

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

BOSTON EDISON COMPANY)

DOCKET NO. ER01- 890- 000

**PREPARED SURREBUTTAL TESTIMONY
OF
PATRICK R. CROWLEY**

WITNESS FOR THE STAFF
OF THE
FEDERAL ENERGY REGULATORY COMMISSION
OFFICE OF MARKETS, TARIFFS, AND RATES
DIVISION OF LITIGATION

WASHINGTON, DC
October 16, 2001

**Summary of
the Prepared Surrebuttal Testimony of
Patrick R. Crowley**

Mr. Crowley responds to the Prepared Rebuttal Testimony of Philip Hanser representing Boston Edison Company (BECO) in regard to the evaluation of market power potential despite the mitigation procedures used by the ISO-NE.

Mr. Crowley argues that Mr. Hanser has 1) misunderstood the market into which Sithe is bidding, 2) assumed that historical bidding practices will be indicative of the future, and 3) assumed the Commission will not move to correct the market power problems of the past.

Mr. Crowley argues that Sithe is bidding into a wider NEPOOL market in which Mr. Hanser's allegations regarding Sithe's bidding behavior are not supported. Mr. Crowley also argues that while some of the market behavior concerns Mr. Hanser raises are serious matters, they represent past behaviors that Revised Market Rule 17 will ameliorate. Mr. Crowley also argues that recent Commission decisions indicate that abuse of market power will not be tolerated and that it is therefore reasonable to assume that the long term benefits of the new Sithe units will flow to consumers.

Mr. Crowley continues to recommend that the allocation of redispatch costs arising out of this generator interconnection be socialized among all NEPOOL costumers.

**Prepared Surrebuttal Testimony of
Patrick R. Crowley
Witness for the Staff of the
Federal Energy Regulatory Commission**

- Q. Please state your name and business address.
- A. My name is Patrick R. Crowley. My business address is 888 First Street, N.E., Washington, D.C. 20426.
- Q. Are you the same Patrick R. Crowley who submitted Prepared Direct Testimony in this case on September 15, 2001.
- A. Yes, I am.
- Q. What is the purpose of this Surrebuttal testimony?
- A. The purpose of this Surrebuttal Testimony is to respond to Mr. Philip Hanser's Prepared Rebuttal Testimony, Exhibit No. BE-18 and the affidavit of Messrs. Hanser and Peter Fox-Penner, Exhibit No. BE 20 through 24.
- Q. Mr. Hanser argues that the reference prices used in the mitigation procedures of Market Rule 17 may not lead to adequate mitigation of market power abuse because a supplier, such as Sithe, may be sufficiently large that the ISO must dispatch its energy regardless of the bidding. Exhibit No. BE-18, page 8, line 23. Do you agree?
- A. No, I do not. The problem highlighted by Mr. Hanser and the Commission order he cites [85 FERC ¶ 61,379 at 62,482] is that of the "critical supplier" who can set the market price knowing its supply is critical to the market. The fact that a large supplier must be dispatched no matter how high it bids may indeed be an indication of market power. Such opportunistic pricing is one of the aspects of the

NEPOOL market that Revised Market Rule 17 [see Exhibit No. S-4] will be monitoring. However, in Sithe's case, it bids into the NEPOOL market where, as we saw in Exhibit No. S-2, page 8, the Herfindahl-Hirschman Index indicates an absence of market power by any one participant. It is unlikely that Sithe is a critical supplier in the NEPOOL market. The test is to compare peak demand against the total supplies of all *other* suppliers in the market; if demand can be met without the supplier in question, that supplier is not a "critical supplier." In the absence of the NEMA load pocket transmission constraint, the NEPOOL market demand can be met without Sithe's units, so it is not a critical supplier in NEPOOL.

However, the load pocket does create a critical supplier situation within NEMA; Sithe's New Boston units must be dispatched to serve load within NEMA. But because the bidding takes place in the NEPOOL market, the New Boston units will be dispatched out of merit order, which will call forth Market Rule 17 procedures. Recall that out-of-merit bids are not used as reference prices for mitigation purposes. Reference prices used for mitigation of Sithe's bids reflect competitive bidding in a competitive market because in order for those bids to have resulted in in-merit dispatching, it must have been bidding below other suppliers. The "critical supplier" would not be bidding competitively.

