

Report of the Office of the Attorney General for the  
State of Connecticut

Investigation of Electricity Supply Conditions in  
New England During the January 14-16, 2004  
Cold Snap

January 18, 2005

## **I. EXECUTIVE SUMMARY**

Cold weather events are inevitable in New England. Electricity is always an essential commodity, but during extreme cold weather reliable electricity service becomes absolutely critical to the public health and safety.

In the restructured electric markets, as demand for electricity and natural gas rises during cold weather events, the incentive for electric generators who use natural gas as fuel to “arbitrage” between these two markets -- sell their natural gas supplies if profits from the sale of gas would be higher than profits from generating electricity -- can rise to very high levels. This incentive resulted in near devastation for New England electric consumers during the January 14-16, 2004 Cold Snap,<sup>1</sup> as the region came perilously close to voltage reductions and rolling blackouts on the coldest days of the year.

As temperatures fell, electric and gas consumption and prices soared. Although the peak level of electric usage during the Cold Snap reached approximately 22,700 megawatts (“MW”), that level of consumption was well within the capability of New England’s installed electric generating capacity, which exceeds 32,000 megawatts. Bad energy policy – not power shortages – made the region a near fatal victim of the bad weather. Market forces, driven by perverse financial incentives, allowed New England’s gas fired generators to cease generating electricity and sell their gas supplies for exorbitant profits, pushing New England to the brink of a public health and safety disaster.

More than 25% of New England’s generating capacity was unavailable for service, largely due to the unavailability of gas fired generating plants, and the region’s electric reserve margin approached zero. ISO New England (“ISO-NE”), the entity responsible for ensuring the reliability of the electric system in New England, issued frightening alerts to the public and government officials throughout New England warning of possible voltage reductions and rolling blackouts.

Incredibly, throughout this crisis, both the gas and electric systems had sufficient installed capacity to meet increased demand. However, high-powered profit incentives provided to electric generators under current arrangements administered by ISO-NE encouraged gas-fired electric generators to sell their natural gas into the gas spot market instead of using that gas to generate electricity. Many electric generators sold their gas, reaping extraordinary profits, and ceased generating electricity. The unavailability of this gas fired generation significantly contributed to shortages of electric generating capacity, threatening the overall reliability of the electric system and the health and safety of millions of New England residents. The sales of gas by the electric generators were not

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<sup>1</sup> For ease of reference, the Jan. 14-16<sup>th</sup> period is referred to in this report as the “Cold Snap.” This terminology borrows the use of the term to describe this period from the Independent System Operator – New England, Inc.’s (“ISO-NE’s”) Market Monitoring Department’s “Interim Report on Electricity Supply Conditions in New England During the January 14-16, 2004 Cold Snap,” dated May 10, 2004 (the “ISO-NE Interim Report”), as updated in the final version of the Interim Report issued by ISO-NE on October 12, 2004 (the “ISO-NE Final Report”).

needed to meet the needs of natural gas customers because the natural gas industry had ample reserves available for this crisis.

Disaster was averted only by the conservation efforts of the region's electric consumers and a change in the weather.

In the wake of the near Cold Snap calamity, ISO-NE now proposes and intends to implement new rules for this coming winter to address market problems that were clearly and dramatically apparent during the Cold Snap. These new rules, unfortunately, reflect ISO-NE's continued reluctance to regulate the electric markets effectively. Instead of exercising its regulatory authority and strongly enforcing its rules, ISO-NE seems content to propose reforms that offer generators higher rewards without imposing any penalties for actions that would be contrary to the public interest. Their reforms will likely increase costs to ratepayers but will not assure that the pursuit of profits by individual electric generators will not again threaten overall system reliability during similar such events in the future.

ISO-NE's proposed market rule changes do not go far enough to ensure system reliability or provide adequate protection for consumers. Both ISO-NE's rules, and its administration of those rules, must be substantially overhauled to reflect and support the basic proposition that generators must serve when called upon to provide a reliable electric system if they wish to participate in New England's market. Accordingly, with respect to extreme cold weather events such as the Cold Snap, ISO-NE must take proactive steps to ensure that generators can and will be available. This reform includes enacting and enforcing rules that remove the financial incentive for generators to place the public health and safety in jeopardy simply to enjoy even greater profits than they could achieve by generating electricity. In addition, after such events, ISO-NE should actively investigate the efforts of generators who did not serve when called upon and hold those who failed to make adequate efforts accountable.

Specifically, ISO-NE must:

- Eliminate all financial incentives for electric generators to sell natural gas instead of generating electricity during a Cold Snap event by assessing significant penalties against generators who do so, including any who failed to make adequate efforts to provide service during January 2004.
- Ensure that generators can and will be available to supply electricity when called upon to respond as a condition to their participation in the New England electric market.
- Consider the adoption of "circuit breaker" like mechanisms to require electric generators to remain available for electric generation during extreme cold-weather events and limiting compensation to the generators' actual cost of natural gas supplies.

- Actively investigate all generators who are not available to supply electricity during Cold Snap events to ensure that their unavailability is due to documented, verifiable and unanticipated equipment failures, and not an effort to manipulate electric supply or price.

## **II. KEY FINDINGS AND CONCLUSIONS**

The Attorney General for the State of Connecticut (“CTAG”) has conducted a thorough investigation of the Cold Snap events and has made the following findings and conclusions:

- The near shortage conditions on New England’s electric system which occurred during the Cold Snap were due in substantial measure to the decision by gas generators to sell their gas for profit rather than use that gas to generate electricity. The ability to make this choice was allowed, in part, by ISO-NE. These shortages, therefore, were not due to physical limitations in either the gas delivery system or installed electric generation capacity. Installed electric generation capacity was well in excess of the high levels of electric demand experienced during the Cold Snap and the natural gas delivery systems in New England had a sufficient supply to provide natural gas to their customers and also fully meet the needs of New England’s gas fired electric generating stations.
- Many natural gas-fired generators made sales of natural gas into the natural gas wholesale markets and reaped substantial profits instead of using their gas to generate electricity or to assure that electric generation was available. These same generators, however, could have made healthy profits - - although maybe not as high as their gas sales provided -- if they had used their gas to generate electricity to meet New England’s electric supply needs.
- Arbitrage by electric generators between the electric and gas markets to maximize profits undermines overall electric system reliability and exacerbates operational uncertainty faced by the gas delivery systems.
- ISO-NE’s existing market rules and its administration of those rules failed to manage and assure overall system reliability during the Cold Snap. ISO-NE did not adequately hold generators to their obligations to maintain the availability of their plants to supply electricity. Some generators failed to return to service when recalled by ISO-NE once the Cold Snap was in progress to restore electric reserve margins. In certain instances, the failure of generators to return to service was due to equipment failures reflecting a lack of preparedness for extreme cold events and poor, perhaps imprudent planning. In other instances, the generators failed to come back into service because they instead chose to sell their gas into the spot market for windfall profits.
- Market conditions in the wholesale electric generation market during the Cold Snap were distorted by the high-powered profit incentives given to electric

generators to pull out of the electric generation market and sell their natural gas into the natural gas markets. This created conditions which were ripe for price and supply manipulation and placed the public's health and safety in jeopardy.

- In exchange for participation in the New England electric markets, generators must make themselves available to serve when called upon to preserve system reliability. As the administrator of the New England electric system responsible for ensuring reliability, ISO-NE must develop and actively enforce those rules that require the availability of generation during extreme cold weather events. This requires a major cultural change in ISO-NE's approach toward its regulation of the electric markets. ISO-NE must become a more active and affirmative regulator, rather than continue to serve as a mere market facilitator.
- With respect to Cold Snap events, ISO-NE should:
  - Eliminate all financial incentives for electric generators to arbitrage between the electric and natural gas markets during a Cold Snap event by assessing significant penalties against those that do.
  - Actively ensure that generators can and will be available when called upon to respond. This means enacting and enforcing rules that require generators who claim to have dual-fuel capability to actually verify their ability to operate on back-up fuel if necessary.
  - Hold accountable generators who do not serve when called upon during a Cold Snap event by assessing significant penalties against generators who do not provide service, including any who failed to make adequate efforts to provide service during the January 2004 cold snap.
  - Consider the adoption of "circuit-breaker" like mechanisms in extreme weather conditions to prevent sales of gas by electric generators to require electric generators to remain available for electric generation and with compensation limited to the generators' actual cost of natural gas supplies. Such "circuit-breaker" mechanisms have been adopted in other market contexts to mitigate the distorting effects of severe market disruptions.
- Several of the recommendations and actions undertaken by ISO-NE in response to the Cold Snap Events are appropriate. First, natural gas-fired electric generation that can also operate on fuel oil should do so during Cold Snap-like conditions, provided such operation is consistent with the environmental laws and relevant permits. Second, ISO-NE should better utilize demand-side management measures under Cold Snap-like conditions to reduce system demand without compromising public health and safety. Third, the time-line of the day-ahead scheduling of the wholesale electric market should be more closely aligned with the natural gas market schedule for the coming 2004/2005 season, but only if a review and assessment of the experience is conducted subsequently to evaluate

and refine the proposal going forward. The CTAG is concerned that ISO-NE's proposal seeking to better align the trading time-lines of the electric and gas markets, while alleviating certain risks faced by natural gas generators, may unduly increase risks for entities responsible for serving load and exacerbate opportunities for indirect anticompetitive coordination by generators.

### **III. INTRODUCTION**

During January 14-16, 2004, the combination of record cold weather, high electric demand and dramatic reductions in the availability of natural gas-fired generation capacity pushed the New England electric system close to its limits. The regional maximum level of electric consumption (the "peak load") during this period increased to approximately 22,700 megawatts ("MWs"). Installed generation capacity in New England exceeds 32,000 MWs, yet the margin of generation actually available to generate electricity in excess of the system's peak load was dramatically reduced. In fact, during the Cold Snap this margin was reduced to nearly zero.

