

**Ontario Energy Board**  
**Independent Electricity System Operator**  
**Reliability Compliance Filing for Calendar Year 2006**

The IESO is the Reliability Coordinator and Balancing Authority in Ontario<sup>1</sup>, and a member of the Northeast Power Coordinating Council Inc. (NPCC Inc.)<sup>2</sup>, the Northeast Power Coordinating Council Cross-Border Regional Entity (NPCC CBRE)<sup>3</sup>, and the North American Electric Reliability Corporation (NERC).<sup>4</sup> The IESO has adopted the NERC and NPCC Inc. reliability requirements, and may set additional Ontario specific reliability standards and criteria when needed.<sup>5</sup> The IESO also administers and enforces the reliability compliance program in Ontario consistent with its authority under the Electricity Act<sup>6</sup> and the Ontario market rules.

In addition, the IESO has a Memorandum of Understanding (MOU) with NERC, NPCC Inc. and NPCC CBRE that documents the obligations of the parties respecting the Ontario reliability framework and complements with the MOU between the Ontario Energy Board (the "OEB") and NERC.

The IESO participates in various industry forums for the development and administration of reliability standards that deal with real-time operating and planning activities.

Recognizing the fundamental and broad mandate of the IESO to ensure reliability, the IESO's Board of Directors adopted a set of Corporate Performance Measures that include a direct measure of system reliability. This measure has two components; Ontario system unsupplied energy, and the company's actions undertaken over the year to meet the objective of reliable operation today and in the future.

This report summarizes the significant activities that were undertaken in 2006 in respect of the development and administration of reliability standards and initiatives, and related coordination efforts with other entities outside Ontario pursuant to Section 6.2(f) of the IESO's license.

The report is organized as follows:

- A. Legislative, Regulatory and Industry Developments
- B. Market and System Operation Activities
- C. Reliability Standards, Performance and Compliance

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<sup>1</sup> The IESO is also registered with NERC as a Transmission Operator, Planning Authority and Interchange Authority. The IESO may not perform all tasks associated with these responsibilities such as the case with Planning Authority activities being shared with the Ontario Power Authority.

<sup>2</sup> The IESO is a member of NPCC Inc. and complies with reliability criteria administered by NPCC Inc. These criteria are particular to the region that includes Ontario. NPCC Inc. is a member driven reliability organization that operates without regulatory oversight in northeastern North America.

<sup>3</sup> NPCC CBRE acts with regional responsibilities and activities under the oversight of NERC as the Electric Reliability Organization for North America. NPCC CBRE may develop regional specific reliability standards that are submitted to the ERO for approval.

<sup>4</sup> NERC is the not-for-profit corporation currently, sponsored by all sectors of the electric utility industry, whose mission is to improve the reliability of the bulk electricity system in North America. NERC has been recognized as the Electric Reliability Organization (ERO) in Ontario and the United States. The North American ERO operates with regulatory oversight in Canada and the United States.

<sup>5</sup> Electricity Act, 1998, Ontario Reg. 452/06, s.1., the IESO objects include "to establish and enforce standards and criteria relating to the reliability of transmission systems."

<sup>6</sup> Ontario Reg. 452/06, s.1.

## **A. LEGISLATIVE, REGULATORY AND INDUSTRY DEVELOPMENTS**

Legislative, regulatory and corporate activities are an important element of the reliability framework. Activities in this domain include those intended to fashion fundamental aspects of the industry both within Ontario and outside the province. Activities also include supporting the OEB's regulatory proceedings, the development of NERC as the ERO, establishing regulatory guidelines for enforcement of mandatory reliability standards, and preserving Ontario's interests in the North American interconnected electricity markets.

### **Advocacy and Influence**

In accordance with the *Electricity Act, 1998*, its OEB license and the Market Rules, the IESO continues to be actively involved in reliability-related matters both within and outside of the province. Within Ontario, the IESO's advocacy is primarily focused on influencing discussions and decisions involving the provincial and federal governments, OEB, market participants, and industry stakeholder groups. Outside of Ontario, the IESO's focus includes other system and market operators, reliability authorities such as NERC and NPCC, as well as regulatory agencies. The IESO's key objectives in these areas are to advance Ontario's and the IESO's interests to ensure that it is able to effectively fulfill its legislative, license and Market Rules obligations with respect to maintaining the reliability of the IESO-controlled grid and efficient operation of the markets. Advocacy is considered a central and critical part of the IESO reliability management activities and is vigorously supported by all management and staff. The IESO's regulatory submissions and applicable decisions and orders are available on its public website at <http://www.ieso.ca/imoweb/corp/regulatory.asp>

The IESO continues to be a strong supporter of reliability organizations such as NERC, its evolution into the ERO, and the NPCC. The IESO also maintains a focused involvement in many aspects of these industry forums, including participation through senior positions within the organizations. See Appendix 1 for a summary of the IESO's reliability committee participation.

The IESO has been advancing its positions and effectively participating in selected industry forums including FERC, ISO/RTO Council, NERC, NAESB, NPCC, RFC, and CEA. In view of the evolving changes in the North American Industry, the IESO remains diligent in addressing challenges and providing timely response to various industry forums.

The IESO's Regulatory Affairs' group is actively involved in or have participated in a number of regulatory proceedings and industry developments within Ontario, notably:

### **Ontario Energy Board**

#### **i. Leave to Construct Proceedings**

The IESO has a role in the regulatory review and approval of proposed new or modified connections to the IESO-controlled grid. The IESO identifies the need for new or modified connections to the IESO-controlled grid, evaluates alternatives accordingly, assesses reliability, and in certain cases, market efficiency impacts on the IESO-administered markets. The IESO also provides technical advice and support to the OEB and stakeholders in respect of the leave to construct review and approvals. The IESO's expects that, going forward, its role will increase with respect to the Board's review and approval of new or modified connections to the IESO-controlled grid.

In 2006, the IESO assisted with regulatory reviews and approvals of a number of connection proposals to facilitate, among other things, implementation of the government's clean energy and renewable generation strategies. Also, there are a number of other new or modified pre-IPSP transmission expansion proposals in the pipeline for which the IESO is supporting OEB review and approval.

