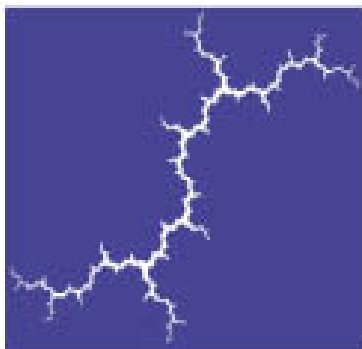


# ISO-New England's Generating Unit Availability Study: Where's the Beef?

Restructuring Roundtable

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# Background

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- The wholesale spot market was opened in New England on May 1, 1999.
- Since that time, the region has experienced higher hourly spot prices and substantial price volatility.
- Hourly Energy Clearing Prices spiked as high as \$6,000 per MWH for four hours on May 8, 2000 and exceeded \$100 per MWH in more than 120 hours.

# Background

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- In the Summer of 2000 -- ISO New England began to express concern about decreasing generating unit availability
  - Fossil steam plant equivalent forced outage rates more than doubled from approximately 11 percent to nearly 24 percent during the first 8 months after opening of new wholesale market. (“Review of NEPOOL Objective Capability for the Power Year 2000-2001,” approved June 2, 2000)
  - “Observations of the recent trends in NEPOOL generating unit availability indicate a decrease in the reliability of NEPOOL generating units.” (ISO-NE Scope of Work, June 12, 2000)

# Background

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- As a result, in August 2000 ISO New England commissioned the Generating Unit Availability Study
- The Study was to be conducted in four Phases and completed by March 2001.

# UCS Outage Report

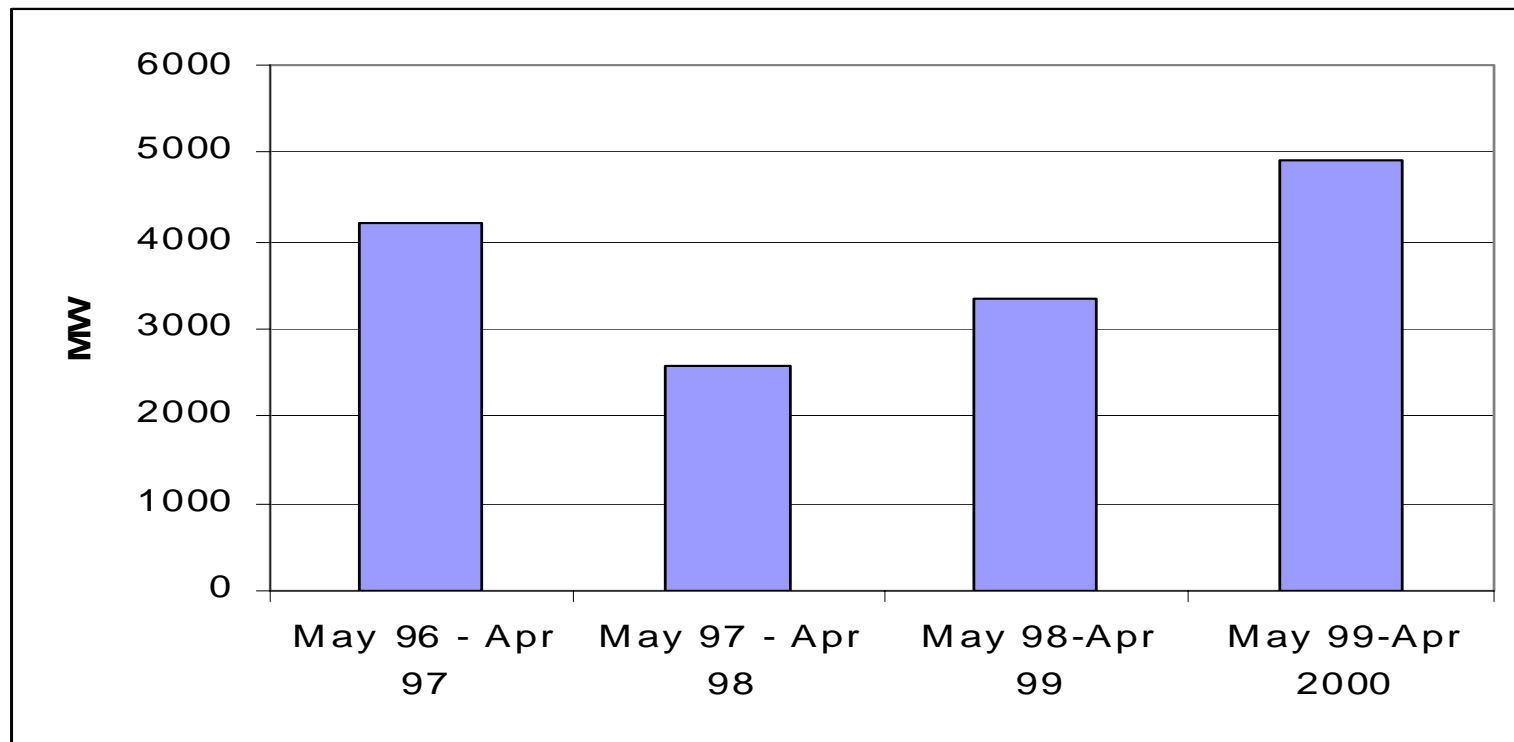
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- In September 2000, the Union of Concerned Scientists asked Synapse to investigate whether there was any evidence that changes in the frequency or patterns of power plant outages in New England may have contributed to higher electricity prices.
- The UCS Outage Report was issued in January 2001. It had a number of significant findings.