Mr. Hanser's argument suggests that the bidding history to which the ISO looks to mitigate market power will be tainted by embedded market power premiums. However, Sithe's bidding history may well reflect the higher prices of a tight market, but higher prices alone are not indicative of market power abuse. If there are no constraints on the market, no collusion of participants, and no lower-bidding suppliers, the large supplier, or any supplier, can and should maximize its

profits. These profits are a signal to the market that entry into the market by new participants would be beneficial.

Q. Mr. Hanser states that "Sithe can consistently bid its Mystic 7 & 8 capacity into the market at just below a high cost supplier that it [Sithe] reasonably expects to be on the margin of the NEMA dispatch queue." Exhibit No. BE-18, page 9, line 18. In other words, Sithe can bid its energy into the market at prices just below the next highest bidder that will be dispatched to serve the NEMA market. Do you agree?

A. Yes, Sithe can certainly bid in that manner. But what Mr. Hanser seems to be suggesting is that Sithe can shield itself from Market Rule 17 mitigation measures by bidding its capacity at just below the bid of the next highest-cost generator in the NEMA market. By bidding just below the next highest competitor, Sithe ensures that it is 1) dispatched and 2) dispatched in merit order. The next highest-bidding competitor thus becomes a shield providing cover for Sithe's bid price above its marginal cost. The shielding generator effectively sets the market clearing price although Sithe is the dispatched generator. Since no units are dispatched out of merit, Sithe's bid does not trigger the mitigation process. However, Sithe does not bid into the NEMA market; it bids into the NEPOOL market. The concerns raised by Mr. Hanser reflect plausible market power strategies in a smaller market. In fact, it would be quite plausible under the locational marginal pricing market structure that will be ushered in under the Congestion Management System (CMS) in the next year or two.

The problem with his argument, however, is that to avoid Market Rule 17 mitigation, Sithe would have to bid low enough to trigger the dispatching of itself and almost trigger the dispatching of the next highest bidder, but not trigger the dispatching of any low bidding generators outside of NEMA. In the more competitive arena of the wider NEPOOL market, there are likely to be generators

who may bid below Sithe but cannot get to the NEMA market because of transmission constraints. The constraints require the ISO to dispatch a local higher cost generator, which would be Sithe. This out of merit dispatching automatically calls forth the ISO price screen tests and mitigation processes. Hence, Mr. Hanser's concerns here would seem to be ameliorated by the competitiveness of the wider market in which Sithe actually bids.

- Q. Mr. Hanser states that "congestion can exist even when there is generation within NEMA that could be dispatched economically (that is ECP exceeds the unit's marginal cost) if these units are bid at levels above their marginal costs, as Sithe has done in the past." Exhibit No BE-18, page 10, line 25. Do you agree?
- A. No, I do not. Congestion relates to economic dispatching, not marginal cost pricing. Congestion exists when lower priced energy cannot get to a market, necessitating the dispatching of higher priced generation, regardless of the marginal costs of the units involved. As Mr. Hanser noted, "It is not the cost of generation that is determinative in relieving congestion, but rather its price." Exhibit No BE-18, page 10, line 21. If generation units within NEMA are bid higher than units outside NEMA and must be dispatched anyway, it is very likely that congestion will be created. But the mere fact of bidding above marginal cost is not indicative of congestion. What it indicates is that demand exceeds supply, and some generators will be earning extra profits from the situation. When Sithe adds its new units within NEMA, it may very well eliminate congestion in NEMA, yet earn market power premiums if Market Rule 17 does not sufficiently police the NEPOOL market.
- Q. Mr. Hanser argues that Sithe can manipulate the market by withholding some of its lower cost capacity from the market, allowing higher cost units, bid at their

marginal costs, to set the market clearing price. Exhibit No. BE-18, page 12, line 15. Do you agree?

