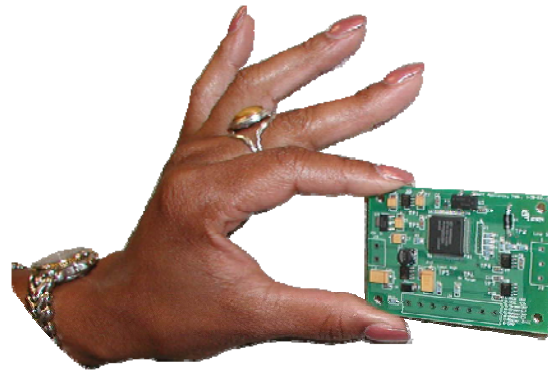


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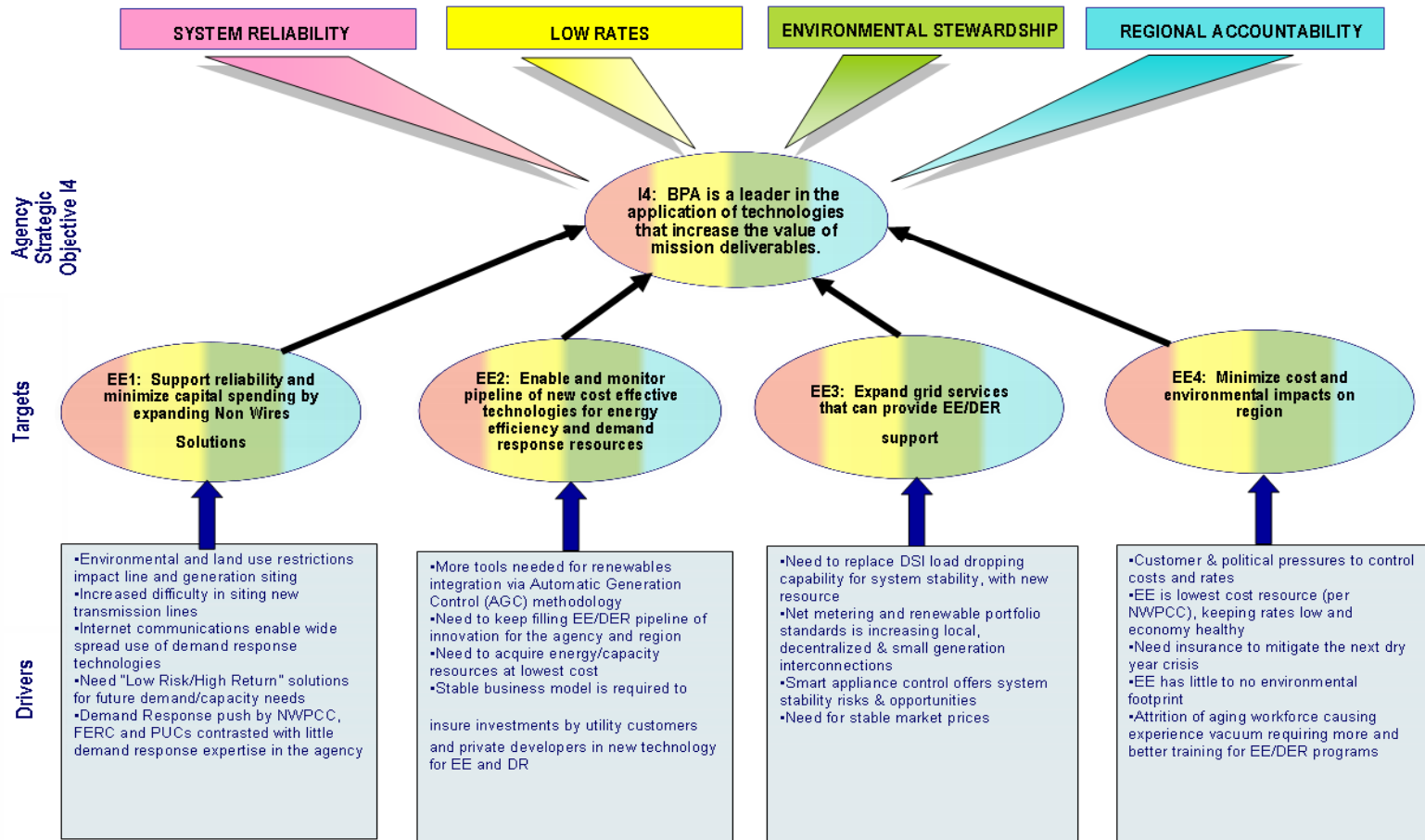
What is Next in Energy Efficiency?

- The Technological Boom that affects so much of our lives will bring us more energy efficient options:
 - For example, White appliance Smart Chips, being tested in the Northwest will one day be in all appliances purchased.
- Besides new technologies, existing measures keep getting more efficient – e.g., lighting.





**Technology Confirmation and Innovation
Energy Efficiency ROADMAP**
DRIVERS → TARGETS → OBJECTIVE





Research & Demonstration Agenda

- Demand Response
- Smart Appliances
- Heat Pump Water Heater
- Heat Pump Without Strip Heat
- Integrated Building Design
- Low Energy Cooling
- High Efficiency Lighting
- Industrial Process

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Energy Efficient Lifestyle

- **What can I do today to enhance Energy Efficiency in my lifestyle?**
 - For both home and businesses take a quick look at the amount and type of energy use.
 - Look for information for how to get assistance (e.g., State Energy Offices, etc.)
 - Identify low-hanging fruit no/low-cost options have the quickest return.

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Summary

- Energy Efficiency is a proven resource.
- With the challenges facing our region and nation, Energy Efficiency only will grow as a priority.
- Energy Efficiency is not “shivering-in-the-dark”, and will become increasingly integrated in the future of our daily lives.



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