Responding to this critical situation, the ISO-NE, the entity responsible for administering the bulk electric power system in New England, issued alerts to the public and government officials throughout New England warning of possible voltage reductions and rolling black-outs. Reflecting the scarcity of available electric generation supply, wholesale spot prices for electricity soared to extreme levels. Constraints in the natural gas delivery system in New England also led to limitations on deliveries over the natural gas pipelines and soaring prices in the daily wholesale gas spot market for delivery of natural gas in New England. ISO-NE only withdrew its alerts about electric system operations late on January 16 and into January 17 following the end of the extremely cold weather, at which time there was a corresponding reduction in electric demand and a return to service of some of the generation which previously had been unavailable to operate.

Despite the substantial margin of existing installed generation capacity in the region in excess of the higher levels of electric load experienced during the Cold Snap, the regional electric system was only barely able to maintain electric service. Substantial amounts of installed generation capacity in the region, especially natural gas-fired capacity, reported itself to ISO-NE as "unavailable" to generate power, resulting in a dramatic reduction in the margin of generation supply actually able physically to produce power. The consequences of an outage of the regional electric system during the conditions of the Cold Snap to public health and safety could have been catastrophic.

In response to these circumstances, the CTAG opened an investigation into the operation of the New England electric and natural gas systems during the Cold Snap. The purpose of the investigation was to develop a better understanding of the underlying causes and conditions that pushed the New England electric system to the edge of reliable operations during the Cold Snap. The CTAG's investigation was also directed at developing recommendations for changes in the rules for and administration of the electric system so as to improve the system's response when faced with similar extreme

cold circumstances in the future. Finally, the CTAG's investigation was directed at reviewing the behavior of market participants with an eye towards evaluating compliance with the rules for administration of the market and with the laws regarding antitrust and competition. The antitrust and competition laws, deterring anticompetitive actions, play a critical role in improving the operation of the recently deregulated/restructured electric markets. In the new deregulated electric markets, anticompetitive actions by market participants can result in or be directed at the withholding of generation capacity from the market, thereby creating or exacerbating an existing shortage of electric generation.

As part of its investigation, the CTAG issued *subpoenas* to key participants in the New England electric and gas markets, including local natural gas distribution companies ("LDCs"), natural gas pipelines providing service into New England and electric generators. The *subpoenas* sought documentary information regarding the factual circumstances affecting the operation of the gas and electric system in New England during the Cold Snap. Parties responding to the *subpoenas* provided voluminous data to the CTAG, which was reviewed and evaluated as part of this investigation. This report (the "CTAG Report") describes the results of the CTAG's investigation to date.<sup>2</sup>

In parallel with the CTAG's investigation, the ISO-NE's Market Monitoring Department ("MMD") undertook an investigation of the Cold Snap events. On May 10, 2004, the MMD issued its "Interim Report on Electricity Supply Conditions in New England during the January 14-16, 2004 Cold Snap" (the "ISO-NE Interim Report"). The ISO-NE MMD solicited comments from the public with regards to the ISO-NE Interim Report. On June 30, 2004, the CTAG filed his written comments with the ISO-NE regarding the ISO-NE Interim Report, which are included as an attachment to the CTAG Report. On October 12, 2004, ISO-NE issued its Final Report, restating the findings and conclusions set forth in its Interim Report. ISO-NE responded to the MMD's Interim and Final Reports with a set of Management Responses.

In addition, the Federal Energy Regulatory Commission ("FERC") Office of Market Oversight and Investigations ("OMOI") conducted an investigation of the Cold Snap events in New England, looking at both wholesale electric and natural gas market operations which it summarized in a presentation to the New England Conference of Public Utility Commissioners.<sup>3</sup>

In the conduct of this investigation, the CTAG has been assisted by the findings and cooperation of the ISO-NE MMD and FERC OMOI. The CTAG has also cooperated with and assisted the ISO-NE MMD and FERC OMOI in the conduct of their separate investigations where appropriate. Finally, the CTAG has sought, where possible, to

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<sup>2</sup> Information provided by respondents to the *subpoenas* is by statute confidential and proprietary. Consistent with the confidential nature of the information provided, the CTAG will only refer to such information in this Report in a general and summary manner.

<sup>3</sup> See, Presentation of William Hederman, Director of FERC OMOI, "Investigation of New England Gas-Electric Market Events, Jan. 13-16, 2004" presented to the New England Conference of Public Utility Commissioners, Brewster, MA (May 24, 2004) (the "FERC Report").

utilize the results of the efforts of the ISO-NE MMD and FERC OMOI in developing its own conclusions and findings and to avoid unnecessary overlap in the investigative efforts of the various agencies.

#### **IV. DISCUSSION**

##### **A. General Background and Overview**

The New England regional peak electric load, or demand, during the Cold Snap was a little less than 23,000 Megawatts (MWs). This level of demand is significantly less than the regional summer peak demand of over 25,000 MWs. The New England electric system has about 32,000 MW of installed electric generation capacity, or supply. This means that ordinarily the New England electric system would have a comfortable surplus of installed capacity over the load experienced during the Cold Snap of 28%. During the Cold Snap, however, almost all of this surplus generating capacity (primarily natural gas-fired) reported itself to ISO-NE as “unavailable”<sup>4</sup> to generate electricity due to claimed or actual outages and the margin of “available” electric generation in excess of electric demand was forced right to the edge.<sup>5</sup> The capacity cushion over demand existing under normal conditions is needed to assure reliable electric supply and, in the restructured electric markets, to dampen price spikes by assuring a workably competitive market in electric generation.

The operating conditions faced by ISO-NE during the Cold Snap, most notably the dramatic reduction in available generating capacity, differed sharply from the prior year and is not explained by the increase in electric demand which occurred during the Cold Snap. During January of 2003, the surplus in available generation in New England during the peak hour on average during every day in January was in excess of 6000 MWs and never was less than 3000 MW. ISO-NE, *Monthly Market Report* (January, 2003), p. 20, Exhibit 16. Energy consumption in January, 2003 overall was only slightly less than that experienced in January, 2004. The peak load in January, 2003 was 21,570 MWs compared with the 22,717 MWs during the January, 2004 Cold Snap, yet this increase of

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<sup>4</sup> In electric industry parlance, in general terms “available” electric generation means electric generation capacity which physically does or can provide power to the grid when called upon (or “dispatched”) by ISO-NE either instantaneously or within short time periods following a dispatch call by ISO-NE. “Unavailable” generation capacity is generation capacity which exists and is interconnected to the transmission grid but cannot operate physically when called upon on short notice because of equipment needing repair, lack of fuel supply or other factors. “Installed” generation capacity is generation capacity which has been constructed and is interconnected with the transmission grid and includes both available and unavailable generation capacity. The effective supply of electric generation, measured at any one time, is the amount of “available” generation.

<sup>5</sup> As described in the ISO-NE Final Report, 8927 MWs of installed capacity was reported unavailable during the peak hour on January 14, 8363 MWs on January 15 and 6328 MWs on January 16. Report at pp. 27, 32, 35. The New England system’s surplus/deficit in generation capacity shrunk to -108 MWs during the peak hour on January 14<sup>th</sup>, 717 MWs on January 15<sup>th</sup> and 2184 MWs on January 16. Final Report at pp. 27, 32, 35.



1150MWs in load is much less than the drop in available generation capacity between January, 2003 and the Cold Snap period during 2004.

At the same time as the New England electric system's available generating capacity was severely stressed during the Cold Snap, the cold weather also increased the demand for natural gas for heating and other purposes, so that natural gas demand in New England also increased dramatically. New England's gas delivery system met the demand requirements placed on the system during the Cold Snap, but several of the pipelines delivering gas into the region imposed operational restrictions on the delivery of gas in order to better manage and conserve available pipeline capacity. Overall, however, the natural gas delivery system had significant additional unused capacity which was not tapped to supply incremental natural gas to the electric system. *See, Levitan and Associates, Inc., Post Operational Assessment of New England's Interstate Pipeline Delivery Capability During the January 2004 Cold Snap* (March 24, 2004) (indicating that the natural gas delivery system physically could have supplied an incremental 1200 to 2700 MWs depending on the day in addition to the actual amounts delivered during the Cold Snap period).

During the 2004 Cold Snap, wholesale spot market electric energy prices throughout New England soared to very high levels during January 14 and 15 both in the day ahead and real time markets (the "DAM" and "RTM", respectively) pushed upward, in part, by the evaporation of available electric generation capacity in excess of system demand for electricity. Wholesale spot prices for delivery on the natural gas pipeline system into New England also soared to extremely high levels in a market suffering from thin liquidity and little transparency due to restrictions placed on gas delivery by the interstate pipelines responding to the record cold and increased natural gas demand. Some gas-fired electric generators sold their natural gas, procured under longer-term contracts, into the wholesale spot market for natural gas at these very high spot prices rather than burn that natural gas to generate electricity, and this activity contributed to the loss of the surplus of available electric generation capacity in the region.

These generators could make more money selling their natural gas into the natural gas spot market than by selling the electricity that they could generate by burning their natural gas at their power plants, exploiting what is known as the "sparks' spread" (*i.e.*, the comparative profit from selling natural gas and not generating electricity vs. using the natural gas to generate electricity and selling the electricity instead). These generators would have made handsome profits by selling electricity but instead sought even greater windfall profits by selling their gas. Another subset of generators were paid very significant amounts by ISO-NE for providing operating reserves to allow the system to maintain supply and demand in balance. In addition, ISO-NE made repeated calls to the public to reduce consumption and undertook emergency procedures to maintain supply and readiness to interrupt loads if worsening system conditions warranted it. Fortunately, the electric generation supply was not interrupted except in very limited areas and the extreme cold weather ultimately abated, restoring the New England electric system's generation reserve margins to more normal levels.

Many electric generators operating on natural gas asserted that they faced increased economic and operational risks during the Cold Snap period because of a mismatch in timing between the time when they are required to place bids in the "day ahead" electric market and when they are required to commit the supply of natural gas. These electric generators defend their actions, in part, as a response to this increased risk. During the Cold Snap, using the customary bidding schedule applied to the electric markets, ISO-NE would only indicate to natural gas electric generators that they were scheduled to run during the following day after the time for closing of bids to purchase or sell natural gas in the natural gas market. This mis-match, however, exists at all times between the natural gas supply and electric generation markets. Under normal conditions, an "intra-day" gas market exists so that generators can adjust their gas supplies after the closing of the natural gas "bid window" commensurate with changes in their level of commitment in the electric market. During the Cold Snap, this intra-day natural gas trading market seized-up because of increased demand for natural gas and because of operational limitations imposed by several of the natural gas pipelines delivering natural gas into New England. For a sizeable number of electric generators with firm natural gas supplies with fixed pricing, however, there was no risk of losing money - - the only "risk" they faced was whether they could realize excessive, windfall profits. They could have generated electricity at the prices at which the DAM or RTM cleared during the Cold Snap and still have made a substantial profit. The "risk" faced by such generators instead was the loss of an "opportunity" profit from selling natural gas into the natural gas markets. Such a so-called "risk" (the loss of even higher profits) is not a sufficient justification for generators to take actions which threaten overall system reliability in circumstances of extreme weather posing risks to public health and welfare.

