Demand Side Management & Conservation

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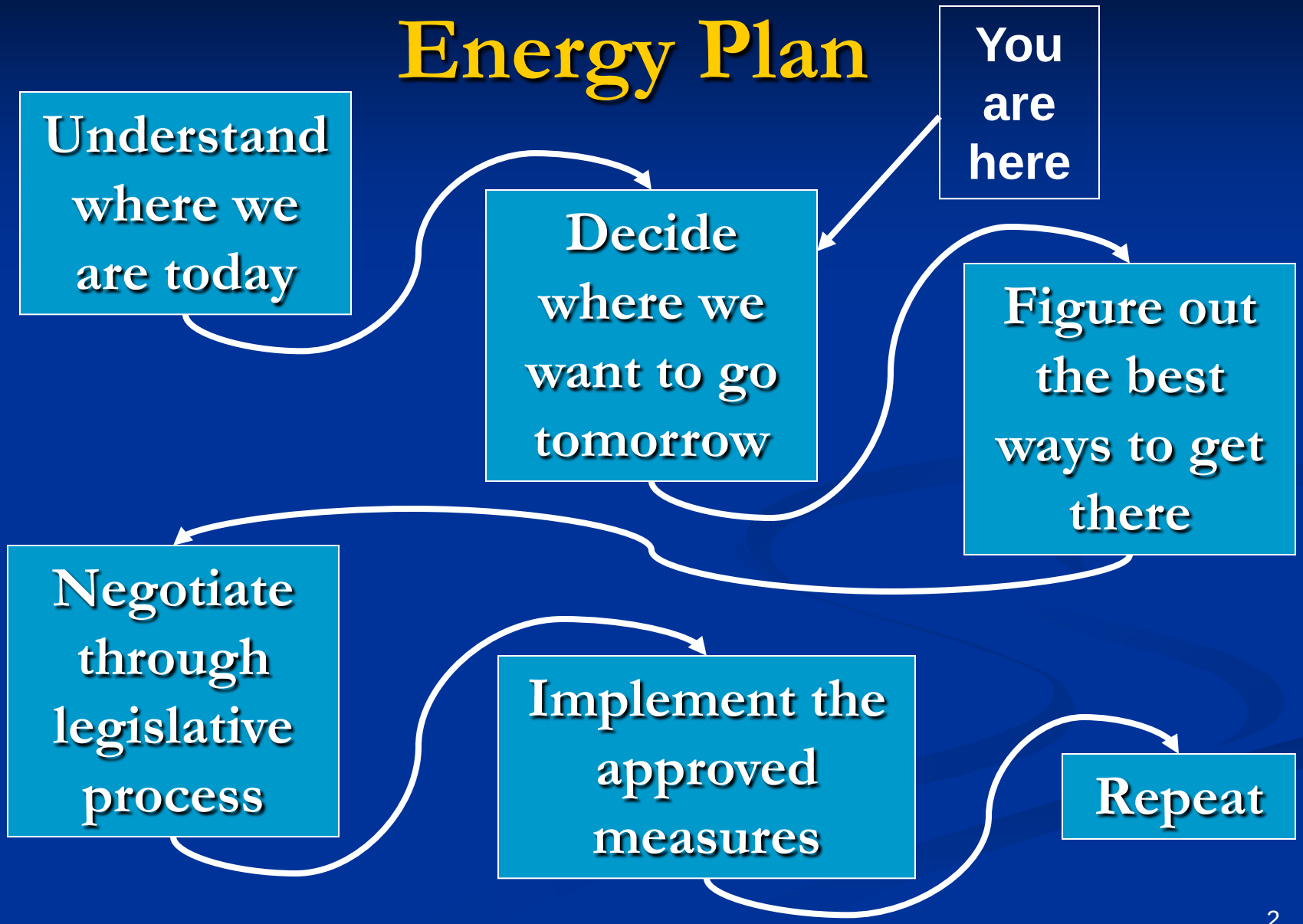
Roadmap for Developing the Energy Plan



Goals for The Morning Session

- Get a good understanding of how DSM lines up with the Committee's draft Policy Objectives
- Understand the what and how DSM is currently being undertaken in Idaho
- Understand what and how DSM is currently being undertaken in other states
- Understand what can be done, from a policy standpoint to accelerate the acquisition of DSM in Idaho

Agenda

- Review of the Draft Policy Objectives
- Is there a need for DSM in the Energy Plan?
  - Does DSM line up with Draft Policy Objectives?
  - Is DSM promotion needed in the Energy Plan?
- What can the legislature do?
- Briefing on WGA Recommendations
- Straw proposal