**ii. Pre-IPSP Transmission Expansion and Reinforcements**

As part of its consultation process for establishing filing guidelines for reviewing and approving transmission expansion proposals, the OEB directed Staff to undertake discussions involving Staff, the IESO, OPA and Hydro One (representing transmitters) to discuss and develop a proposal pertaining to their proposed respective roles and responsibilities in section 92 proceedings; in particular, to facilitate review and approval of pre-IPSP projects. The OEB aim was to establish a framework for obtaining public input pertaining to pre-IPSP transmission proposals, as well as provide a logical transition to the IPSP. The IESO, OPA and Hydro One jointly developed a matrix setting out their proposed roles and responsibilities in respect of regulatory proceedings for review and approval of transmission expansion proposals. On November 14, 2006, the OEB issued a final report setting out minimum filing guidelines for transmission and distribution leave to construct and rate applications.

**iii. Integrated Power System Plan and Procurement Processes**

The OEB has commenced a consultation process to establish principles and filing guidelines that will be adopted by the OEB in its review and approval of the Integrated Power System Plan (the "IPSP" or "plan") and procurement processes. The IESO has a direct and substantial interest in all aspects of the proceeding. On October 2, 2006 the IESO filed a set of comprehensive comments, setting out key principles and guidelines that it believes the OEB should adopt in its review and approval of the IPSP and Procurement processes. The IESO continues to monitor these developments, and discuss IESO position and interest with OEB Staff.

**iv. Lennox Reliability Must-Run Agreement**

Ontario Power Generation ("OPG") filed an application dated September 22, 2005 with the OEB seeking approval of the reliability must-run contract ("RMR Contract") entered into with the IESO in relation to Lennox generating station ("Lennox"). The Application was made under section 5 of OPG's Licence, which requires that any reliability must-run contract be approved by the OEB prior to its implementation. The IESO intervened in the proceeding to assist with, and encourage OEB approval of the RMR Contract. On March 13, 2006, the OEB issued its decision and order approving the first RMR Contract.

The IESO conducted a preliminary technical assessment to ascertain the continued need for Lennox to maintain reliability of the IESO-control grid beyond October 2006. Assessment of the anticipated conditions in 2006 and 2007 revealed that, even with the new capacity due to the three proposed gas units at Goreway, conditions east of Toronto in general will be worse off in 2007 than 2006 due to forecasted load growth. On May 19, 2006, the IESO informed OPG that it has determined that deregistration of Lennox would put the IESO-controlled grid at undue risk—accordingly it intends to enter into negotiations with OPG for a new contract to ensure the continued operation of Lennox for a period of up to one year. OPG filed the Lennox RMR Contract on August 23, 2006 for the Board's review and approval, in accordance with the terms and conditions of its license. The application is currently under review by the OEB.

**v. Transmission Customer Connection Procedures**

The IESO's intervened in the OEB's proceeding to review and approve customer connection procedures for Hydro One and Great Lakes Power Ltd. (GLPL). The IESO intervention was with the aim of promoting development and administration of a standard process throughout the province, to the extent possible, to facilitate customer connection to the IESO-controlled grid. It was also to address a number of inconsistencies between the various transmitter customer connection processes and to ensure that the customer connection process integrates efficiently with the IESO's Connection Assessment and Approval process, and that the process is efficient and transparent.

Regulatory Affairs' group is also actively involved in or have participated in a number of regulatory proceedings and industry developments outside of Ontario, including:

**Development of Electric Reliability Organization**

In response to NERC's ERO petition to the OEB, the IESO supported NERC as the ERO for North America. NERC's application to the OEB recognizes the need for a MOU between Ontario and NERC. The OEB-NERC MOU defines the regulatory process surrounding NERC as the ERO and its respective authority in Ontario.

The IESO remained actively involved in coordinating with the OEB (which would hear appeals of ERO decisions sanctioning the IESO for any standards violations in Ontario) and the Ministry of Energy on NERC's application to the OEB and the subsequent OEB-NERC MOU. This MOU recognizes the importance of Ontario market participants and the IESO in the development and enforcement of NERC reliability standards. It also designates the IESO as the authority under the market rules to develop Ontario-specific reliability standards to supplement those of NERC and that the IESO will continue to be the sole entity in Ontario accountable to NERC for compliance with all NERC reliability standards. It also states the IESO will be subject to NERC's standards compliance monitoring and enforcement processes. The MOU also acknowledges that the IESO's role in the reliability standards compliance and enforcement process predates the establishment of NERC as the ERO. Additionally, in order to augment this MOU, the IESO has worked with NERC and NPCC to complete a second MOU that is complementary and consistent to the OEB-NERC MOU. In preparation for the joint MOU with NERC and OEB, the IESO completed its own extensive review of internal procedures and interactions with market participants on matters related to the ERO and in particular compliance. As a result of the completion of the Ontario MOUs, the Ministry of Energy have also recently recognized NERC as the ERO.

The IESO also held a one day workshop on June, 28 2006 on the development of the ERO, the effects the proposed changes will have on the industry as a whole and more specifically on Ontario. It was attended by speakers from the Ministry of Energy, OEB, NERC and NPCC as well as IESO management and staff. Over 50 market participants attended the workshop which was well received.

In addition, the IESO is in the process of developing a stakeholdering group (i.e., Reliability Standards Working Group) that will address issues related to developing and implementing NERC, NPCC and IESO reliability standards.

## **Federal Energy Regulatory Commission**

The IESO along with the CEA and ISO/RTO Council filed comments to FERC on the with respect to FERC's review of existing critical standards that deserved immediate attention and the development of a plan to address these standards.

The IESO took part in FERC's Reliability Standards Technical Conference on July 6, 2006 as one of 9 panelists and 1 of 2 Canadian representatives before FERC.

FERC released its reliability standard NOPR on October 20, 2006. Consistent with the position put forward by the IESO, FERC did not propose to remand any reliability standards. FERC is proposing that 83 standards become mandatory and enforceable in the U. S. upon the effective date of the final order coming into force. The IESO continues to monitor these developments and, where applicable, will participate in the ongoing review and consultation process.

