PROCEDURE

Independent Electricity System Operator

Market Manual 7: System Operations

Part 7.2: Near-Term Assessments and Reports

Issue 35.0

This procedure describes the process by which the IESO undertakes short-term weekly and daily forecasts and assessments of expected system conditions on the IESO-controlled grid.

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This *market manual* may contain a summary of a particular *market rule*. Where provided, the summary has been used because of the length of the *market rule* itself. The reader should be aware, however, that where a *market rule* is applicable, the obligation that needs to be met is as stated in the "Market Rules". To the extent of any discrepancy or inconsistency between the provisions of a particular *market rule* and the summary, the provision of the *market rule* shall govern.

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Reference (Section and Paragraph)	Description of Change
Section 1.2.4	Added bullet to the list of items defined as material changes (an external jurisdiction making a reliability declaration calling upon Ontario capacity for firm energy exports).

Market Manuals

The *Market Manuals* consolidate the market procedures and associated forms, standards, and policies that define certain elements relating to the *operation* of the *IESO-administered markets*. Market procedures provide more detailed descriptions of the requirements for various activities than is specified in the "Market Rules". Where there is a discrepancy between the requirements in a document within a *market manual* and the *market rules*, the "Market Rules" shall prevail. Standards and policies appended to, or referenced in, these procedures provide a supporting framework.

Market Procedures

The "System Operations Manual" is Volume 7 of the *market manuals*, where this document forms "Part 7.2: Near-Term Assessments and Reports".

A list of the other component parts of the "System Operations Manual" is provided in "Part 7.0: System Operations Overview", in section 2, "About This Manual".

Structure of Market Procedures

Each market procedure is composed of the following sections:

1. **"Introduction"**, which contains general information about the procedure, including an overview, a description of the purpose and scope of the procedure, and information about roles and responsibilities of the parties involved in the procedure.
2. **"Procedural Work Flow"**, which contains a graphical representation of the steps and flow of information within the procedure.
3. **"Procedural Steps"**, which contains a table that describes each step and provides other details related to each step.
4. **"Appendices"**, which may include such items as standards, policies, agreements and list of forms.

Conventions

The *market manual* standard conventions are as defined in the "Market Manual Overview" document.

Bold font is used for emphasis.

"We", "us" and "our" refer to the *IESO*. "You" and "your" refer to *market participant(s)*.

– End of Section –

1. Introduction

1.1 Purpose

The *market rules* describe long-term (18-month) forecasts and assessments as well as near-term weekly (3 and 4 weeks out) and daily (up to 14 days out) forecasts and assessments (C. 5, S.7.1.1 of the *market rules*). The *market rules* also require us to produce System Status Reports at specific times and under certain conditions. We inform *market participants* of expected conditions on the *IESO-controlled grid* and in the *IESO-administered markets* over the next month through:

- Weekly *Security* and *Adequacy* (SAA) Reports for the period that is 3- and 4-weeks out,
- Daily SAA Reports for the period that is 3-14 days out, and
- System Status Reports for the period that is 0-2 days out.

This information should help you to make appropriate operational decisions.

Each business day, we also prepare a Surplus Baseload Generation (SBG) report that spans the period from tomorrow to about 30 days out. The SBG Report identifies those times when we expect that most if not all of Ontario's generation will be supplied by non-carbon sources. This will allow you to assess the impact upon the *IESO-controlled grid* and in the *IESO-administered markets* when these conditions are expected to be present.

This manual details the preparation and publication of the Weekly *Security* and *Adequacy* Assessment (SAA) Report, the Daily *Security* and *Adequacy* Assessment Report and the System Status Report. It also describes the process of preparing and publishing the SBG report. The procedures for the long-term forecasts and assessments are described in "Market Manual 2: Market Administration"[1].

1.2 *Security* and *Adequacy* Assessment Reports and the SSR

We regularly produce three near-term reports that present information relating to *IESO-controlled grid security* and *adequacy*:

- the System Status Report (SSR),
- the Daily SAA Report, and
- the Weekly SAA Report.

[1] The relevant parts of "Market Manual 2: Market Administration" are:
- "Part 2.8: Reliability Assessments Information Requirements,", and
- "Part 2.11: 18-Month Outlook and Related Information Requirements".

The SSR covers days 0-2[2] while the Daily SAA Report covers days 3-14 – both reports have an hourly granularity. The SSR and the Daily SAA Report contain the same content except that the SSR also includes:

- System Advisories, and
- *intermittent generator* forecasts *and self-scheduling* and *transitional scheduling generator* schedules.

Each day, we *publish* a Daily SAA Report that includes a new day 14 (i.e. yesterday's 'day 15' that was part of the Weekly SAA Report). Each day, we *publish* a SSR with a new day 2 (i.e. yesterday's 'day 3' that was part of the Daily SAA report). At any time, we will update the SSR and/or Daily SAA for any hour for which there has been a material change (C. 7, S.12.1.1.4 of the *market rules*).

The Weekly SAA Report covers the days beyond the Daily SAA Report period – that is, day 15 and out. The Weekly SAA is published on Monday and Thursday (or the next business day when either day is a holiday) – every Monday we publish the Weekly SAA with the demand forecasts for a new Week 4, and we publish the assessment for that new week on Thursday[3]. At any time, we will update the Weekly SAA Report for any day for which there has been a material change.

1.2.1 Market Participant Requirements to Submit Data

We need inputs from you to produce the daily assessments (C. 5, S.7.1.5 of the *market rules*). Each Tuesday, *market participants* that operate *energy*-limited *generators* are required to provide us with a pre-schedule of these resources for each day of the week for the week that is 4 weeks out [4]. The pre-schedule defines the daily *energy* content of the specific resource (i.e. a generating unit, or generating units when units have been aggregated) and the capacity of the resource. You need to update the *energy*-limited resource information any time there is material change.

1.2.2 Producing and *Publishing* the Weekly SAA Report

Every Thursday by 17:00 EST, we prepare and *publish* an assessment for each day of a week that is 4 weeks beyond the current *dispatch* week (C.5, S 7.1.1, of the *market rules*). In advance of this time, the following events occur:

- every Monday ,we *publish* the *demand* forecast by 17:00 EST, with hourly granularity, for each day of the new Week 4, and
- every Tuesday, you provide pre-schedules for *energy* limited resources for each day of Week 4 by 17:00 EST using IMO-FORM-1385 ("Energy Limited Data").

In addition, we prepare and *publish* a revised Weekly SAA report for any day if there is a material change to the information in the previous report. The following are what we define as a material change:

[2] The current day is referred to a Day 0.

[3] The current day is defined as belonging to Week 0. A week runs from Monday to Sunday. As such, the week that includes day 15 is considered to be a part of Week 2. The Weekly SAA report contains data for Week 2 from day 15 on, Week 3 and Week 4 when published on Thursday.

[4] The process of gathering *energy*-limited data for th Public e days of Week 4 are discussed further in the sections on the Weekly SAA.

- a capacity or *energy* shortfall is forecast for the *IESO-controlled grid* or for any *local area*, in any hour, or when this capacity or *energy* shortfall is corrected,
- any single *outage* submission or *outage* revision (i.e. start-time or end-time) for a generating unit that results in a change of 500 MW capacity or more. This includes planned *outages*, forced *outages* and deratings,
- an estimated change (increase or decrease) of an operating *security limit* ≥ 25% in any hour, or
- an estimated change (increase or decrease) in *demand* forecast ≥ 3.0% in any hour.

1.2.3 Producing and *Publishing* the Daily SAA Report

Each day by 17:00 EST, we prepare and *publish* an assessment for the 14th day beyond the current day (C. 5, S.7.1.1.2 of the *market rules*):

In addition, we prepare and *publish* a revised Daily SAA report for any of days 3-13 if there is a material change to the information in the previous report. The following are what we define as a material change.

