Determining The Need for Proposed Overhead Transmission Facilities

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Paul Peterson and David Schlissel

Synapse Energy Economics

22 Pearl Street, Cambridge, MA 02139

www.synapse-energy.com

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The standards for determining when applications for new transmission lines should be approved

- "Public Need" versus "Public Benefit"

The Statutory Standard for Underground or Underwater Transmission Lines

- An underground or underwater transmission line shall not be approved unless the Siting Council finds a “public benefit” for the facility and that this “public benefit” outweighs the adverse impacts of the line. CGS 16-50p(c)(2).
- A “public benefit” exists if the facility “is necessary for the reliability of the electric power supply of the state or for the development of a competitive market for electricity.”

The Statutory Standard for Overhead Transmission Lines

- An overhead transmission line shall not be approved without a finding of “public need” and that this “public need” outweighs the adverse impacts of the line. CGS 16-50p(a).

Differences between the standard of "public need" and the standard of "public benefit"

- There is no statutory definition of public need but a state court has found that the standard of "public benefit" differs from that of "public need." According to the court, a "benefit" is "something that aids or promotes well being" while "need" means a "necessary duty" or a "want of something requisite, desirable or useful."
- Thus, it appears that "public need" refers to electric system reliability while a "public benefit" under the Connecticut statute can include reliability as well as other attributes that relate to the development of a competitive market for electricity -- such as allowing consumers to access lower cost power or reducing congestion costs.

Differences between the standard of "public need and the standard of "public benefit"

- If "market" factors are allowed to justify the building of an overhead line then, in effect, the two standards would be identical, which is counter to the statutory language.
- The more relaxed "public benefit" standard seems to reflect a legislative preference for underground facilities.

Determining the "public need" for a proposed overhead transmission line

- Determining the need for a proposed facility requires an examination of electric system reliability with and without the proposed facility.
- This means analyzing whether there will be adequate power to serve customer demands and provide reasonable levels of system reserves during peak periods in case power plants are out of service or hotter-than-expected temperatures are experienced.
- Looking at electric system reliability also means investigating whether transmission lines will be operating at higher than normal loadings for extended periods.
- Also concerned about voltage support and system stability.

The planning horizon for determining need

- Historically, electric power system planning examined as far as 10 to 20 years into the future when examining the need for new generation and transmission facilities.
- However, the change to the new deregulated markets suggests that this may be too long of a planning horizon.
- Given all of the new developments -- that is, distributed generation, load response programs, etc. -- a shorter planning horizon may be appropriate.

Planning Criteria

- Need to ensure that there will be adequate power to serve expected customer demands + reasonable reserves.
- Electric systems traditionally have been designed so that load will not be lost more frequently than 1 day in 10 years. This has meant 15 to 20 percent reserve margins for capacity.
- Double loss contingency planning -- The electric system also should be designed so that adequate power will be delivered even if two transmission lines, two generating facilities or the largest transmission line and generating facility are unavailable at the same time.
- Want to design the transmission system to avoid, where possible, situations where a single event (that is, a lightning strike or loss of a tower) can cause the loss of two or more transmission lines.

The key variables that need to be evaluated when determining need for a proposed transmission line

- Generating capacity
- Transmission import capacity and loadings of existing transmission lines
- Customer demand forecasts
- Reasonable alternatives to the proposed facility

Generating Capacity

- Existing generating facilities.
- Projected capacity retirements.
- Projected capacity additions including facilities that are under construction, those that have been approved by the Siting Council and those for which applications have been submitted to the Siting Council.
- The potential for repowering existing generating facilities or reusing existing sites.
- The potential for distributed generation within the geographic area being examined.

Transmission Import Capability

- It is important to consider the amounts of power that can be imported into the geographic area being examined over existing lines and scheduled system improvements.
- For example, 2,500 MW can be imported into the State of Connecticut -- according to ISO-NE. The transmission import capability for Southwestern Connecticut was 1,700 MW through 2001. It was then increased to 1,850 MW during 2002 and will be increased to 2,150 MW in 2004 -- without the proposed 345-kV transmission line.