Review of Draft Policy Objectives

Conservation Priorities from 7/11 Committee Meeting

- Maintain Idaho's low cost energy
- Conserve resources
- Air, water
- Maintain adequate energy supply
- Dependability
- Don't arbitrarily preclude any resource
- Don't discourage production with regulation
- Reduce dependence on foreign energy sources
- Reduce dependence on non-renewable energy source
- Reliability to meet peak demands
- Diverse portfolio of resources
- Energy as a local industry
- Increase the tax base
- Grow the Idaho economy
- Appropriate use of water and other resources/competing uses
- Recognize environmental impact of various technologies
- Reliable transportation/delivery of energy
- Incentives for production & conservation
- Protect the environment
- Energy independence
- Position the state for possible carbon regulation
- Promote the most efficient use of Idaho's energy resources
- Fluid and flexible energy policy
- Promote rural economic development/agricultural involvement in energy production
- Access to energy for ALL Idahoans (limited income)
- Best practices from other nations
- Protection of public health & safety

Categories of Policy Objectives

1. **Reliability, Stability:** Ensure a secure, reliable and stable energy system for the citizens and businesses of Idaho
2. **Low-Cost, Affordability:** Maintain Idaho's low-cost energy supply and ensure access to affordable energy for all Idahoans
3. **Environment, Conservation:** Protect Idaho's public health, safety and natural environment and conserve Idaho's natural resources
4. **Jobs, Economy:** Promote sustainable economic growth, job creation and rural economic development through investments in Idaho's energy infrastructure
5. **Flexibility:** Provide the means for Idaho's energy policy to adapt to changing circumstances

Is There a Need for DSM in the Energy Plan?

Policy Objectives

DSM in Draft Policy Objectives

- Objective 1: Reliability and Stability
  - DSM provides enhanced reliability to the energy system by reducing overall demand through energy efficiency and by reducing peak demand through dispatchable programs.
  - It also reduces transmission and distribution costs relative to a supply side resource
  - DSM increases diversity of energy sources

DSM in Draft Policy Objectives

- Objective 2: Low Cost/Affordability
  - The cost of DSM is technology specific and varies relative to other supply side resources
  - Dispatchable DSM programs can be called when their cost is lower than alternative market purchases
  - Cost-effective resource planning can ensure that DSM is only procured up to the point where it is cheaper than supply alternatives
  - DSM can also help low-income customers reduce their energy costs

DSM in Draft Policy Objectives

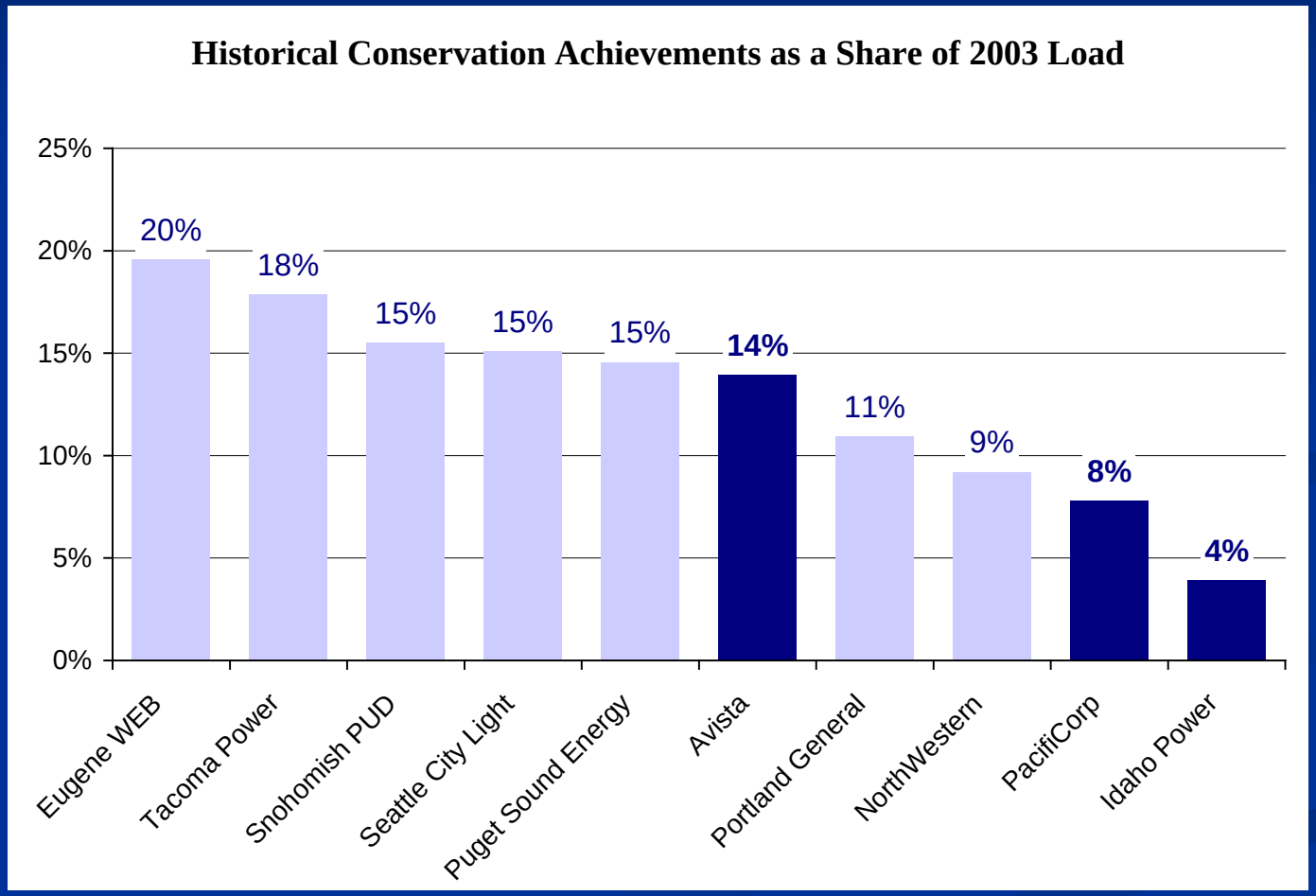
- Objective 3: Environment, Conservation
  - DSM is the most environmentally friendly resource available
  - It conserve resources
  - It reduces the dependence on foreign energy sources
  - It reduces dependence on non-renewable energy sources
  - It positions the state for possible carbon regulation
  - It protects the public health and safety