## **Northeast Power Coordinating Council**

The IESO provided significant input into the development of the structure and responsibilities of NPCC Inc. and NPCC CBRE. The IESO anticipates further involvement in the establishment and development of NPCC CBRE processes and standards.

NPCC has also initiated development of a Regulatory-Government Affairs Group to consider issues as they materialize, including recommending next steps to the NPCC's Executive Council.

## **US Department Of Energy**

The IESO filed comments, in conjunction with the CEA, NPCC and the ISO/RTO Council regarding DOE's undertaking to identify and designate certain areas or assets as part of a National Interest Electric Transmission Corridor (NIETC). The IESO's interest and ensuing submission was to ensure that any provisions that are considered to address interstate transmission congestion will also take into account the international nature of the integrated transmission grid and the potential impacts on inter-jurisdictional reliability from future transmission reinforcements. The report did not identify any congestion areas in Ontario or on its borders with United States.

## **National Energy Board**

### **i. Energy Futures Report**

The NEB has embarked on development of the next Energy Futures Report, scheduled for release in October 2007 and the IESO's input and assistance will be required to enable NEB staff to conduct simulations of generation and transmission systems operation and expansion over the review period.

### **ii. Emergency Power and Energy Export Permit**

The IESO also filed an Application with the NEB for a new 10 year permit to export power and energy to the U.S. on an emergency basis as the previous permit was to expire July 9, 2006. On August 2, 2006, the NEB granted the IESO two permits to facilitate emergency exports to the U.S.; one each for firm power and energy and interruptible energy exports. By issuing 10 year permits for firm and interruptible exports, the NEB recognized that, under certain circumstance,

the IESO may need to curtail emergency exports to address a local reliability concern that might develop during the course of exporting to the U.S.

## II. MARKET AND SYSTEM OPERATION ACTIVITIES

### IESO Reliability Assurance

Reliability Assurance (RA) unit was created to address the strategic need to highlight the IESO contribution to reliability and to ensure that reliability is not jeopardized during this time of unprecedented change. The benefits realized by the realignment include the production of the Ontario Reliability Outlook (ORO) in conjunction with other business units and what the ORO has achieved in terms of public and Government attention on key reliability issues and concerns that the IESO needs others to take action on. Other benefits from RA are; reliability reports to the Board, internal and external project tracking, issue identification and management, coordination of activities between the OPA and the IESO, and the support of OPA procurement initiatives

Since its formation, the RA has had many successes. The first Ontario Reliability Outlook was published in February 2006 and highlighted a number of reliability issues that were subsequently addressed by the government and OPA. For example, the government directed the OPA to enter into a contract with the Portlands Energy Centre to address the immediate central Toronto needs. The ORO also highlighted the need for OPG to have provisions to keep the Lambton and Nanticoke units running beyond the announced shutdown dates. OPG put plans into place to effect the necessary fuel, staff and maintenance. The success of the first ORO set the scene for the government to accept the primary recommendation of the second ORO issue, in June 2006, namely that the present coal replacement plan was not tenable. As directed by the government RA participated in the OPA's development of a revised coal replacement plan, published in the November IPSP Discussion Paper #7 "Integrating the Elements – A Preliminary Plan". The publication of the revised plan demonstrated the over-arching priority given to reliability assurance. This was recognized not only by Ontarians but also by the neighbouring interconnected jurisdictions.

### Market Rule Amendments

Several market rule amendments were made throughout 2006 to address on-going changes in reliability requirements and to improve operational efficiency and stability of the IESO-controlled grid. The rule amendment process follows a rigorous change-control process including participant commentary and stakeholdering and co-ordinated system modifications where necessary. Details of these amendments can be found on the IESO's Website at:

<http://www.ieso.ca/imoweb/manuals/marketdocs.asp>

Notable amendments pertaining to reliability management include:

- i. **MR-00303-R00-R05: Day-Ahead Commitment Process – Data Submission** -This amendment specified the obligations, permissions, and authorities for the IESO and market participants regarding submission of generation facility registration data to support the day-ahead commitment process.
- ii. **MR-00304-R00: Day-Ahead Commitment Process – Pre-Dispatch Scheduling and Commitment** - This amendment specified the obligations, permissions, and authorities for the IESO and market participants necessary to implement the pre-dispatch scheduling and commitment component of the day-ahead commitment process.

- iii. **MR-00305-R00-R09: Day-Ahead Commitment Process – Reliability Guarantees -** The amendment specified the settlement activities for the determination of reliability guarantee payments and related settlement amounts for the day-ahead commitment process
- iv. **Impact Assessment for Day-Ahead Commitment Process Market Rule Amendments MR-00303, MR-00304, MR-00305, MR-00310 –** The amendments aligned the IESO's forecasting obligations under the market rules with the Electricity Act, 1998 by removing the obligations on the IESO to produce forecasts and assessments that cover a ten-year period. These amendments enabled the IESO to conduct reliability assessments of the IESO-controlled grid as required to ensure the reliable operation of the IESO controlled grid and clarifies the actions that may be required as a result of the IESO's reliability assessments.
- v. **MR-00316: Day-Ahead Commitment Process – Minimum Generation Block Run-Time -** The amendment defined a minimum generation block run-time for generation facilities. The definition is necessary to ensure that the IESO applies constraints to generation facilities during the day-ahead commitment process (DACP) that accurately reflect the capability of the facility.
- vi. **MR-00317: Day-Ahead Commitment Process – Prohibit Import Eligible for DA\_IOG to Be Part of a Linked Wheeling Through Transaction -** This amendment will ensure that a market participant who is eligible to receive a Day-Ahead Intertie Offer Guarantee (DA-IOG) for an import transaction would not be permitted to convert that day-ahead import transaction to a linked wheeling through transaction. It also obligates the IESO to not consider import offers associated with a linked wheeling through transaction when determining DACP pre-dispatch schedules. The changes were required to ensure that an import scheduled in the DACP and eligible for a DA-IOG will provide reliability benefits to Ontario (i.e., flow to meet the requirements of Ontario loads and not flow through Ontario to other markets).
- vii. **MR-00319: Real-Time Intertie transaction Failure Charge – Interim Reporting of RT\_IFC on Preliminary Settlement Statements -** This amendment requires that, until the IESO has the software capability to include real-time intertie transaction failure charges in the daily preliminary settlement statements, the IESO may include these charges in the preliminary settlement statement issued for the last trading day of a billing period. The amendment was needed to ensure that real-time intertie failure charge can be implemented at the same time as the day-ahead intertie failure charge associated with the DACP. The concurrent implementation of intertie transaction failure charges with the DACP will improve the effectiveness of the DACP in maintaining reliable operation of the IESO-controlled grid.
- viii. **MR-00284-R00-R02: Reliability Compliance - Include Reliability Impact as Criterion for Determining Financial Penalties -** This amendment identified more explicitly the consequences of non-compliance with reliability standards and the Ontario power system restoration plan, including the impact of a market rule breach on system reliability among the criteria for fixing the amount of a financial penalty.
- ix. **MR-00325-R00: IESO Procurement Markets - Duration of Contracted Ancillary Service Contracts -** The amendment extended the permitted term of contracted ancillary service contracts from 18 months to 36 months which will provide more opportunity for potential new contracted ancillary service providers to enter the procurement market and result in lower up-front costs associated with contracted ancillary service contracts.

