



BY ELECTRONIC MAIL AND REGULAR MAIL

December 23, 2009

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street,
27th Floor Toronto,
ON M4P 1E4

**Independent Electricity
System Operator**
655 Bay Street
Suite 410, PO Box 1
Toronto, Ontario M5G 2K4
t 416 506 2800
www.ieso.ca

Dear Ms. Walli:

Re: IESO 2009 Reliability Compliance Report

Please find attached the Independent Electricity System Operator (IESO) 2009 Reliability Compliance Report, filed pursuant to section 6.2(f) of the IESO license. Hard copies of the document will follow this transmittal.

Please let me know if you have any questions regarding this report.

Thank you.

/s/ Biju Gopi

Biju Gopi
Senior Analyst, Government & Regulatory Affairs
Independent Electricity System Operator
655 Bay Street, Suite 410
Toronto, ON M5G 2K4
Tel: 905-855-6496

cc. Peter Fraser, Sr. Manager, Infrastructure and Renewables



IESO Reliability Compliance Filing for the Ontario Energy Board

2009

INDEPENDENT ELECTRICITY SYSTEM OPERATOR (IESO)

2009 RELIABILITY COMPLIANCE FILING FOR THE ONTARIO ENERGY BOARD

This report summarizes the significant actions the IESO undertook in 2009 with respect to reliability, and its activities in regard to the development of reliability standards and criteria, as well as the work it undertook in 2009 in cooperation with parties outside of Ontario. This report is prepared and filed pursuant to section 6.2(f) of the IESO license.

The IESO fulfills its roles and responsibilities with respect to ensuring reliability in a number of ways, including:

- Administering and enforcing the reliability compliance program in Ontario pursuant to the *Electricity Act, 1998* and the Ontario Market Rules;
- Operating as the Reliability Coordinator (RC), Transmission Operator (TOP), Transmission Planner (TP), Interchange Authority (IA), and Balancing Authority (BA) for Ontario, and as a member of the Northeast Power Coordinating Council (NPCC) and the North American Electric Reliability Corporation (NERC).
- Adopting NERC and NPCC reliability standards, regional reliability standards and criteria. Additionally, under the market rules, the IESO has the authority to set additional standards and criteria in Ontario when necessary. These activities are supported by the IESO's Memorandum of Understanding (MOU) with NERC and NPCC which sets out the obligations of the signatories, and compliments the MOU between the Ontario Energy Board (OEB) and NERC;
- Participating in various industry forums, councils, and committees for the development and administration of reliability standards that deal with both operational and planning activities; and
- Positioning the company to deliver on its core responsibilities in a changing electricity sector including responding to the demands associated with the implementation of the government's renewable energy policies.

A. LEGISLATIVE, REGULATORY AND INDUSTRY DEVELOPMENTS

1. Advocacy and Influence

The *Electricity Act, 1998*, the OEB License and the IESO Market Rules provide the IESO with authority to advocate on behalf of Ontario, reliability related discussions and decisions, and to ensure that the IESO is able to fulfill its legislative and license obligations with respect to maintaining the reliability of IESO controlled grid and the effective management of the IESO administered markets.

The IESO meets these obligations through its collaboration and interactions with reliability authorities, industry partners and associations, electricity participants and stakeholders and government agencies. The IESO also advocates and influences the development of NERC and NPCC reliability standards, regional reliability standards, and criteria to ensure that Ontario's interests are preserved in the broader North American interconnected electricity grid and markets. This advocacy is an essential part of the IESO's reliability related activities and is supported by IESO management and staff.

2. Ontario Energy Board

i. Transmission Leave to Construct Applications

There are several new or modified transmission proceedings underway in which the IESO is providing support in respect of their OEB leave to construct applications, including:

- On May 31, 2009, Hydro One filed an application for their Woodstock East Transmission Line Upgrade Project in which they are seeking approval to rebuild approximately 4 km of the existing single circuit 115 kV and double circuit 230 kV transmission lines. In addition the project would include the construction of a new transformer station in the City of Woodstock.
- On July 16, 2009, Canadian Niagara Power Inc. (CNP) filed an application with the OEB for leave to construct and reinforce its transmission facilities in and around the Fort Erie area. CNP operates a transmission system in the Niagara Falls/Fort Erie area including an international interconnection to US National Grid's transmission system in Buffalo, New York. Since this application includes an international power line both OEB and National Energy Board approval will be required by CNP.
- On August 11, 2009, Greenwich Windfarm LP filed an application with the OEB for approval of a 230 kV double-circuit transmission line to connect its 99 MW wind farm to the IESO-controlled grid in Northern Ontario.
- The IESO has performed the System Impact Assessment (SIA) in support of Hydro One's pending application to reinforce the Northwest transmission system to enable connection of planned renewable generation resources and address reliability concerns in the region. This application is expected to be filed with the OEB in early 2010.