- a capacity or *energy* shortfall is forecast for the *IESO-controlled grid* or for any *local area*, in any hour, or when this capacity or energy shortfall is corrected,
- any single *outage* submission or *outage* revision (i.e. start-time or end-time) for a generating unit that results in a change of 500 MW capacity or more. This includes planned *outages*, forced *outages* and deratings,
- an estimated change (increase or decrease) of an operating *security limit* ≥ 25% in any hour,
- an estimated change (increase or decrease) in *demand* forecast ≥ 3.0% in any hour, or
- an estimated change (increase or decrease) in system wide *variable generation* forecast of ≥ 500 MW affecting six or more hours in any of the days 3 to 5.

Examples of material changes (C.7, S. 12.1.3 of the *market rules*) are:

- on day 10, the weather parameters used for preparing the *demand* forecast change from climatic data to weather forecast data. It is expected that this change will result in a more accurate *demand* forecast, possibly triggering a new assessment and report for the affected day,
- on day 7, the *variable generation* forecast changes from a static, seasonal capacity factors based model to a dynamic model. This change will result in a more accurate *variable generation* forecast, possibly triggering a new assessment and report for the affected day,
- a *forced outage* may impact upon a number of days in the near-term,
- *planned outages* for equipment may change at any time, affecting any number of days within the 14-days following the *dispatch day*. Among other events, any of the following may occur:
    - *market participants* may complete *outages* early,

- *market participants* may request short-notice *outages*, or
- *market participants* may request an extension to an in-progress *outage*.

Any of these events may trigger significant changes to the assessment for the affected days.

1.2.4 Producing and *Publishing* the System Status Report

Each day, we prepare and *publish* System Status Reports at the following times (C. 7, S. 12.1.1 of the *market rules*):

- by 05:30 EST for tomorrow,
- by 09:00 EST for tomorrow[5], and
- by 15:30 EST for a day that is two days from today.

In addition, we prepare and *publish* a revised SSR at any time after 09:00 EST on the *pre-dispatch day*, or at any time during the *dispatch day* (for the current and remaining *dispatch hours*) if there is a material change to the information in the previous system status report. The following are what we define as a material change:

- a capacity or *energy* shortfall is forecast for the *IESO-controlled grid* or for any *local area* in any hour, or when this capacity or *energy* shortfall is corrected,
- any single *outage* submission or *outage* revision (i.e. start-time or end-time) for a generating unit that results in a change of 250 MW capacity or more. This includes planned *outages,* forced *outages* and deratings,
- an estimated change (increase or decrease) of an operating *security limit* $\geq$ 25% in any hour,
- a single change (increase or decrease) of an *intertie* scheduling limit $\geq$ 25% from the values reflected in the last *published* "Predispatch Unconstrained Regional Constraints" Report,
- an estimated change (increase or decrease) in *demand* forecast $\geq$ 1.5% and $\geq$ 250 MW in any hour,
- an estimated change (increase or decrease) in system wide *variable generation* forecast of $\geq$ 500 MW affecting: (i) any two hours remaining in day 0 or (ii) any four or more hours in day 1 or 2, or
- an external jurisdiction makes a reliability declaration calling upon Ontario capacity for firm energy exports

The SSRs are categorized as Normal, Urgent and Emergency.

- A 'Normal' report is one that has been *published* at one of the regularly scheduled intervals.
- An 'Urgent' report is one that has been *published* with a System Advisory or a Major Change Advisory. (A System Advisory will be issued if we expect over-generation, under-generation, or shortfalls in *operating reserve* or *contracted ancillary services*.)

[5] The 09:00 EST SSR is not required by the *market rules*. It was added in 2006 to aid *market participants* participating in the Day Ahead Commitment Process.

- An 'Emergency' report is one that has been *published* with a System Emergency Advisory (excluding advisories for a *high risk operating state*), a Market Suspension/Resumption Advisory, or any message to *market* participants requiring their immediate action.

The System Status Report may contain advisory notices (C. 7, S. 12.1.3 of the *market rules*):

- A **Major Change Advisory** if a major change in expected load, *generation*, or *transmission capacity* has occurred since the last System Status Report was issued.
- A **System Advisory** if we expect over-generation, under-generation, or shortfalls in *operating reserve* or *contracted ancillary services.* The System Advisory includes the actions we intend to take if the market does not or cannot respond sufficiently to eliminate the problem.
- A **System *Emergency* Advisory** if we expect an *emergency operating state* or a *high-risk operating state*. Any such System *Emergency* Advisory includes the actions we intend to take if the market does not or cannot respond sufficiently to eliminate the problem.
- A **Market Suspension Advisory** or **Market Resumption Notice** if we are suspending or resuming *operation* of all or part of the *IESO-administered markets*.

1.3 Surplus Baseload Generation

Surplus Baseload Generation (SBG) is a condition where market actions, or actions that are required for reliability, regulatory, safety or equipment concerns, require the reduction of generation that results in the manoeuvre of nuclear units or the loss of fuel for a generator that is reduced (e.g. hydroelectric spill).

During SBG periods we expect that most, if not all, of Ontario's generation will be supplied by non-carbon sources.

1.3.1 Baseload Generation

Baseload generation is the sum of the expected generation of all available:

- nuclear *generators*,
- must-run hydroelectric generation,
- *self-scheduling generation facilities* (including commissioning units),
- *intermittent generators*,
- *variable generators* (including wind and solar *generators*), and
- other *generators* that typically offer their generation at a value lower than the highest offer for nuclear generation.

1.3.2 SBG Reports

The purpose of the SBG Report is to identify those times when Ontario's baseload generation is greater than the forecast Ontario demand. This will allow *market participants* to assess the potential impact of SBG on their facilities.

Each day, we *publish* an SBG report on the *IESO* public website:

- The report spans the period from tomorrow to 10 days out.
- We calculate SBG by subtracting the forecast Ontario demand from the forecast baseload generation. Exports are not factored in the calculation.
- Our SBG reports will include exports information on our export forecast during the highest SBG period for the day.
- We will publish this report by 17:00 EST.
- We use the forecast Ontario demand based upon forecast weather and the embedded *variable generation* forecast for facilities ≥ 5MW.
- We use the centralized *variable generation* forecast for Ontario's *variable generators* for days 1 to 7.
- We will issue Minimum Generation Alerts as per the conditions set out in section '1.3.3 SAAs and SSRs'.

1.3.3 SAAs and SSRs

When baseload generation exceeds Ontario demand, the surplus is often addressed by export demand. When the surplus is greater than exports, then the output of baseload resources is reduced to balance the electricity system.

During the hours when SBG conditions are expected, we forecast an amount of exports that might reasonably be expected. This forecast is based upon recently observed export volumes and is adjusted if we are aware that neighboring jurisdictions are also anticipating SBG conditions or if we are aware of upcoming intertie restrictions.

If we forecast that SBG will exceed the forecast of expected exports for 4 or more contiguous hours for a day that is 3-4 days out, we will include a Minimum Generation Alert in the daily Security and Adequacy Assessment (SAA Report). The alert will identify the potential for an SBG event and will include a forecast of expected export quantities during the SBG event. We may issue SAAs further out than 3-4 days for holiday weekends or as necessary.

If we forecast that SBG will exceed the forecast of expected exports for 2 or more contiguous hours for a day that is 1-2 days out, we will include a Minimum Generation Alert in the next regularly scheduled System Status Report (SSR).

If pre-dispatch shows a baseload generation maneuver of 50MW or more, we will issue a SSR indicating a Minimum Generation Alert[6].

Triggers that may exacerbate or lessen forecast SBG events include:

- Load is different (lighter or heavier) than forecast,
- Forced outages of dispatched generation or transmission facilities,
- Short notice changes of hourly export transactions (increase or decrease), and/or

[6] After the Day-Ahead Commitment Process completes, we will assess pre-dispatch results on an hourly basis. If we determine, with reasonable certainty, that a baseload generation manoeuvre exceeding 50 MW is likely for a future hour, we will issue a Minimum Generation Alert.

- *Intermittent generators*, *self-scheduling generation facilities* and *variable generators* producing more or less than anticipated.

We will cancel a Minimum Generation Alert if conditions change such that we no longer expect SBG to exceed exports.

In real-time, if a baseload generation manoeuvre is imminent or in progress, we will issue a SSR indicating a Minimum Generation Event.