DSM in Draft Policy Objectives

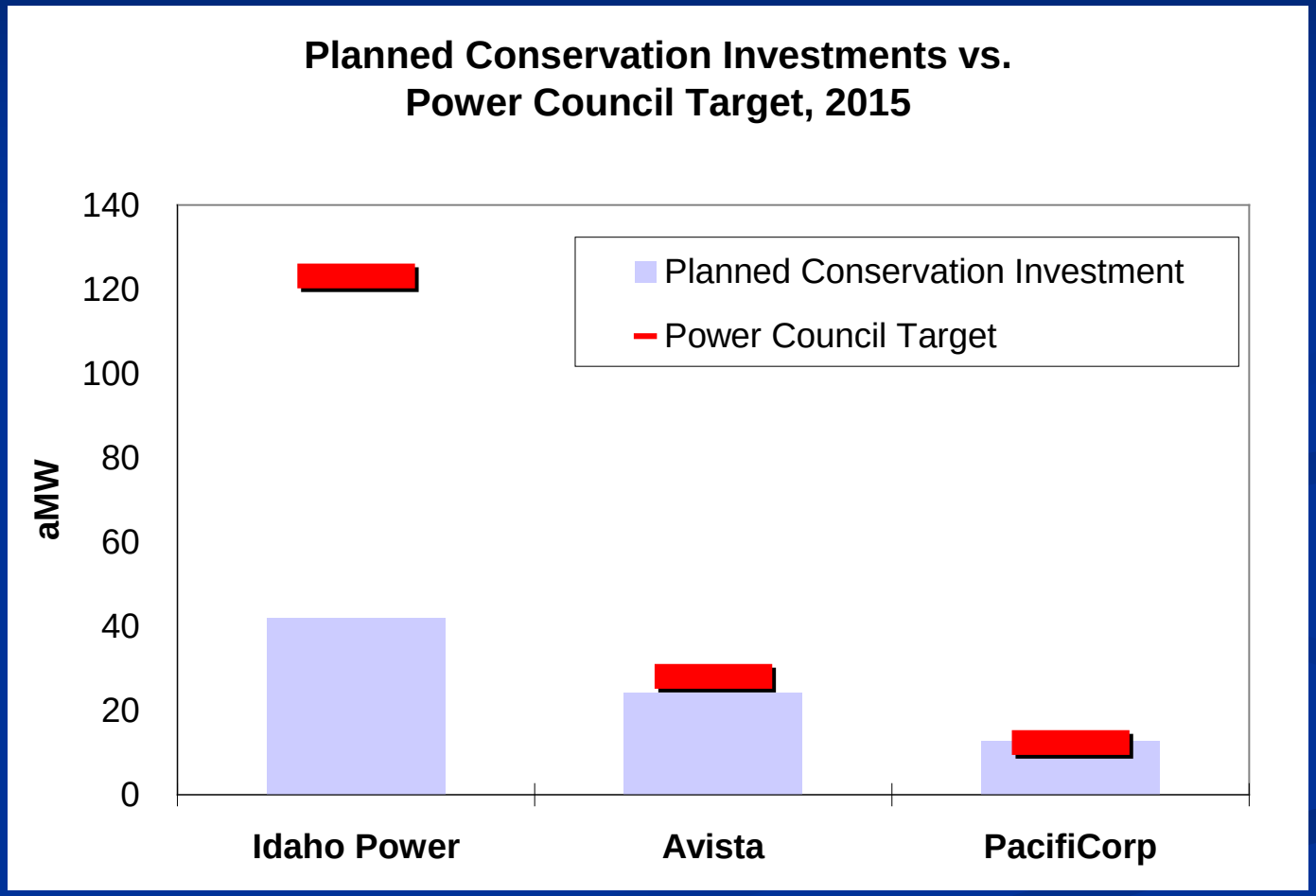
- Objective 4: Jobs/Economy
  - DSM can increase job levels and tax base with increased investment in the DSM industry
  - DSM can be administered in Idaho and create a local industry

