STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Northeast Utilities Service Company Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need ("Certificate") For The Construction of a New 345-Kv Electric Transmission Line Facility and Associated Facilities Between Scovill Rock Switching Station in Middletown and Norwalk Substation In Norwalk, Including the Reconstruction of Portions of Existing 115-kV and 345-kV Electric Transmission Lines, the Construction of Beseck Switching Station in Wallingford, East Devon Substation in Milford, and Singer Substation in Bridgeport, Modifications at Scovill Rock Switching Station and Norwalk Substation, and the Reconfiguration of Certain Interconnections

Docket No. 272

October 29, 2004

ISO NEW ENGLAND INC.

FIRST SET OF INTERROGATORIES TO ABB, INC.

ISO New England Inc.("ISO"), an intervenor in the above-captioned proceeding, hereby requests that ABB, Inc. ("ABB") answer the following interrogatories. ISO requests that ABB provide responses to the interrogatories on or before November 12, 2004.

If there are objections to any of the interrogatories, or if providing responses to particular interrogatories (or portions thereof) would be unduly burdensome, ISO requests that ABB contact the undersigned as soon as possible.

In the event that any interrogatory requests specific data or information that has already been provided in this proceeding, ABB need only specifically identify where the responsive data or information is located in the record.

I. DEFINITIONS

A. As used in these interrogatories, "any" shall include "all," and "all" shall include "any," as needed to make the request inclusive and not exclusive.

B. As used in these interrogatories, "and" shall include "or," and "or" shall include "and," as needed to make the request inclusive and not exclusive. For example, both "and" and "or" mean "and/or."

C. As used in these interrogatories, "include" and "including" mean "including but not limited to."

D. As used in these interrogatories, "ABB" means ABB, Inc., ABB Power Technologies AB, and ABB Electric Systems Consulting and any of their present officers and employees and any former employees who may have worked on or contributed to reports submitted by ABB, as defined, in connection with the above-captioned docket.

E. As used in these interrogatories, "ABB's report," "ABB's study," "report" or "study" shall mean ABB's report entitled "Middletown – Norwalk Transmission Project, VSC HVDC System Feasibility Study," unless the context shall otherwise require.

FIRST SET OF ISO NEW ENGLAND INTERROGATORIES TO ABB

1. Does ABB agree that the need to install series reactors to mitigate short circuit indicates that the HVDC solution does not, in itself, reduce short circuit levels? If not, please explain why not.

2. There are system constraints that result in increasing amounts of conditional dependencies among operation of generators in Southwestern Connecticut ("SWCT"). Doesn't the addition of multiple HVDC terminals make system operation more complicated by actually creating additional conditional dependencies that would require very complicated and careful coordination of the outputs of all of area generators and all of the HVDC terminals?

3. The existing system in SWCT has short circuit problems that limit the ability to interconnect generation. Assuming that ABB agrees with this observation:

    a. Please explain how the HVDC proposal can support the addition of generation without requiring dedicated HVDC terminals, thereby creating even more complex HVDC facilities with more than three terminals?

b. Wouldn't such a multi-terminal facility create a common mode failure that would result in the simultaneous loss of the line, all of the HVDC terminals, and the generator? Please explain.

4. Wouldn't the addition of additional load-serving HVDC terminals result in a more severe common mode contingency involving the simultaneous loss of the line and all of the HVDC terminals? Please explain why or why not.

5. Wouldn't changes in system conditions, such as change in generation dispatch or load level, potentially require adjustment to all of the HVDC terminals, as suggested in Table 3-1 of the Power Flow Analysis report? Please explain why or why not.

6. The study report indicates that overloads could not be resolved by dispatch, but that they could be resolvable by runbacks of the DC. Does ABB agree that it is possible that a runback of an embedded DC facility could produce an overload or unsecure condition in another part of the system, at or near another affected terminal, and if so, is this not a significant consideration?

7. Has a VSC HVDC converter of the 400 to 500 MW size been installed anywhere in the United States, and has such a converter been installed anywhere else in the world? If so, please specify where and describe the facility.

8. Has the cable at the nominal DC voltage proposed been installed anywhere in the United States, and has such a cable been installed anywhere else in the world? If so, please specify where and describe the facility.

9. Are there any other multi-terminal VSC HVDC lines in operation anywhere in the United States or in the world? If so, please specify where and describe the facility.

10. Are there any other places in the United States or elsewhere in the world where multi-terminal VSC or conventional HVDC lines are operating in parallel with another multi-terminal VSC or conventional HVDC lines? If so, please specify where and describe the facilities.

11. What is the itemized breakdown of the estimated HVDC option cost, including cable installation, construction and all substation work?

12. Please explain how the HQ-Sandy Pond multi-terminal conventional HVDC line is scheduled and operated.

13. Please describe the system changes that would result in a need to change the scheduled HQ-Sandy Pond flow and describe what other system adjustments would also be needed if the scheduled flow is changed.

14. Please explain how the proposed embedded multi-terminal VSC HVDC line would have to be scheduled and operated.

15. Please describe what system changes would result in a need to change the scheduled embedded VSC HVDC flows and describe what other system adjustments would also be needed if the scheduled flows are changed.

16. Please describe how and why the operation of HQ-Sandy Pond, Highgate, Eel River, Madawaska, and Chateauquay are similar but would be different from the operation of an HVDC facility embedded in the middle of a free flowing unregulated network.

17. Table 3-1 in the Power Flow Analysis report indicates a substantial change in the relative schedules of the HVDC terminals for the various cases. Doesn't this indicate that a substantial number of multiple simultaneous HVDC terminal schedule changes could potentially be required if there was an event such as a loss of a generator that represented a change similar to the difference between the cases? Please explain why or why not.

18. Does ABB agree that Table 3-1 suggests that multiple and frequent simultaneous HVDC terminal schedule changes could potentially be required as load level changes throughout the day and generation levels vary? Please explain why or why not.

19. Is it practical to assume that in the embedded parallel multi-terminal HVDC solution for SWCT, the terminals could be set "once in the morning" and then left unchanged or unattended by the system operators? Has ABB considered the potential consequences of such an unchanged or unattended operation, and if so, what are they?

20. Is it fair to assume that the proposed embedded parallel multi-terminal HVDC solution in SWCT require constant operator vigilance, near-perfect scheduling, decision-making and simultaneous action to be operated in a manner consistent with applicable NERC and NPCC reliability criteria? Please explain why or why not.

21. Does ABB have any operational experience with respect to an embedded parallel multi-terminal HVDC solution such as that proposed for SWCT, and if so, what additional operating considerations does ABB believe the solution imposes on system operators, and has ABB encountered any operational difficulties?

22. If ABB does not have any direct operational experience with respect to an embedded parallel multi-terminal HVDC solution such as that proposed for SWCT, does ABB nevertheless know what additional operating considerations such a solution may impose on system operators, and what operational difficulties have been encountered in connection with such a solution?

ISO NEW ENGLAND INC.

By___s/*Anthony M. Macleod*_____
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Certification

I hereby certify that a copy of the foregoing has been mailed, e-mailed and/or hand-delivered to all known parties and intervenors of record this 29th day of October, 2004.

____s/ *Anthony M. Macleod*_____
Anthony M. Macleod