ii. Review of Ontario Export Transmission Service (ETS) Tariff

On August 28, 2009, the IESO filed its ETS Tariff report and recommendation with the OEB. In its report the IESO recommended that the ETS tariff remain unchanged from the current \$1/MWh. The report was undertaken by the IESO in response to an OEB decision in Hydro One's September 26, 2006 transmission rate application (EB-2006-0501). As part of this earlier decision, the IESO was to undertake a study of the "appropriate" ETS tariff, taking

into consideration three options identified and discussed in the proceeding as well as engage in negotiations with neighbouring jurisdictions towards establishing acceptable reciprocal arrangements with the aim of eliminating the ETS tariff. Further to IESO's recommendation, Hydro One submitted its request to the OEB that the ETS Tariff report be reviewed as part of its 2011 and 2012 transmission rate proceeding. On October 6, 2009, the OEB confirmed that the ETS Study will be considered as part of Hydro One's upcoming transmission rate application which is expected to be filed early in the New Year. The OEB expects that the IESO will participate as necessary in that hearing to address matters pertaining to the ETS study. In the meantime the OEB will make no change to the approved transmission rates including the \$1/MWh applicable to export service for 2010

iii. IESO Comments on Enabler Facilities

The IESO was an active participant in the OEB's discussions on cost allocation for developing enabler facilities in the province and submitted written comments. Enabler facilities are transmission lines which will transport power from remote renewable resource clusters to load centers in Ontario. The IESO supported the "hybrid" cost allocation methodology which was eventually adopted by the OEB.

3. North American Electric Reliability Corporation (NERC) and Northeast Power Coordinating Council (NPCC)

Through regular interactions and submission of comments, the IESO continues to maintain and advance positive relations with NERC and NPCC. NERC, as part of its Electric Reliability Organization (ERO) obligations, was required to file its self assessment before the Federal Energy Regulatory Commission (FERC) in July of this year. The assessment covers the first three years of NERC in its role as the ERO. The IESO completed a comprehensive performance assessment survey highlighting NERC's successes and challenges. In addition, the IESO sent a letter to the NERC CEO expressing IESO's views on NERC's performance and offered suggestions for improvement in certain key areas.

Through the performance assessment survey and the letter, the IESO expressed its support of NERC and offered many recommendations to NERC in specific areas. The IESO noted that NERC should recognize that it cannot be an effective international organization if the standards development process is unduly influenced by any single regulatory authority. The IESO also noted that there was a significant need to further refine the existing standards and standards development process to make them more efficient and effective. The IESO recommended that NERC enhance the timeliness and effectiveness of addressing cyber security issues within the NERC framework, and to argue forcefully against any proposal to shift NERC's authority in cyber security to FERC.

The IESO actively participated in both NERC and NPCC business planning activities through discussions with executive staff, formal submissions and participation in conference calls. The IESO was successful in representing Ontario's concerns on the proposed significant budget increases which contributed to the initial proposed increases being reduced substantially. The IESO was again successful in obtaining special funding allocations (fee

reductions) for Ontario from both NERC and NPCC in recognition of Ontario's compliance framework.

Ontario Technical Feasibility Exemption Process

A number of NERC cyber security (CIP) standard requirements have provisions allowing entities to request a Technical Feasibility Exception (TFE) for the requirement. Once approved, the TFE allows an entity to not be in strict compliance with a requirement but requires them to implement a mitigation plan and be compliant by a certain future date. In March 2009, NERC issued a proposed TFE process for stakeholder comment (in which the IESO participated in providing joint comments along with the ISO/RTO Council). Based on the comments it received from stakeholders, NERC revised the proposed TFE program such that Regional Entities, instead of NERC, will have the responsibility for the initial screening, review and approval of TFEs.

In keeping with the existing framework in Ontario, the IESO's Market Assessment and Compliance Division (MACD) shall have overall authority to manage the TFE process in Ontario and approve the TFE requests submitted by Ontario market participants, including the IESO itself. The IESO is currently working with its market participants, NERC, and NPCC to establish a process specific to Ontario. The "Ontario" process will be as stringent as the NERC process, if not more. The IESO expects to have the process in place prior to end of January 2010.