Table 1–1: Minimum Generation Status

Timeframe	Forecast Condition	Minimum Generation Status
3-4 days out	Forecast SBG will exceed the forecast of expected exports for four or more contiguous hours.	**Alert**
1-2 days out	Forecast SBG will exceed the forecast of expected exports for two or more contiguous hours.	
Pre-dispatch	Pre-dispatch shows a baseload generation manoeuvre of 50MW or more.	
Real-Time	Baseload generation manoeuvre is imminent or in progress	**Event**

1.3.4 IESO SBG Control Actions (Forecast or Occurring)

In the event that we determine that there is SBG in pre-dispatch, we may pre-emptively take one or more of the following control actions, which may be performed in any order. These control actions are taken in advance of at least one run of pre-dispatch in order to have the most accurate inputs into the Dispatch Scheduling and Optimization (DSO) tool.

If…	Then…
The Control Room Operator (CRO) determines that the use of average demand forecasting will mitigate SBG and/or baseload generation manoeuvres	We will use the average demand forecast instead of the peak demand forecast for any or all of the defined ramp hours[6], and will issue an SSR stating the change.[7]
The two hour out pre-dispatch identifies nuclear units are being dispatched down by more than 50MW	We may issue an SSR opening the mandatory window for bids and offers. We may expand the Net Interchange Scheduling Limit (NISL) to 1000 MW and issue an SSR indicating the NISL expansion. **Note:** We will only take these actions if they are likely to provide assistance to the SBG event.

[7] The ramp hours are defined in MM 4.2 Appendix E1 and include HE06 through HE09 for the entire year, as well as HE17 and HE18 from November 1st through January 31st.

If…	Then…
One hour out, the pre-dispatch schedule identifies nuclear units are being dispatched down by more than 50MW	We will curtail import transactions (including inadvertent payback) equal to the total MW reduction amount. Imports that are cut for this purpose will be tagged with ADQh.[8] **Note:** All imports will be cut economically on a best effort basis.
• The dispatch of a nuclear unit is not for the full amount of its maneuverable capability, or • The nuclear unit cannot operationally respond to the instruction	We may manually adjust its schedule, requiring other generators (including variable) to respond in its place. **Note:** The manual adjustment may be to maintain the nuclear unit at its current output or to over-dispatch the nuclear unit for the full amount of its maneuverable capability. Manual adjustments to generator schedules are for the hour-at-hand and the next hour only. If adjustments were to extend further into the future, it is likely that pre-dispatch would schedule actions interfering with our management of the SBG event. For example, a constrained-off nuclear unit may result in pre-dispatch scheduling fewer export transactions in future hours. Response from other generators will be an automatic dispatch from the DSO tool.
All flexible responses from baseload generation are exhausted	We may need to implement nuclear unit shutdowns. **Note:** We will issue an SSR stating that a shutdown is in progress.

In the event we determine that there is SBG in real-time, we may take one or more of the following control actions, which may be performed in any order:

If…	Then…
Nuclear units are being dispatched down by more than 50MW (possibly as a result of export failures)	We may curtail import transactions (including inadvertent payback) equal to the total MW reduction amount. **Note:** Imports ~~that are~~ cut for this purpose will be tagged with ADQh. All imports will be cut economically on a best effort basis.
• The dispatch of a nuclear unit is not for the full amount of its maneuverable capability, or • The nuclear unit cannot operationally respond to the instruction	We may manually adjust its schedule, requiring other generators (including variable) to respond in its place. **Note:** The manual adjustment may be to maintain the nuclear unit at its current output, or to over-dispatch the nuclear unit for the full amount of its maneuverable capability. Manual adjustments to generator schedules are for the hour-at-hand and the next hour only. If adjustments were to extend

[8] ADQh is the code applied to transactions curtailed for IESO Adequacy (Surplus or Deficiency) Actions. These transactions are not eligible for CMSC and are exempt from real time failure charges.

If…	Then…
	further into the future, it is likely that pre-dispatch would schedule actions interfering with our management of the SBG event. For example, a constrained-off nuclear unit may result in pre-dispatch scheduling fewer export transactions in future hours. Response from other generators will be an automatic dispatch from the DSO tool.
All flexible responses from baseload generation are exhausted	We may need to implement nuclear unit shutdowns. **Note:** We will issue an SSR stating that a shutdown is in progress.

1.4 Control Action Operating Reserve

Control Action Operating Reserve (CAOR) offers represents the IESO's ability to use the following control actions to meet operating reserve requirements:

- 3% and 5% voltage reductions
- Disregarding the 30-minute operating reserve requirement (for up to four hours)

Two fictitious (i.e., dummy) generators supply standing offers to the operating reserve market as follows:

- RICHVIEW-230.G_3VR: 400 MW for 30-minute reserve at $30/MW and for 10-minute reserve at $30.10/MW
- RICHVIEW-230.G_5VR: 200 MW for 10-minute reserve at $75/MW, 200 MW for 10-minute reserve at $100/MW

CAOR is only scheduled in the real-time dispatch algorithm, and is not part of the day-ahead commitment and pre-dispatch sequences.

1.4.1 Derating CAOR

When Ontario demand is sufficiently low, CAOR capacity backed by voltage reductions is required to be derated. This is because the MW relief associated with voltage reductions is proportional to system demand.

The IESO will manage derates to the CAOR resources in the following timeframes:

Day-ahead:

In the day-ahead timeframe, we will derate the RICHVIEW-230.G_3VR resource for the next day real-time scheduling. Derates will be based on the expected MW relief, achievable within 10 minutes, from implementing a 5% voltage reduction[9].

Real-time:

[9] We assume that 85% of total voltage reduction capacity can be achieved with 10 minutes of a contingency.

In real-time, IESO CROs will:

- Monitor Ontario demand changes from the day-ahead forecast. Any change to Ontario demand that results in a greater than 50 MW change in the day-ahead derate to the RICHVIEW-230.G_3VR resource will trigger an update to the CAOR derate.
- Derate the RICHVIEW-230.G_5VR if the real-time dispatch of CAOR for 10-minute reserve exceeds the expected MW relief (achievable within 10 minutes) from implementing a 5% voltage reduction

1.4.2 SSRs

In the day-ahead timeframe, we will issue a System Advisory in the System Status Report (SSR) for the next day indicating that we have derated the RICHVIEW-230.G_3VR resource.

In real-time, we will issue an SSR indicating a System Advisory, and include the start time and maximum MW amount of the derate, if we either:

- Modify the derate to the RICHVIEW-230.G_3VR resource, or
- Derate the RICHVIEW-230.G_5VR resource.

1.5 Roles and Responsibilities

Responsibility for performing the *security* and *adequacy* assessments and publishing the status reports is shared among:

- **All *market participants***, who are responsible for providing the *outage* information described in "Part 7.3: Outage Management",
- ***Market participants* operating *energy*-limited resources**, who are responsible to provide pre-schedule information of the daily *energy* availability of their *energy*-limited resources for the Weekly SAA, and to update this data for any material change,
- ***Transmitters***, who are responsible for providing transmission rating change information as it occurs,
- ***Self-scheduling, Intermittent* and *Transitional Scheduling Generators***, who are responsible for providing generation schedule information to the *IESO* as *dispatch data*,
- ***Market participants,*** who are responsible for submitting requests for *segregated mode of operation*, as described in "Part 7.3 Outage Management".
- the ***IESO***, who is responsible for:
    - preparing the *demand* forecast,
    - preparing the *variable generation* forecast,
    - calculating the operating *security limits* for the *IESO-controlled grid*,
    - performing the *security* and *adequacy* assessments for each hour and each day, as appropriate,
    - determining any shortfalls, advisories, and additional information to be *published*, and

- publishing the Daily SAA Report, the Weekly SAA Report, the System Status Report and the SBG Forecast Report.

All *published* reports are available on the *IESO* Web site.