It cannot be stressed enough that maintaining the electric supply, especially during a severe weather event such as was experienced this past January, is of vital public interest. Under such extreme weather conditions, the reliable availability of electricity can literally be a matter of life or death. While New England experienced record levels of cold combined with high winds (intensifying the effect) during the Cold Snap, the inevitability of recurrence of similar circumstances during future winters and the drastic consequences of a supply failure merits a detailed examination of the circumstances experienced during the Cold Snap and the prospective adoption of appropriate corrective actions. Specifically, the rules and operating practices of participants in the New England gas and electric markets require rigorous evaluation in light of the confluence of three parallel developments with seeming importance to the Cold Snap events:

- (a) the recent large increase in the proportion of natural gas-fired generating capacity in New England. Electric generation primarily fired by natural gas now constitutes approximately 41% of installed capacity in New England.
- (b) the increasing correlation of price and supply conditions in the wholesale natural gas and electric markets, highlighted by the Cold Snap events; and

- (c) the incentives that electric generators may have in the restructured electric markets to pursue greater profits in the wholesale natural gas market through actions that may adversely impact electric system reliability.

The ISO-NE Interim and Final Reports and the FERC Report regarding the Cold Snap events conclude, in general terms, that the sharp drop in available generation capacity that occurred during the Cold Snap can largely be explained by the response of natural gas-fired electric generators to risks they faced in scheduling the purchase of natural gas for use in firing their plants, given the substantial increase in reported spot prices for natural gas and mismatches in timing between the different scheduling rules for the commitment of gas and electricity during the next day, respectively, in the electric and gas markets. The FERC Report also concluded that sales of natural gas by electric generators during the Cold Snap helped support the continued supply of natural gas into the region. According to FERC, such sales constituted a swing supply shifting gas supplies from electric generators to the gas markets served by the natural gas local distribution companies ("LDCs"). Additionally, ISO-NE found no evidence of anti-competitive actions by participants in the electric market. Consequently, based on the findings in its Interim and Final Reports, ISO-NE's primary policy recommendation is to better align the scheduling time-line between the gas and electric markets during extreme cold weather periods so that gas-fired electric generators can better commit to generate in the next day's electric market while reducing their risks in procuring natural gas in the natural gas supply market during the same period. ISO-NE and FERC also recommend that any regulatory or operational impediments to dual fuel operation by natural-gas fired generating units be removed so that such units can operate on fuel oil as well as natural gas.

Implicit in the analysis conducted by both the ISO-NE and FERC is their belief that the market functioned properly during the Cold Snap, despite the fact that the actions of the electric generators brought New England perilously close to a health and safety emergency. According to ISO-NE and FERC, the relative relationship of "published" wholesale spot prices of natural gas (reported on a daily basis) and for electricity (reported hourly) provided appropriate incentives for where incremental usage of gas should occur. If the wholesale natural gas daily spot price exceeded the wholesale electric spot price in any hour which occurred during certain hours over the Cold Snap, then ISO-NE and FERC conclude that economic efficiency is better served by directing incremental supplies of natural gas into the natural gas delivery system, rather than utilizing the gas for electric power generation. In other words, according to ISO-NE and FERC, the ability of electric generators to achieve the maximum profit possible, whether by selling gas or generating electricity, shows that the electric market is working properly, irrespective of whether such actions imperil the safety of electric consumers.

The CTAG conducted this investigation of the Cold Snap events so as to minimize overlap with the fact-gathering conducted by ISO-NE and FERC and with the areas of substantive review undertaken by those agencies. The CTAG has also utilized the results of the ISO-NE and FERC investigations. In conducting its investigation, the CTAG was also mindful of the relative resources and areas of expertise of the various

agencies analyzing the circumstances of the Cold Snap. ISO-NE has a dedicated staff of individuals with responsibility for on-going administration and oversight of the New England electric markets. ISO-NE is also the administrator and, in many cases, the author of the market rules which define, as an initial matter, the permissible activities which may be undertaken by participants in the electric markets.

CTAG's fact-finding was confirmed and in many respects benefited from the studies undertaken by ISO-NE and FERC. However, the conclusions in this report diverge in certain major respects from those of ISO-NE and FERC, and more properly reflect the dire situation faced by New England consumers and the anti-consumer market policies and forces operating during the Cold Snap.

The Cold Snap events created exigent circumstances which put electric reliability at risk in New England with the potential for serious adverse consequences to public health and safety. While in normal circumstances (very different from those confronted during the Cold Snap), spot market pricing may be the best indicator of economically efficient arrangements, during the Cold Snap such markets were demonstrably illiquid, not competitive and not conducive to economically efficient pricing or allocation of resources. As discussed in greater detail below, CTAG concludes that the apparent endorsement by ISO-NE of the unfettered ability of electric generators to swing back and forth between the gas and electric markets may exacerbate the adverse impacts on system reliability which became apparent during the Cold Snap. Moreover, there are structural market conditions occurring during periods similar to that of the Cold Snap which give generators the opportunity to exploit market power in the electric and possibly natural gas supply markets and further undermine the credibility of assertions that the gas and electric wholesale markets are "economically efficient" during such periods. Exercise of market power during such periods alone may exacerbate the risks to system reliability. Moreover, serious policy issues are raised when regulators promote so-called "economic efficiency" at the expense of the health and safety of consumers. The market simply did not work in the public interest during the Cold Snap. While the ISO-NE has made some suggested changes that should help consumers in the future, ISO-NE's proposals do not go far enough. For example, ISO-NE should contemplate additional default "circuit-breaker" mechanisms to protect system reliability during future periods similar to those confronted by New England consumers in January 2004.

Finally, CTAG's investigation of widespread anti-competitive activity by market participants continues.<sup>6</sup> As described further below, market conditions during the Cold Snap were highly conducive to the occurrence of such anti-competitive activity. CTAG's conclusions are directed at seeking reforms in the administration of the electric market by ISO-NE on a prospective basis so as to reduce the potential for anti-competitive actions arising from the structure of the market. Moreover, CTAG will continue to monitor vigilantly activities by participants in the electric markets to assure compliance with antitrust and competition laws.

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<sup>6</sup> The CTAG is continuing his investigation as to certain specific circumstances, which are currently not subject to disclosure under Connecticut law regarding the confidentiality of its investigative process.

**B. Detailed Discussion and Analysis**

**1. Many Natural Gas-Fired Electric Generators Could Have Generated Electricity During the Cold Snap at a Substantial Profit, but Instead Declared themselves Unavailable to the Electric System In Order To Sell Their Natural Gas**

The CTAG has identified a number of natural gas-fired electric generators who garnered very significant profits from selling natural gas into the natural gas wholesale spot markets during the Cold Snap rather than using that gas to generate electricity. These same generators could have made significant profits by generating electricity and selling the electricity into the wholesale electricity markets at the reported spot electricity prices occurring during the same period.<sup>7</sup>

Many of these generators have firm natural gas supply contracts which establish the pricing for delivered gas based on the spot price occurring at the beginning of each calendar month. For January, 2004, the price for delivered gas under these contracts during the Cold Snap was approximately \$6.27 per MMBTU.<sup>8</sup> Assuming such generators could have sold their natural gas into the wholesale natural gas markets during this same period at the published wholesale natural gas daily spot prices, generators purchasing gas under their contracts could have sold their gas for a profit of \$14.74 per MMBTU during Jan. 14, \$57.15/MMBTU during Jan. 15, and \$12.33 per MMBTU during Jan. 16. For a hypothetical electric generator with a double train, combined-cycle 540 MW electric generation unit in New England with approximately half of its natural gas consumption covered by a firm natural gas contract, this would have meant it could have realized a profit of \$3.7 million from the sale of natural gas rather than utilizing the gas to generate electricity during Jan. 14-Jan. 16.

Correspondingly, if the electric generator had instead declared itself available for the generation of electricity and utilized the natural gas available to it under a firm natural gas supply contract, the generator would have realized a profit in every hour during the Cold Snap in both the DAM and RTM wholesale electric spot markets. The cumulative profit for the electric generator, operating a single of its double trains during the Cold Snap (Jan. 14-16) would have been \$2.6 million in the DAM or \$2.3 million in the RTM, about 2/3 of the profit available for selling natural gas but sizeable nonetheless.

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<sup>7</sup> The profits that such generators could have earned in the spot markets does not consider the separate payments for substantial "operating reserves" which ISO-NE also made to certain natural gas-fired generators, discussed *infra*. The full range of possible compensation available to electric generators for participation in the electric markets including operating reserve payments is the proper basis for analyzing the incentives faced by electric generators.

<sup>8</sup> MMBTU means million British thermal units of natural gas. MMBTU is the commonly used unit of measurement for the supply and marketing of natural gas.

The CTAG's Investigation and the ISO-NE Interim and Final Reports brought to light that a number of natural gas fired electric generating units were unprepared for the physical conditions of extreme cold experienced during the Cold Snap, which could have and should have been remedied with prudent planning. These conditions ranged from the absence of a critical but relatively inexpensive part in inventory to the absence of heaters or blowers in critical areas of the power plants. They also included circumstances where the generator was permitted to operate on fuel oil and natural gas under its environmental permits and had designed the plant to operate on either fuel, but had not yet commissioned the plant to operate on fuel oil.

These conditions explain some of the reduction in available electric generation. However, this office could not definitively conclude that these mechanical reasons explained the reduction in available electric generation in all cases where they were reported. This is because of the inherent uncertainties in evaluating the engineering judgments made by the electric generators regarding their own plant operations as well as the possibility that generators may have not fully disclosed all the information they possessed.<sup>9</sup> Moreover, the strong relative profit incentives to sell natural gas may have caused some generators to disregard or not adequately attend to their obligation to return to service and use that natural gas to generate electricity.