## **Operating and Interconnection Agreements**

New joint operating instructions were implemented with Minnesota Power and the Midwest ISO. Existing joint operating instructions were revised with the New York ISO and Niagara Mohawk Power Corporation (National Grid US). Also, the Operating Agreement with Hydro One and the Interconnection Agreement with Minnesota Power were amended and restated.

The IESO and TransEnergie are in process of amending their Emergency Energy joint operating instruction (JOI) to the effect that the pricing of Emergency Energy will be the same (i.e. as established by the IESO and TransEnergie) irrespective of the supplier providing the energy. The new JOI is expected to be in effect before year end.

As part of the amending of the Interconnection Agreement with Minnesota Power, the Emergency Energy pricing (Schedule D) was revised to incorporate references to prices in the Midwest ISO and IESO markets.

## **Ancillary Services Contracts**

Notable activities relating to ancillary services agreement are as follows:

- The current eighteen month contract for Regulation/Automatic Generation Control (AGC) will expire in April 2007. A Request for Proposal (RFP) for procurement of regulation /AGC was issued in November 2006 with a closing date in January 2007. Negotiations with respondents are expected to be concluded well before April 2007.
- An RFP for procurement of Black Start service was closed in October 2006 to replace an expiring contract for this service in the Windsor / Sarnia area.
- Current Emergency Demand Response Program (EDRP) contracts will expire on April 30, 2007. The IESO Board approved the continuation of EDRP after that date. The IESO will continue to pursue the renewal of current EDRP contracts, and will seek new EDRP participants in early 2007.
- As mentioned earlier, a new RMR contract was negotiated with OPG for a term of twelve months. This was approved by the IESO Board and is now awaiting the OEB's review and approval.

## **Ontario Stakeholder Engagement**

Stakeholder consultation is a critical element of the IESO business processes. The IESO Board of Directors has established a Stakeholder Advisory Committee providing stakeholder representatives the opportunity to advise and make recommendations directly to the IESO Board of Directors and Executive on market development and planning decisions, or any other matter that may be of concern to stakeholders.

The stakeholder engagement process is designed to give participants and stakeholders alike an effective voice in the evolution of their market, particularly on commercial and reliability issues affecting them. Membership of the Advisory Committee is broadly reflective of stakeholder constituencies with a direct interest in IESO decisions. Members are appointed by the IESO Board of Directors from nominees submitted by each of the constituencies which are responsible for guiding the IESO. Notable stakeholdering processes that were initiated or ongoing in 2006 include:

**i. Plan Wind Power Integration in Ontario**

As a result of a number of initiatives to increase renewable energy generation supply in the province, particularly wind power generation, the IESO has initiated a stakeholder consultation process to discuss and address the challenges faced by wind power project proponents in connecting and participating in the IESO-administered markets.

**ii. Location Pricing**

The IESO have undertaken this initiative to examine the implications on stakeholders and market efficiency of changing how Ontario's real-time electricity price is calculated, by making the calculation better reflect the impacts of the transmission system. The IESO will address pricing model options beginning with a pricing study that examines the various forms of locational pricing that are used across the industry. This study is being conducted at this time for the following reasons:

- stakeholder interest;
- increasing congestion management settlement credit complexities;
- a recommendation in the latest market surveillance panel report to introduce locational pricing; and
- to address pricing issues relating how day-ahead market prices will be calculated.

The study results will be taken into consideration in design of the day-ahead market.

**iii. Day-Ahead Market Evolution**

The purpose of this initiative is solicit stakeholders inputs with respect to their interests and priorities in evolving the electricity market as it relates to day-ahead mechanisms. The design of the DAM that will be recommended to the IESO Board hinges on successful resolution of several key issues and decisions.

**iii. Ontario Natural Gas-Electric Interface Review Working Group**

The Ontario Gas Electric Interface Working Group was formed to consider discuss and address electricity/gas interface that are outside the scope of the issues being considered in respect of the OEB's consultation processes and proceedings. Initial participants in the Ontario Gas Electric Interface Working Group included the IESO and the three Interconnected Gas Pipeline Operators (Enbridge, TransCanada Pipelines, and Union Gas). The OEB were added as an observer to facilitate as noted above. The working group has three objectives:

- The creation of a coordination process between the IESO and the Interconnected Gas Pipeline Operators including the identification of any needed reliability studies and contingency analyses.
- The sharing of information about how the industries operate.
- Ensuring that the development of a day-ahead electricity market takes natural gas industry capabilities and issues into consideration.

This Working Group is developing a communications procedure between the IESO and the Interconnected Gas Pipeline Operators. The procedure is meant to ensure that neither infrastructure is put at risk by the other's operations either in real-time or during planning. Furthermore, the Working Group was charged with examining possible gas/electric reliability studies and contingency analyses. A document is under development that will detail a framework for conducting such studies.

