Response to CSC Post-Hearing Interrogatory 1

1. If the peak load increases by 50 or 100 megawatts, would the expense be generally borne by the State of Connecticut for additional capacity requirements?

ISO-NE Response: If the Connecticut peak load increased by 50 or 100 MW, then Connecticut would generally bear the expense.

Response to CSC Post-Hearing Interrogatory 2

2. What is the rough carrying cost of 100 megawatts on an annual basis?

ISO-NE response: An estimate of the expected cost would be the estimated Cost of New Entry used in the capacity market Settlement Agreement, which is $7.50 per kilowatt-month, or $90 per kilowatt-year. This is an estimate of the annual capital cost of a new peaking unit, spread over the life of the unit. Assuming that the auction cleared at that number, it would be reduced during the delivery of the purchased capacity by the netting of Peak Energy Rents under the capacity market design. Peak Energy Rents are energy market revenues above a specified threshold calculated as a function of fuel prices. For discussion purposes, Peak Energy Rents might be energy market revenues above approximately $250/MWh.

Response to CSC Post-Hearing Interrogatory 3

3. Define operating reserves (in the context of generation) and explain what the operating reserve requirements are in Connecticut.

ISO-NE response: ISO New England Operating Procedure No. 8 specifies how ISO-NE determines the system (*i.e.*, the New England) operating reserve requirement.[1] At the system level, the operating reserve requirements are a function of the largest and second largest supply losses in New England. As such, because the largest supply sources in New England are about the same size (between 1200-1400MW on a typical day), the system operating reserve requirement is fairly static.

The local operating reserve requirement maintained in import-constrained areas, such as Connecticut, is an operational requirement that varies throughout the day. Deriving the local operating reserve requirement requires a more complex assessment than the system operating reserve requirement. The local operating reserve requirement is the result of a complex function of the 1st contingency interface limit, the 2nd contingency interface limit, the largest single generator contingency in the local area, the minimum generating capacity scheduled in-hour required to cover a 1st contingency, the availability of non-generation based 30-minute actions (including demand response) to cover a 2nd contingency, and the local load levels. Establishing interface limits and developing local reserve requirements to meet reliability criteria are fundamental to the planning and operations functions at ISO-NE.[2]

See also ISO-NE's July 5, 2006 comments on the Council's draft 2006 forecast report.

See also the ISO New England white paper on operating reserves, which is posted on the ISO-NE Web site.[3]

Additionally, the draft 2006 Regional System Plan discusses operating reserves and provides representative future locational Forward Reserve Market requirements for Connecticut.[4] This is excerpted in the table below.

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[1] *See*, ISO New England Operating Procedure No. 8 – *Operating Reserve and Regulation, available at:* http://www.iso-ne.com/rules_proceds/operating/isone/op8/index.html.

[2] *See, e.g.*, ISO New England Planning Procedure No. 3 – *Reliability Standards for the New England Bulk Power Supply System, available at*: http://www.iso-ne.com/rules_proceds/isone_plan/PP3_R2.doc; *see also* ISO New England Operating Procedure No. 19 – *Transmission Operations, available at*: http://www.iso-ne.com/rules_proceds/operating/isone/op19/index.html .

[3] http://www.iso-ne.com/pubs/whtpprs/operating_reserves_white_paper.pdf

Response to CSC Post-Hearing Interrogatory 3

Table 1-1
Representative Future Operating-Reserve Requirements
in Major New England Import Subareas (MW)

Area/Improvement	Market Period[a]	Existing Amount of Fast-Start[b] Resources (MW)	Representative Future Forward Reserve Market Requirements (MW)	
			Summer (June to Sept.)	Winter (Oct. to May)
Greater Southwest Connecticut		427[c]		
	2006		NA	550
With SWCT Reliability Project Phase 1	2007[d]		500–600	400–500
	2008		400–500	400–500
	2009		400–500	400–500
With SWCT Reliability Project Phase 2	2010[e]		400–500	0
Greater Connecticut		662[f]		
	2006		NA	1,340
	2007		1,200	1,200
	2008		1,200	1,200
	2009		1,200	1,200
	2010		1,200	1,200

(a) The market period is from June 1 through May 31 of the following year.

(b) These values do not contain outage adjustments.

(c) This value does not include SWCT Emergency Capability Resources

(d) The requirement is based on ISO-NE's resource adequacy process.

(e) The requirement is based on ISO-NE's resource adequacy process and assumes that operating reserve could be imported from outside the subarea.