DSM in Draft Policy Objectives

Is DSM Promotion Needed in the Energy Plan?



Planned Conservation Investments of Idaho Utilities by 2015



What Can the Legislature Do?

Sample Policy Language

1982 Idaho Energy Plan

- High priority on conservation, renewables, and high fuel efficiency generation before others. High priority to hydroelectric projects.
  - Carefully consider impacts on agriculture
  - Favor conversion to natural gas heating
  - Review and update curtailment plans
  - Consider coal and nuclear
  - Promote cogeneration and wood fuel
  - Encourage development of municipal solid waste power
  - Identify potential for wind development
- Promote petroleum and gas conservation, exploration
- Encourage and support local governments in their efforts to promote energy awareness, efficiency and resource development.

Policy Language: EPA National Action Plan for Energy Efficiency Recommendations

- Recognize energy efficiency as a high-priority energy resource.
- Make a strong, long-term commitment to implement cost-effective energy efficiency as a resource.
- Broadly communicate the benefits of and opportunities for energy efficiency.
- Promote sufficient, timely, and stable program funding to deliver energy efficiency where cost-effective.
- Modify policies to align utility incentives with the delivery of cost-effective energy efficiency and modify ratemaking practices to promote energy efficiency investments.

Policy Language: California Energy Action Plan II

"As stated in EAP I and reiterated here, cost effective energy efficiency is the resource of first choice for meeting California's energy needs. Energy efficiency is the least cost, most reliable, and most environmentally-sensitive resource, and minimizes our contribution to climate change."

"With the implementation of well-designed dynamic pricing tariffs and demand response programs for all customer classes, California can lower consumer costs and increase electricity system reliability. To achieve this transformation, state agencies will ensure that appropriate, cost-effective technologies are chosen, emphasize public education regarding the benefits of such technologies, and develop tariffs and programs that result in cost effective savings and inducements for customers to achieve those savings."

Policy Language: 2005 Nevada Energy Status Report

"The NSOE is responsible for supporting and encouraging policies that improve the efficiency of electricity and natural gas use."

Energy Efficiency and Conservation Program Planning

- *Adopt energy savings standards*
- *Increase funding to support demand side management programs,*
- *Support updated building codes and energy codes,*
- *Establish natural gas demand side management programs,*
- *Increase funding for low income weatherization programs and stimulate demand for consumer investment in home weatherization,*
- *Study the benefits of a residential energy conservation ordinance to assist renters,*
- *Review state energy conservation program and establish updated energy savings targets for state agencies,*
- *Investigate more aggressive load management strategies to reduce Nevada Power's needle peak.*

What Can the Legislature Do?

Action Items

Action Items

- Funding levels
  - Resource treatment and loading order
- Goal setting
- Incentive mechanisms & Decoupling
- Aligning policy objectives with DSM conservation policy

Funding Levels

- Currently Idaho IOU's have tariff rider charges between 0.5% and 1.95% of customer bills. The amount of investment in DSM is constrained at some level by these tariff collections.
- Investment in DSM conservation could be accelerated by increasing these tariff levels. This would impose an immediate economic burden on customers but could be offset by efficiency investment support from conservation programs.
- Investment in DSM can also be accelerated by changes in the treatment of DSM conservation as a resource and by pre-specified IOU loading orders.

Resource Treatment and Loading Order

- In current Idaho IRP's DSM conservation is treated as a load reduction resource. The IOU treatment of "conservation" is dictated by IPUC Order 22299:

IT IS HEREBY ORDERED that the electric utilities under our jurisdiction that are party to this case shall, in compliance with the terms of this Order:

1. Give balanced consideration to demand side and supply side resources when formulating resource plans and when procuring resources.