## **Market Evolution Activities**

The IESO has been working to ensure that the electricity market evolves in a manner that encourages reliable supply and improved economic efficiency, and is consistent with a long-term vision that is supported by stakeholders. In 2006, the IESO responded to a variety of operational and stakeholder concerns by placing its highest priority on resolving immediate reliability-based market issues before proceeding with significant market evolution programs.

Consequently, the first half of 2006 was focused on the implementation of the DACP, Day-ahead and Real-time Intertie Failure Charges and the development and implementation of the ELRP, both by the summer of 2006.

These initiatives contributed favourably to the reliable operation of Ontario's power system during the record setting days of late July and early August. Overall, these initiatives resulted in greater certainty of generator availability, fewer transaction failures and additional flexibility for the IESO in managing the reliability of the system.

### **i. Day-Ahead Commitment Process**

The DACP was introduced to commit internal resources and import transactions in advance of real-time in an effort to reduce transaction failures and provide certainty for internal and import resources. For the forecasted peak hour on August 1, the IESO economically committed 98.6 percent of its internal resources one day in advance. Although actual peak demand was approximately 700 megawatts (MW) heavier than forecast, the market responded by economically scheduling additional imports to compensate for the difference.

Last summer, prior to the implementation of the DACP, the import transaction failure rate during the peak demand week was much greater. For example, during the week of July 11 to July 15, 2005, the failure rate was 14 percent. During this year's peak week of July 28 to August 3, only three of 218 import transactions scheduled in the DACP failed, resulting in a 1.4 percent failure rate based on failed MW. In addition, the in November 2006 the IESO Board approved continuation of the DACP until such time as another program is implemented that provides at least equivalent reliability benefits.

### **ii. Day-ahead and Real-time Intertie Failure Charges**

Even though there were fewer import transactions scheduled in 2006 due to an improved internal resource availability including additional installed capacity, the reduction in failures during the peak demand periods illustrates the effectiveness of the implementation of the intertie transactions failure charges. For example, by comparing all intertie transactions for the peak periods (hour ending 15 to 19) from July 11 to July 18, 2005, and July 28 to August 3, 2006 a 1.5 percent decrease of failed MW from 5.6% to 4.1% has been observed.

### **iii. Emergency Load Reduction Program**

ELRP is an IESO initiative that creates incentives for electricity consumers to help address the reliability needs of the province. Currently, there are 11 participants offering a total of 318 MW. ELRP is intended to be an ongoing feature of the IESO-administered market.

The focus of the IESO's market evolution efforts has shifted to developing the necessary market conditions that could facilitate a liquid, competitive electricity market that provides the necessary signals for future investments.

- At their July, 2006 meeting, the Stakeholder Advisory Committee to the IESO Board unanimously passed a resolution requesting the IESO to conduct a review of Location-based Marginal Pricing (LMP). An initial review began in September, 2006.
- The IESO has issued a draft stakeholder engagement plan regarding the day ahead market. This plan will lay out the timeline for discussions with stakeholders to create a Day-ahead market design. Although the design of the DAM is unknown at this time, one key design objective will be to provide enhanced reliability benefits compared to the existing DACP.

In all cases, progress on real-time market issues will be consistent with Government and stakeholder goals for the evolution of Ontario's hybrid market in an efficient, viable and integrated transition.

Previous evolutionary market enhancements continued throughout 2006 under the following programs:

- **Spare Generation On-Line (SGOL)<sup>7</sup>** – The SGOL program continues to contribute to improved reliability of the IESO-controlled grid by providing an incentive and mechanism for available spare generation to be on-line in shoulder periods. This additional generation helps eliminate temporary shortages of supply. Currently, 32 generation units are actively participating in this program.
- **Transitional Demand Response Program (TDRP)** – TDRP began in the spring of 2005 with 14 participants offering a total of 67 MW. The TDRP was designed to provide economic assistance to consumers to help them overcome specifically identified barriers that prevent them from responding to wholesale electricity market price signals. The expectation is that the measures taken by consumers under the program will enable them to continue to provide demand response after the conclusion of the program in May 2007. Information on TDRP can be found on the IESO website at: <http://www.ieso.ca/imoweb/consult/econDRPP.asp>
- **The Emergency Demand Response Program (EDRP)** – EDRP continues to be used to mitigate the adverse impact of shortages when all commercial mechanisms in the market have been exhausted. The IESO is currently renegotiating EDRP contracts with nine market participants totalling about 208 MW. Exhaustive information and program details, on the EDRP program, can be found on the IESO website at: [http://www.ieso.ca/imoweb/consult/consult\\_EDRP.asp](http://www.ieso.ca/imoweb/consult/consult_EDRP.asp)

### III. RELIABILITY STANDARDS, PERFORMANCE AND COMPLIANCE

#### New or Revised Reliability Standards and Measures

Since market opening, reliability standards have been mandatory and enforced through the Ontario Market Rules which governs the operation of the IESO-controlled grid and bulk electric system. The IESO oversees reliability of the system through the enforcement of the market rules and standards established by standards authorities including the NPCC, NERC and the IESO. Also, the IESO is an active member, as well as participates in various NERC, NPCC and

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<sup>7</sup> The objective of SGOL program is to increase the amount of spare generation being available during off-peak and shoulder periods, such as spring and fall. As a result, price volatility is reduced, and the reliability of the IESO-controlled grid is strengthened.

ECAR committees, task forces, subcommittees and working groups. A summary of these activities are attached as Appendix A.

The power system collapse of August 14, 2003, which resulted in the loss of supply to 50 million customers in USA and Canada, initiated a far-reaching transformation of the industry and the ultimate passage of the 2005 US Energy Policy Act. As discussed earlier, the electricity industry transformation continued in 2006 at a rapid pace and to-date, has resulted in the issuance of the FERC Rule 672 (i.e., certification of NERC as the ERO for the US and the issuance of the FERC Notice of Proposed Rule (NOPR) on reliability standards). This has moved the industry much closer to mandatory and enforceable standards throughout North-America, an outcome which is expected to occur for mid 2007.