1.6 Contact Information

As part of the participant authorization and registration process, *applicants* are able to identify a range of contacts within their organization that address specific areas of market operations. For near term assessments and reports, this contact will most likely be the *Outage* Planner Market Contact Type as indicated in the IESO Registration Solution - *market participant* Contacts screens. If you have not identified a specific contact, we will seek to contact the Main Contact in the IESO Registration Solution that is established during the participant authorization process. We will seek to contact these individuals for activities within this procedure, unless alternative arrangements have been established between the *IESO* and the *market participant*. For more information on the IESO Registration Solution and the participant authorization process see "Market Manual 1: Market Entry, Maintenance & Exit, Part 1.1: Participant Authorization, Maintenance and Exit".

If you wish to contact us, you can contact *IESO* Customer Relations via email at customer.relations@ieso.ca or via telephone, mail or courier to the numbers and addresses given on our web-site www.ieso.ca. Outside of our business hours, telephone messages or emails for Customer Relations may be left in relevant voice or electronic *IESO* mail boxes, our Customer Relations staff will respond as soon as possible.

Standard forms that participants must complete for this procedure are listed in Appendix A. These forms are generally available for downloading on our web-site. These forms as well as the accompanying supporting documentation must be transmitted to us via mail, fax or courier, by using the appropriate address or number provided on our web-site or on the form. All correspondence relating to this procedure shall identify the subject**: Near Term Assessments and Reports**.

– End of Section –

2. Procedural Work Flow

The diagrams in this section represent the flow of work and information relating to the process of preparing and publishing near-term assessments and reports as it pertains to the *IESO* and *market participants*.

The steps illustrated in the diagrams are described in detail in Section 3.

Table 2–1: Legend for Work Flow Diagrams

Legend	Description
Oval	An event that triggers task or that completes task. Trigger events and completion events are numbered sequentially within procedure (01 to 99).
Task Box	Shows reference number, party responsible for performing task (if "other party"), and task name or brief summary of task. Reference number (e.g., 2A.02) indicates procedure number within current *Market Manual* (2), sub-procedure identifier (if applicable) (A), and task number (02).
Solid horizontal line	Shows information flow between the *IESO* and external parties.
Solid vertical line	Shows linkage between tasks.
Broken line	Links trigger events and completion events to preceding or succeeding task.

2.1 Daily SAA Process and Report Publication

The Daily SAA procedure prepares an assessment for the 14th day beyond the current *dispatch day* (hourly granularity) and updates the assessment for any hour of days 3-13 for material changes[10]. This procedure also *publishes* the assessment report daily for day 14 and *republishes* the assessment report for any day of days 3-13 for material changes.

The steps illustrated in Figure 2-1 are described in detail in Section 3.1, Table 3-1.

[10] The dispatch day, or current day, is referred to as 'Day 0'. 'Day 1' is tomorrow, and so on.

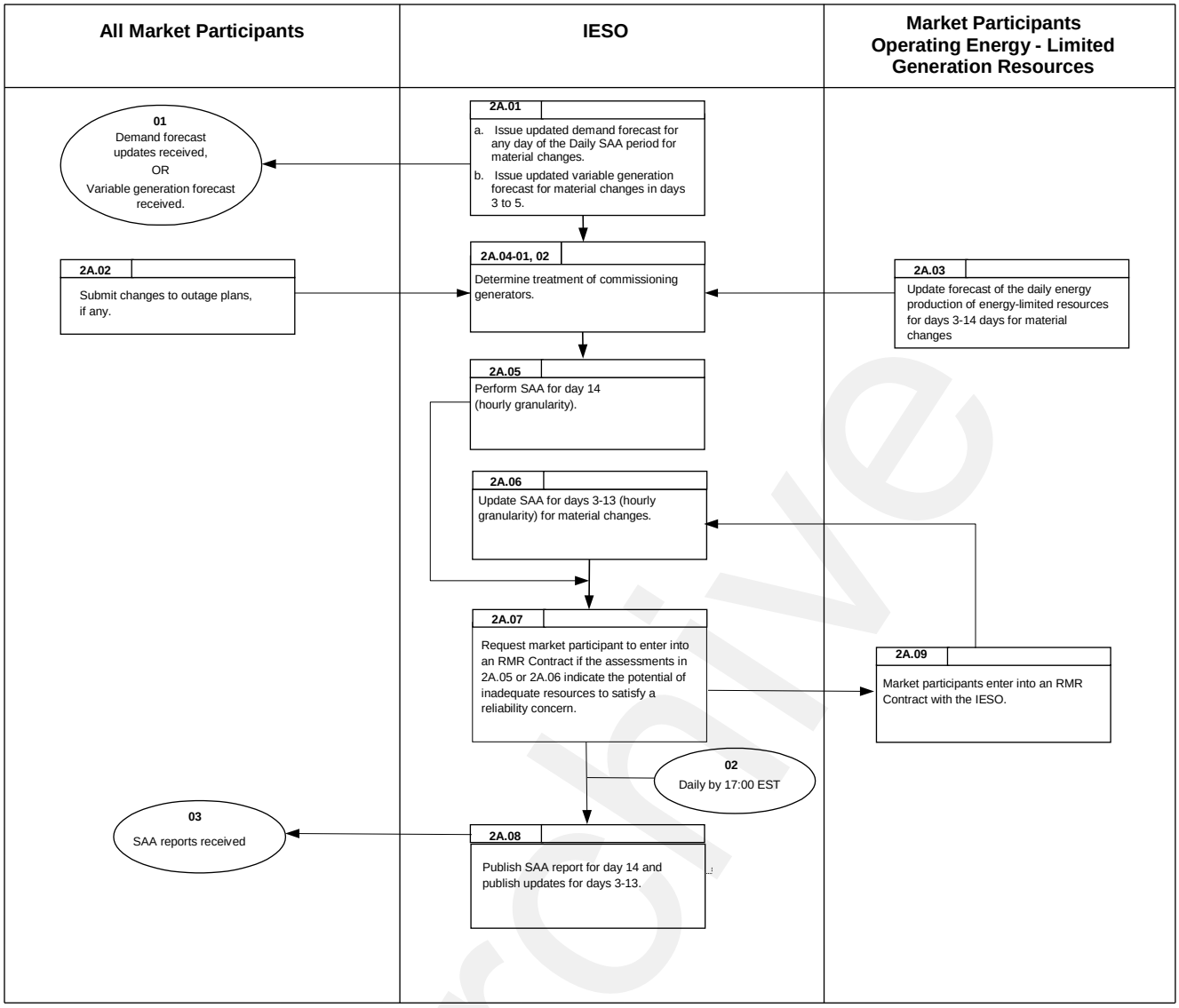

Figure 2-1: Work Flow for Daily SAA

2.2 Weekly SAA Process and Report Publication

The Weekly SAA procedure prepares and *publishes* an assessment for the days of the 4th week beyond the current *dispatch* week.

The steps illustrated in Figure 2-2 are described in detail in Section 3.2, Table 3-2.