# UCS Outage Report Finding: Capacity Out of Service

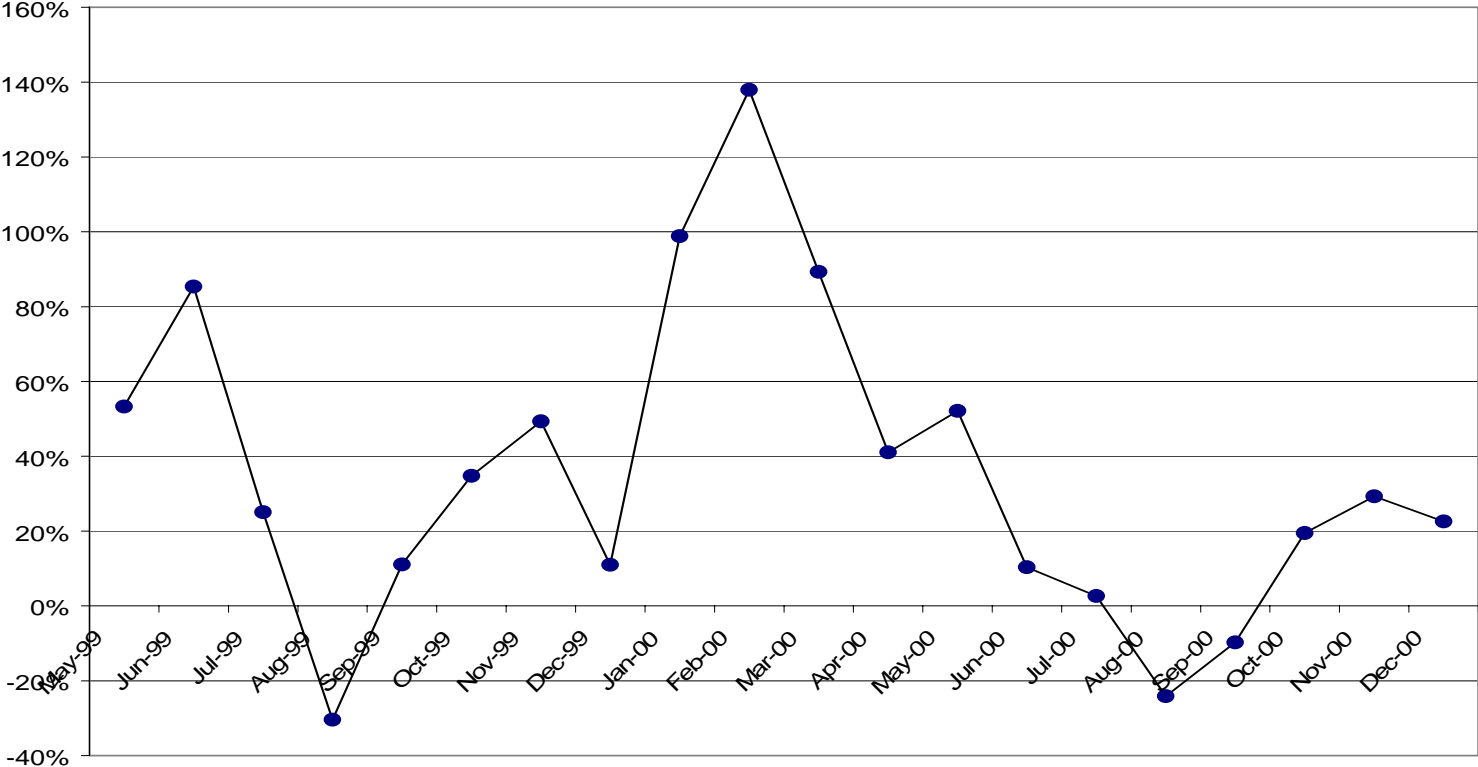
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The average amount of capacity out of service increased by 47 percent in the twelve months following the May 1, 1999 opening of the new wholesale market.