- Other states such as Arizona, Hawaii, and Montana, also require IOU's to consider DSM conservation as a resource equal to generation resources in the IRP least cost procurement processes.
- California, in addition to treating DSM conservation as a resource in IRP processes also specifies a preferred loading order for IOU resource acquisition that prioritizes DSM conservation.

Resource Treatment Action Item: California Energy Action Plan II

KEY ACTIONS:

1. Require that all cost-effective energy efficiency is integrated into utilities' resource plans on an equal basis with supply-side resource options.
2. Adopt 2006-2008 energy efficiency program portfolios and funding by late 2005.
3. Expand efforts to improve public awareness and adoption of energy efficiency measures.
4. Promote a balanced portfolio of baseload energy, demand, and peak demand reductions to obtain both reliability and long-term resource benefits of energy efficiency for both electricity and natural gas.
5. Integrate demand response programs with energy efficiency programs.

Goal Setting

- Currently there is no overarching DSM conservation goals set forth for the Idaho IOU's.
- Other states such as California, Illinois and Texas, and Oregon have set DSM conservation goals based on per capita energy use, specific portfolio percentage targets, and energy unit targets.
- Goal setting could hinder flexibility and least cost policy objectives if it is not considered in cost-effectiveness terms

Goal Setting Action Item: State of Oregon Energy Plan 2005-2007

"The NPCC's Plan calls for the region to acquire more than 500 average megawatts of conservation from 2005 through 2009. Oregon's share of this target is roughly 150 average megawatts. Accomplishing the NPCC's targets will require the commitment of every energy stakeholder. ODOE will work with all Oregon utilities to determine their share of the target and move quickly to acquire those shares."

Need For Decoupling and Incentives to Implement DSM

- Current regulatory structure rewards utilities for increasing sales & rate base
  - Revenue tied to sales volumes
  - Return earned on rate base assets
- Utility DSM activities do the opposite
  - Reduce sales volumes
  - Program costs generally expensed, not capitalized
- Need BOTH decoupling and incentives to encourage utilities to promote DSM

Cost Mismatch Generates Need for Decoupling

- Utility costs are fixed and variable
- Utility rates have fixed and variable components, but often fixed costs are allocated to variable rates
  - Residential and small commercial customers generally have a large component of fixed costs recovered through variable rates
  - Otherwise, customers with small consumption would pay large fixed charges
- This mismatch of fixed costs and variable charges makes utilities vulnerable to fluctuations in sales
  - Creates disincentive to reduce sales for any reason, including DSM measures
- Decoupling removes the reduced sales disincentive by keeping the utility neutral to sales fluctuations

Examples of Revenue Decoupling Mechanisms

- Sales Volume Decoupling
  - Keeps utility profit neutral to sales fluctuations due to energy efficiency via true-up to forecast amounts
  - Must carefully allocate risk from fluctuations due to weather, economic growth, demand elasticity
    - sometimes risk borne by customers through poor regulatory policy – can create decoupling backlash (i.e., Maine)
- Per Customer Decoupling
  - Keeps utility profit per customer neutral to customer growth via application of average per customer profit
- Lost Revenue Adjustment
  - Restores revenue lost due to qualifying efficiency programs

Idaho Power Docket Timeline

- In May 2004, the Idaho Public Utilities Commission (IPUC) determined that a proceeding to assess financial disincentives inherent in Idaho Power (IP) sponsored Energy Efficiency programs should proceed by informal workshops
- Five Workshops were held with Idaho Power Company, Idaho Public Utilities Commission, Industrial Customers of Idaho Power, and Northwest Energy Coalition participating
- Workshop recommendations were provided in February 2005:
  - Fixed Cost True Up Mechanism:
    - For agricultural and industrial sectors adjusted per same rate of increase or decrease in retail sales in the load forecast section of IP's IRP, or
    - For commercial and residential customers, the fixed cost revenue requirement should be adjusted per annual changes in customer count.
  - Incentive Mechanism:
    - Incentive payment if savings from its Energy Star homes northwest (residential new construction energy efficiency program) exceeds 100% of target (1070 MWh annually).
  - Simulation calculation based on 1994 and 2004 rate cases, with 0.5% energy savings annually
- In January 2006, IP filed an Application with IPUC requesting a "Fixed Cost Adjustment" rate adjustment mechanism (see next slide for details)
- February 2006, IPUC recommended that the Commission issue a Notice of Application

Idaho Power Docket

- Idaho Power is requesting a Fixed Cost Adjustment (FCA) applicable only to Residential Service and Small General Service
  - These customer classes have large percentage of fixed costs recovered through variable rates
- FCA recovers difference between authorized fixed costs and recovered fixed costs for these two customer classes
  - Fixed costs per customer rate in each class multiplied by actual number of customers in each class
  - Adjustment will be positive or negative, depending on number of customers and actual fixed costs recovered annually
  - Actual fixed costs weather normalized
  - 3% cap on adjustment
- FCA proposed to commence 01 Jan 2006 with first adjustment on 01 June 2007.