The large profits which certain electric generators garnered from selling natural gas rather than making themselves available to generate electricity reduced the incentives that such generators had to keep their plants available and this circumstance may have contributed to the apparent lack of preparedness of the power plants during the Cold Snap. The continuing existence of these super-charged incentives created by the increasing volatile natural gas wholesale spot market in New England, as discussed further below, may similarly reduce generators' incentives to keep their plants available when such conditions occur in the future. ISO-NE's market rules, which are intended to maintain system reliability while granting significant flexibility to generators, should have given ISO-NE some ability to curb the overall adverse impacts of individual generator's actions. These rules, and or ISO-NE's inability or unwillingness to enforce them, did not do so during the Cold Snap and may not in similar circumstances in the future. As discussed further below in section B.5, this failing is due to: (a) ISO-NE's relatively low level of sanctions for non-compliance of its rules; and (b) the ISO-NE's own troubling de-emphasis of the importance of compliance with its rules as reflected in the ISO-NE Reports and failure to address the need to enhance its ability to sanction rule non-compliance.

## **2. Structural Conditions Existing During the Cold Snap Were Highly Conducive to Market Manipulation**

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<sup>9</sup> The complexity of power plant operations has long bedeviled efforts by regulators and other third-parties that lack the intimate familiarity of plant operations possessed only by the generators to audit or review plant operations effectively in other contexts involving the de-regulated or restructured electric markets. This was notably the case in California where repeated declarations of plant unavailability which dramatically affected the profits of market participants were questioned by regulators.

As discussed above, some individual generators faced strong incentives to sell natural gas rather than generate electricity or make themselves available to operate. At the same time, reductions in available electric generation also may have created circumstances where the withholding of incremental electric capacity from the market increased prices in the wholesale electric spot markets above competitive levels, creating additional profits for generators and reinforcing the generators' incentives to sell their gas.

During the Cold Snap, the combination of high demand and dramatically reduced availability of generation created substantial opportunities for market manipulation by generators in the New England wholesale electric markets. Generator supplies relative to demand were sufficiently reduced so that one or several generators were in a position, through withholding of their generating capacity, to push the system into shortage conditions.

Such circumstances are generally acknowledged as affording monopoly power to such generators. The residual supply index ("RSI") is one metric for measuring market power and was calculated for the New England electric markets for each hour during the Cold Snap. The RSI measures the relationship between the generation supply offered by the largest supplier on the system to the available generation supply in excess of system load. If the RSI is less than 100%, it means that there is no alternative to maintaining system load other than through the operation of the largest supplier's generation. RSIs below 120% are deemed unlikely to be competitive. As calculated by ISO-NE in its Reports, all hours during the Cold Snap were below 110% and about a third of the hours were below 100%, meaning that the system had no alternative except to purchase from the largest supplier. Report at 77. The system's actual supply surplus/deficit was razor thin at 108 MW on January 14<sup>th</sup>, 717 MW on January 15<sup>th</sup> and 2184 MW on January 16. Report at 27, 32, 35. In these circumstances, the availability of any one or two plants during the first and second day and several plants on the third day of the Cold Snap held the difference between system operations and supply deficit. These circumstances gave tremendous pricing leverage to generators.

In its Reports, ISO-NE MMD de-emphasized the importance of these circumstances by comparing them with high demand periods during the summer when similar effects occur to the RSI calculations. Yet during the Cold Snap, although demand was approximately 3000 MWs less than during those "comparable" summer periods, the margin of available generation was just as tight and the limitations on competition were just as severe as during summer peak demand periods. Moreover, given the very tight capacity margin occurring during the Cold Snap, it is likely that multiple suppliers had capacity equal to the remaining reserve margin of available generation. As a result, each possessed significant pricing leverage – circumstances which ISO-NE MMD did not fully investigate.

ISO-NE MMD further de-emphasized the importance of these circumstances by looking at the aggregate actual conduct of generators by comparing the locational clearing prices in the market with the supply curve from generators' bids during the Cold

Snap adjusted for the increases in operating costs assuming that gas-fired units were paying the published daily spot price of gas during the Cold Snap. ISO-NE MMD concluded from this analysis that, although the structural conditions were ripe for market manipulation, actual conduct roughly incorporated changes in operating costs flowing through the huge increases in daily spot prices. As discussed below, however, ISO-NE MMD's reliance on published spot gas prices in a disrupted and illiquid market to determine the appropriate level of bidding by generators is problematic. Therefore, ISO-NE's conclusion regarding the lack of anti-competitive behavior in a market that structurally was ripe for such behavior is simply not warranted.<sup>10</sup>

### **3. Physical Withholding of Electric Generation Capacity**

Despite the clear structural vulnerabilities of the wholesale electric markets during the Cold Snap described above, exacerbated by the huge profit opportunities existing through the sale of natural gas, the ISO-NE MMD concluded that there was little or no attempt at physical withholding of generation capacity during the Cold Snap. ISO-NE based its conclusion on evidence that pivotal suppliers had more available generation and had taken less generation out of service than non-pivotal suppliers. Report at 98. ISO-NE MMD reasoned that because pivotal suppliers can better profit from physical withholding given their larger market share, the greater availability of pivotal supplier controlled generation during the cold-snap period negates the existence of any material physical withholding.

Directly contrary to the ISO-NE MMD's conclusions, however, pivotal suppliers, given their larger scale, larger portfolio of gas supply and generation options and greater financial resources, were simply better positioned to confront the operational and financial risks occurring during the Cold-Snap period and to maintain their generation in an available status than were non-pivotal suppliers.<sup>11</sup> The incentive to withhold generation arises from the economic benefits accruing to that generator's other operations that remain participating in the market and can then realize the higher prices resulting from the constriction in supply caused by the withheld generation. Given the importance of its supply and the lack of alternatives, a pivotal supplier may be better able to realize that benefit by withholding less relative capacity than a non-pivotal supplier. Moreover, given the razor-thin margins of supply occurring during the Cold Snap, it did not take very much additional unavailable generation to affect market prices substantially. Given

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<sup>10</sup> In its letter responding to CTAG's comments on the ISO-NE Interim Report, the director of the ISO-NE MMD criticizes the CTAG's concerns about using spot prices to evaluate the exercise of market power by referring to the general views of expert advisors regarding the design of wholesale electric markets. Letter dated October 14, 2004. Contrary to the ISO-NE's criticism, CTAG emphasizes that its concerns about the utilization of spot prices are narrowed to circumstances such as those confronted during the Cold Snap when the spot markets lack liquidity and not to general circumstances such as those addressed by the cited experts and misapplied by ISO-NE.

<sup>11</sup> For example, a pivotal supplier may have multiple gas contracts and multiple gas delivery options to service its several generating plants. A non-pivotal supplier owning only a single generating plant is more likely to lack such alternatives.



the structural conditions conducive to market manipulation through the withholding of physical supply, ISO-NE MMD's general conclusions that no such withholding occurred is not warranted.

#### **4. Natural Gas Spot Prices**

As noted previously, the reported "spot" price of natural gas increased to extreme levels during the Cold Snap and rapidly fell back following the end of the Cold-Snap. Spot sales of natural gas during the three days of the Cold Snap were generally made on a bilateral basis in a very thin market and represented a small amount of the total volumes of gas transacted during the period. Moreover, gas purchases during this period, primarily by natural gas LDCs, were likely not made on an arms' length basis. This is because regulated natural gas LDCs are able to recover 100% of their costs of gas purchased from customers through purchased gas adjustment clauses. Thus, the LDC's had little incentive to bargain aggressively to keep prices low but, to the contrary, are encouraged to buy any available spot gas at any available price simply to increase their supply portfolio to protect against the downside risk, however remote, of shortages.

Accordingly, it is not at all clear that the posted daily spot prices are indicative of any "market" price as such. The CTAG has reason to believe that actual prices for "spot" sales of gas during the Cold Snap were, on average, significantly lower than the reported spot prices.<sup>12</sup> As noted above, ISO-NE MMD incorrectly inferred that the actual price of gas was likely higher than the posted daily price due to the lack of liquidity in the intra-day market for gas sales so that the posted price is "conservative" measure.

The ISO-NE MMD then utilized the spot price of natural gas derived from the various indices rather than the actual costs incurred by generators to procure natural gas, to assess competition in the market during the Cold Snap and to assess whether bids by generators exceeded conduct and market impact screens which provide evidence of undue exercise of market power. ISO Final Report at 78-81. By equating the cost of operation to the published spot price, the ISO-NE MMD concluded that "competitive" conditions warranted very high bids in the electric energy markets. According to ISO-NE MMD, increases in bids by electric generators were cost-justified so as not to trigger market power mitigation review and sales by generators into the gas market were warranted because of the even higher margins realized on such sales in the gas market than could be garnered if the gas was used to generate electricity for sale. ISO's conclusion is in error, however, because these published spot prices were not reflective of any true "market" conditions. The natural gas market during the cold snap was characterized by substantial disruption, distortions and illiquidity. Because these "spot" prices greatly exceeded the actual costs incurred by electric generators in the market, the

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<sup>12</sup> Further evidence of this disruption in the natural gas markets is the extreme spreads (relative to other periods) in energy bids by gas-fired generators during the three days of the Cold Snap. ISO-NE Final Report at 85, Figure 15. Presumably, generators were reflecting their marginal costs in their bids. If the published spot price was truly reflective of marginal cost, this would have been incorporated in the bidding. Instead, there was very substantial dispersion among the bids by natural gas-fired generators as depicted in the Figure reflecting market disruption as much as increases in actual gas costs.

ISO-NE MMD's relatively benign view of the behavior by market participants is not justified.