- A. Mr. Hanser presents two plausible bidding strategies that require the attention of the ISO and the Commission. In the chart on Exhibit No. BE-22, Mr. Hanser shows Sithe bidding above its marginal cost, but just below its next highest competitor. The difference between what he has labeled the competitive price and the strategic price, he calls excess profits. While they are profits, I would not characterize them as excess profits if the market clearing price, absent physical or economic withholding, is above the "strategic price." We should keep in mind that Sithe is bidding into the NEPOOL market, not a NEMA market. If other competitors in the NEPOOL market cannot underbid Sithe, Sithe is simply exercising its right to let prices clear the market. If there are lower bidding generators outside NEMA who cannot get to the NEMA market, the ISO is obligated to dispatch out of order and begin mitigation examinations.

In Exhibit Nos. BE-23 and 24, Mr. Hanser illustrates the problem of economic withholding. Economic withholding has the same effect as physical withholding in driving the ISO to dispatch higher cost generators. The creation of artificial scarcity to manipulate the market clearing price is clearly market power abuse which the ISO is supposed to be monitoring and mitigating. In this instance, although it is left unstated, I assume Sithe would be bidding some of its capacity at a price close to its marginal cost so that it will be dispatched in merit order, yet also knowing that the artificial scarcity will require a higher cost unit to set the market clearing price and lift Sithe's units to a price way above its marginal costs.

- Q. Mr. Hanser argues that you have overlooked the fact that consumers cannot see the real time prices for electric energy and therefore cannot respond to price signals in a reasonable time frame and therefore scarcity rents are not appropriate entry

signals for potential competitors. Exhibit No BE-18, page 13, line 6. Do you agree?

A. No, I do not. In today's energy markets, there is certainly a large time lag between the usage of electric energy and the receipt of the bill by consumers. Nevertheless, the existence of persistent scarcity rent earnings will lure competitors to the market, particularly where demand is strongly inelastic and suffers from an inability to respond to price signals in a reasonable time frame, as is the case in today's energy markets. The very reasons cited by Mr. Hanser are, in fact, lures for entry.

Q. Mr. Hanser states that the "CMS (Congestion Management System) will further dilute the effectiveness of the mitigation rule because Sithe's portfolio of generation makes possible very profitable strategies that do not require deviations from marginal cost bidding by withholding capacity." (Exhibit No. BE-18, page 7, line 27 and Exhibit No. BE-20, page 23, paragraph 69) Do you agree?

A. No, I do not. To be "very profitable," the producer must receive price above marginal cost. The only way it can get away with bidding above marginal cost is if it has unmitigated market power or the demand exceeds supply in the short run. CMS will set up zonal markets in which the bids of local producers have a greater impact on the local prices borne by consumers. The test will be whether Market Rule 17 can effectively monitor anti-competitive bidding strategies within the zonal markets using the CMS pricing mechanism.

Q. Please discuss how the CMS pricing mechanism will operate.

A. The CMS algorithm is a form of locational marginal pricing (LMP). Under the CMS algorithm, the dispatching of generation takes into consideration the capacities of the transmission lines between generation points and load points as well as the bidding of the generating units into the market. The price of energy in

each load zone reflects the cost of dispatching in that zone. The effect of CMS/LMP will be to create local clearing prices for each zone. A load pocket generator that would have been seen as bidding above the NEPOOL clearing price and dispatched out of merit may now be in merit for the load pocket's zone. In an odd twist of logic, what had been considered congestion related uplift costs will now appear as ordinary energy costs. Redispatch costs arising from what was out-of-merit dispatching will no longer be a redispatching cost but simply the zonal energy cost. Hence, no congestion and no uplift costs. Yet the local clearing price may be higher than under the current NEPOOL-wide dispatching system.