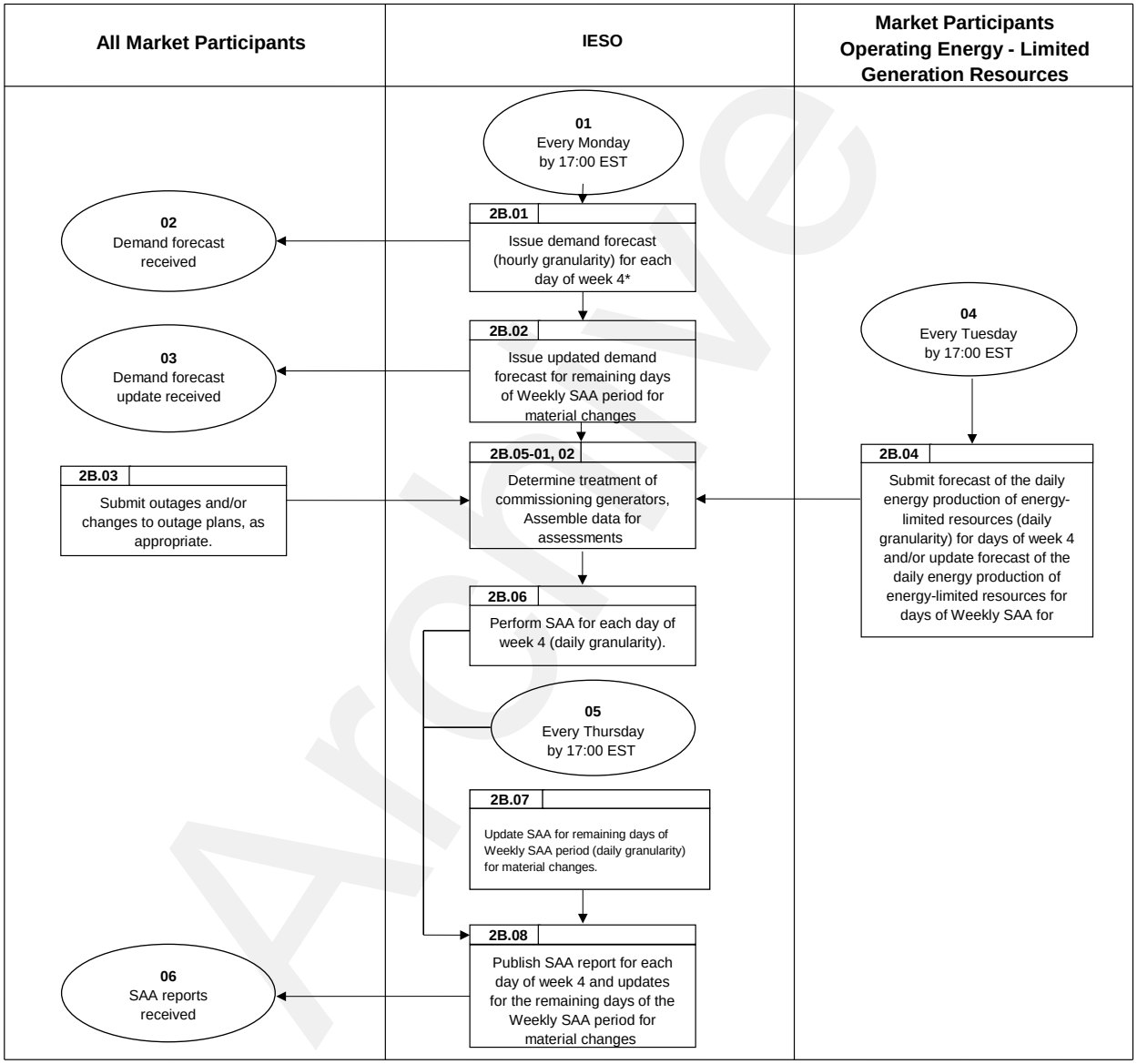

Figure 2-2: Work Flow for Weekly SAA

***** A week runs Monday – Sunday. Week 0 contains the current *dispatch day*.

2.3 The System Status Report Publication

The SSR procedure prepares an assessment for days 0-2. The SSR contains all the information of a Daily SAA Report, but adds forecasts/pre-schedules of *self-scheduling*, *intermittent* and *transitional scheduling generators*. System notices and advisories are created as necessary.

The steps illustrated in Figure 2-3 are described in detail in Section 3.3, Table 3-3.

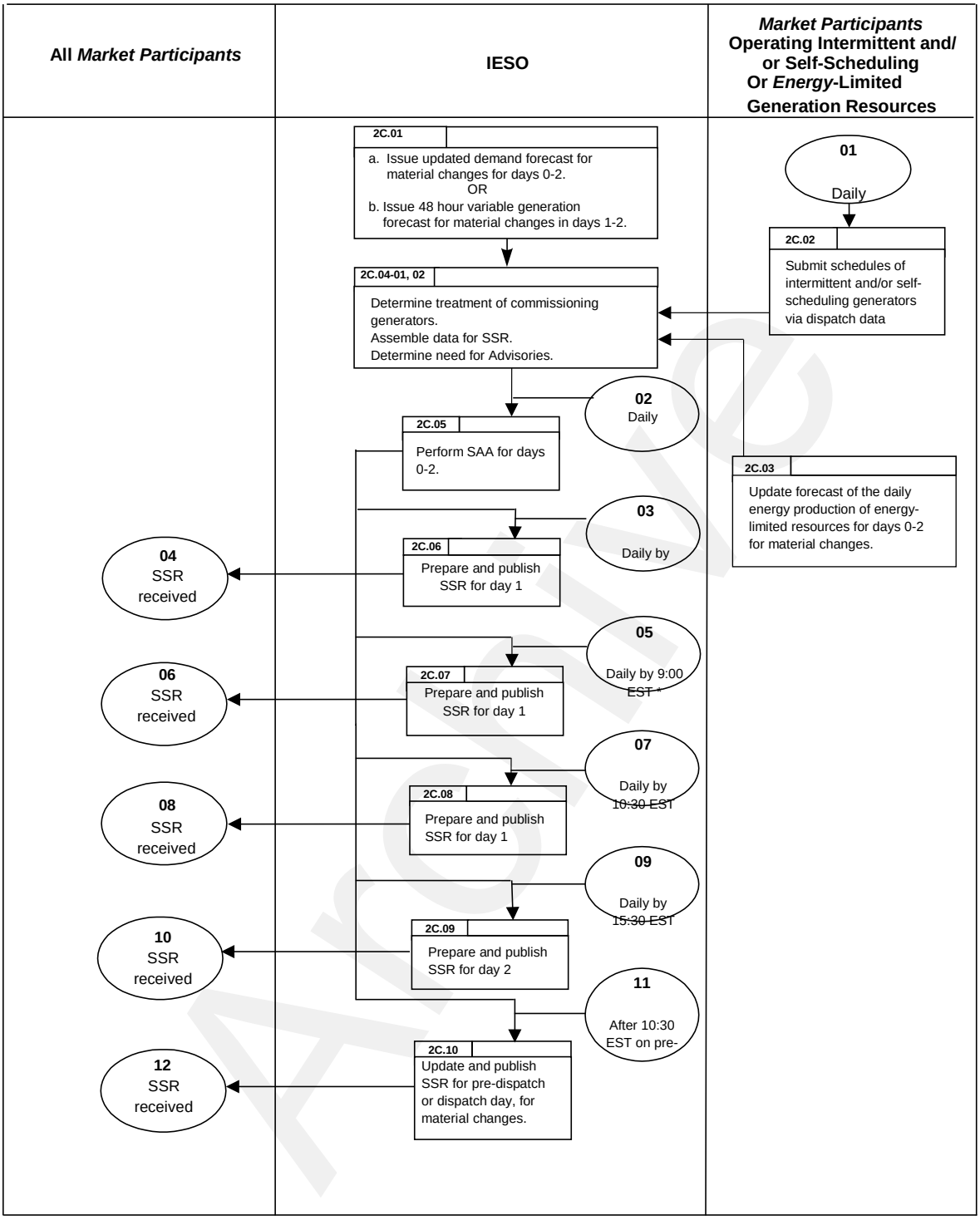

Figure 2-3: Work Flow for SSR

– End of Section –

3. Procedural Steps

This section contains details of the tasks that comprise the procedures. The table contains seven columns, as follows:

ID

The numerical reference to the task.

Task Name

The task name as identified in Section 2.

Task detail

Detail about the task.

When

A list of all the events that can trigger commencement of the task.

Resulting information

A list of the information flows that may or must result from the task.

Method

The format and method for each information flow are specified.

Completion events

A list of all the circumstances in which the task should be deemed finished.

Please refer to the timing charts in Section 3.1 below for details regarding the timing of the different tasks and events referred to in the procedural steps.

3.1 Daily Security and Adequacy Assessment Process and Report Publication

The following table shows the tasks related to performing and publishing the Daily *Security* and *Adequacy* Assessments. The steps described in Table 3-1 are illustrated in Section 2.1, Figure 2-1.