In its investigation and in the administration of its market rules to curb market power, the ISO-NE MMD measured the economic incentives faced by the generators strictly in terms of the daily or hourly spot gas and electric price. Yet gas and electric contractual commitments are frequently made on a longer term basis by market participants. If analyzed on the basis of the actual cost of gas incurred (rather than the floating spot price), the generators that during the cold snap sold gas procured under long term arrangements but declared themselves unavailable made large windfalls (in an obviously disrupted market) rather than the losses projected by ISO-NE based on a narrow analysis of spot prices. While the ISO-NE MMD's short-term analysis which focused only on spot prices may be appropriate during normal operations, a different approach may be required during extreme events such as the Cold Snap, with major price fly-ups and market disruption in circumstances where spot prices may reflect panic buying and selling directly contrary to rational action.<sup>13</sup> ISO-NE's approach is even more troubling in light of recent criticisms of the methods for price formation, trading and regulatory oversight of the natural gas markets.<sup>14</sup>

The ISO-NE MMD's use of spot prices rather than generators' actual incurred costs also imported an upward bias on pricing which can be extreme during extreme events such as the Cold Snap and which may have undermined any consistent review of market participants' actions. The purpose of the "reference" price used by ISO-NE to evaluate generators' bids for purposes of anti-competitive activity is intended to allow generators to recover their variable cost of operation consistent with tenets of economically rational behavior. If, for example, a generator were to purchase long-term gas at a price which exceeded the daily spot price on a particular day, the generator would likely argue that the long-term gas price was a relevant indicator of the reference price in keeping with the requirement that the generator not sell power at a price less than its costs.<sup>15</sup> In short, the ISO-NE's spot price analysis is simply another energy market variant of "tails I win, heads you lose." Spot prices are used to evaluate the rationality of a generator's actions only when they are higher than the actual costs incurred by generators based on longer term arrangements.

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<sup>13</sup>The CTAG also questions whether a generator that is under a "best efforts" obligation to restore its capacity can decline to operate based upon an alleged paper "opportunity" loss calculated using spot prices when the actual cost incurred to procure that gas would still have allowed the generator to operate profitably.

<sup>14</sup> See, e.g., Industrial Energy Consumers of America, *The Natural Gas Crisis and the Need to Strengthen Energy Market Oversight* (Nov. 17, 2004) (pointing out numerous problems in the functioning of the NYMEX natural gas trading market, including frequent changes in contract terms without regulatory approval, insufficiently calibrated trading limits and inadequate oversight and regulation of the exercise of market power).

<sup>15</sup> ISO-NE has maintained that this is not the case, but CTAG was unable to verify whether such asymmetry infects ISO-NE's review of generator bidding.

## **5. The Role of Plant Outages Declared or Taken under ISO-NE's Market Rules During the Cold Snap**

“Outages” taken by electric generators (*i.e.*, declarations by generators or events causing generators to take their plants out of service) played an important role during the Cold Snap. The ISO-NE has issued a lengthy set of rules, approved by FERC, which define the procedures under which electric generators in New England operating in the wholesale electric markets administered by ISO-NE can operate their plants and take their plants out of service. Under these rules, generators first opt into participation in the markets administered by ISO-NE through qualification as “installed capacity” or “ICAP” resources. Once qualifying as an ICAP resource, a generator then is obligated to offer its capacity for sale into the ISO-NE administered markets unless the generator is able to take itself out of service through an “outage” of various types recognized under ISO-NE’s rules.<sup>16</sup> Generators can fulfill their “must offer” obligation by bidding for the sale of their capacity up to the system-wide price bidding cap of \$1000/MWH, subject to ISO-NE’s market power mitigation rules. Generators qualifying as ICAP resources receive payment for their ICAP capacity from electric load-serving entities operating within New England.

The “must-offer” obligation of ICAP resources and the types of permitted outages allowed for ICAP resources are critical underpinnings of the market rules. They establish the vital reciprocal obligations undertaken by electric generators in return for their ability to participate and earn unregulated profits in the ISO-NE administered deregulated electric markets. They also permit ISO-NE to plan for the maintenance and availability of electric generation to maintain the reliability and continuity of electric service during the course of the year and through the different seasonal periods when electric load systematically varies.

Under the existing market rules, ISO-NE allows generators, with its advance approval, to take their plants out of service:

- (a) to conduct necessary periodic maintenance of the plants so as to maintain their availability and useful lives, known as “maintenance outages;”
- (b) to avoid excessive costs from operation, known as “economic outages;” or
- (c) without advance approval but with timely notice to ISO-NE, due to circumstances beyond the generator’s control, known as “forced outages.”

This protocol is a vital element in maintaining reliable system operations because it allows ISO-NE New England to schedule outages needed to conduct necessary maintenance without compromising system reliability. For example, by scheduling maintenance during periods when system demand is likely to be lower, such as off-peak and shoulder months during the year, ISO-NE can assure availability of generation when

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<sup>16</sup> See, *e.g.*, ISO-NE Market Rule 1, sections 1.10.1.A(d) (must offer obligation of ICAP resource), 1.10.4, 8.3.1(a)(v) (must offer obligation of ICAP resource).

it is needed most during high demand periods. Reflecting the importance of the rule to planning for system reliability, ISO-NE reserves the right to require rescheduling of maintenance outages requested by generators in order to better match the amount of capacity affected by the outages to system demand and operational conditions. Similarly, ISO-NE can deny requests for economic outage or require that generators previously granted an economic outage return to service on a best efforts basis.

The ISO-NE rule for allowing economic outages presumably allows generators to declare outages when the economic circumstances confronting the particular generator are adverse if it were to maintain itself available for ISO-NE dispatch. This rule affords some flexibility to generators to better manage their financial condition, but also reflects a balance between the needs of the market and the requirements for system reliability. Economic outages are not intended to afford such flexibility when allowing such outages would damage overall system reliability and thereby compromise the ability of ISO-NE to approve the outage in advance and the recall right which ISO-NE has under the rule.

Despite the seeming critical importance of the “must-offer” obligation imposed on ICAP resources and the permissible scope for outages undertaken by generators to the maintenance of overall electric system reliability, ISO-NE has designed the resource obligation rules so that any sanctions for non-compliance are minimal. ISO-NE’s sanction for non-compliance with the ICAP resource obligations is to remove the ICAP payment on a pro rata basis for the month during which the ICAP resource is non-compliant. Currently, the market based ICAP monthly payment is relatively low.<sup>17 18</sup>

Immediately prior to the Cold Snap, ISO-NE had granted a significant amount of “economic outages” requested by generators, allowing this generation to make itself unavailable for operation.<sup>19</sup> During the Cold Snap and faced with the melting away of

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<sup>17</sup> In its letter to CTAG responding to CTAG’s comments on the ISO-NE Interim Report, the ISO-NE MMD further confirmed that the removal of the ICAP monthly payment is the primary sanction for non-compliance with the ICAP resource obligations. ISO-NE MMD Letter to CTAG, dated October 14, 2004.

<sup>18</sup> ISO-NE is proposing changes to this rule through its locational installed capacity (“LICAP”) proposal currently under review before FERC which would increase ICAP payments significantly and better align ICAP payments to performance by generators during “critical” system operating conditions (including high load and low surplus available generation periods). For other reasons discussed in CTAG’s filings at FERC, CTAG opposes the ISO-NE’s LICAP proposal but agrees as a general matter that ICAP payments should be better aligned with generator unit availability. *See*, discussion, *infra*.

<sup>19</sup> Prior to January 14, ISO-NE had granted 2327 MWs of economic outages. Final Report at 23, 101. ISO-NE noted that it may have granted economic outages after the deadline permitted under OP5 and did so after, in hindsight, underestimating the amount of generation needed going into the Cold Snap. Final Report at 107. ISO-NE, as discussed in the Final Report, did not really analyze its own actions in granting the level of economic outages that it did prior to the Cold Snap other than to conclude that whatever they were they likely did not materially affect the later available capacity crunch. This is because following the recall of economic outages on January 14 at 10 AM, generators had time to purchase gas in the intra-day natural gas spot markets. Elsewhere, ISO-NE described the natural gas intra-day spot market as difficult for generators to transact in due to timing differences between scheduling in the gas and electric markets. Moreover, this capacity did not fully return to service until the day following the Cold Snap. ISO-NE did not fully investigate whether generators exercised best efforts to return to service before then, instead

available excess generation, ISO-NE called these units back into service as it is entitled to do in an emergency under the existing market rules (Operating Procedure 5 or “OP5”). As noted previously, under ISO-NE’s market rules, generating units are generally given significant flexibility to declare “economic outages” under circumstances in which the unit operator anticipates that market revenues will be less than operating costs for whatever reason with varying degrees of advance notice. Once called back into service by ISO-NE due to an emergency condition, however, the generating unit operators, under the rules, must exercise “best efforts” to do so. “Best efforts” is a strong legal obligation requiring operation even if doing so might cause the generator to operate at a loss.

The vast majority of the units on economic outage and called back into service by ISO-NE during the Cold Snap did not come back into service until after the cold snap had passed. Many of these generators claimed either equipment failures or lack of fuel. As described in the ISO-NE Final Report, the ISO-NE MMD did not and seemingly could not verify whether generators complied with their best efforts obligation to come back into service. ISO-NE Final Report, p. 102. This requirement of the market rules would appear to be a critical tool for ISO-NE to assure reliable operations and should be the *quid pro quo* for the flexibility afforded generators in allowing them to declare economic outages in the first place.

Alternatively, ISO-NE has stated in response to CTAG’s comments on the ISO-NE Interim Report that if a generator had sold its gas but otherwise would have been available to generate electricity, that it would qualify for a forced outage and similarly would not be available to the system and impliedly in compliance with ISO-NE’s market rules. ISO-NE Letter to CTAG, dated October 14, 2004 at p. 2. This view does not appear to comport with the ISO-NE market rule definition which defines “generator forced outage,” in relevant part, as:

an immediate reduction in output or capacity or removal from service, in whole or in part, of a generating unit by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the facility, as specified in the relevant portions of the NEPOOL Manuals and ISO Administrative Procedures.