4. Federal Energy Regulatory Commission (FERC)

The IESO remains actively involved with the proceedings of FERC. The IESO and Hydro One filed joint comments in response to the FERC Notice of Proposed Rulemaking (NOPR) on the relay loadability standard. Currently the standard applies to all transmission facilities operating at 200 kV and above; and those transmission facilities between 100 kV and 200 kV that are designated by planning coordinators as critical to the reliability of the bulk electric system. FERC, through the NOPR, intends to increase the applicability of the standard to cover all transmission facilities operating at voltages greater than 100 kV. The IESO noted that FERC should not increase the applicability of the standard because substantial costs will be incurred by entities in adopting this approach without providing a measurable reliability benefit. The IESO also noted that this would distract financial, analytical, and staff resources from other areas which have a higher impact on reliability. In a related but separate filing, the IESO also took the lead in drafting joint comments on the subject along with PJM, the Midwest ISO, and the Southwest Power Pool (SPP).

NPCC, in response to FERC directions, is moving towards implementing a voltage based threshold (100 kV and above or the "bright-line" approach) for the applicability of NERC reliability standards. NPCC are currently the only Regional Entity which uses an impact based methodology to determine which facilities should form part of the Bulk Electric System (BES). In the joint filing, led by the IESO, the filing parties noted that the application of NERC reliability standards should be limited to wide area reliability without expanding its scope to cover local-area reliability. The filing parties noted that adopting the bright-line definition across the members of NPCC would impose significant additional costs

on consumers with no measurable benefits to wide-area reliability (including systems with which we are interconnected). The IESO was commended by both Ontario market participants and neighbouring reliability entities for the role it played in organizing this submission.

The IESO's regulatory submissions to FERC are available on the IESO website at <http://www.ieso.ca/imoweb/corp/regulatory.asp>

B. IESO MARKET AND SYSTEM RELATED ACTIVITIES

1. Ontario Reliability Reports (ORO) and IESO 18 Month Outlooks

To ensure reliability, the IESO regularly assesses the adequacy and reliability of Ontario's power system and provides appropriate signals to market participants and the public. Through regular issues of the 18 month Outlooks and the Ontario Reliability Outlook (ORO), the IESO reports on progress of the inter-related generation, transmission and conservation projects underway to meet future reliability requirements.

During 2009, stakeholders were consistently updated on the forecasted security and adequacy of Ontario's interconnected integrated power system through IESO publications of four quarterly 18-month forecasts. Interested parties were apprised of Ontario's reliability related assessments and issues through timely publication of the ORO report in December 2009.

The IESO's 2009 Ontario Reliability Outlook examines the sweeping task of renewing the province's electricity infrastructure: describing the challenges of transmission, integration and reliability; as well as the changing dynamics of a system in transformation. In the ORO, the IESO noted that The Green Energy Act and the accompanying Feed-in Tariff (FIT) program will accelerate the growth of the province's renewable generation capabilities and supporting infrastructure. The IESO is developing new ways to help it balance supply and demand. These efforts include new tools such as centralized wind forecasting that will provide a more accurate and reliable view of wind's contribution to the system. The IESO notes that in the years following the phase out of coal-fired generation, meeting resource adequacy requirements will entail the successful coordination and implementation of a number of different initiatives to address the ongoing management of the province's aging nuclear fleet. It will also challenge the IESO to integrate new storage technologies including flywheels, pumped storage, and batteries.

The 18-month forecasts and the ORO can be found on the IESO website at:

http://www.ieso.ca/imoweb/ircp/reliability_outlook.asp

2. On-Line Limits Derivation Project (OLLD)

The IESO continues to improve its processes to encourage reliable supply and reliable operations. The project will be undertaken in several stages over the next few years for a total projected capital cost of \$6.3 million. The project will mitigate identified risks in the

Resource Integration and Operations business units, and essentially replaces much of the manual development of system operating limits with automated tools. This project will acquire or develop the tools to facilitate on-line limit derivation in both the on-shift and back office environments. The new systems will be fully integrated into the existing suite of tools.

3. Market Rule Amendments

The following is a list and short summary of the reliability-related market rules that came into effect in 2009:

MR-00348-R00: Enhanced Day Ahead Commitment Process: This amendment modifies the market rules in section 2.2 of Chapter 7 by identifying the information that registered market participants are required to submit during the facility registration process for the Enhanced Day-Ahead Commitment process (EDAC). This information is important because it is necessary for the operation of the EDAC calculation engine when it is solving the optimization of unit commitment over the entire 24 hours of the next day. This amendment specifies the obligation for registered market participants to submit technical data for non-quick start generation facilities. Additionally, the option is being proposed to permit registered market participants to also register with the IESO additional technical information if the registered market participant would like to have a combined-cycle generation facility considered for modeling as a pseudo-unit model by the EDAC calculation engine.