Table 3–1: Procedural steps for preparation and publication of the Daily Security and Adequacy Assessments

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.01-a	Receive updated *demand* forecast for any day of the Daily SAA period for material changes.	We update the *demand* forecast for any day of the Daily SAA period if any material changes have occurred. We will pay particular attention to the day where weather forecast data replaces climatic data. We issue the *demand* forecast with hourly granularity.	Any time a material change occurs that alters a previous *demand* forecast.	Updated hourly granularity *demand* forecast for the relevant day(s).	Internal process.	*Demand* forecast is judged to be the best representation for the day, given the available data.
2A.01-b	Receive updated 2 to 7 day *variable generation* forecast that contains a material change for days 3 to 5.	We receive an updated 2 to 7 day *variable generation* forecast (with hourly granularity) twice a day. We assess if the change is material. Material changes trigger a new SAA.	Any time a material change occurs that alters a previous *variable generation* forecast.	Updated hourly granularity *variable generation* forecast for the relevant days.	Internal process.	*Variable generation* forecast is considered to be the best representation for the day.
2A.02	Submit changes to *outage* plans, if any.	*Market participants* normally submit *outage* plans at least 33days in advance of the start time and date of the *outage*. However, there may be changes to these plans, or there may be *outages* driven by real-time events. This activity includes submission of short-notice *outage* requests and *segregated mode of operation*.	Any time there is a change to previously submitted *outage* plans or there is a new *outage* request or change to *segregated mode of operation*.	Up-to-date *outage* database to use for the assessment process.	Electronic, using the IOMS tool or using a web-based form.	We receive *planned outage* data.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.03	Update forecast of the daily *energy* production of *energy*-limited resources for days 3-14 for material changes	All *market participants* who operate energy-limited generation resources submit an updated forecast of the daily energy production for that resource for any day of the Daily SAA period if any material changes have occurred. • As soon as the generator becomes aware of a component failure, operational limit or other circumstance that will cause the generating unit to be derated (equal to the greater of 2% of rated output or 10 MW), or cause the unit to trip if no control actions can be taken before the condition can be repaired as assessed by the generator, the generator should promptly inform us via phone and as per the *outage* management process. • As soon as the generator becomes aware of a new potential change in unit/plant condition that can cause the loss of multiple units at its facility based on its internal assessment/forecast, the generator should promptly inform us via phone. • Where deratings results in Daily Energy Limits that may impact reliability, we may constrain the generator to best utilize available energy.	Any time a material change occurs that alters a previous *energy*-limited resource pre-schedule. As soon as / any time upon becoming aware	Daily *energy* content of *energy*-limited resources. Information provided for each *energy*-limited resource: • Daily *energy* content (MWhr), and • Capacity of the resource when it is <u>not</u> *energy*-limited (MW). A resource is a generating unit, or a group of units when aggregated. Derating information in MW. New or potential condition. Resulting daily *energy* limits, where applicable.	Submit completed IMO-FORM-1385 via fax or e-mail. The generator should promptly inform us via phone and as per the *outage* management process. The generator should promptly inform the IESO via phone.	We receive pre-schedule data. We may use this information in security and adequacy assessments. Where alternative modes of operation are provided, we may advise you of the related reliability impact.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.04-01	Determine treatment of commissioning *generators*	A commissioning generation facility shall be treated as a self-scheduling generation facility for the purposes of *outage* coordination and shall be reflected in our security and adequacy assessments depending on the type of commissioning performed as follows: • New generators or those returning from long term outages (mothballing) that are registered as self-scheduling generation facilities will be treated as unavailable for the purpose of calculating available capacity in our adequacy assessments. • Generators that are registered as self-scheduling generation facilities for the purpose of testing new or modified equipment associated with the generator will be treated as available for the purposes of calculating available capacity in our adequacy assessments. To manage the treatment of commissioning facilities in our security and adequacy assessments, it may be necessary to make manual adjustments for the maximum available capacity for the self-scheduling generation facility.	As and when required	Adjustment to the outages quantity in the SAA reports	Manual adjustment to SAA reports	SAA reports

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
		This is necessary where in bullet #1 above the generator may wish to test at various outputs and would not be scheduled. The manual adjustment shall accurately reflect any transferred deratings for testing purposes. In bullet #2 above, the tool transfer for the commissioning period would be removed allowing available capacity to be included in adequacy assessments. The available capacity will automatically reflect any tool transferred deratings for testing purposes.				

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.04-02	Assemble data for assessments.	We assemble all data used for the assessment process. This includes, but is not limited to, the following: • *intermittent generator* forecasts, • *self-scheduling generation facility* schedules, • *transitional scheduling generator* schedules. Schedules and curtailment plans for *transitional scheduling generators*, *self-scheduling generation facilities* are aggregated and published as "self-scheduling MW/HR" in the SSR, • *segregated mode of operation*, • *demand* forecast, • *outage* plans for transmission elements, *generators* and loads, • *energy*-limited resource data, • *variable generation* data, • network *security limits*, • network model, • *ancillary service* contract information, • net interchange ramp rate, and • adjustments in available *dispatchable* capacity (refer to Appendix D.1).	Daily, as part of the main assessment process. As provided by TSG's.	Database to be used for assessing items including *energy adequacy*, capacity *adequacy* and network *security*. Curtailment plans for TSG's to be used to forecast TSG schedules.	Internal process. Submit an outage request as per the *outage* management process.	Data ready for the assessment process. Normally set to 700 MW (not including segregation). We will *publish* any change to this limit in the SSR.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.05	Perform SAA for day 14 (hourly granularity).	We execute a number of internal processes using different software tools and manual processes to determine: • Energy adequacy, • Capacity (or operating reserve) adequacy, • Adjustments in available dispatchable capacity (refer to Appendix D.1), • Need for must-run units, • Area reserve adequacy, • Restrictions on power flow across critical interfaces and transmission elements, and • Potential regional and overall energy and capacity shortages. We may limit the MW quantity of planned outages that can be supported with outage replacement energy. The total import MW quantity attributed to the arrangements for outage replacement energy shall not exceed the lesser of: • the MW quantity determined to be reasonably achievable based on forecast conditions (e.g. loop flows and reserve margins of neighbouring *reliability* authorities), or • 500 MW.	Daily, as part of the assessment process.	Assessment of the *adequacy* and *security* of the network. Daily *energy* associated with *energy* limited resources is normally distributed evenly across all hours, however this *energy* may have to be moved to overcome shortfalls. When this is required, the *IESO* will use the hourly *energy* profile provided by *market participants.*	Internal process	Data ready for preparation of the SAA report.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.06	Update SAA for days 3-13 (hourly granularity) for material changes.	We review all the data (primarily changes to *outage* data, weather data and real time events) to determine whether there have been any changes that affect the *security* and *adequacy* assessments already prepared for the remaining days of the Daily SAA period. Where there have been changes, we update the SAA Reports for these days, as appropriate.	Daily, as part of the assessment process.	Assessment of the *adequacy* and *security* of the network.	Internal processing	Data ready for publication of the SAA report, including indication of potential for inadequate resources.
2A.07	Request *market participant* to enter into a *Reliability* Must Run (RMR) Contract with the *IESO* if the assessments in 2A.05 or 2A.06 indicate the potential of inadequate resources to satisfy *reliability* concerns.	Send request to all *generators*.	After step 2A.06	Solicitation to all *generators* with respect to RMR Contract .	Telephone.	*Generators* in receipt of *IESO* request.
2A.08	*Publish* SAA report for day 14 and *publish* updates for days 3-13 of the Daily SAA for material changes.	We collect all the results of the assessments performed above and *publish* the SAA report for day 14 and updates for any of days 3-13.	Daily, by 17:00 EST	SAA Report for day 14 and updates to any of days 3-13 for which there has been a material change.	Internal process. The information is displayed on our public web-site.	Electronic tools indicate that the report has been *published* on our public web-site.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2A.09	*Market participants* enter into an RMR Contract with the *IESO.*	Respond to RMR Contract request as per *IESO*'s specific request.	After step 2A.07	Agreement to proceed with RMR Contract (information provided within one hour of request).	Telephone.	We receive the *market participant's* agreement to enter into an RMR Contract. Go to 2A.06.

3.1.1 Timing Chart for Daily SAA

The diagram below indicates the timing of the tasks associated with the Daily SAA.

This timing chart focuses upon the last day of the Daily SAA period (assessment day AD = day 14) and the relation of tasks 2A.01-2A.07 relative to this day. For example, task 2A.03 (update pre-schedule of *energy* limited resources) is to be completed 14 days in advance of the assessment day.