ISO-NE, Market Rule 1, section 1.2.4. The sale of gas by a generator so as to make its plant unavailable would appear to be a voluntary act by a generator and not one “beyond [its] control.” Therefore, such actions should not comprise a “forced outage.” ISO-NE’s

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inferring that the failure to return to service was due to physical outages. ISO-NE Final Report at 102. Without conducting a closer analysis of the reasons for the failure of units to return to service from economic outage, ISO-NE’s conclusions regarding the propriety of the level of economic outages granted by it are questionable. CTAG is mindful of the large uncertainties and difficulties in forecasting system loads and weather with which ISO-NE has to contend, but the seriousness of the issues and need for improved planning in the future warrants that ISO-NE’s actions in this respect also be reviewed. CTAG made the foregoing comment regarding ISO-NE’s actions during the Cold Snap in its comments on the ISO-NE Interim Report. ISO-NE did not undertake such a review in its Final Report.

apparent leniency in interpreting its rules make these rules intended to protect the public meaningless.

By failing to ask more searching questions regarding this issue in its investigation and by construing such behavior as compliant with its market rules (or of little consequence because of the low level of sanctions), ISO-NE has undercut the effectiveness of its own rules and regulatory authority. ISO-NE should take affirmative steps to ensure that generators undertake equipment redesign to assure against equipment failures and ways of managing fuel supply to deal with similar cold weather circumstances in the future.<sup>20</sup> While the Cold Snap obviously imposed extraordinary operational stresses on the system, prudent electric operators plan for such eventualities. Effective enforcement of the rule in the circumstances of the Cold Snap is an important tool to provide incentives to generators to take pro-active measures to assure their ability to return to service in circumstances of extreme cold.

ISO-NE's failure to enforce rigorously its existing rule regarding economic outages sends the wrong signals to generators. ISO-NE's apparent passivity regarding this rule is seemingly premised on its view that if generators are called back into service, they may, under the market rule, freely bid up to \$1000/MWH. Since high bids are just as likely to prevent actual operation of the generator, the distinction in declaring a unit unavailable due to an economic outage or available but only at a very high bid is viewed as a distinction without a difference. This is not an adequate explanation. While such pricing behavior obviously will tend to raise energy spot market prices if the generators offering such bids are called on to run (which may be partially curbed through the triggering of market power mitigation rules), at least it secures available generation so that an outage is less likely to occur and system reliability, as well as public safety and welfare, are maintained.

Moreover, generators already have very substantial bidding flexibility (up to \$1000/MWH) under this rule so that the supposed burden of the obligation on generators does not exist. This is especially the case when the system is pushed to the brink of collapse because of lack of available generation. In addition, generators, knowing the rule can be administered so as to enforce the generators' best efforts obligation to return to service, will be more likely take the steps to make themselves available during system emergencies.<sup>21</sup> ISO-NE's lack of inquiry regarding the compliance of generators with the economic outage rule in failing to return to service when called on by ISO-NE is also at odds with the policy framework in which the rule functions.

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<sup>20</sup> ISO-NE recommended that such measures be investigated, but was strangely silent regarding whether its current rule would require such actions to be taken.

<sup>21</sup> The CTAG, of course, does not endorse and instead vigorously opposes extreme price bids from generators absent justifying circumstances. In the event that a system emergency due to lack of generation supply occurs, however, having more generation available is of obvious and critical importance. Moreover, appropriate market power mitigation rules can function to curb bidding manipulation in such circumstances.

It may be asserted that no generator should be required to operate at a loss under any circumstances; hence, it follows from this assertion that the economic outage rule's recall provision can be trumped if it causes a generator to incur an economic loss during the period of the recall (which certainly was not a possibility during the Cold Snap). This, however, is a distorted and cramped view of the purpose of the electric system rules generally and the economic outage rule in particular. Participation by generators in the New England wholesale electric market affords them the opportunity to realize profits overall; but such participation and profit opportunity is coupled with specific obligations to support system reliability, even if compliance with these specific obligations when considered alone may tend to reduce the level of profits otherwise available from the market. This kind of coupled benefit and burden has many precedents<sup>22</sup> and reflects a necessary balance in the context of the electric industry mandated by the system coordination required for a complex, regional power grid, such as New England's, to operate reliably.

The ISO-NE MMD also takes the position that non-compliance with the ICAP resource obligations and possible non-compliance with the economic outage rule is of little consequence because of the low level of sanctions which ISO-NE may impose for such non-compliance even if it did occur. Letter to CTAG, dated October 14, 2004. This argument totally ignores that ISO-NE is the regulatory authority charged with ensuring the reliable operation of the New England electric system. To the extent the current rules do not assure ISO-NE's ability to ensure system reliability, it is ISO-NE's obligation to correct that deficiency. ISO-NE must review whether its rules were complied with as well as whether or not any resulting sanctions for non-compliance are a sufficient deterrent to non-compliance. The question of whether ISO-NE currently possesses sufficient deterrent power to punish generators that violate their obligations to system reliability is properly a second, but distinct and different component of the required analysis. In this second respect, the ISO-NE MMD's view points out a glaring deficiency in the overall operation of the ISO-NE administered markets when confronting extreme operating conditions such as those occurring during the Cold Snap. That is ISO-NE's refusal or inability to exercise its regulatory authority to ensure system reliability.

In light of the huge profit incentives faced by some generators to sell their gas rather than operate or make themselves available to generate power during the Cold Snap or in the future in similar circumstances, the ISO-NE market rule sanction in its current form was and likely will not be an effective deterrent to non-compliance with the ICAP resource obligations. Yet, it is the ICAP Resource obligations which are intended to

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<sup>22</sup> Precedents are innumerable running from the personal (*e.g.*, marriage obligates spouses to support their children financially and not merely to benefit from shared housing expenses) to the professional (*e.g.*, practicing a profession allows one to realize increased income but brings with it the obligation to comply with the ethical rules of the profession) to those from the business world (*e.g.*, a company issuing stock on a public exchange benefits from the infusion of equity but must then comply with the reporting requirements of the securities exchange act and blue sky laws, among other obligations).

control generator behavior so that it does not threaten overall system reliability.<sup>23</sup> While the ISO-NE MMD may well be correct that ICAP non-compliance under the current version of the rule may be of little consequence to generators, the critical role the rule plays in assuring system reliability and the very substantial flexibility the rule already gives to generators to adjust their bids and to take outages suggests that the relatively toothless sanctions of the current rule are a significant loophole or flaw in the ISO-NE market rules. The conclusion is inescapable that the existing ISO-NE ICAP resource obligation rules and their associated sanctions need to be beefed up and more aggressively administered to curb adverse generator behavior responding to the large and possibly increasing price volatility in the natural gas markets and the increasing correlation of the gas and electric markets.

ISO-NE's approach is very different. The ISO-NE MMD has undercut the effectiveness of its rule by seemingly emphasizing the minimal nature of any sanctions under the existing rule. Instead, ISO-NE proposes to increase further payment streams to electric generators (ultimately paid for by electric ratepayers) so as to induce them to not sell their natural gas but to use it to remain available for electric markets. ISO-NE's approach portends potentially huge increases in the cost of electric generation premised on securing electric system reliability and will likely do little to secure system reliability.

## **6. Forward Contracting**

In its Interim and Final Reports, the ISO-NE MMD took comfort from the fact that a substantial majority of load in New England was covered with forward contracts for the supply of energy during the Cold Snap. As a result, that load did not see the high spot market energy prices experienced but rather incurred the substantially lower prices for energy supply already defined in their supply contracts. Final Report at 81-83. Based on the information provided by ISO-NE, this is true with respect to the Cold Snap period.<sup>24</sup> It is also true, however, that the circumstances of the Cold Snap which lead to high prices are capable of recurring and the probability of recurrence will be incorporated into participants' expectations in the future. This, in turn, can be anticipated to lead to incorporation of a price premium in forward contracts in future periods. The impact may have been hedged in substantial part this past January, but if appropriate remedies are not adopted in the future, the cost impacts will ultimately be paid for by electric consumers.

## **7. The Outsize Role of Operating Reserves**

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<sup>23</sup> The ISO-NE MMD in its October 14<sup>th</sup> letter to the CTAG asserted that the ICAP Resource non-compliance sanction under the current version of the Market Rules is ineffective in circumstances such as those of the Cold Snap.

<sup>24</sup> Note, however, that the amount of uncovered load was not *de minimus* and was significantly greater than periods before and after the Cold Snap. The much higher spot prices realized during the Cold Snap period magnify this adverse effect. Valued at energy spot market prices, for example, the dollar cost of all generation during the Cold Snap rose to as high as more than four times that of preceding and succeeding days. The dollar cost of this unhedged load in absolute terms and relative to that incurred under more normal conditions, which presumably is also relevant, is not discussed in the Report.



During the Cold Snap, a very substantial amount of gas-fired generation was committed by ISO-NE as “operating reserve” and paid its bid through what are, in effect, “side-payments” made under ISO-NE’s rules outside of the spot energy markets which ISO-NE focused on in the report. ISO-NE, in its analysis of the Cold Snap, focused on the level of compensation available in the “energy” market to generators and concluded (improperly for the reasons discussed above) that gas-fired generators faced inadequate compensation from this market. Yet, even on ISO-NE’s own terms, a proper analysis must also include the full range of incentive available to generators including payments for “operating reserves” which were substantial during the Cold Snap.

Operating reserves are dispatched “out-of-merit”<sup>25</sup> to maintain system reliability and typically entail running generating units at a “minimum” level declared by the generator with the ability of the generator to ramp up to full load if called on by ISO-NE to meet system requirements. Generators providing operating reserves do not set the energy clearing price and are paid their bids. These payments were made in excess of the spot price and resulted in approximately \$15 million in additional payments over the three days of the Cold Snap and are not reflected in the “energy” spot markets (the day ahead and real time markets) settlements.<sup>26</sup> The ISO-NE’s primary analysis contained in the report was of the energy markets and thus did not include the operating reserve market. The ISO-NE Report did not really analyze together the full range of incentives facing generators which also had the opportunity to operate or were operating in this separate market for operating reserves and whether arbitrage between the gas and electric markets was justified in such circumstances or whether there was a potential for manipulation in the operating reserve market. Given the very high level of operating reserve charges, excluding these charges from the analysis presents a truncated view of the incentives truly faced by generators in bidding generation into the electric market and inappropriately discounted the compensation paid or available to be paid to generators, thereby magnifying the perception of uncompensated risk borne by generators.