MR-00348-R00-R06: Enhanced Day Ahead Commitment Process – 24 Hour Optimization and 3-part Offers: This amendment inserts a new Appendix 7.5A in Chapter 7 of the market rules to specify the calculation engine for the enhanced day-ahead commitment process. The enhanced day-ahead commitment process introduces:

- Optimization of commitment and scheduling over 24 hours of the next day;
- Multiple passes of the optimization algorithm to determine the schedule of record; and
- Use of 3-part offers to better represent the offered costs for energy.

The enhanced day-ahead commitment process calculation engine performs the optimization. Appendix 7.5A describes the calculation engine process which undertakes three passes for the optimization process.

MR-00356-R00-R02: Generation Cost Guarantees – Interim Changes to Real-time and Day-ahead Generation Cost Guarantees: This amendment introduces changes to the market rules governing the real-time and day-ahead generation cost guarantee (GCG) programs. Compared to the previous GCG program design, the changes are expected to result in more efficient economic outcomes.

Addressing the inefficiencies associated with the current GCG program design aligns with the Market Surveillance Panel January 2009 Report which recommended that the IESO consider changes to the method of calculating guarantees to improve the effectiveness of day-ahead scheduling decisions.

The changes include:

- Linking the guarantee payment to the market participant's offer price;
- Introducing more stringent eligibility requirements for the real-time GCG program;

- Removing operating reserve revenues from the guarantee payment; and
- Revising definitions of parameters used for calculating the guarantee payment.

MR-00360: CMSC resulting from IESO Action and Binding Net Interchange Schedule

Limit (NISL): The IESO has identified a set of conditions where congestion management settlement credits (CMSC) is inappropriately charged (or paid) to exporters. Under this market rule, exporters shall not be charged or paid CMSC incurred during internal transmission constraints under either of the following conditions:

- The net interchange schedule limit is binding in the market schedule on an economic export transaction in pre-dispatch, and subsequently, in accordance with section 6.1.3 of Chapter 7, the IESO increases the quantity of that transaction in the real-time schedule; or
- The net interchange schedule limit is binding in the market schedule on an uneconomic export transaction in pre-dispatch, and subsequently, in accordance with section 6.1.3 of Chapter 7, the IESO decreases the quantity of that transaction in the real-time schedule.

The amount of CMSC is limited to the portion of the transaction that is modified by the IESO.

4. Stakeholder Engagement Activities

The *Electricity Act, 1998* requires the IESO to establish one or more processes by which consumers, distributors, generators, transmitters and other persons who have an interest in the electricity industry (collectively, stakeholders) may provide advice and recommendations for consideration by the IESO. The IESO Board approved the adoption of enhanced stakeholder engagement principles and processes, and approved the creation of the Stakeholder Advisory Committee (SAC), to ensure compliance with its legislative obligation.

Below is a list of notable reliability related engagements and activities initiated or currently underway in 2009:

SE-75: Outage Management Replacement Project: Market participants are required to request permission and receive approval for planned outages from the IESO. A project for the replacement of the existing Outage Management System is underway with the first phase being the implementation of a user interface for market participants who do not currently submit outages via an Application Programming Interface (API). This phase will address some process efficiencies identified by both the IESO and market participants. This initiative is of specific interest to all market participants who currently submit outage requests to the IESO.

SE-73: Enhanced Day-Ahead Commitment Detailed Design: The IESO Board of Directors approved proceeding with the development of an Enhanced Day-Ahead Commitment (EDAC) system on September 5, 2008. Completion of the detailed design of EDAC will be the primary focus of this stakeholder engagement plan. This includes defining the elements associated with systems and processes for operations, the optimization engine, and settlements. A core objective of this plan is to provide affected stakeholders with the

opportunity to identify operational and settlement issues with respect to EDAC processes and systems, in order to minimize potential adverse impacts. This initiative will involve market participants that enter bids and offers into the market as they will be directly affected by the implementation of EDAC - including generators, importers and exporters who transact through the submission of bids, offers and schedules.

SE-61: Dispatch Methodology and Processes: The IESO has initiated dialogue with key stakeholders to discuss both current and future dispatch issues. The initial discussions will help the IESO determine the most effective methods of gathering stakeholder input on this initiative, and help determine the issues and approach for the next phase of this initiative. The future will see new resources with different characteristics from those currently existing in Ontario, and the IESO must ensure that the market maintains sufficient drivers to guarantee reliable and efficient load-following and dispatch capability. The IESO would also like to improve the reliability and capability of the current resources by examining existing dispatch issues.