# The Average MWs of Capacity Out of Service Increased in 16 of the First 20 Months After the New Wholesale Market was Opened

- Increase/Decrease in Total Capacity Out of Service: May 99 - December 2000 compared to May 98 - April 99



# UCS Outage Report Finding: Capacity Out of Service on Days When Price Spikes Occurred

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Substantially more capacity was out of service on nearly 80 percent of the days on which energy clearing prices exceeded \$100 per MWH.

- For example, when prices spiked to \$6,000 per MWH on May 8, 2000, 66 percent more capacity was out of service than had historically been out of service, on average, on a weekday during the month of May prior to the opening of the new wholesale market.



## **UCS Outage Report Finding: Capacity Out of Service on Days When Price Spikes Occurred**

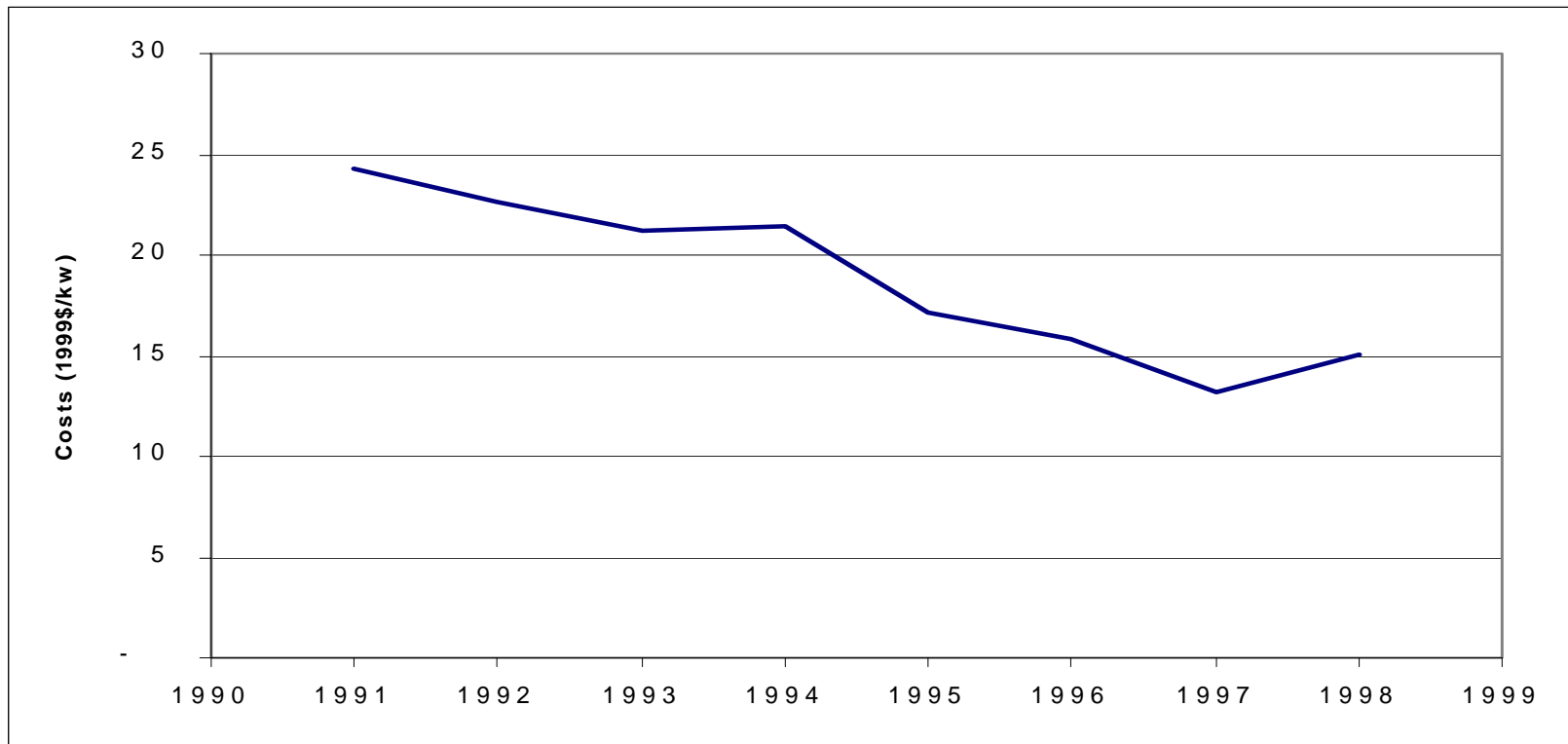
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- When prices reached \$1,003 per MWH on June 8, 1999, 83 percent more capacity was out of service than had historically been out of service, on average, on a weekday during the month of June prior to the opening of the new wholesale market.
- Significantly more capacity also was out of service when price spikes occurred in the non-summer months of January, April, and November.