(f) This value does not include SWCT Emergency Capability Resources but does include other resources in Greater Southwest Connecticut.

[4] ISO-NE has prepared this August 1, 2006 draft version of RSP06 for review by the Planning Advisory Committee. The information contained in this document is subject to modification. The full draft report is available by contacting ISO-NE Customer Services at (413) 540-4220.

Response to CSC Post-Hearing Interrogatory 4

4. Which generating units in Connecticut can provide operating reserves? How much reserve can each provide? Would they be 10 minute, 30 minute, or spinning reserves?

ISO-NE response: Several types of resources can provide operating reserves. These may include off-line generating resources that can be synchronized to the grid within 10 or 30 minutes or on-line generating resources that can increase their output within 10 or 30 minutes. Additionally, the transmission system may be capable of providing operating reserves if the transmission system is not fully loaded, i.e. there is additional capacity to import supplies. The ability of any resource to provide operating reserve is dependent on ISO-NE's unit commitment performed on a day-to-day and hour-to-hour basis and ISO-NE's economic dispatch, which varies from minute-to-minute based on system conditions. The universe of resources that can provide reserves is dynamic. As such, there is not a specific list of units in Connecticut that can provide operating reserves.

Additionally, Dispatchable Asset Related Demand can provide reserves, and ISO-NE is conducting a pilot program beginning in September 2006 to assess the effectiveness of smaller demand response resources to provide reserves in the future.

Response to CSC Post-Hearing Interrogatory 5

5. Comment on the ability to bring one or two of the Lake Road Generating units (electrically) into Connecticut. Describe how it may be done and the status of the review.

ISO-NE response: The Lake Road generating units are physically located in Connecticut, but are electrically located outside the Connecticut area of the bulk power system.

The Lake Road generating units are not counted as capacity in Connecticut because they do not provide incremental load serving capacity to the state of Connecticut due to their location on the transmission system. Lake Road uses the same part of the transmission system used to import power into the state to serve load in Connecticut. As such, Lake Road is mutually exclusive with full utilization of imports into Connecticut.

In order to "bring any of the Lake Road generating units into Connecticut", the physical interconnection of these units would need to be modified in such a way that some amount of the Lake Road generating units would provide incremental load serving capability in Connecticut. This may be possible through the addition of a new 345-kV line between the Lake Road and Card substations or by interconnecting some of the Lake Road generation units to the 115-kV system. However, ISO-NE has not studied either of these possibilities in full to determine their effectiveness. The issues surrounding this interconnection are extremely complicated, involving not only the steady state thermal performance of the system, but also the dynamic response of the system.

ISO-NE is in the process of studying the short- and long-term needs of the bulk power system in the southern New England region. ISO-NE's objective is to identify an expeditious solution to reliability problems in southern New England, including Connecticut. Reconfiguring the interconnection of Lake Road could emerge as a result of ISO-NE's analysis of the system in southern New England; however, it is not a specific objective of these studies. ISO-NE has issued a draft report titled "Southern New England Transmission Reliability (SNETR)," which is a needs analysis for southern New England.[5] A copy of the draft report, which is subject to modification, is attached to these interrogatory responses. ISO-NE plans to present to stakeholders this fall the preferred solutions to address these needs.

[5] The draft SNETR report is also available by contacting ISO-NE Customer Services at (413) 540-4220.

Response to CSC Post-Hearing Interrogatory 5

See also ISO-NE's July 5, 2006 comments on the Council's draft 2006 forecast report.

Response to CSC Post-Hearing Interrogatory 6

6. Could the reactivation of Devon Units 7&8 help offset some of Connecticut's capacity shortage, subject to certain transmission issues being resolved?

ISO-NE response: Yes.

Response to CSC Post-Hearing Interrogatory 7

7. *According to ISO-NE's 50/50 forecast, the peak load in Connecticut will increase by approximately 1,285 MW from 2006 to 2015. What do you do about that? Is your GAP RFP process available? Do you just expect the state to come up with programs? What do you do about the 1,285 MW increase?*

ISO-NE response: It is correct that ISO-NE projects peak demand in Connecticut to increase by 1,285 MW over the next ten years under the 50/50 forecast. Connecticut will continue to rely on existing supply resources and also need additional investment in supply resources and bulk power system infrastructure to meet this growth in demand.

ISO-NE has pursued three approaches to address growth in peak demand for electricity.

