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## IESO SENIOR MANAGEMENT UPDATE

To: Stakeholder Advisory Committee

Date: June 3, 2009

Subject: **Embedded and Renewable Generation (SE-57)**

Information Item

### Background

The IESO continues to have discussions with stakeholders on the integration of embedded and renewable generation into the reliable operation of the grid. The IESO's intent is to maximize this integration with the most cost-effective solutions, providing value-added benefit to the electricity customers of Ontario. The scope of this initiative includes:

#### a) **Forecasting**

The introduction of improved forecasting methodologies which will be required to accommodate increased levels of renewable resources.

#### b) **Minimum Load Management**

The development of a policy to successfully manage the growing number of renewable resources and determine the dispatch actions during periods of low demand periods.

#### c) **Development of Standards**

The creation of reliability standards specific to renewable resources as necessary that can enable maximum amount of penetration within specific regions and the province as a whole.

#### d) **Telemetry & Visibility**

The determination and development of two way information sharing protocols for operational data between the IESO, proponents, transmitters and LDCs, where appropriate.

### **Forecasting**

We will be advising stakeholders of our position that Ontario will benefit from centralized renewable generation forecasting services and be discussing implementation options. The primary focus will be on forecasting wind generation, but the IESO will also consider the implementation of solar generation forecasting. Centralized forecasting – at least in the context of wind – is now broadly accepted within North America as best practices and most ISO's have either adopted, or are in the process of adopting, centralized renewable forecasting services. A recent report released by NERC's Integration of Variable Generation Task Force found forecasting of variable generation to be "critical to bulk power system reliability". In addition to reliability benefits, reducing forecast errors from variable resources is expected to provide greater price predictability that will result in efficiencies to unit commitment and to intertie transaction scheduling.

### **Minimum Load Management**

With growing amounts of new baseload generation coming online in next few years and its impact on the IESO's ability to manoeuvre units, the IESO will be exploring options to effectively manage the existing and new resource mix during provincial and regional minimum load periods. The discussions will include factors that impact areas such as reliability, environmental and the market.

The outcome will recommend the order in which generation resources may be dispatched to manage minimum load periods without compromising the reliability of generators or supply to Ontario consumers.

### **Development of Standards**

The IESO is currently developing standards related to the IESO's resource operability assessment. Resource operability is a measure of whether the forecasted resource mix can be reasonably coordinated, through unit commitment decisions and real-time dispatch, to closely follow the varying load profile while maintaining all operating standards.

The standards would serve to validate long term plans of Ontario's forecasted resource mix. Furthermore, it allows the IESO to gauge the effectiveness of existing procedures, actions and market mechanisms, as well as highlighting any modifications required to either the IESO's existing response options or the proposed resource mix plan to ensure reliable operability.

The industry is expected to create these standards. Where possible, the IESO will leverage off of these standards however there may be circumstances where the IESO will be required to create unique standards. These standards will focus on the combination of the criteria, requirements and assumptions used by the IESO during its assessment of the Ontario Power Authority's Integrated Power System Plan and the recommendations from

the NERC Report “Accommodating High Levels of Variable Generation”. The criteria would include but not limited to assessing operational factors such as:

1. Load Following Capability

Load following analysis measures the aggregate ramp depth available from the dispatchable portion of the supply mix and its ability to shadow demand variations through high and low demand conditions.

2. Surplus Baseload Generation (SBG)/ Management of Minimum Load Management

SBG analysis involves evaluating available options to effectively manage surplus supply.

3. Verification of Sufficient Generation Capacity

Sufficient generation verification is focussed on ensuring that the forecasted resource mix is able to satisfy Reliability Requirement from Standard Authorities.

For each criterion, the standards will include a definition of each factor being assessed and define its purpose. The standards will also describe the procedure used in the ongoing resource mix assessment and any remedies that could be applied against any encountered shortfall.

### **Telemetry & Visibility**

With the Green Energy Act and open feed in tariffs (FiT) the resource mix is expected to change drastically from the historical norm. Significant increases in new technologies will require a re-evaluation of existing operational methodologies. Visibility and an understanding of a resources operation will be paramount to the reliable control of transmission and distribution systems. Understanding the current and predicted outputs and capabilities of embedded and directly connected resources will be critical to both the system and distribution operators. The IESO and LDCs are working together to ensure that the telemetry and visibility is available and shared between entities in the most cost effective way minimizing the impacts on proponents.

### **Next Steps**

The IESO will be meeting with stakeholders on June 16<sup>th</sup>. The goal of the meeting is to provide the stakeholders with an update on the IESO’s direction of centralized renewable forecasting and obtain feedback on minimum load management proposals and standards development.