# UCS Outage Report Finding: Fossil Plant O&M Expenditures

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**New England fossil steam plant O&M expenditures decreased by approximately 40 percent between 1990 and 1998.**



# UCS Outage Report Conclusions

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- The amount of capacity out of service and fossil plant equivalent forced outage rates rose significantly after the wholesale market was launched on May 1, 1999.
- One potential explanation of higher plant outage rates is the reduced level of expenditures for operation and maintenance costs during the 1990s.

# UCS Outage Report Conclusions (continued)

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- Another possible explanation is that generators may be intentionally withholding capacity from the market in an effort to raise wholesale spot market prices.
- Unfortunately, it is not possible to determine whether generators are withholding capacity to manipulate wholesale spot market prices without plant and supplier specific data.

## June 2001

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- ISO New England releases Generating Unit Availability Study.
- ISO New England claims that the Study shows that the implementation of the wholesale markets had not impacted availability of generation throughout New England.
- But this is not correct -- The Study is so flawed that such a conclusion cannot be supported.

# **The ISO New England Generating Unit Availability Study is Seriously Flawed**

- The Study fails to address many of the key issues set out in the initial scope of work.
- The Study fails to perform an analysis of outage causes and provides no analysis of forced versus planned outages.
- The Study fails to examine individual unit performance.
- The Study primarily presents information on the annual performance of large groups of plants or their overall performance during the 20 month period May 1999 to December 2000. Because it looks at such broad periods, the Study does not identify any significant changes in hourly or daily unit availability.

# **The ISO New England Generating Unit Availability Study is Seriously Flawed**

- The Study never looks at whether generators have profited from capacity shortages or have withheld otherwise available capacity in order to raise prices.
- The Study never looks at whether the units that had higher outage rates were located in load pockets and/or whether outages occurred during transmission constrained periods.
- The Study's examination of changes in maintenance practices and expenditures is inadequate.
- The Study contains many conclusory statements without any supporting evidence or data.

## **The Study Fails to Address Many of the Key Issues Set Out in the Initial Scope of Work**

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The June 2000 Scope of Work for the Generating Unit Availability Study outlined a number of critical work tasks that were to be performed during the first two phases of the Study:

- ▣ Develop an electronic database with 4 years of historical data on individual generating unit operating and performance characteristics as well as bid information.
- Review NEPOOL's historical unit availability statistics (specifically maintenance and forced outage rates)



## **The Study Fails to Address Many of the Key Issues Set Out in the Initial Scope of Work**

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- Conduct a behavioral analysis of units identified as having significant changes in availability. Develop correlation between:
  - ◆ Adequacy of maintenance practices and unit performance
  - ◆ Past and present owner and unit performance
  - ◆ Unit type and unit performance
  - ◆ Weather conditions and unit performance
  - ◆ Energy Clearing Price (ECP) and unit performance
  - ◆ Seasonal and/or Monthly correlation and unit performance
- Evaluate correlation between fuel supply and ECP.
- Determine if the problem is unique to New England.