Implications of Proposed FCA

- Actual fixed cost revenues are only weather normalized before FCA is calculated
  - IP will continue to bear risk of weather-induced revenue fluctuations
  - IP will benefit if consumption decreases due to poor economic conditions, reduced demand
    - In Maine, this risk allocation led to repeal of decoupling program because rates rose during economic downturn
- There appears to be no implementation of an incentive mechanism to complement the FCA
  - May reduce IP's incentive to promote energy efficiency
- No rate design changes implemented to motivate consumer-driven reductions in energy consumption

Expense Treatment of Costs Creates Need for Incentives

- DSM program costs are not treated as capital assets
  - Recovered as annual expense, not capitalized
  - This is correct treatment: returns should not be earned on DSM costs – they are not capital assets
- Supply-side costs associated with capital assets are capitalized and do earn an annual return
- This differing treatment costs creates disincentive for utilities to pursue DSM
- Implementing shareholder DSM incentives can keep the utility neutral to supply-side options

Incentive Mechanisms

- Currently Idaho IOU's do not receive performance incentives for DSM conservation program performance
- To spur the most efficient administration of DSM conservation programs some states such as Massachusetts, Minnesota and Nevada, offer incentive mechanisms to program administrators based on program performance
- Program performance can be evaluated by:
  - Net program benefits, evaluated using cost/benefit tests
  - Energy savings goals (aMW, therms)
  - Rate of return on investment
  - Program milestone goals (# of CFL's installed, # of building operators trained)

Customer Rate Design Incentives for Encouraging Conservation

- Conservation is strongly driven by consumer decisions
  - Customers can receive powerful signals to curtail energy use through proper rate design
- Rate designs that encourage efficient consumption include:
  - Time of Use
  - Inclining block
  - Real Time Pricing, Critical Peak Pricing
- Some rate designs shift consumption to non-peak periods, versus eliminating consumption altogether
- Effective rate design should be incorporated to support any DSM program

Straw Proposal

Straw Proposal: Policy Language

- Conservation, energy efficiency, and demand response provide several important benefits to the citizens of Idaho. These benefits may include but are not limited to; environmental protection, stabilized energy costs for consumers, resource diversity, a reduced reliance on energy imports, the mitigation of supply shortages and energy price spikes, and lower transmission and distribution system costs.
- In the context of least cost reliable resource acquisition, Idaho utilities should give priority to: (1) Conservation, energy efficiency and demand response; (2) renewable resources; (3) clean coal, and high-efficiency thermal generation; and (4) All other resources.
- In the context of least cost reliable resource acquisition, Idaho consumers should give priority to conservation and energy efficiency. *Consider the point about informing customers of the true cost of power*
- Idaho utilities should acquire all conservation that is cost-effective from the perspective of Idaho consumers, with a goal of 20% *[number subject to further discussion]* electricity savings by 2020 and a goal of X% natural gas savings by 2020.
- *Add a bullet point re: conservation of natural resources, such as water (or incorporate above)*
- The IPUC should remove any disincentives for Idaho utilities to achieve the above State goals for conservation, energy efficiency, and demand response resources.
- The State of Idaho should strengthen the compliance with the International Building Energy Code.

Straw Proposal: Action Items

1. The IPUC should require Idaho utilities to fully incorporate conservation, energy efficiency, and demand response as the priority resources in their IRP planning. The Idaho utilities should clearly report on how this requirement is integrated into their IRP's.
2. The Idaho utilities should continue to support NWPP Market Transformation Programs.
3. The State of Idaho should adopt international building codes as a minimum for building energy efficiency standards and should fund or establish a department to provide energy code compliance support. Funding shall be via a surcharge placed on all Idaho electricity and natural gas bills.
4. The IPUC should remove all barriers and disincentives to effective utility acquisition of conservation, energy efficiency, and demand response resources and additional incentives for utilities for highly effective acquisition of these resources should be considered.