ISO-NE’s only apparent analysis of possible market manipulation in the operating reserve market was to review whether bidding for operating reserves violated ISO-NE’s

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<sup>25</sup> “Out of merit” means that the generator is called onto dispatch even though its bid is higher than the clearing price determined by stacking up bids from generators in order of price from lowest to highest, with the clearing price just equal to the bid from the generator whose additional output is just needed to satisfy load during a particular hour. ISO-NE’s rules seek to maximize “merit” dispatch and minimize “out of merit” dispatch. Out of merit dispatch is typically require where the particular generator’s output is needed to maintain system operations which cannot be satisfied from running generators in merit only.

<sup>26</sup> This level of payment relative to total compensation in the market is not insubstantial. Daily energy load for all of New England during the Cold Snap was approximately 462,000 MWHs during each day of the Cold Snap. For example, on January 15<sup>th</sup>, assuming that all generation was paid the hourly real-time prices, total compensation in the market would be approximately \$80.5 million. Real-time operating reserve charges paid on January 15 were about \$10.5 million, or about 13% of energy market compensation on this measure, a substantial amount. Operating reserve charges in the week prior to and the week following the Cold Snap week were minimal. ISO-NE Weekly Market Summary (Jan. 11-17, 2004); ISO-NE Weekly Market Summary (January 25-31, 2004). (The ISO Weekly summaries report the operating reserve payments with a one week lag).

existing market power mitigation “screens” for operating reserves. This screen somewhat arbitrarily is triggered only if the bid for such generation is: (a) 100% greater than the “reference level” (variable operating costs, reflecting spot gas prices for gas generation); and (b) represents an increase of more than \$10/MWH over prior bids. By utilizing the published natural gas spot price to adjust this screen and given the huge fly-up in the published spot price during the cold-snap, the “reference” price screen (any bid below which ISO-NE by implication concludes that there is no need for further inquiry) would have been nearly at or above \$1000/MWH for many plants, which is the general price cap established for all bids. In circumstances of extreme disruption in the gas market as occurred during the Cold-Snap, the market power mitigation screen is of little value in evaluating whether market manipulation occurred. Moreover, excluding the consideration of the opportunity for the payment of operating reserves from the incentives facing generators to make themselves available for operation provides an incomplete view of the market dynamics affecting the New England wholesale electric market during the Cold Snap.

#### **8. Gas vs. Electric System Operations**

Reflecting ISO-NE’s primary responsibility for operations in the electric sector, the ISO-NE Report did not analyze to any great extent the joint functioning of the electric and gas delivery systems during the Cold Snap. The Cold Snap stressed the operations of both systems. The FERC in its report presented to the New England Conference of Public Utility Commissioners (“NECPUC”) reviewed the joint functioning of the two markets and concluded that gas sales by electric generators at the margin did support gas system operations. These conclusions, however, provide little guidance regarding what happened and how to incorporate better planning guidelines in the event of future similar circumstances. These conclusions also minimize the anti-consumer functioning of the electric market during the Cold Snap and the failure of the regulators or the market to protect the public from a near disaster.

First, the New England gas system retained adequate supplemental daily supplies during the Cold Snap to meet its firm gas delivery requirements without the incremental purchases of spot gas sold by electric generators. The gas system’s gas supplies are procured to meet the firm gas sales requirements of the “design day” which anticipates conditions occurring during severe cold weather. That is why such requirements exist. The robustness of these supplies over the entire winter season would not have been materially impacted if the gas sales displacing their use during the Cold Snap had not occurred.

Second, although electric load was, in fact, met by sufficient generation to meet load, the region’s reserve margin was close to zero, despite the existence of significant amounts of installed generating capacity -- amounts well above the peak load requirements -- which simply did not operate. The immediate issue raised by the Cold Snap was the loss of the normal cushion of available generation in excess of the actual electric load to deal with further unexpected losses of operating generation and transmission assets or increases in load. It is the loss of this cushion that pushed the

electric system to the edge of both reliable and economic operation and presumably motivated ISO-NE to invoke emergency procedures as it did and created circumstances ripe for market manipulation.

Under these circumstances, the requirements of maintaining the integrity of the electric system were trumped by the diversion of gas from electric generation to the gas markets which did occur. Generators owning a substantial amount of generation did have rights in natural gas. Some of these generators, however, chose to sell without rights of recall resulting in the loss of their available capacity.

ISO-NE contends that the major focus of inquiry to address this issue is to better synchronize the gas and electric day ahead scheduling deadlines so that generators can know better how to commit for gas purchases for electric generation. Generators would therefore know earlier in time what their commitments are in the next day wholesale electric market during extreme cold weather periods. ISO Management proposes to make this recommendation operational for the 2004/2005 winter season. CTAG endorses this recommendation with several caveats.

First, there may be inherent limitations to this effort due to inconsistencies in the time-line for scheduling natural gas and electricity, given the different physical response rates to and volatility in changes in demand and operating conditions of the two infrastructures. Accelerating the schedule for establishing electric dispatch to move it more into accord with the deadlines for scheduling gas may impair the accuracy of forecasting of electric loads by increasing the time difference between the making of the forecast and the period to which the forecast applies. Advancing the time for forecasting loads creates additional uncertainty in anticipating market conditions and will likely impose increased costs and risks on entities responsible for serving load (which, in turn, will increase the costs to ratepayers).

Second, this proposal does not directly address the critical question presented by the Cold Snap concerning the ability of generators to maintain their availability to provide an adequate reserve to maintain competitive conditions in the electric market and not simply adequate supply. Third, the advance notification by ISO-NE to generators to trigger the alignment of scheduling time-lines on particular days may facilitate indirect coordination by generators in their bidding which exacerbates the structural conditions occurring during extreme cold weather for generators to act in an anticompetitive manner. Accordingly, the CTAG believes that ISO-NE should adopt the proposed rule change aligning the scheduling time-lines for the two markets for the upcoming season only and then rigorously assess its effects in a post operational assessment, with modifications to be proposed for the subsequent winter season if warranted.

In addition, the ISO's review of the Cold Snap events did not directly address or answer additional critical questions about the joint operation of the gas and electric markets. For example, ISO-NE did not establish how much electric generation can maintain availability and rights to recall its gas supply or schedule its gas supply to maintain availability. Moreover, ISO-NE did not fully address the ability of the natural

gas delivery system to meet the joint needs of the electric and gas wholesale markets. While unstated in the ISO-NE Reports, ISO-NE itself appears to have depended on the ability of the gas-fired Exelon Mystic 8 and 9 units (comprising 1700 MWs of capacity) to come back on line to provide operating reserves following their coming off line and the passing of the deadline for scheduling day ahead natural gas in order to maintain system reliability.<sup>27</sup> The experience of the Exelon plants illustrates at least one generator's ability to procure or recall gas outside of the normal natural gas procurement process.

Others commenting on the Cold Snap events have noted that a change in the environmental operating permits of two large electric generators in Rhode Island to allow clearly dual fuel operation and increased and achievable demand side management would supply substantial additional generating supply margin during conditions such as those confronted during the Cold Snap.<sup>28</sup> ISO-NE itself had an analysis of the delivery conditions on the gas pipeline and delivery system into New England during the Cold Snap, focusing on how much additional unutilized capacity existed so as to better assess the capability of the overall gas and electric system to respond.<sup>29</sup>

ISO-NE's investigation does not appear to probe fully the ability of individual generators to recall gas in which they have rights during the operating day if called on or the consequence of scheduling gas deliveries in order to maintain system availability which later are turned back to the system if the units are not called on to produce electricity.<sup>30</sup> Yet, it appears that knowing this detailed information at the plant level about the New England electric system is crucial to being able to operate the system with

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<sup>27</sup> *New England Power Pool*, Order Conditionally Accepting Filing, 107 FERC ¶61,183 (May 25, 2004). Exelon apparently received the lion's share of operating reserve payments made by ISO-NE during the Cold Snap. The Mystic units' operational flexibility may be due to the fact that the plants are located next to Distrigas' LNG facility in Everett, Massachusetts. These issues, however, are not discussed in the Report.

<sup>28</sup> Paul Peterson and Douglas Hurley, Synapse Energy Economics, *Cold Snap Low Hanging Fruit*, presentation to the NEPOOL Markets Committee (September 30, 2004) (the "Synapse Report"). The Synapse report identifies, for example, 1125.64 MWs of additional primarily natural gas-fired capacity at the Ocean States Power and Manchester Street Stations in Rhode Island which can operate also on fuel oil and can do so with a revision in their environmental operating permits. The availability of this additional generation plus the demand-side management according to the Synapse Report would have eliminated the generation supply deficit during the Cold Snap.

<sup>29</sup> Levitan and Associates, Inc., *Post Operational Assessment of New England's Interstate Pipeline Delivery Capability during the January 2004 Cold Snap* (March 24, 2004). Levitan reports that under a "steady-state" analysis which ignores ramping and intra-day variations in plant operation, the gas delivery system in New England could have fired between 1200 to 2700 MWs (depending on the day) more electric generation than actually occurred during the Cold Snap.

<sup>30</sup> It also appears that the orders instituted by the interstate gas pipelines restricting use of the pipelines during the Cold Snap imposed penalties for excess-takes but not for undertakes. It appears that a generator under these circumstances would not incur an imbalance charge if it scheduled its full requirements assuming dispatch in order to declare itself available to ISO-NE and then cut-down the actual deliveries if not actually called on to generate.

sufficient reserve margin to operate reliably through a period with severe temperature conditions similar to those experienced during the Cold Snap. It also appears that such information is crucial to evaluate whether during the Cold Snap generators complied with their “best efforts” obligations to return to service following ISO-NE’s instructions to do so. This information is important both for system operations in the future and for evaluating the compliance by generators with existing ISO-NE and NEPOOL market and operating rules.

ISO-NE responded to these comments of the CTAG, in part, by asserting that the operations of the natural gas delivery system are not within its jurisdiction, as ISO-NE is the administrator of the wholesale electric system in New England and not the natural gas delivery system.<sup>31</sup> The CTAG respectfully disagrees that this precludes ISO-NE from undertaking an investigation of the joint operation of the gas and electric system along the lines suggested here. ISO-NE itself has not in other circumstances viewed its role as so limited. Given the conditions which occurred during the Cold Snap, the large and increasing role of natural gas fired electric generation in New England and the increasing correlation of the natural gas and electric wholesale markets in New England, close attention to conditions of the natural gas system is a central element in planning for and maintaining the reliability of the electric system in New England. Presumably in response to these and similar concerns, ISO-NE has itself conducted on-going planning reviews of the capacity of the natural gas supply system to service electric generation in New England and received an update of those analyses in its investigation of the Cold Snap events.<sup>32</sup> While not the focus of the CTAG’s investigation of the Cold Snap events, the CTAG urges ISO-NE to undertake the further review and analysis of the joint operation of the electric and gas systems in New England discussed above.