SE-57: Embedded and Renewable Generation (including periods of surplus baseload generation): Embedded or distributed generation is usually a small scale production of power connected within the distribution network and not having direct access to the transmission network. These generators are typically located close to the electricity consumer. In August 2005, the Ministry of Energy requested that the Ontario Power Authority (OPA) and the Ontario Energy Board (OEB) work together to address barriers to the development of small electricity generating projects using clean or renewable energy sources that are connected to the electricity distribution system in the province. In November 2006, the OPA launched a Renewable Energy Standard Offer Program (RESOP) for the province, and subsequently the Clean Energy Standard Offer Program (CESOP). Both programs focus on generators under 10 megawatts connected to the distribution system. When connected to the distribution system, these smaller generators can make a significant aggregate contribution to security of supply for Ontario consumers and to achieving the Government's objectives for clean and renewable energy supply. The scope of this initiative includes centralized forecasting, management of minimum load periods (including periods of surplus baseload generation) and development of standards.

5. Market Evolution Activities

The IESO continues to work with stakeholders and vendors on the delivery of the Enhanced Day Ahead Commitment (EDAC) process. The approach of this project is to proactively implement a solution which enhances efficiency of the electricity supply while maintaining the reliability that Ontario needs to evolve its electricity market, particularly with the introduction of the Green Energy and Green Economy Act (GEA) and once coal-fired generation is retired. The project will address how Ontario can use the existing and new fleet more efficiently and provide mechanisms that encourage appropriate market behaviour while maintaining system reliability and market integrity.

A key focus for market evolution, with the introduction of the GEA, is to prepare and enable the IESO and its market participants for significant penetration of renewable generation

associated with the Feed-in-Tariff (FiT). This work will address three main areas of development:

- **Visibility:** Understanding what and how these largely variable generation resources are and will be operating is critical to the reliable and efficient operation of the transmission and distribution systems. To help address visibility needs the IESO in partnership with participants and Local Distribution Companies (LDC) are developing systems and processes for forecasting, telemetry and operational information sharing that will help enable higher penetration of GEA resources.
- **Dispatch & Control:** The FiT articulates an additional contract payment for the contract proponent if they respond to the IESO dispatch instruction under various scenarios. As a result current dispatch processes have been reviewed and new elements of self-scheduling and intermittent resource dispatch will be introduced as part of the GEA enabling work.
- **Coordination:** Historically there has been a clear line between distribution and transmission operation. With the introduction of the FiT and its significant volumes of embedded generation the IESO and LDC relationships will need to evolve. Partnerships between the IESO and LDC's will help ensure the greatest level of penetration at the least cost through the sharing of forecast, telemetry and outage information as examples.

The IESO is also focusing on market and business efficiency improvements. Regarding market and system operation the IESO is working with stakeholders including the OPA to help address concerns related to Surplus Baseload Generation (SBG) management, the interaction between the markets and OPA contract design and the impacts of Global Adjustment.

From a business perspective the IESO is implementing a number of efficiency improvements including Enrolment Automation and On Line Limit development. The Enrolment Automation project will improve the capability to effectively manage the registration and enrolment activities through a centralized IT solution. The project will provide a consistent and centralized repository of customer and market system data, better align the IESO related business processes, and simplify the information submission process for external applicants and market participants. Currently much of the limit derivation processes in the IESO is performed manually for all possible conditions. This project would acquire or develop the tools to facilitate a more automated limit derivation process, in both the real-time and day ahead operating time frames, for actual and forecasted conditions.

6. Connection Assessments

The IESO assesses and documents the impact of each new project on reliability and identifies the necessary system upgrades required to meet IESO reliability standards and to ensure continued reliable system operation.

Between January 1 and November 30 2009, 21 generation, transmission and load connections to the IESO-controlled grid were reviewed through the Connection Assessment and Approval (CAA) process and another 15 assessments are under way and are near completion. Several transmission system enhancements identified as necessary in the Ontario Reliability Outlook, the 18-Month Outlooks and various System Impact Assessments are progressing through this process. These include new transformer stations, new load supply facilities and facilities required to support system voltages.

A summary of these projects and their detailed reviews can be found on the IESO website at: <http://www.ieso.ca/imoweb/connassess/ca.asp>

7. Generation Procurement Initiatives

The IESO has provided support to all initiatives announced by the Ministry of Energy and Infrastructure and the OPA for new renewable, combined heat and power, and other clean generation resources in Ontario, and for the initiatives undertaken by the OPA in the area of integrated power system planning.

8. Coordinated Regional and Interconnection-wide Transmission Studies

The advent of the NERC functional model and the development of mandatory reliability standards, especially the transmission planning and operations standards, has resulted in increased requirements on the IESO to support inter-area, intra-regional and inter-regional transmission studies and exchange of reliability-related planning and operational information. This is required to demonstrate compliance with those standards and to also ensure that power system developments in the various areas and regions do not adversely impact neighbouring entities. The IESO has participated in such studies through 2009, and has also worked on setting up the necessary framework and contacts with neighbouring, intra-regional and inter-regional organizations.