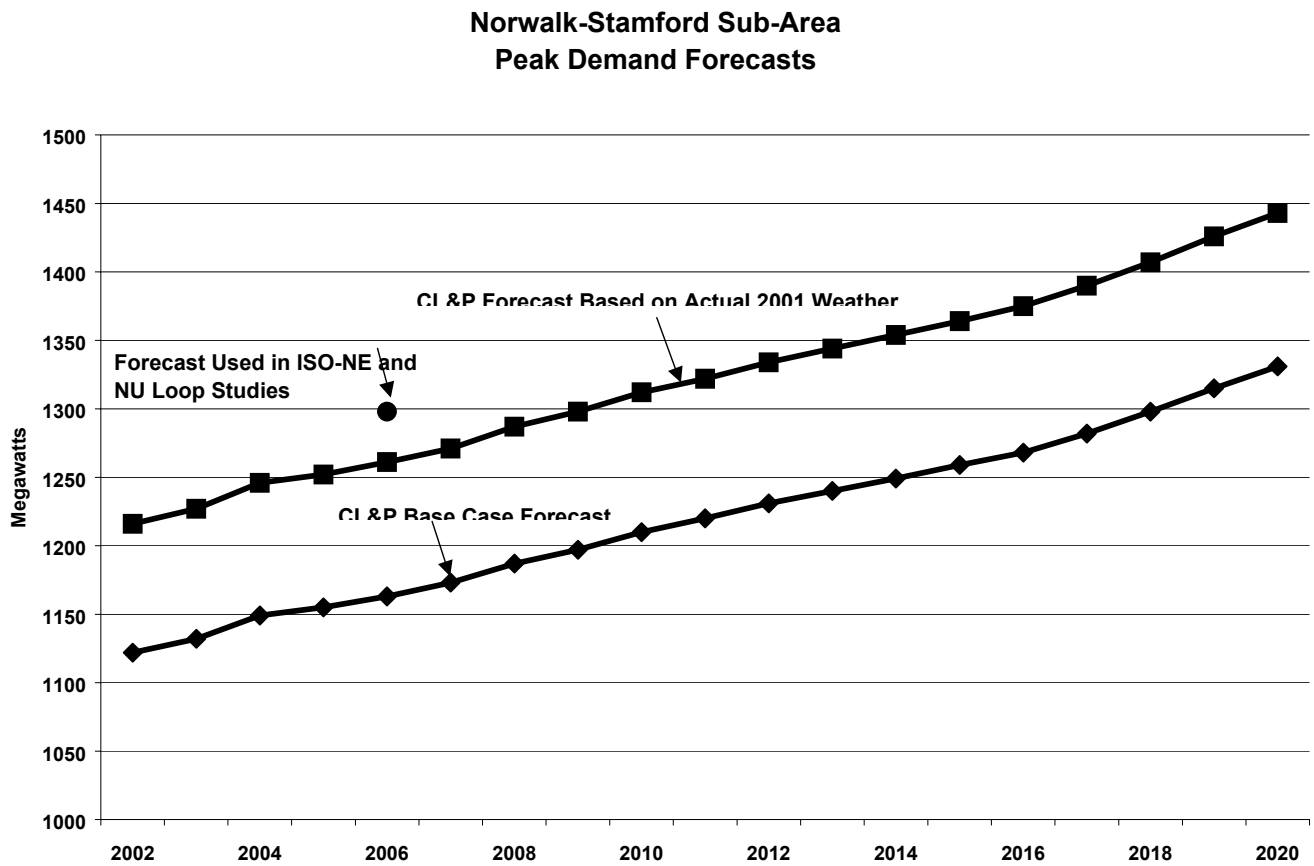
Customer Demands

- Need to project future customer demands when analyzing electric system reliability.
- Weather-normalized forecasts versus forecasts based on extreme weather conditions.
- Weather-normalized forecasts reflect historic conditions over a period of years.
- Extreme weather forecasts can reflect hotter-than-normal temperatures experienced in recent summers.
- However, it is important not to assume unrealistically extreme weather conditions. Doing so puts unrealistic burdens on the electric system.