### C. Recommendations

The CTAG endorses a number of the recommendations set forth in the Final Report and in the ISO-NE Management Response, although those recommendations are not on their own sufficient to protect the public from a reoccurrence of the Cold Snap scenario. They include:

- Improving coordination between the gas and electric markets both to ensure better joint operations in extreme circumstances like those which occurred during the Cold Snap and better coordination of the trading schedules between the two markets (reflecting specific adjustments to facilitate such coordination when conditions like those of the Cold Snap are forecasted);

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<sup>31</sup> See, Letter of ISO-NE to CTAG dated October 14, 2004.

<sup>32</sup> See, Levitan and Associates, Inc., *Post Operational Assessment of New England’s Interstate Pipeline Delivery Capability During the January 2004 Cold Snap* (March 24, 2004).

- Facilitating increased dual fuel (oil and natural gas) operation of power plants, consistent with compliance with the environmental laws, relevant permit restrictions and existing limits on plant emissions.
- Acquiring better information about the availability of gas supplies to individual power plants, and the response rates of power plants during conditions like those of the Cold Snap.
- Improving forecasting assumptions about unit availabilities to improve scheduling and dispatch.
- Investigating the availability of peaking gas supplies to ensure greater availability of gas-fired units.

The CTAG does not, however, agree that generators should be free to pursue arbitrage between the gas and electric markets in extreme circumstances such as those occurring during the Cold Snap. The ISO-NE itself acknowledges that:

[i]t is difficult for a market monitor to distinguish between participants who submit high offers reflecting genuine risk and uncertainty, and participants who have better information about fuel prices and availability but are inflating their offers to take advantage of volatile market conditions.

Report at 152.

The CTAG believes that in circumstances like the Cold Snap, structural conditions create an environment which encourages participants to exploit the resulting disrupted gas and electric markets. The CTAG believes that this may have occurred during the Cold Snap notwithstanding the difficulty of distinguishing such behavior, and its occurrence should be prohibited.

Unfettered rights to take one's generation off-line in extreme weather conditions puts at risk system reliability, public health and safety and is inconsistent with the overarching obligations which generators have as participants in the electric market. The CTAG believes that the ISO-NE's investigation of generators' compliance with the rules for taking outages was inadequate and further submits that its view of the overall role of ICAP Resource obligations is unduly cramped and implicitly sends the wrong message to generators prospectively.<sup>33</sup> The CTAG believes that ISO-NE should instead strongly affirm and enforce the obligations of generators to support system reliability, even when such support may conflict with the generator's desire to maximize its profits. Substantial

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<sup>33</sup> While unstated, the ISO-NE's conclusions may reflect a view that portions of the generation sector are financially stressed and, therefore, ISO-NE should not impose any limitation on generators opportunities for profit making such as limiting rights of gas arbitrage during market disruptions such as occurred during the Cold Snap. If this indeed ISO-NE's conclusion, this problem should be addressed through other more targeted approaches rather than removing or weakening generators' obligations to support system reliability during extreme weather conditions.

penalties should be available to allow ISO-NE to properly enforce its rules. The CTAG also believes that qualification for ICAP resources should require that electric generators have firm gas supplies or real dual fuel capability to support their generation during capacity short periods, otherwise it is unclear how the generating resource can really provide the ICAP resource.

As discussed herein, the market reforms that ISO-NE has proposed to address the Cold Snap reflect its continued reluctance to regulate the electric markets vigorously. Instead of exercising its authority and strongly enforcing its rules, ISO-NE seems content to propose reforms that effectively offer only larger incentives and no meaningful penalties. This is likely to lead to increased costs for ratepayers without any real assurance of system reliability, as generators are freed to chase higher profits in the increasingly more volatile natural gas market and as ISO-NE then offers similar inflated compensation to pull such generators back into the electric market to provide necessary overall system reliability.

ISO-NE should take proactive steps to ensure that generators can and will be available when called upon. This includes enacting and enforcing rules that require that generators who claim to have dual-fuel capability actually verify their ability to operate on back-up fuel if necessary. In addition, after a Cold Snap event ISO-NE should actively investigate the efforts of generators who did not serve when called upon and sanction appropriately those who failed adequately to do so.

The CTAG also disagrees with the ISO's conclusion that the terms of the air emissions permits may have limited the ability of generators to utilize fuel oil to maintain their availability at least insofar as such conclusions apply to plants operating in Connecticut. CTAG's investigation has found no such permit limitations. Instead, it appears that some generators may have failed to install or make operational their fully authorized ability to operate on dual fuels.

For reasons separately discussed elsewhere, CTAG opposes the adoption of additional enhanced revenue streams proposed for payment to generators, such as locational installed capacity ("LICAP"). CTAG believes that generators are already required to support system reliability as part of the overall right to participate in the electric market.

Finally, CTAG believes that the ISO-NE should consider the adoption of a "circuit breaker" type mechanism which in narrowly defined conditions, such as those occurring during the Cold Snap, would require generators with firm natural gas supplies to make available their generation. Circuit-breakers have long been seen as necessary and vital components of functioning trading markets. After the famous October 1987 "Market Break" of the United States securities markets, the stock exchanges instituted rules which trigger suspensions in market trading in circumstances of heightened volatility in the markets. These mechanisms have provided substantial benefits. A thorough analysis and discussion of circuit-breakers was undertaken in the *Report of the Presidential Task Force on Market Mechanisms* (Jan. 1988) (the "Task Force Report"),

which analyzed the October 1987 Market Break.<sup>34</sup> The Task Force Report recommended the adoption of circuit-breaker mechanisms in securities markets that are triggered by excessive volatility.

In describing the benefits of circuit-breaker mechanisms, the Task Force Report stated that:

[c]ircuit breakers have three benefits. First, they limit credit risks and loss of financial confidence by providing a "time-out" amid frenetic trading to settle up and ensure that everyone is solvent. Second, they facilitate price discovery by providing a "time-out" to pause evaluate, inhibit panic and publicize order imbalances to attract value traders to cushion violent movements in the market. Finally, circuit breaker mechanisms counter the illusion of liquidity by formalizing the economic fact of life, so apparent in October [1987], that markets have a limited capacity to absorb massive one-sided volume....

[C]ircuit breakers cushion the impact of market movements which would otherwise damage market infrastructures. They protect markets and investors.

Task Force Report at p. 66.

As noted in the Task Force Report, critics typically fault circuit breakers because they may interfere with trading strategies adopted by market participants. However, as also noted in the Task Force Report, serious market disruptions create "ad hoc" effects that are similar to but more harmful than those of circuit breakers, such as panic buying and seizing up of trading settlement processes. Formal adoption of circuit breakers, triggered in defined circumstances, provide a means for managing disrupted markets in a rational manner and, when instituted in advance, afford market participants the ability to incorporate the effect of such mechanisms into their market activity.

The circumstances faced by the New England electric and gas markets during the Cold Snap entailed disrupted markets, windfall profits and huge price volatility that were similar in many respects to the problems in the financial markets evaluated in the Task Force Report. Moreover, it was the market responses during Cold Snap and not the lack of physical availability of fuel or generation capacity that threatened the continued physical delivery of a vital public infrastructure service during the coldest period of the year.

Consequently, ISO-NE should consider the adoption of circuit-breaker mechanisms and not continue to surrender its administration of the market to the volatile price swings of disrupted electric and gas delivery markets. Specifically, ISO-NE should consider a requirement that when cold-snap like circumstances are forecasted to occur, natural gas-fired generators with firm gas supplies must make themselves available for generation supply or be available through their previously proven ability to operate on

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<sup>34</sup> The Presidential Task Force was chaired by Nicholas Brady and the report is sometimes referred to as the Brady Report. See also, Division of Market Regulation, U. S. Securities and Exchange Commission, *The October 1987 Market Break* (Feb. 1988).



fuel oil and, in either case, bid into the market at their actual costs. As discussed previously, qualification as an ICAP resource should require that gas-fired generation either have dual-fuel capability or firm gas supplies to support such availability.

## V. CONCLUSION

As a result of the CTAG's investigation into the circumstances of the Cold Snap, the CTAG is concerned that the ISO-NE market rules that govern the electricity market are inadequate to protect New England from market manipulation by unscrupulous generators faced with extreme cold weather events. As a result, such behavior by individual generators may contribute collectively to circumstances like those faced during the Cold Snap when the people of New England faced the potential collapse of the reliability of the electric grid on the coldest day of the year. This is unacceptable.

The ISO-NE MMD Reports and the ISO-NE Management Response provide important factual background and analysis to the investigation of the Cold Snap events and recommendations and proposed actions for changes in practices to better avoid similar circumstances in the future. However, the conclusions of the ISO-NE review regarding a lack of evidence of anti-competitive behavior during the Cold Snap is not well-founded. Moreover, any possible inference from such a finding that such behavior is not an important concern during similar such occurrences in the future is completely unwarranted given the highly vulnerable market structural conditions occurring during the Cold Snap. In addition, ISO-NE's apparent failure to investigate key elements of compliance with its existing rules during the Cold Snap events raise questions about the validity of the ISO-NE's overall conclusions regarding the adequate functioning of the market.

The CTAG endorses a number of the action items contained in ISO-NE Management's response to the ISO-NE MMD Reports. The CTAG believes, however, that a more thorough set of reforms (including strengthening the obligations borne by ICAP resources) is required to better align the incentives facing individual electric generators with the ability to maintain overall electric system reliability.

As the ISO-NE acknowledges, there is a central point at stake here. It is cold in winter in New England, and our electrical system must be able to function during such conditions. A conclusion that the system worked because it just squeaked by during the Cold Snap is not acceptable. Extreme weather conditions, hot or cold, should not open the door to unscrupulous conduct by energy market participants at the expense of consumers.

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