	M	T	W	Th	F	Sa	Su
Week 0				Tasks 1-8			
Week 1							
Week 2				**AD**			
Week 3							
Week 4							

AD	Assessment Day

Figure 3-1: Typical Calendar Relationship for a Daily SAA

3.2 Weekly Security and Adequacy Assessment Process and Report Publication

The following table shows the tasks related to performing and publishing the Weekly *Security* and *Adequacy* Assessments. The steps described in Table 3-2 are illustrated in Section 2.2, Figure 2-2.

Table 3–2: Procedural steps for preparation and publication of the Weekly Security and Adequacy Assessments

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.01	Issue *demand* forecast (hourly granularity) for each day of week 4.	We prepare and *publish* the *demand* forecast for each day of week 4 (hourly granularity).	Every Monday by 17:00 EST (or by the next business day when Monday is a holiday).	New Ontario *demand* forecast for all days of week 4.	Internal process.	*Demand* forecast is judged to be the best representation for each day, given the available data.
2B.02	Issue updated demand forecast for remaining days of Weekly SAA period for material changes	We update the *demand* forecast for any day of the Weekly SAA periods, if any material changes have occurred. We will pay particular attention to the day where weather forecast data replaces climatic data. We issue the *demand* forecast with hourly granularity.	Any time a material change occurs that alters a previous *demand* forecast.	Updated hourly granularity *demand* forecast for the relevant day(s).	Internal process.	*Demand* forecast is judged to be the best representation for the day, given the available data.
2B.03	Submit *outage* plans and/or changes to *outage* plans, as appropriate.	Every *market participant* who operates *facilities* connected to the *IESO-controlled grid* normally submits their *outage* plans for these *facilities* at least 33 days in advance of the *planned outage* start time. Our assessment of security and adequacy spans this 33-day target.	33 days prior to the *outage* beginning and any time there is a change in the *outage* plans.	Up-to-date database of *planned outage* data for all *facilities* connected to the *IESO-controlled grid*.	Electronic, using the IOMS tool.	*IESO* receives *planned outage* data.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.04	Submit forecast of the daily energy production of energy-limited resources (daily granularity) for days of week 4 and/or update forecast of the daily energy production of energy-limited resources for days of Weekly SAA period for material changes	All *market participants* who operate energy-limited generation resources submit a forecast of the daily energy production for that resource for each of the days of week 4. All market participants who operate energy-limited generation resources submit an updated forecast of the daily energy production for that resource for any day of the Weekly SAA period if any material changes have occurred. • As soon as the generator becomes aware of a component failure, operational limit or other circumstance that will cause the generating unit to be derated (equal to the greater of 2% of rated output or 10 MW), or cause the unit to trip if no control actions can be taken before the condition can be repaired as assessed by the generator, you should promptly inform us via phone and as per *outage* management process. • As soon as the generator becomes aware of a new potential change in unit/plant condition that can cause the loss of multiple units at its facility based on its internal assessment/forecast, the generator should promptly inform us via phone. Where deratings results in Daily *Energy* Limits that may impact *reliability*, we may constrain the *generator* to best utilize available *energy.*	Every Tuesday by 17:00 EST (or by the next business day when Tuesday is a holiday). Any time a material change occurs that alters a previous *energy*-limited resource pre-schedule. As soon as / any time upon becoming aware.	Daily *energy* content of *energy*-limited resources. Information provided for each *energy*-limited resource: • Daily *energy* content (MWhr), and • Capacity of the resource when it is <u>not</u> *energy*-limited (MW). A resource is a generating unit, or a group of units when aggregated. Derating information in MW. New or potential condition. Resulting daily energy limits, where applicable.	Submit completed IMO-FORM-1385 via fax or e-mail. The *generator* should promptly inform us via phone and as per the *outage* management process. The *generator* should promptly inform us via phone.	We receive pre-schedule data. We may use this information in security and adequacy assessments. Where alternative modes of operation are provided, we may advise you of the related reliability impact.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.05-01	Determine treatment of commissioning *generators*	A commissioning *generation facility* shall be treated as a *self-scheduling generation facility* for the purposes of *outage* coordination and shall be reflected in our *security* and *adequacy* assessments depending on the type of commissioning performed. Refer to Table 3-1 (2A.04-01)	As and when required.	Adjustment to the *outages* quantity in the SAA reports.	Manual adjustment to SAA reports.	SAA reports.
2B.05-02	Assemble data for assessments.	We assemble all data used for the assessment process. This includes, but is not limited to, the following: • *demand* forecast, • *outage* plans for transmission elements, *generators* and loads, • *energy* pre-schedules, • network *security limits*, • network model, • *ancillary service* contract information, and adjustments in available *dispatchable* capacity (refer to Appendix D.1).	Weekly, as part of the *main assessm*ent process.	Database to be used for assessing items including *energy adequacy*, capacity *adequacy* and network *security*.	Internal process.	Data ready for the assessment process.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.06	Perform SAA for each day of week 4 (daily granularity).	We execute a number of internal processes using different software tools and manual processes to determine the: • energy adequacy, • capacity (or operating reserve) adequacy, • adjustments in available dispatchable capacity (refer to Appendix D.1), • need for must-run units, • area reserve adequacy, • restrictions on power flow across critical interfaces and transmission elements, and • potential regional and overall energy/capacity shortages. We may limit the MW quantity of planned outages that can be supported with outage replacement energy. The total import MW quantity attributed to the arrangements for outage replacement energy shall not exceed the lesser of: • the MW quantity determined to be reasonably achievable based on forecast conditions (e.g. loop flows and reserve margins of neighbouring *reliability* authorities), or • 500 MW.	Weekly, as part of the main assessment process.	Assessment of the *security* and *adequacy* of the network.	Internal processes.	Data ready for preparation of the SAA report.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2B.07	Update SAA for remaining days of Weekly SAA (daily granularity) for material changes.	We review all the data (primarily changes to *outage* data, weather data and real time events) to determine whether there have been any changes that affect the *security* and *adequacy* assessments already prepared for the remaining days of the Weekly SAA periods. Where there have been changes, we update the SAA report for these days, as appropriate.	Daily, as part of the assessment process	Assessment of the adequacy and security of the network.	Internal processing	Data ready for publication of the SAA report, including indication of potential for inadequate resources.
2B.08	*Publish* SAA report for each day of week 4 and updates for the days of the Weekly SAA for material changes.	We collect all the results of the assessments performed above and *publish* the SAA report or the update to the report for the days of week 4.	Every Thursday by 17:00 EST (or by the next business day when Thursday is a holiday).	SAA report for days of week 4.	Internal process. The information is displayed on the *IESO* public Web site.	Electronic tools indicate that the report has been *published* on our public web-site.

3.2.1 Timing Chart for Weekly SAA

The diagram below indicates the timing of the tasks associated with the Weekly SAA.

This timing chart focuses upon the days of the Weekly SAA period (assessment week = week 4) and the relation of tasks 2B.01-2B.08 relative to these days. For example, task 2B.04 (submit pre-schedule of *energy* limited resources for week 4) is to be completed on Tuesday of week 0 for the days of week 4.

	M	T	W	Th	F	Sa	Su
Week 0	Task 1	Task 4		Task 8			
Week 1							
Week 2							
Week 3							
Week 4	**AD**	**AD**	**AD**	**AD**	**AD**	**AD**	**AD**

AD Assessment Day

Figure 3-2: Typical Calendar Relationship for a Weekly SAA

3.3 System Status Report Publication

The following table shows the tasks related to preparing and publishing the System Status Report. The steps described in Table 3-3 are illustrated in Section 2.3, Figure 2-3.