Customer Demands

- Differences between forecasts can be quite substantial and can have significant impact on results of analyses

Customer Demands



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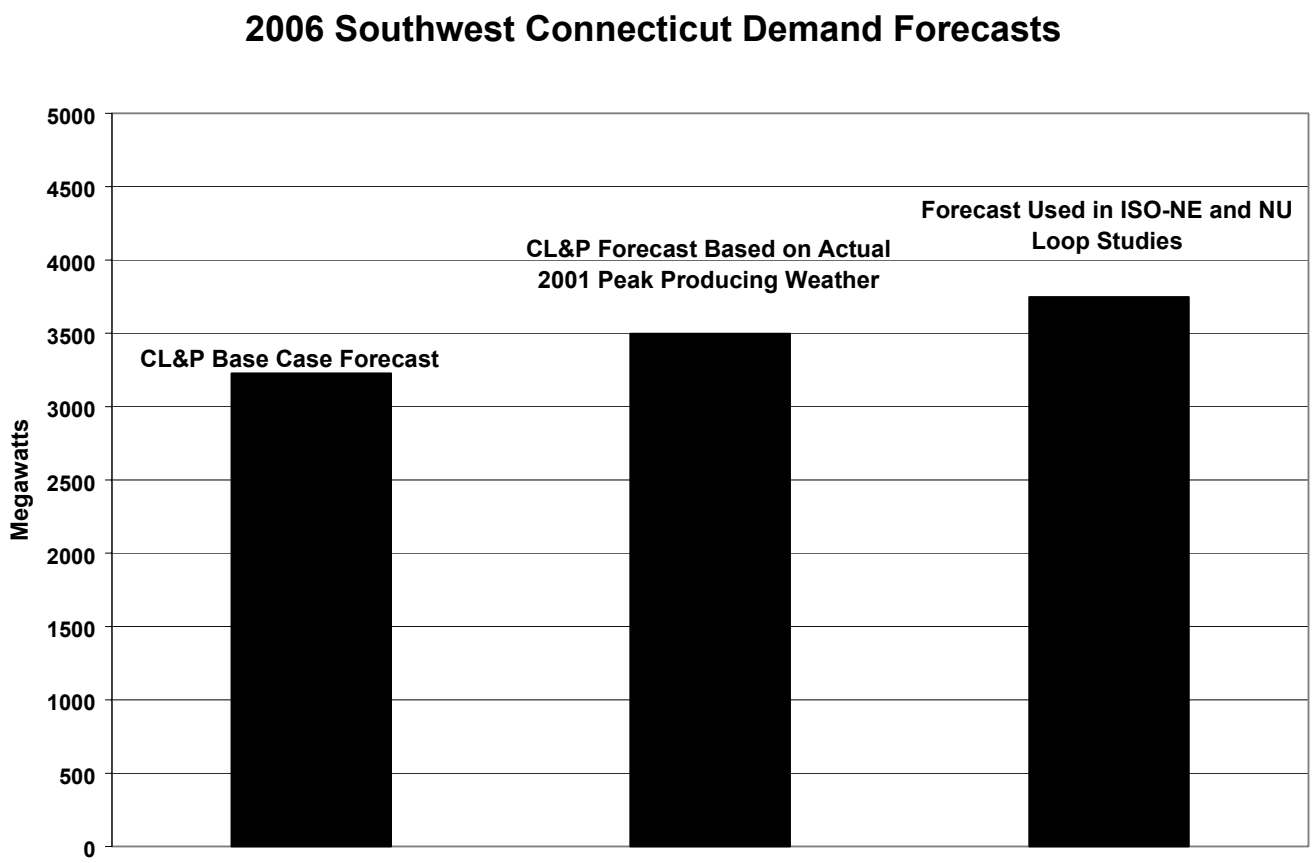
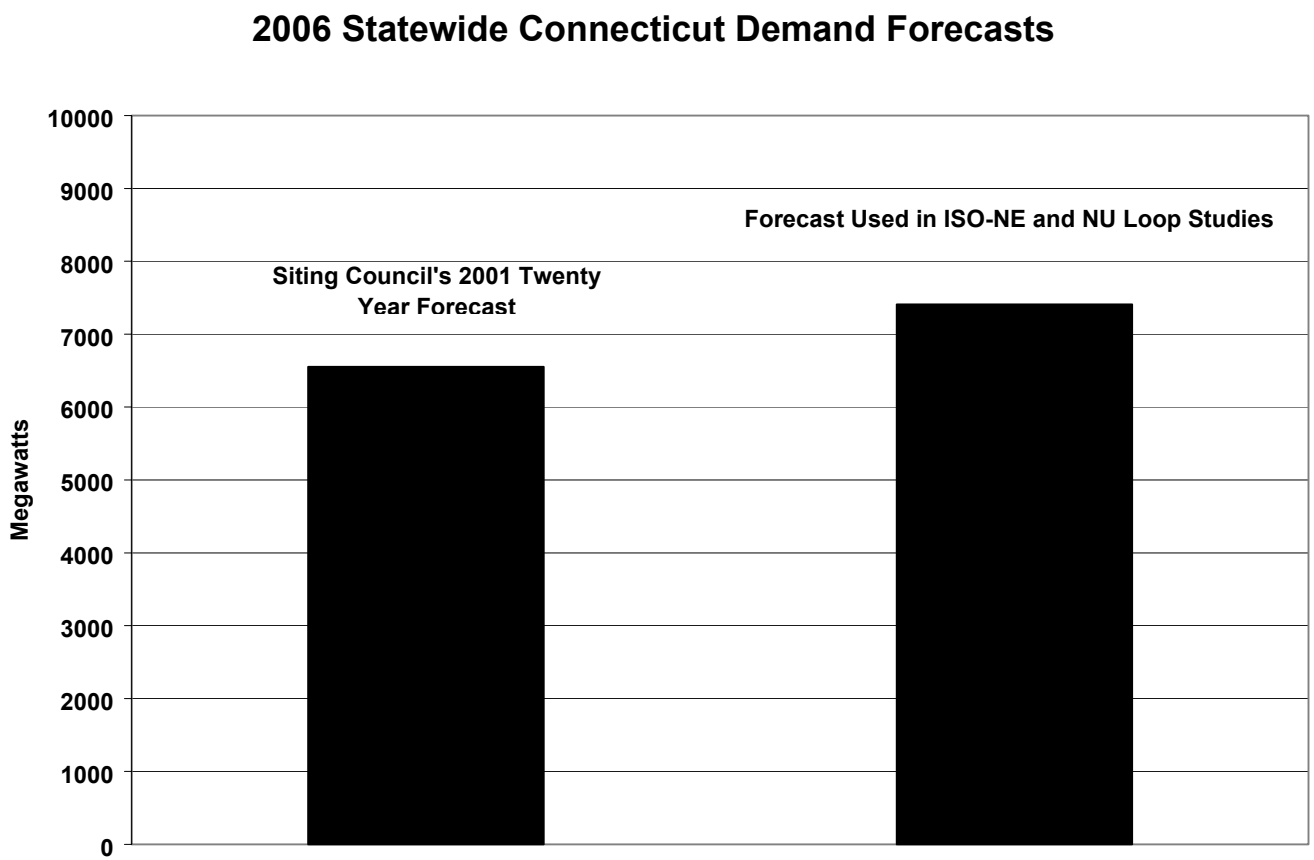


Customer Demands



Customer Demands

- Therefore, it is important to examine a range of possible forecasts that reflect both historic weather-normalized and extreme weather conditions.
- It also is important to consider the potential impact of load response programs when considering future customer demands.
- Load response can reduce the need for new generating and transmission facilities and the loadings on existing transmission lines.
- Customers representing 107 MW of load participated in ISO-NE's 2002 summer program in Southwestern Connecticut.

Alternatives

- It is critical to compare the proposed overhead transmission line to other reasonable alternatives.
- Underground alternatives
- Other system reinforcements including reconductoring of existing transmission lines
- New or repowered generating facilities
- Distributed generation
- Load response
- Energy efficiency/conservation investments

Alternatives

- It is important to examine a portfolio of alternatives, for example, a lower voltage transmission line combined with the implementation of a load response program and incentives for energy efficiency/conservation alternatives.
- It is important that “like-for-like” analyses be conducted. Including other phases of a proposed facility (which are not under yet under consideration) can bias the results of the analyses in favor of a proposed transmission line.
- All alternatives need to be examined under the same sets of assumed conditions -- unreasonably burdening a proposed transmission line or the alternatives biases the analysis.