Q. Is Revised Market Rule 17 concerned with more than just congestion?

A. Yes, Revised Market Rule 17 is designed to mitigate not only congestion caused by redispatched generation but to watch for anti-competitive bidding behavior as well. What Mr. Hanser seems to be suggesting is that CMS offers generators the chance to engage in opportunistic price setting in these smaller zonal markets where demand will exceed supply, and the absence of out of merit dispatching will obscure the abuse of market power. Section 17.1 of the NEPOOL Tariff states that

A seller with market power can also profit by raising the price of the Resource that actually sets the clearing price in a market or by raising its price or changing its unit characteristics to receive excess uplift in a market. The ISO shall monitor the markets for conduct that suggests the exercise of market power, including opportunistic price-setting, behavior, and attempts to receive excessive uplift payments. [Original Sheet 1751, Effective May 15, 2001]

I would expect that the market concentration we saw highlighted by the HHI analysis earlier will remain a warning signal for the ISO to keep an eye on the NEMA market conditions and bidding behaviors.

Q. Mr. Hanser discusses his Lerner Index analysis of Sithe's bidding behavior. Exhibit No. BE-20, page 18, paragraph 50 ff. Will you explain the Lerner Index?

A. Yes. The Lerner Index is a measure of the relationship of prices to marginal costs. The index runs from a value of zero, suggesting a perfectly competitive market, to one, suggesting a monopoly market. The Lerner Index is calculated by the following formula:

$$M = (P - MC) / P$$

where M is the index value, P is the price, and MC is marginal cost. In a perfectly competitive market, price equals marginal cost so that the numerator in the formula is zero and the equation (M) equals zero. The Lerner Index also reflects the ability of a producer to charge prices above marginal costs, indicating market power potentials in that market. To place the Lerner Index into perspective, the following table illustrates the implications of the index.

Price	Marginal Cost	Lerner Index	Price as Multiple of Marginal Cost
\$100	\$10	0.90	10.00
100	25	0.75	4.00
100	30	0.70	3.33
100	50	0.50	2.00
100	66	0.34	1.52
100	70	0.30	1.43
100	90	0.10	1.11

An index value of .50 suggests that prices may be as high as twice the marginal cost. An index value of .3 would imply prices set at approximately 1.4 times marginal cost, an index value of .7 would suggest prices 3.3 times marginal cost.

Q. How does Mr. Hanser use the Lerner Index?

A. The Lerner Index in Attachment K to Exhibit No. BE-20 indicates that Sithe has had the market power to set prices significantly above its marginal costs.

Analyzing bid data from the ISO, Mr. Hanser calculated weighted average bids from what he presumes is Sithe's New Boston 1 generating unit and Sithe's Mystic 6 generating unit for May of 1999 and May of 2000. Using the weighted average bids and an estimated marginal cost, Mr. Hanser calculated the Lerner Index values for those two months. The index jumped from roughly a .30 in 1999 to .70 in 2000. These values suggest a sustained ability to keep prices above marginal costs, which is an indication of market power problems. It should be pointed out that the bid data upon which Mr. Hanser's Attachment K is based come from a historic period (May 1999 and May 2000) that predates the Commission's banning in April of 2001 of exactly the anti-competitive bidding behavior Mr. Hanser is concerned about.

Q. What are those anti-competitive behaviors?

A. In his affidavit, Mr. Hanser raises three market power problems he believes were exhibited by Sithe.

1- "Hockey Stick" bidding, where the last units are bid at such high prices so as to effectively take the capacity off the market so that remaining units or blocks can reap the rewards of higher clearing prices brought about by the dispatching of other, higher bidding, entities. Exhibit No. BE-20, pages 15 - 17.

2- "Conscious parallelism" and what I call "riding the thermals." Conscious parallelism is a phenomenon in which suppliers avoid price competition and

gradually raise prices, testing the elasticity of demand in the market. If no one "rocks the boat" by bidding aggressively, all generators gain by rising prices. Riding the thermals is a phenomenon where a supplier finds himself alone in a tight market and can simply ride the heat wave of heightened demand and see where it takes prices. Exhibit No. BE-20, page 18.

3- "Re-calibration" bidding (my terminology) where generators redefine the operating characteristics of the units being bid into the market such that the units must be run at higher output levels, longer run times, or both. Exhibit No. BE-20, pages 19 - 20.

