Electricity: Perspective and Outlook

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Leading up to the Crisis

- March 2000 analysis said region faces increasing probability of being unable to fully meet needs -- 24% by winter of 2003
- **Equivalent** of 3000 MW required to bring probability down to 5%
- Market prices unlikely to support development of new generation until 2003-2004
- Need voluntary, economic load reduction
Prices Before Summer 2000

Heavy Load Hour Prices: Mid-Columbia

$/MWhr

May 1
May 4
May 7
May 10
May 13
May 16
May 19
May 22
May 25
May 28
May 31
Jun 3
Jun 6
Jun 9
Jun 12
Jun 15
Jun 18
Jun 21
Jun 24
Jun 27
Jun 30
Jul 3
Jul 6
Jul 9
Jul 12
Jul 15
Jul 18
Jul 21
Jul 24
Jul 27
Jul 30
Aug 2

1996
1997
1998
1999
Summer 2000 Prices

Heavy Load Hour Prices: Mid-Columbia

$/MWhr


May 1 May 4 May 7 May 10 May 13 May 16 May 19 May 22 May 25 May 28 May 31

- 100 200 300 400 500 600 700 800
The “Perfect” Storm

- Poor Hydro Conditions
- Under-investment in Generation, Efficiency
- Rapidly Growing Demand
- Tightening Supplies & Higher Gas Prices
- Environmental Constraints
- Limited Price Response
- Dysfunctional California Market

Unprecedented High Wholesale Power Prices, Risk of Curtailment
Fall and Winter 2000-2001

- Second driest water year on record
- A struggle to deal with shortages and high prices
  - Demand reduction programs
  - Short-lead-time generation
  - Emergency hydro operations

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![Graph showing energy prices per MW/hr for 2000 and 2001]

- HLH
- LW

Prices are shown from January (Jan) to September (Sep) for the years 2000 and 2001.
Market was Responding to High Prices

- New power plant siting and construction
- Natural gas pipeline expansions and drilling
- Innovative emergency supply alternatives
- Innovative demand management programs
- Stimulation of renewable and distributed generation alternatives
- Reduced consumption and economic activity
Looking Ahead to Summer 2001

- In spring 2001 Council evaluated outlook for summer and coming winter
  - Between driest and second driest year in the 60-year record
  - Extraordinary actions needed to make it through the summer
  - Reservoir refill critical to winter conditions, even with refill 20% probability of shortage this winter, without refill could be 45% LOLP
Recommended Actions

- Emergency hydro operations and spill reduction
- Facilitate additional generation capacity
  - Emergency citing and permitting
  - Lift environmental operating restrictions
- Reduce consumption through:
  - Conservation programs
  - Load buyouts and interruption agreements
  - Appropriate price signals to consumers
- Store additional water in Canadian reservoirs
What Happened in Summer 2001?

- We made it through summer, filled reservoirs and stored additional water in Canadian reservoirs.
- Wholesale prices collapsed during the summer.
The Current Winter Outlook

- Looking ahead for this coming winter the Council now sees a very low probability of shortages, less than 5% probability.

- What happened?
  - Warnings a cry of “wolf!”?
  - Policies saved the day?
  - A recession saved the day?
  - Lucky?
Reasons for Improved Outlook

- Reduced demand
- Added generation
- Emergency hydro operations
- Mild summer weather
- Filling reservoirs and storing additional water in Canada
- More flexibility in use of Canadian storage
- Improved outlook for availability of imports from California
Monthly Load Change from Previous Year

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<tr>
<th>Month</th>
<th>Percent Change from Previous Year</th>
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Composition of July 2001 Load Reduction

- **DSI**: 58%
- **Buyouts**: 5%
- **Shutdowns**: 7%
- **Other Response**: 30%
Generating Resource Prospects for Winter 2001 - 02

- On net, about 2180 MW of new generation is expected to have entered service during 2001.
  - About 1650 MW of this is permanent.
  - About 530 MW of this operates under temporary permits.
- Some additional temporary projects may be removed from service, but some unverified capacity may be available for service.
New resource expectations

Net Northwest Resource Additions

- Capacity (MW)
- Energy (MWh)

Jan-00 Jul-00 Jan-01 Jul-01 Jan-02 Jul-02 Jan-03 Jul-03 Jan-04
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<td>March 2000</td>
<td>Northwest Power Supply Adequacy/Reliability Study</td>
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<td>April 2001</td>
<td>Analysis of the 2001 - 2002 Power Supply Outlook</td>
<td>2001 - 7</td>
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<td>October 2001</td>
<td>Readiness Steering Committee report Coping with the 2000 - 2001 Energy Crisis</td>
<td><a href="http://www.pnucc.org">www.pnucc.org</a></td>
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