In 2009, the IESO became the only Canadian member to be a member of the Eastern Interconnection Planning Collaborative (EIPC). EIPC is comprised of 23 entities, mainly transmission and resource planners, of the Eastern Interconnection, led by PJM Interconnection LLC as the primary lead investigator. EIPC is an interconnection-wide planning collaborative which will, through various technical working groups, develop and analyse transmission plans to ensure a coordinated approach to transmission planning at the interconnection level. The IESO will work closely with OPA and Hydro-One on this initiative.

C. RELIABILITY STANDARDS, PERFORMANCE AND COMPLIANCE

1. Reliability Standards Compliance

The IESO maintains the reliability of the IESO-controlled grid by monitoring and enforcing compliance with Ontario market rules, as well as reliability standards and criteria established

by standards authorities, such as the North American Electric Reliability Corporation (NERC) and the Northeast Power Coordinating Council (NPCC). Through its annual Reliability Compliance Program (IRCP), the IESO ensures that Ontario market participants, including the IESO, report on their applicable reliability compliance obligations and, in case of non-compliance, implement remedial actions that mitigate any adverse impact on reliability. In addition, as a registered entity with NERC and member of NPCC, the IESO reports annually to NPCC on its compliance status with the reliability standards and criteria that are actively monitored by NPCC's compliance monitoring and enforcement programs.

In 2009, the IRCP monitored compliance of the IESO and Ontario market participants against 54 NERC reliability standards and NPCC criteria. Of these, 46 reliability standards and criteria applied to the IESO and 15 to generators, transmitters and other market participants. The IESO has reported 100% compliance with all applicable NERC standards and NPCC criteria, and has accurately met the compliance submission timelines specified by NPCC. With one exception, Ontario market participants have also reported full compliance with the applicable standards and criteria. The exception refers to a particular transmitter that continues to be challenged by requirements to become compliant with the NPCC's criteria on key facilities and critical component testing. The IESO is working closely with the affected transmitter to develop appropriate mitigation plans and apply the required enforcement actions to ensure compliance in this area.

As previously reported to OEB, on May 29th, 2009 the Market Assessments and Compliance Division (MACD) issued a Notice of Alleged Breach (NAB) to the IESO associated with an event that occurred on October 27, 2008. Upon completion of their investigation, MACD will confirm if actual breaches of market rules and reliability standards have occurred and determine the nature and level of penalties that may need to be levied on the IESO.

In recognition of the changing reliability landscape, both within Ontario and across North America, and the need for increased focus on compliance with reliability standards, the IESO management requested that IESO Internal Audit conduct a review of the IESO's reliability compliance process and provide the advice needed to ensure that the appropriate reliability compliance process exists for Ontario. The final audit report was presented to the IESO Board in April 2009 and included a series of recommendations to enhance the existing reliability compliance process. In response, the IESO management accepted all these recommendations and provided an action plan to address the high and medium risk recommendations. This year's critical milestones in the plan were achieved by implementing an IESO Reliability Compliance Policy and assigning one of the IESO senior executives as Chief Reliability Compliance Officer for the IESO.

Additional details on the IESO's reliability compliance program may be found at: <http://www.ieso.ca/imoweb/ircp/reliabilityStandards.asp>.

2. New or Revised Reliability Standards and Measures

During 2009, the IESO developed positions and provided comments on more than 100 additions or revisions of NERC and NPCC Reliability Standards, Regional Standards, and Criteria. The IESO also provided comments in response to various final orders, notices of

proposed rulemaking (NOPR), and clarification rulings issued by FERC, as stated earlier. The IESO consistently advocated Ontario perspectives in the ISO/RTO Council's (IRC) Standard Review Committee (SRC) submissions to NERC and other forums. The IESO has ensured timely reviews and submission of comments for each of these individual activities.

The IESO provides regular updates to market participants on all evolving industry changes, standards development activities, FERC rulings, and U.S. Senate and House hearings and bills which are of relevance. Actions were taken to assist market participants in achieving compliance with NERC and NPCC standards. The IESO continues to ensure that all new or modified certification forms for the IESO Reliability Compliance Program (IRCP) are stakeholdered through the Reliability Standards Standing Committee (RSSC). The RSSC is used as the forum to discuss standards and compliance related issues and concerns with Ontario Market Participants and arrives at solutions and provides guidance on concerns raised. The RSSC also offers an important platform for the IESO to stakeholder important issues, policies, and processes.