With the certification of NERC as the ERO in the US and comparable recognition and approvals from government authorities in Canada, NERC has taken several steps to meet the requirements of the reliability legislation through subsequent compliance filings that involved substantial stakeholder input including that of the IESO.

All existing NERC standards have undergone rigorous scrutiny by FERC staff with a subsequent stakeholdering by the industry as a whole of the FERC staff report. This further enhances and strengthens existing reliability standards for approval by FERC and the Canadian governmental authorities under the new ERO framework.

Each of the NERC standards is at various stages of acceptability by FERC with the expectation that they will continue to evolve over the next 3 years to meet the new tests of acceptability based on the recently published NERC work plan proposal.

The IESO remained actively engaged and played a leading role through participation in the ISO/RTO Council Committees and NPCC's reliability standards working group CP9 during the various phases of the standards development process (i.e., from conceptual development to implementation). In addition, the IESO is the sole Canadian organization represented on NERC's Functional Model Working Group, the group that manages NERC's Reliability Functional Model. The model defines the tasks of the "responsible entities", the classes of organizations that are specified in NERC's reliability standards. The model is a key element of the standards accountability framework and serves as a reference for teams developing new standards.

A summary of specific IESO-standard related activities and submissions are available on the IESO's public website at:

[http://www.ieso.ca/imoweb/ircp/Emerging\\_Reliability\\_Standards.asp](http://www.ieso.ca/imoweb/ircp/Emerging_Reliability_Standards.asp).

## **Reliability Performance**

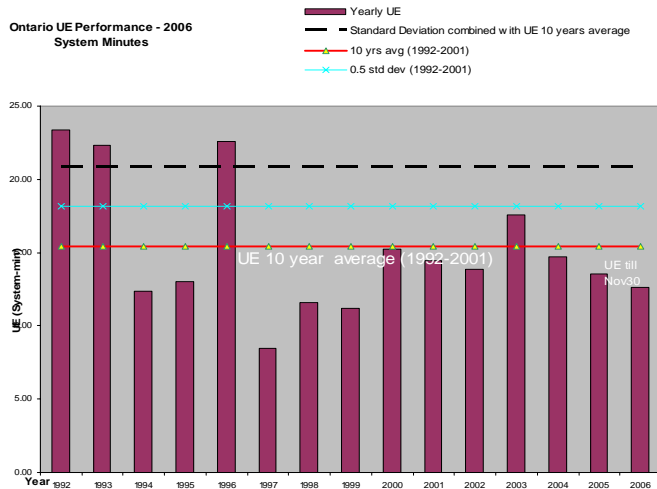
Various measures and initiatives are used to measure the overall performance of the IESO and market participants with respect to reliability performance, as well as capability to address contingencies, including:

### **i. Unsupplied Energy**

One indicator of the reliability of supply is the amount of load that is interrupted (i.e., annual unsupplied energy). In this regard, the IESO examines the aggregate performance of the IESO-controlled grid with respect to unsupplied energy on an overall system basis, as well as within 34 defined subsystems or local areas. Unsupplied energy can be affected by a large number of

factors including actions taken or not taken by the IESO and market participants in accordance with their market rule obligations. A significant increase in unsupplied energy would prompt the IESO to trigger a review with market participants to ascertain whether the causes were preventable through combined or unilateral actions or investment.

Our analysis has shown that, for the period between January 1, 2006 to November 30, 2006, overall system unsupplied energy is below the ten year UE-average, as well as within the industry average, based on standard deviation from the 10 year average.



These results depict the capability of IESO and the market participants in managing system reliability as well as demonstrate the adequacy of actions taken by the IESO and the market participants towards ensuring and maintaining the system reliability.

## ii. NERC Readiness Audit

There were several audits of IESO systems and processes in 2006 but notable was the NERC Readiness Audit which took place between October 16 and 19. The audit team comprised of members from NERC, NPCC as the Regional Reliability Organization (RRO), and neighboring control areas, transmission operators, ISOs including the New York ISO, Midwest ISO, and transmitters including Hydro-Quebec, and Michigan’s METC.

The Readiness Audit Program independently reviews the operations of all Reliability Coordinators, Balancing Authorities, Transmission Operators, and other entities that support the reliable operation of the bulk power system in North America, and determines their readiness to maintain safe and reliable operations. The audits identify areas of excellence in operations and areas in need of improvement. The readiness audits, which are conducted on a three-year cycle, are separate from NERC compliance audits, which measure compliance with NERC reliability standards.

The NERC Readiness Audit Team found the IESO Reliability Coordinator/Balancing Authority/Transmission Operator to have the necessary systems, tools, processes and personnel to operate its area. The audit identified three potential examples of excellence including the gas-electric interdependency assessment, the cooperative education program with universities and colleges, and the Ontario Reliability Outlook (ORO) and 18-Month Outlook, which the Audit Team called “model documents for presenting reliability assessments.”

The Audit Team gave positive marks to the IESO extensive use of co-op students to attract new employees, which is providing an opportunity for the IESO to evaluate potential employees and ensure potential new staff are in the queue to replace those retiring. The Audit Team also noted that the Reliability Outlook documents were “well written public assessment documents supported by thorough planning analysis.”

The audit also provided recommendations for the IESO including a need to improve communications with neighbouring jurisdictions, need to continue with the update of the operator phone system, and provide full system simulation training for operators. The IESO is taking the necessary measures to make further improvements in this regard.

### **iii. Emergency Preparedness**

Participation in Ontario's electricity market requires all Market Participants to prepare emergency plans describing how they will respond to emergencies affecting the supply or delivery of electricity. Chapter 5, Section 11 of the Market Rules describes the planning requirements for emergency preparedness and system restoration. Certain Market Participants who are directly-connected to the IESO-controlled grid and support the grid restoration process must prepare and submit attachments to the IESO identifying how they support the Ontario Power System Restoration Plan. The IESO has been directed by the Ministry of Energy to assist in the preparation of these emergency plans by coordinating efforts among Market Participants. To accomplish this, the stakeholder-represented Emergency Preparedness Task Force (EPTF), chaired by the IESO's Chief Operating Officer, was established in November 1998 to direct and oversee these efforts.