First and most importantly, ISO-NE has worked with stakeholders to develop new markets for resources that provide capacity and reserves in New England. Beginning this fall, the Locational Forward Reserve Market will provide incentives to locate quick-start resources throughout the system and in appropriate areas of specific need to address local reliability needs. The Forward Capacity Market will commence with an auction in 2008 to bring resources online beginning in the 2010-2011 timeframe. Both of these markets have been approved by FERC and strongly supported by the State of Connecticut as efficient means to develop new resources both when they are needed and in appropriate locations. Second, ISO-NE has recommended stronger linkages between the wholesale and retail electricity markets in the form of time-differentiated pricing. Currently, there are not clear or accurate price signals for retail consumers to utilize electricity efficiently. This results in the need to build, and pay for, increasing amounts of capacity and infrastructure to meet growth in peak demand. Third, ISO-NE develops a comprehensive transmission plan to ensure compliance with reliability standards throughout the New England region and sub-areas. (This transmission plan can be modified when market responses, such as generation, demand response or conservation, emerge to address reliability needs.)

State-sponsored conservation and load management programs are an important part of the state's strategy to reduce electricity consumption and the Energy Conservation Management Board has documented the success of this effort. Moreover, ISO-NE adjusts its forecast to take these reductions into account. Finally, the Energy Independence Act provides financial incentives to increase electricity supplies and reduce electricity demand in Connecticut.

Response to CSC Post-Hearing Interrogatory 7

ISO-NE's Gap RFP secured approximately 250 MW of quick-start capacity resources for the period 2004-2007. These resources are available for dispatch only when ISO-NE implements certain actions of Operating Procedure No. 4 (OP-4), Actions During a Capacity Deficiency. ISO-NE does have the authority to issue this type of an RFP when there is a reliability need, but only as a last resort.

Section II.48.5 of the ISO-NE Open Access Transmission Tariff describes the process for ISO-NE issuing a GAP RFP. That document is available at:

http://www.iso-ne.com/regulatory/tariff/sect_2/index.html

Response to CSC Post-Hearing Interrogatory 8

8. Do you think there will be enough generation and distribution for the State of Connecticut this year to prevent any blackouts?

ISO-NE response: ISO-NE cannot comment on the state of the distribution system for the State of Connecticut. Otherwise, please see response to question 9 below.

Response to CSC Post-Hearing Interrogatory 9

9. What would be necessary so we would not have the projection of any blackouts as we've had in other years?

ISO-NE response: ISO-NE cannot assure that there will not be any blackouts or the need for controlled power outages to maintain bulk system reliability in Connecticut this year. However, ISO-NE has taken actions to secure quick-start resources for the period 2004-2007 to provide support to the bulk power transmission system during capacity deficiencies. ISO-NE also has a series of long-standing operating procedures in the event that consumers' demand for electricity exceeds available supplies (i.e. Actions During a Capacity Deficiency, Operating Procedure No. 4).

As the Council is aware, the first phase of the 345-kV project in Southwest Connecticut is expected to be in service by year-end, and the second phase by the end of 2009. Additional transmission reinforcements for the state of Connecticut are in the planning stage. These projects are longer-term solutions, however. In the interim, ISO-NE will continue to rely on all existing resources, including the quick-start capability from the Gap RFP to operate the system in Connecticut.

The transmission reinforcements identified in ISO-NE's Regional System Plan (RSP) and the new markets for capacity and reserves are intended to address Connecticut's growing demand for electricity and to meet reliability standards and criteria applicable to the bulk power system in Connecticut.

ISO-NE was asked recently to testify before the U.S. House Government Reform Committee's Subcommittee on Energy and Resources on the reliability of the system in Southwest Connecticut. ISO-NE's testimony is posted on the ISO-NE Web site.[6]

[6] http://www.iso-ne.com/pubs/pubcomm/pres_spchs/2006/iso-ne_testimony.pdf

Response to CSC Post-Hearing Interrogatory 10

10. In Table 4.8 of ISO-NE's 2005 RSP, explain where the 483 MW of assumed available capacity comes from?

ISO-NE response: The assumed unavailable capacity in the Regional System Plan is based on historical, weighted forced outage rates for generators in Connecticut. This information is updated regularly and incorporated annually into the RSP. (Note: forced outages do not include planned maintenance outages.)

Response to CSC Post-Hearing Interrogatory 11

11. In Table 4.8 of ISO-NE's 2005 RSP, it lists 1,200 MW as the reserve requirement based on the largest unit. Is that based roughly on Millstone 3's capacity?

ISO-NE response: Yes.