For more information on the RSSC, go to www.ieso.ca/imoweb/consult/consult_rssc.asp.

3. Reliability Performance

i. Unsupplied Energy

One industry standard indicator of power system unreliability is the amount of load that is interrupted (unsupplied energy) each year due to planned or unplanned outages. The IESO examines the aggregate performance of the system with respect to unsupplied energy (UE) expressed in system minutes¹ on an overall system basis as well as within 34 defined subsystems or local areas on the basis of UE-MW-minutes.

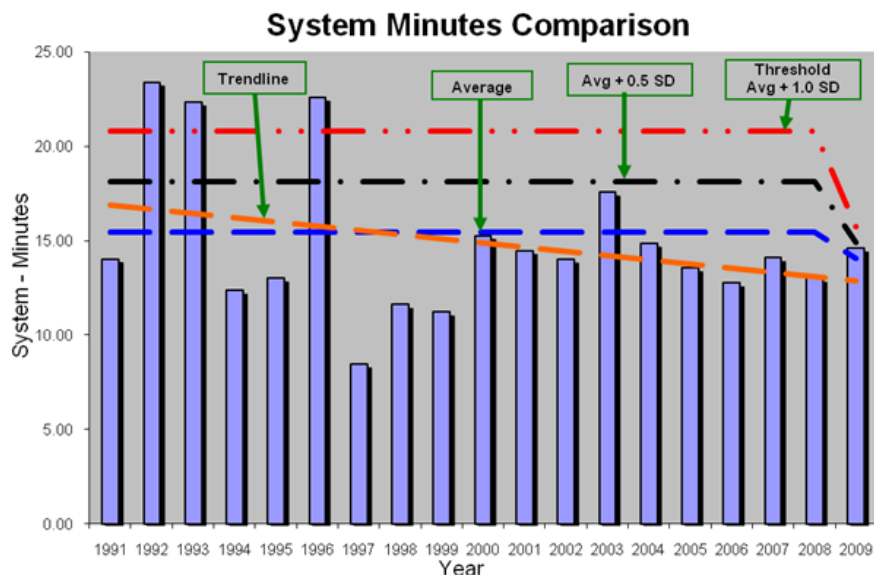
Typically, the UE performance in a reporting year is compared against a fixed benchmark that is established based on 10 years of historic UE performance. This benchmark is reviewed periodically and was updated during 2009, with the revised limit becoming effective from January 1, 2009 for a 5-year period. Due to the resetting of the benchmark, the system unsupplied energy threshold limit has become more stringent in 2009, i.e. the threshold was tightened from 20.82 minutes to 15.75 minutes.

The following graph presents Ontario's aggregate UE performance over the period 1991 to November 2009. For the period January 1 to November 30, 2009 the system minutes reached 14.75 minutes, just below the annual threshold. This figure was greatly influenced by a single outage in one local area in January. That event affected Dufferin transformer station that serves part of Toronto and contributed over four system minutes to the total UE. The responsible transmitter has developed a mitigation plan acceptable to the IESO, to minimize the likelihood of a similar occurrence in the future.

¹ A System Minute is the total interrupted MW-min divided by system peak MW. The System Minutes of Unsupplied Energy tracks the extent to which energy is not supplied to a customer (or group of customers) connected to a delivery point due to interruptions caused by either forced or planned outages of transmission.

A closer examination of Ontario’s UE performance to-date reveals that thirty (30) local areas meet their revised benchmark values compared to twenty-eight (28) for 2008. Of the four (4) local areas that have exceeded their UE threshold, two (2) of them were below their limit in previous year – designated “yellow-flagged”, while the remaining two (2) exceeded their limit in 2009 for a second consecutive year – designated “red-flagged”. In 2008 there were four (4) yellow-flagged and two (2) red-flagged local areas respectively. Here again the IESO is following up with relevant transmitters on the review of mitigation plans for the red-flagged local areas for improving their local area performance in the future.

In summary, the unsupplied energy data for the period January 1 to November 30, 2009 is within the acceptable yearly limits. However, it is approaching the reset benchmark and there is a risk of UE exceeding the threshold by the end of the year. The IESO will re-assess the UE performance and its status upon availability of full year’s data including December 2009 UE data.



ii. NPCC Cyber Security and Infrastructure Protection Standards (CIP) audit of the IESO

NPCC conducted two audits on the IESO in 2009. The first audit took place in October and it reviewed the IESO’s documentation that attested compliance with requirements 1 to 4 of NERC standard CIP-001-1. The second audit, conducted on site between November 17 and November 19, 2009, performed a comprehensive review of the IESO’s compliance with a subset of 13 requirements of NERC Critical Infrastructure Protection (CIP) standards CIP-002 to CIP-009.

