New Hampshire’s Energy Future
An Electric Utility Perspective

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Green Energy Conference

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PSNH’s Service Territory

- Serves about 75 percent of New Hampshire residents
- 5,628 square miles
- 211 New Hampshire communities
- More than 490,000 customers
- 8,041,000 megawatt hours in annual sales
- 1,320 employees
- 1,000 miles of transmission and about 14,000 miles of distribution lines
PSNH Generating Plants

- PSNH produces about 65% of its load from its NH generating facilities.
- PSNH purchases about 35% from the market.
PSNH - Fuel Diversity

New England Fuel Mix

- Natural Gas: 38%
- Oil: 25%
- Nuclear: 14%
- Coal: 9%
- Hydro: 6%
- Pumped Storage: 5%
- Other Renewables: 3%

PSNH Fuel Mix

Open Market Purchases
- Oil/Gas: 3%
- Nuclear: 8%
- Hydro*: 7%
- Wood*: 2%
- Other*: 2%
- Coal: 49%

* Includes unit power purchases from other suppliers
PSNH’s Energy Rate for Residential Customers Remains Competitive in New England

As of 8/6/08
PSNH Serves Many Groups

- **State Oversight and Accountability**
  - Legislature allowed the retention of generation, but ...
  - PUC Annual Review of all outages

- **Environmental Requirements**
  - State and Federal (air, water, etc.)
  - PSNH ahead of curve with SCR, precipitators, fuel switching

- **Society’s Needs Are Changing**
  - Fuel and goods/services have had dramatic price increases
  - Climate Change has triggered new policies – less carbon emissions, RPS
  - Lifestyle choices are stimulating new thinking
Transitioning to More Carbon-Free Generation Will Require Major Investments

- Today, over 55 percent of New England’s electricity is produced by fossil-fueled power plants.
- New England is projected to need an additional 3,500 MW of new generation by 2016 to meet consumers’ needs.
- New England will require 1,250 MW of new renewable energy resources to meet 2016 Renewable Portfolio Standards requirements.
- Carbon-free renewable energy resources are a challenge to site, fund and build.
NH Initiatives and State Environmental Laws define a path:

- NH Clean Air Power Act: “4P” bill (SO2, NOx, Mercury, CO2)
- Regional Greenhouse Gas Initiative
  - Purchase RGGI Allowances
- Renewable Portfolio Standard
  - Green MWH’s or Alternative Compliance Payment
- Governor’s Climate Change Task Force
PSNH – What Have We Done to Respond?

➢ “Supply Side Management”
  – Repower Schiller Unit 5 with wood
  – Install energy efficiency runner at Smith Hydro for more hydro power
  – Installed an energy efficient turbine at Merrimack Unit 2
  – Support in-state wind projects
  – Support in-state biomass projects
Significant Reductions in Emissions are Achievable With “Green Generation”

<table>
<thead>
<tr>
<th>Renewable Project</th>
<th>Project Size</th>
<th>REC’s Per year (estimated)</th>
<th>Avoided Fossil CO2 Emissions (tons)</th>
<th>Total Lifetime Emissions Reductions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Wood Power</td>
<td>45 MW</td>
<td>320,000</td>
<td>425,000</td>
<td>6.5M</td>
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<tr>
<td>Smith Hydro-Incremental</td>
<td>15 MW</td>
<td>10,000</td>
<td>5,900</td>
<td>0.12M</td>
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<tr>
<td>Lempster Wind</td>
<td>24 MW</td>
<td>70,000</td>
<td>41,200</td>
<td>0.8M</td>
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<tr>
<td>Energy Efficiency 6 years (02-07)</td>
<td></td>
<td></td>
<td></td>
<td>3.2 M</td>
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</tbody>
</table>

* Renewable projects - assume 15 year life for comparison purposes
Saved **5.2 billion lifetime kWh** – enough energy to power Concord for 13.9 years

Served over **365,000 customers**

Saved customers **$749 million** – the amount they would have paid for energy no longer needed. These savings are more than seven times the cost of the CORE program

Reduced emissions by **3.2 million tons** – like taking 688,000 cars off the road for a year
New England Will Face Severe Challenges to Meet Renewable Energy Objectives

- Limited siting opportunities for major sources of renewable energy
  - wind towers must be sited on ridges or coastlines
  - biomass must be sited near forest resources
- Finite supply of sustainable biomass fuel in the region
- Opposition to new projects (NIMBY)
- Transmission capacity
  - major new transmission lines must be constructed to transport renewable energy from remote renewable energy projects and high-demand regions
- State laws excluding regulated utilities from building renewable energy resources to meet their requirements
## A Balancing Act – The Environment, The Economy and Energy

### Seek Customer Value

- Energy supply adequacy
- Predictable prices
- Economic values for NH
- Fuel diversity
- High plant reliability
- Efficient operations

### Pursue Environmental Benefits

- Improve current equipment
- Increase energy-efficiency programs
- Install new energy-efficient equipment
- Reduce greenhouse gas emissions
- Increase use of renewable and carbon-free generation
Yesterday:
~ 6million MWH’s
Merrimack, Newington and Schiller Stations
coal, oil/gas, hydro

Today:
Added Schiller #5 - 50 MW wood
Increased Hydro generation
Improved Merrimack #2 efficiency
Lempster Wind

And Tomorrow…
Conservation
Cleaner Power
As We Look to the Future, PSNH is Advancing Multiple Strategies to Secure Clean and More Economic Energy