Review of DSM

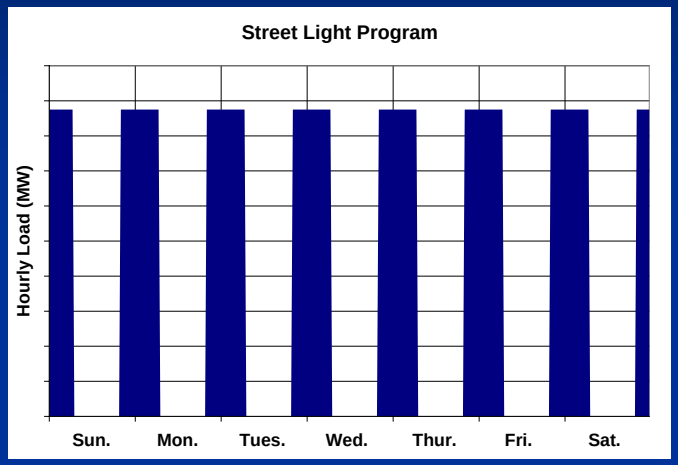
Review of DSM Conservation

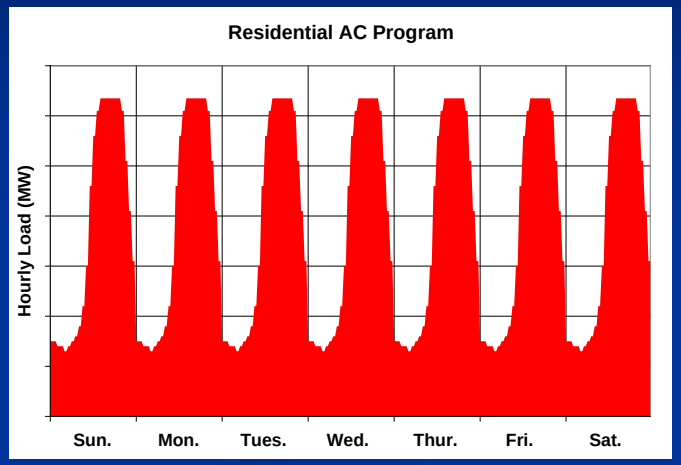
- Types of DSM conservation programs
- Value of DSM conservation programs
- DSM conservation delivery mechanisms

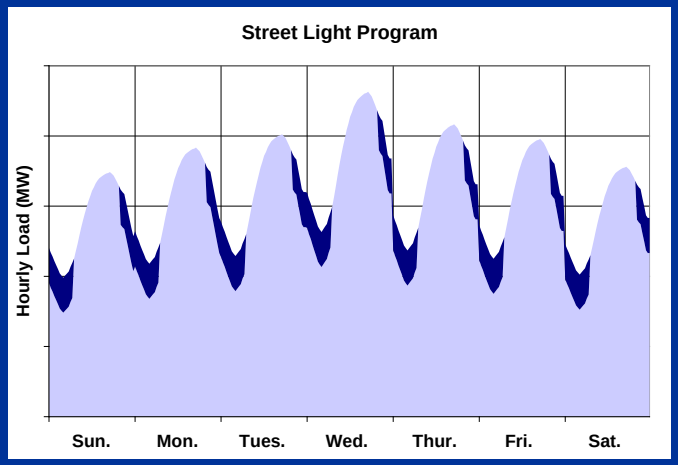
Types of DSM Conservation Programs

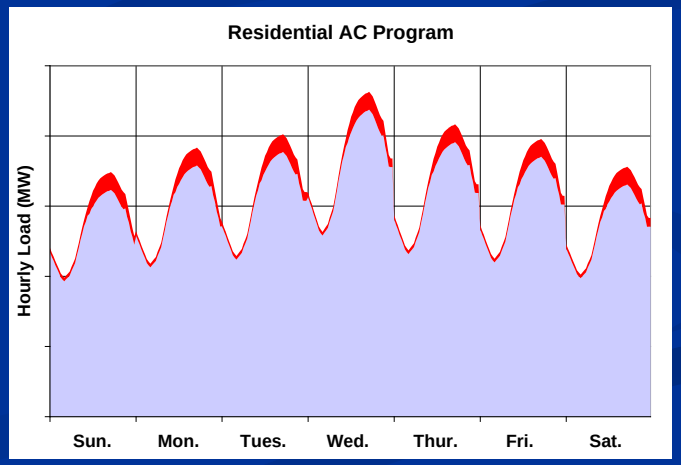
1. Energy Efficiency
   - Efficiency equipment upgrades that provide long term energy savings
   - Can provide peak demand reductions but not dispatchable during peak hours
2. "Peak Shaving" Programs
   - Resource resulting from participant load reductions during peak hours or whenever supply/demand margin is tight
   - Includes interruptible/curtailable load which can be called upon when needed or demand response which relies on voluntary load reductions in the face of high energy prices
   - Not a persistent resource of energy savings