Both audits found the IESO in full compliance with the audited requirements. This means not only that the IESO has adequately developed and implemented the required processes,

policies and procedures but also it has successfully provided evidence that these policies and procedures are routinely applied in accordance with the requirements of the CIP standards.

Commenting on the IESO's contribution throughout the audit process, the audit team noted that the IESO has provided exceptional documentation and has demonstrated flexibility and cooperation. In addition, NPCC praised the subject matter experts present throughout the process for their time, openness and expertise. The publication of the final NPCC report on the audit conducted is expected in January 2010.

iii. Emergency Preparedness

In order to maintain and enhance Ontario's capability to manage reliability and respond to electricity system emergencies, the IESO conducted 9 Power System Workshops across Ontario involving more than 400 individuals from over 40 organizations.

Additionally, due to its efforts and contributions including coordination of Critical Infrastructure Initiatives (CIP) in Ontario, across Canada, and with NERC, the IESO continues to be regarded as a leader on Critical Infrastructure Protection (CIP) matters by the provincial and both Canadian and U.S. federal governments. Particular emphasis has been placed on meeting NERC's new cyber security standards, and the IESO successfully met these requirements as confirmed by the recent audit.

The H1N1 outbreak in April 2009 provided us with an opportunity to implement our pandemic plan, identify lessons-learned and improve how our plans are coordinated with market participants and other critical infrastructures. In our October 21, 2009 letter to the Minister of Energy and Infrastructure, we informed the Minister that our flexible severity-based response framework has been adopted widely across North America. We also provided a current assessment of Ontario's ability to maintain electricity reliability through the H1N1 pandemic.

The IESO's emergency preparedness activities and the related process can be found on the IESO web at <http://www.ieso.ca/imoweb/EmergencyPrep/Preparedness.asp>.

iv. Operational Performance Measures

The IESO's reliability related performance impacts participants, stakeholders and the electricity grid and accordingly, measures and standards must be based on accepted standards of performance. In order to achieve its reliability objectives, the IESO continues to measure its results against established NERC and NPCC reliability standards and industry practices.

Current results for the IESO's corporate performance measures are available on the IESO web site at: <http://www.ieso.ca/imoweb/corp/corppperformance.asp>.

APPENDIX I

Participation and Memberships in NERC, NPCC and related Committees, Task Forces, Subcommittees and Working Groups

NERC
Members Representative Committee (MRC)
Operating Committee
Critical Infrastructure Protection Committee
Finance and Audit Committee
Standards Committee
Compliance Certification Committee (CCC)
Standards Interface Subcommittee
Interchange Subcommittee
Operating Reliability Subcommittee
Reliability Assessment Subcommittee (RAS)
Personnel Subcommittee
Distribution Factor Working Group
Functional Model Working Group
Interchange Distribution Calculator Working Group
Reliability Coordinator Working Group
Operating Limit Definition Task Force
NPCC
Board of Directors
Full Member Representatives
Reliability Coordinating Committee
Public Information Committee
Regulatory and Government Affairs Working Group
Compliance Committee
Reliability Standards Committee
TFSS (Task Force on System Studies)
TFCP (Task Force on Coordination of Planning)
TFCO (Task Force on Coordination of Operations)
CO-1 (Working Group on Control Performance)
CO-2 (Working Group on Dispatcher Training)
CO-7 (Operational Review Team)
CO-8 (System Operating Managers Working Group)
CO-10 (System Operational Tools Working Group)
CO-11 (Restoration Working Group)
CO-12 (Operations Planning Working Group)
CO-13 (Available Transfer Capability Working Group)

CP-8 (Working Group on Review of Resource and Transmission Adequacy)
CP-10 (Collaborative Planning Initiative)
SS-37 (Working Group on Base Case Development)
SS-38 (Working Group on Inter-Area Dynamic Analysis)
RFC-NPCC Steering Committee
RFC-NPCC Working Group
IST-2 (Telecommunications Working Group)
IST-3 (EMS-SCADA Working Group)
ISO/RTO Council
Communications
Info Tech
Markets
Planning
Regulatory
Standards Review Committee (SRC)
NAESB
Board
CEA
Transmission Council
Regulatory and Development Task Group
Security and Infrastructure Protection Committee (SIPC)
DOE
Energy Sector Cyber Security Working group (ESCSWG)
Over The Horizon Working Group (OTH)
DHS
Partnership for Critical Infrastructure Security (PCIS)
Cross-Sector Cyber Security WG (CSCSWG) - under PCIS