## **The Study Fails to Address Many of the Key Issues Set Out in the Initial Scope of Work**

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- Prepare a written summary report identifying units that have had significant changes in availability.
- ALL OF THESE TASKS WERE TO BE COMPLETED BY NOVEMBER 2000
- HOWEVER, WHEN FINALLY ISSUED IN JUNE 2001, THE STUDY DOES NOT PROVIDE THE REQUIRED DATA OR ANALYSES

## The Study Fails to Analyze Outage Causes and Forced Versus Planned Outages

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- One of the most important tasks for the Generating Unit Availability Study was to examine the causes of the increased unit unavailability that ISO had identified. However, the Study's authors have acknowledged that they have not performed any analysis of outage causes. (page 28)
- The Study's authors blame their failure to analyze the causes of generating unit outages on the fact that information on outage causes “was not available in a useful form.” But this claim is not persuasive.

## The Study Fails to Analyze Outage Causes and Forced Versus Planned Outages

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- The California Public Utilities Commission is currently conducting a unit-by-unit engineering investigation into the causes of the increased unavailability of that state's generating facilities. Regulatory commissions traditionally have conducted similar outage investigations. If a detailed investigation using plant specific information can be conducted in California, a similar investigation can be performed in New England.
- The California ISO also has examined whether there has been physical or economic withholding of capacity.

## **The Study Primarily Focuses on Group Performance Over Extended Periods of Time**

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- The initial scope of work for the Study envisioned an examination of individual unit availability on an hour by hour basis. However, the Study looks at the availability of large groups of plants during annual or longer periods that are far too broad to permit any meaningful examination of individual generator behavior.
- Such a review obscures any significant changes in the hourly or daily availability of individual generating units.
- Such a review cannot identify any evidence of the physical withholding of individual generating units.

## **The Study Does Not Support the ISO Claim that the Increased Outages of Fossil Steam Units in 1999 and 2000 are due to Extended Millstone Outages**

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The ISO offers the following explanation for the increased outages of fossil steam units since May 1, 1999:

Fossil steam units had record-breaking capacity levels, with less maintenance, in 1997-1998 to compensate for the nuclear units that were offline for extended periods from 1996-1998. Consequently, these fossil units suffered a higher level of outages in the following years, leading to lower availability rates.

**BUT THIS CLAIM IS CONTRARY TO THE FINDINGS OF THE GENERATING UNIT AVAILABILITY STUDY.**

## **The Study Does Not Support the ISO Claim that the Increased Outages of Fossil Steam Units in 1999 and 2000 are due to Extended Millstone Outages**

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- The Study tried to find a relationship between fossil steam unit availability in 1999 and 2000 and the extended Millstone Unit outages. However, the Study's authors acknowledge that "The availability of generating units in 1999 and 2000 is not correlated to whether their output in 1997 was higher or lower." (Study, page 14) This directly contradicts the ISO's claim.
- The Study's authors further admit that "Our analysis draws no conclusion as to how much of the continued lower availability of the units that were stressed in 1997 is due to the stress, how much to the market factor, and how much to some other unknown cause." (Study, page 14)

## **The Study's Examination of the Impact of Changes in Maintenance Expenditures is Inadequate**

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- The Study claims that the data on maintenance expenditures from FERC reports shows that annual maintenance spending at some New England plants is in essence level from 1995 to 1999. But this analysis is inadequate:
  - The Study only looks at maintenance expenditures for approximately 5,700 MW of capacity which is about 50 percent of the fossil steam capacity in New England and about 30 percent of the total non-nuclear capacity.
  - The Study also only looks at maintenance expenditures between 1995 and 1999 even though data was available for years before 1995.



## **The Study's Examination of the Impact of Changes in Maintenance Expenditures is Inadequate**

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- The Study uses current dollars which cause the slight upward trend in maintenance expenditures it found. Expenditures at the limited plants it examined were, at best, flat in constant dollars.
  - The Study did not look at Operations expenditures.
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- The Study concludes that its analysis of maintenance expenditures cannot be extrapolated to all of New England. We agree.

# Conclusions

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- The ISO New England Generating Unit Availability Study never addresses, let alone resolves, the important concerns raised by the UCS Outage Study.
- The ISO needs to complete the Study it set out to conduct last September. The generators should be required to provide whatever data that the ISO needs but doesn't have.
- The data gathered by the ISO should be made available to interested parties to examine.

## Conclusions (continued)

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- The ISO should contact the California Public Utilities Commission, the California Attorney General and the California ISO to learn how they are conducting their investigations of physical withholding and how they are obtaining needed data.
- This issue is important because generating unit availability continues to be a significant factor in determining prices.

## Conclusions (continued)

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- The new study sponsored by the Maine PUC, the Massachusetts Attorney General and the ISO will examine economic not physical withholding.