In order to demonstrate the response capability of the IESO and Market Participants, four reliability training and restoration drill workshops involving almost 300 individuals from 54 different organizations were conducted across Ontario during 2006. All the training and workshop objectives were met and these training sessions were considered a success by those who participated. Additional site-specific meetings were also conducted in order to address the specific issues of applicable market participants. Other notable activities and coordination regarding emergency preparedness matters include:

- Emergency preparedness obligations of market participants reinforced by implementing self-certification process as part of IESO Reliability Compliance Program.
- In collaboration with Bruce Power, Hydro One, Ontario Power Generation and health authorities, the IESO developed a Pandemic Continuity of Operations Planning Guide for use by market participants.
- Market participants are being asked to consider the pandemic influenza threat as part of their plans.
- Coordination of Critical Infrastructure Protection initiatives in Ontario, across Canada and with NERC:
  - Continuing active participation with the CEA's CIP Working Group and NERC CIP Committee
  - IESO staff continues to serve as Chair of NERC's Critical Infrastructure Protection Committee as well as Chair of the U.S. Partnership for Critical Infrastructure Security (PCIS), which represents all critical infrastructures and is recognized by the Department of Homeland Security (DHS) in their partnership framework.
- Role of IESO-led Crisis Management Support Team continues to be acknowledged by the Ministry of Energy and Emergency Management Ontario as an effective mechanism to share information during the record demand setting days of summer and receives frequent mention as a best practice at industry conferences.

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

#### **iv. Compliance with Market Rules**

Ensuring compliance with the market rules is key to the operation of a competitive and reliable electricity market. In order to promote understanding of and compliance with the market rules, the IESO continues to work with market participants to educate them about the application of the market rules and to clarify specific issues.

A total of 39 NERC/NPCC related reliability standards were actively monitored for compliance by the IESO in 2006. Five of these are on a 48 hour exception reporting basis with monthly confirmation of compliance and three (3) are assessed on a monthly basis. Of the 39 standards (and 68 assessments to date), the IESO and participants were fully compliant with all standards with the exception of two.

NPCC's key facilities and critical component testing requirements<sup>8</sup> continues to be a challenge for a transmitter to achieve full compliance. In addition, fulfilling the requirements of NPCC's bulk power system minimum maintenance requirements was an additional challenge for a transmitter and two generators largely due to labor disputes in 2005.

The reliability standards compliance performance for 2006 has achieved a 97.06 percent success factor to-date and continues to demonstrate the IESO's efforts and achievements towards ensuring and maintaining the reliable operation of the Ontario electricity market and bulk electric system. It also demonstrates the strict adherence to reliability standards and practices established by the standards authorities including [NERC](#), [NPCC](#) and the IESO. The details of the IESO's reliability compliance program can be found at <http://www.ieso.ca/imoweb/ircp/reliabilityStandards.asp>.

#### **v. Corporate Reliability Performance Measures**

Maintaining reliability and operating a market is complex and multi-faceted. In its day-to-day operations, the IESO must attempt to satisfy the expectations of different constituencies of customers and stakeholders, each with diverse, and sometimes conflicting, interests.

With this in mind, the IESO stakeholdered and re-developed its corporate measures to align with the opening of the electricity market in 2002, focusing on a "balanced scorecard" approach. This approach, which continues as the basis for driving performance in 2006, considers four perspectives that yield feedback around both internal business processes and external outcomes in order to continuously improve strategic performance and results.

- Financial - Effective Use of Funds
- Evolution and Growth - Market Evolution
- Customer - Customers and Stakeholders
- Business Processes - Operational Effectiveness

The IESO's reliability related operational business processes that impact participants and stakeholders must be effective and based on accepted standards of performance. In order to meet this objective, the IESO measures its results against established NERC and NPCC

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<sup>8</sup> Key facilities and critical component testing requirement continues as an NPCC Reliability Assessment Program (NRAP) requirement with monitoring of Area compliance only. Full enforcement at NPCC Inc. is now not envisioned until 2008, with the focus in 2007 on the NPCC CBRE.

reliability standards. In addition, the IESO factors into its performance expectations the results of an annual peer review conducted by other independent system operators based on this report.

For 2006, IESO corporate objectives were considered in developing performance measures and targets. These objectives were:

- Ontario's integrated electricity system is operated reliably.
- The IESO manages the wholesale electricity market to promote an efficient allocation of resources.
- Customers and stakeholders are confident in the IESO's handling of its critical roles of managing system and market operations.
- In concert with other key entities including the Ontario Power Authority and the Ontario Energy Board, the IESO advances an efficient, reliable and competitive electricity sector for the benefit of all Ontarians.
- The IESO provides products and services today and in the future that are valued by market participants and others.
- The IESO's assets and resources are effective in supporting the IESO in meeting its commitments now and in the future.

Based on stakeholdering done with the IESO's Stakeholder Advisory Committee (SAC) during 2005 and using a public web-based stakeholder engagement (SE-12), along with an assessment of our experience with the 2005 performance measures, the IESO proposed retaining the overall performance format, while incorporating the following changes for 2006:

- changing the high-level corporate measures to increase clarity and identify priorities for the effective use of funds, market evolution, customer and stakeholder initiatives, and reliability and operational effectiveness improvements.
- recognizing the maturing of IESO customer-facing operational processes, two operational measures that were eliminated, as they were assessed as being redundant:
  - meter trouble reports issued to meter service providers
  - outage request processing accuracy.

The assessment of the IESO's overall performance relative to reliability-related measures, among other things, is available at the following link:

<http://www.ieso.ca/imoweb/corp/corppperformance.asp>

December 21, 2006

## APPENDIX A

### Participation and Membership in NERC, NPCC and ECAR Committees Task Forces, Subcommittees and Working Groups

#### **NERC Critical Infrastructure Protection Committee (CIPC)**

- CIPC coordinates NERC's security initiatives. The group is comprised of industry experts in the areas of cyber security, physical security, and operational security. CIPC reports to NERC's Board of Trustees.

#### **NERC Operating Committee**

- The Operating Committee supports the NERC reliability mission by executing the policies, directives, and assignments of the Board of Trustees, and advising the Board on operating reliability matters. The Operating Committee also maintains a work plan that prioritizes the existing and future work of the committee and its subgroups consistent with the business and strategic plans of NERC.