Value of Energy Efficiency Programs Depends on Timing of Savings

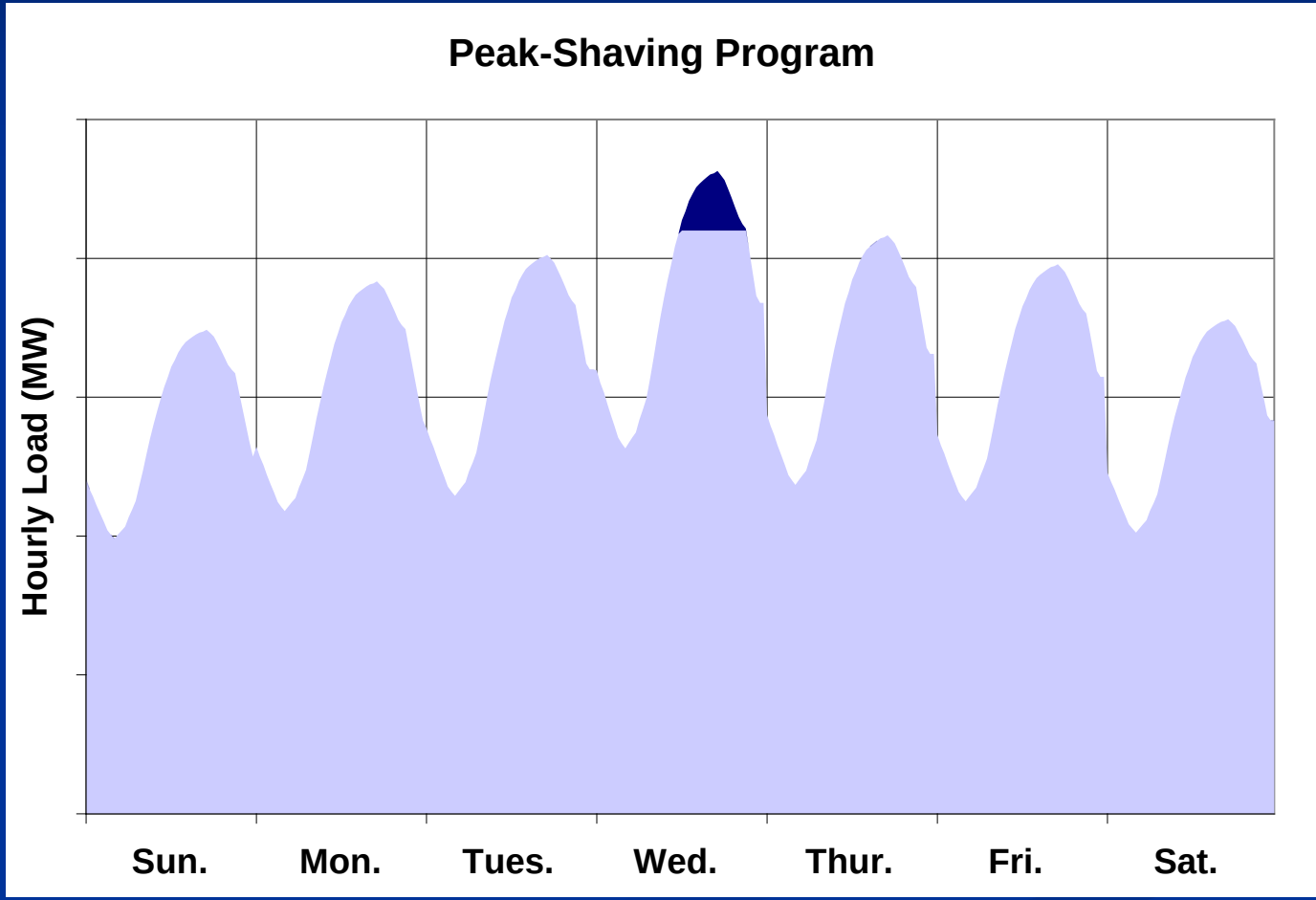








"Peak-Shaving" Programs Aimed at Reducing Peak Demand



Energy Efficiency Delivery Mechanisms

1. Program Delivery Types
   - Market Transformation
   - Codes and Standards
   - Low interest rate loans
   - On-bill financing
   - Direct install and incentives

2. Delivery Agents
   - IOU
   - State Agency (NYSERDA, IDWR)
   - Private Companies (Efficiency Vermont)

"Peak Shaving" Delivery Mechanisms

1. Program Types
   - Dispatchable/Curtailable programs that incent customers to drop load upon request
   - Demand Response programs that shape retail rates to wholesale rates to encourage energy usage reduction during high price periods
2. Delivery Agents
   - IOU, System Operator