All three raise the problem of bids/prices that rise faster than the general rise in marginal costs.

- Q. At page 17 of the Hanser/Fox-Penner affidavit, ¶ 49, Mr. Hanser notes the Commission's concern regarding Hockey stick bidding behavior. Has the Commission addressed these economic withholding strategies in recent orders?
- A. Yes, the Commission addressed these very concerns in the same order cited by Mr. Hanser. Mr. Hanser seems to have failed to notice the forest for the trees here. The Commission has acknowledged the problem of economic withholding and *prohibited such behavior*. In its April 26, 2001 order on the California markets [95 FERC ¶ 61,115 at 61,360], the Commission conditioned market based rate authority so as to ensure that sellers do not engage in anti-competitive bidding behavior. Violators will have their market based rate authority subject to the imposition of conditions and their rates subject to refunds. The two examples of such anti-competitive behavior provided by the Commission were 1) the "hockey stick" bidding described above and 2) the bidding of power into the market in a pattern that correlated not to the performance of the unit or fuel prices but to variations in demand or announcements of outages.

- Q. Mr. Hanser argues that Market Rule 17 is insufficient to police potential market power abuses by Sithe. Exhibit No. BE-20, page 15. Do you agree?
- A. No. Mr. Hanser's concerns regarding anti-competitive bidding strategies by Sithe may have been a problem in the past, but the Revised Market Rule 17 accepted by the Commission in its April 26, 2001 order [95 FERC ¶ 61,125] appears to have amended the market rules for the NEPOOL market so that in the future the structure of the market will more closely reflect what would have come about under truly competitive market structures. Specifically, Section 17.1 of Market Rule 17, quoted above, states the objective of monitoring for such anti-competitive behaviors.
- Q. Do these Commission decisions alter your recommendation regarding the allocation of redispatch costs in this case?
- A. No, in fact they reaffirm my recommendation. I have to assume that if the Commission has barred market manipulation based on an economic withholding strategy on the West Coast, it is or will soon be barred on the East Coast. Hence, the new generating units at Mystic will operate in a market whose monitoring and mitigation procedures should ensure a fairly competitive environment so that the long term benefits will flow, by and large, to the consumers.
- Q. Mr. Hanser argues that the Commission's order on rehearing in Docket No. EL00-62 et al., requires a 50/50 split of interconnection costs between the generators and load in this case because the Sithe Mystic Expansion Project falls within the Category B of interconnection projects that are permitted cost sharing arrangements. Do you agree?
- A. Yes, after a fashion. I have stated that I do not know if an accurate measurement of redispatch costs can be accomplished at this time, but that it may soon be doable. However, it would have to be accomplished rather soon in order to measure the

redispatch costs arising out of this particular interconnection project. If we do nothing at this juncture, the redispatch uplift costs will be socialized across NEPOOL because that's how the current billing system allocates redispatch costs. My analysis was intended to set up a framework for analyzing the allocation of interconnection costs on the basis of analyzing the flows of costs and benefits. I have recommended that these costs be socialized across NEPOOL because the flows of benefits indicate that the consumers will be the beneficiaries of the improvements over the long run. While my analysis is relevant for the general policy of allocation of interconnection costs, including redispatch costs, there appear to be extenuating circumstances here under which binding arrangements take precedent. The Commission's order conditionally accepting the ISO-NE's CMS/MSS proposal agreed that "it is appropriate to apply the 50/50 cost allocation to Category A and Category B generation projects, which have already entered into binding arrangements." 91 FERC ¶ 61,311 at 62,079, reh'g order, 95 FERC ¶ 61,384 (2001). However, the Commission specifically rejected charging interconnection generators for redispatch costs because the ISO-NE could not explain exactly what those costs would amount to or how they would be assigned. Assuming they could be measured, the Commission's order suggests that, for a Category B project like the Sithe Mystic Expansion Project, such redispatch costs may be treated as interconnection costs and thus be split between load and generators at 50/50.

Q. Does this conclude your testimony?

A. Yes.