#### **NERC OLDTF (Operating Limits Definition Task Force)**

- This Task Force created by the NERC OC (Operating Committee) is charged with reviewing the definition of operating security limits as referenced in NERC standards to ensure a consistent understanding and implementation throughout the NERC regions.

#### **NERC Standards Drafting Team (Coordinate Operations)**

- This team is responsible for development of version 1 standards for the coordination of operations between reliability authorities.

#### **NERC Standards Drafting Team (Coordinate Interchange)**

- This team is responsible for development of version 1 standards for the coordination of interchange between balancing authorities.

#### **NERC ORS (Operating Reliability Subcommittee)**

- The ORS develops, maintain, and oversees the implementation of polices and Standards related to Reliability Coordinator operations in support of market and interconnection operating reliability objectives. Reporting to the NERC Operating Committee the ORS is responsible for NERC standards related to transmission, emergency operation, reliability coordination and event reporting.

#### **NERC PS (Personnel Subcommittee)**

- This group is responsible for NERC based System Operator training and certifications. In carry out these tasks the PS recommends and facilities training materials, promotes information sharing, reviews relevant polices and serves as the interim governance body for the certification program.

#### **NERC RCWG (Reliability Coordinating Working Group)**

- Provide a forum for coordinating system operating procedures in the interconnections including: coordinating policy implementation, preparations for the upcoming peak season, reviewing system disturbances and transaction curtailments for "lessons learned" and compliance with policies and providing advice to the ORS.

### **NERC IDCWG (Interchange Distribution Calculator)**

- This group, reporting to the ORS, is responsible for implementing NERC's Interchange Distribution Calculator (which is used to equably manage transmission congestion) and other tools used by the NERC Reliability Coordinators.

### **NERC MMWG (Multiregional Modeling Working Group)**

- This working group coordinates the development of designated power flow base case models, which realistically simulate bulk electric system behaviour.

### **NERC Functional Model Working Group**

- This group developed and maintains the NERC Reliability Functional Model

### **NPCC Executive Committee**

- This Board level committee provides board level policy direction and development consistent with the roles and responsibilities contained in the NPCC Membership Agreement.

### **NPCC Reliability Coordinating Committee**

- This lead committee provides the technical forum and direction for the various Task forces regarding bulk power system reliability.

### **NPCC TFCO (Task Force on Coordination of Operation)**

- This task force promotes, and provides a forum for, the active coordination of security and operation among the NPCC control areas and Regions to enhance the reliability of the interconnected bulk power system.

### **NPCC Task Force on Coordination of Planning**

- This task force coordinates reliability through the coordination of regional planning processes and activities.

### **NPCC Task Force on System Studies**

- This task force coordinates system studies of the reliability of the interconnected bulk power system. The IESO participates on this through the SS-37 and SS-38 working groups.
  - **SS-37 Working Group:** This working group develops a library of solved load flow cases and associated dynamic data for use by the member companies and regional / inter-regional study groups in planning and evaluating future systems and current operating conditions.
  - **SS-38 Working Group:** This working group analyzes dynamic phenomena which may affect interconnected system reliability, especially in the area of low frequency oscillations (LFO).

### **NPCC Task Force on Infrastructure Security and Technology**

- This task force promotes and enhances the reliability of the Interconnected Power System in Northeastern North America by focusing attention on the performance of Electric System Monitoring and Control Computers and the Telecommunications Systems that serve and interconnect them.

### **NPCC Compliance Monitoring and Assessment Subcommittee**

- This subcommittee performs independent monitoring and assessment of compliance with reliability criteria.

### **NPCC Summer Assessment Working Group**

- This working group reports to TFCO and performs pre summer assessment work.

### **NPCC CO1 (Working Group on Control Performance)**

- This working group monitors, evaluates the performance of automatic controls and procedures for controlling interchange between NPCC control areas, time errors, system frequency and operating reserve response.

### **NPCC CO2 (Working Group on Dispatcher Training)**

- This working group is responsible for System Operator Training relating to inter-area matters, established criteria, terminology, policies and operating instructions by preparing and presenting material at the bi-annual training seminars. These staff also exchange information on internal training methods and evaluates and proposes new techniques and training aids as they become available.

### **NPCC CO7 (Working Group on Operational Review, Coordination and Assessment)**

- The objective of CO-7 working group is to assess, coordinate and evaluate regional operational issues and reliability concerns to achieve conformance with the criteria, and procedures of the Northeast Power Coordinating Council (NPCC) and the North American Electric Reliability Council (NERC) Standards.

### **NPCC CO8**

- This working group is responsible for providing a forum for the System Operations managers of the regions control centers to identify and discuss reliability concerns in the operation of the interconnection (with specific reference to inter regional operations).

### **NPCC CP8**

- The objective of this working group is to review resource and transmission adequacy by considering interconnections with neighboring systems in reliability evaluations.

### **NPCC CP9**

- This working group provides consensus in NPCC on emerging standards.

### **NPCC CP11**

- This working group performs comprehensive reviews of the NPCC Basic Criteria.

### **NPCC CO10 (System Operational Tools Working Group)**

- This working group is responsible for taking a lead role in the development of NPCC and NERC operational tools, including hardware, software and integrated systems. The group will define the need for operational tools, evaluate the cost benefits of operational tools, coordinate their implementation within NPCC and coordinate common training in the use of the tools.

### **NPCC Working Group CO11 (NPCC Inter-Control Area Restoration Coordination Working Group)**

- The objective of the Inter-Control Area Restoration Coordination Working Group (IRCWG) is to achieve effective and coordinated power system restoration among the NPCC Control Areas and with adjacent jurisdictions.

### **NPCC Working Group CO12 (Operations Planning)**

- The objective of this working group is to ensure sufficient resources in the event of extreme operating conditions; the Operations Planning Working Group will conduct overall assessments of the reliability of the generation and transmission system in the NPCC Region.

**NPCC CO13**

- This working group reviews and monitors procedures for determining Available Transfer Capability.