Table 3–3: Procedural steps for preparation and publication of the System Status Report

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.01-a	Receive updated demand forecast for material changes for days 0-2	We update the *demand* forecast for any day of the SSR periods if any material changes have occurred. We issue the *demand* forecast with hourly granularity.	Any time a material change occurs that alters a previous *demand* forecast.	Updated hourly granularity *demand* forecast for the relevant day(s).	Internal process.	*Demand* forecast is judged to be the best representation for the day, given the available data.
2C.01-b	Receive updated 48 hour *variable generation* forecast that contains a material change for days 1 or 2.	We receive an updated 48 hour *variable generation* forecast (with hourly granularity) every hour. We assess if the change is material. Material changes trigger a new SSR.	Any time a material change occurs that alters a previous demand forecast.	Updated hourly granularity *variable generation* forecast for the next 48 hours.	Internal process.	*Variable generation* forecast is considered to be the best representation for the day.
2C.02	Submit forecasts of *intermittent generators* and schedules of *self-scheduling* and/or *transitional scheduling generators* via *dispatch data*.	Every *market participant* operating *intermittent, self-scheduling* and/or *transitional scheduling generation facilities* must submit forecasts or schedules of *intermittent, self-scheduling* and/or *transitional scheduling generators* as *dispatch data*. Preparation of the SSR will gather this information for publication. Where report publication is prescribed before *dispatch data* is available, we will estimate these forecasts and schedules for the SSR.	Daily.	Proposed power production from *intermittent*, *self-scheduling* and *transitional scheduling* units.	Electronic.	We receive forecasts and schedules of proposed generation plan from *intermittent*, *self-scheduling* and *transitional scheduling generation* resources.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.03	Update forecast of the daily *energy* production of *energy*-limited resources for days 0-2 for material changes.	All market participants who operate energy-limited generation resources submit an updated forecast of the daily energy production for that resource for any days 0-2, if any material changes have occurred. • As soon as the generator becomes aware of a component failure, operational limit or other circumstance that will cause the generating unit to be derated (equal to the greater of 2% of rated output or 10 MW), or cause the unit to trip if no control actions can be taken before the condition can be repaired as assessed by the generator, you should promptly inform us via phone and as per outage management process. • As soon as the generator becomes aware of a new potential change in unit/plant condition that can cause the loss of multiple units at its facility based on its internal assessment/forecast, you should promptly inform us via phone. Where deratings results in Daily Energy Limits that may impact reliability, we may constrain the generator to best utilize available energy.	Any time a material change occurs that alters a previous *energy*-limited resource pre-schedule. As soon as / any time upon becoming aware.	Daily *energy* content of *energy*-limited resources. Information provided for each *energy*-limited resource: • Daily *energy* content (MWhr), and • Capacity of the resource when it is not *energy*-limited (MW). A resource is a generating unit, or a group of units when aggregated. Derating information in MW, New or potential condition Resulting daily *energy* limits, where applicable.	Submit completed IMO-FORM-1385 via fax or e-mail. The *generator* should promptly inform the *IESO* via phone and as per the *outage* management process. The *generator* should promptly inform the *IESO* via phone.	IESO receives pre-schedule data. The IESO may use this information in security and adequacy assessments and where alternative modes of operation are provided, the IESO may advise the market participant on the related reliability impact.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.04-01	Determine treatment of commissioning *generators.*	A commissioning *generation facility* shall be treated as a *self-scheduling generation facility* for the purposes of *outage* coordination and shall be reflected in our *security* and *adequacy* assessments depending on the type of commissioning performed. Refer to Table 3-1 (2A.04-01)	As and when required.	Adjustment to the *outages* quantity in the SSR reports.	Manual adjustment to SSR reports.	SSR reports.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.04-02	Assemble data for SSR. Determine need for Advisories.	The *IESO* assembles all data to be *published* as the SSR. This includes, but is not limited to, the following: • *intermittent generator* forecasts, • *self-scheduling generation facility* schedules, • *transitional scheduling generator* schedule. Schedules and curtailment plans for *transitional scheduling generators* and *self-scheduling generation facilities* are aggregated and published as "self-scheduling MW/HR" in the SSR, • *segregated mode of operation*. • *demand* forecast, • *outage* plans for transmission elements, *generators* and loads, • *energy*-limited resource data, • *variable generation* data, • network *security limits*, • network model, • *ancillary service* contract information, • net interchange ramp rate, and • adjustments in available *dispatchable* capacity (refer to D1)	Daily, prior to the publication time of each SSR. As provided by TSG's.	Database to be used for assessing items including *energy adequacy*, capacity *adequacy* and network *security*. Curtailment plans for TSG's to be used to forecast TSG schedules.	Internal process. Submit an outage request as per the *outage* management process.	Data ready for the assessment process. Normally set to 700 MW (not including segregation). We will publish any change to the NIRR in the SSR.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.05	Perform SAA for days 0-2	We execute a number of internal processes to determine the: • *energy adequacy*, • capacity (or *operating reserve*) *adequacy*, • adjustments in available *dispatchable* capacity (refer to Appendix D.1), • need for must-run units, • area reserve *adequacy*, • restrictions on power flow across critical interfaces and transmission elements, and • potential regional and overall *energy*/capacity shortages.	Daily, as part of the main assessment process.	Assessment of the *security* and *adequacy* of the network. Daily *energy* associated with *energy* limited resources is normally distributed evenly across all hours. However, this *energy* may have to be moved to overcome shortfalls. When this is required, we will use the hourly *energy* profile you have provided.	Internal processes.	Data ready for preparation of the SSR report.
2C.06	Prepare and *publish* SSR for day 1.	We *publish* the data assembled in Task 2C.03. In addition, we add any Advisories, as necessary.	Daily, by 05:30 EST.	SSR for tomorrow.	Internal process. The information is displayed on our public web-site.	Electronic tools indicate that the report has been *published* on our public web-site.
2C.07	Prepare and *publish* SSR for day 1.	We *publish* the data assembled in Task 2C.03. In addition, we add any Advisories, as necessary.	Daily, by 09:00 EST.	SSR for tomorrow.	Internal process. The information is displayed on our public web-site.	Electronic tools indicate that the report has been *published* on our public web-site.

Ref.	Task Name	Task Detail	When	Resulting Information	Method	Completion Events
2C.08	Prepare and *publish* SSR for day 2.	We *publish* the data assembled in Task 2C.03. In addition, we add any Advisories, as necessary.	Daily, by 15:30 EST.	SSR for the day two days out	Internal process. The information is displayed on our public web-site.	Electronic tools indicate that the report has been *published* on our public web-site.
2C.09	Update and *publish* SSR for pre-*dispatch* or *dispatch day*, for material changes.	We prepare and *publish* additional SSRs after 10:30 EST on the *pre-dispatch day* for material changes. In addition, we add any Advisories, as necessary.	After 10:30 EST on the *pre-dispatch day*.	SSR for tomorrow and/or the remaining hours of the current *dispatch day*.	Internal process. The information is displayed on our public web-site.	Electronic tools indicate that the report has been *published* on our public web-site.

3.3.1 Timing Chart for System Status Report

The diagram below indicates the timing of the tasks associated with the System Status Report.

This timing chart focuses upon the days of the SSR (days 0-3) and the relation of tasks 2C.01-2C.07 relative to these days. For example, task 2C.04 (prepare and *publish* SSR for day 2) is to be completed by 15:30 EST on the day two days in advance of the *dispatch day*.

	M	T	W	Th	F	Sa	Su
Week 0		Tasks 1, 3-5, 9	Tasks 1-3, 5-8, 10	**AD** Tasks 1-3, 10			
Week 1							
Week 2							
Week 3							
Week 4							

AD Assessment Day

Figure 3-3: Typical Calendar Relationship for the SSR

– End of Section –

Appendix A: Forms

The following form is used during the Near-Term Assessments and Reports process. It is available on the *IESO* Web site (www.ieso.ca:)

Form Name	Form Number
Energy Limited Data	IMO-FORM-1385

– End of Section –

Appendix B: Report Screens

A sample System Status Report is included below. Quantities in BLUE indicate that it changed since the previous report and RED indicates a negative quantity.

Note: The data shown in this report is for illustration purposes only. It is not intended to convey any actual operational information.

Normal SSR Report for 2005/07/19 generated on 2005/07/18 08:54

System Advisory/Summary

System Advisory/Summary Hourly Details H1-12 Hourly Details H13-24 Transmission Interfaces SAA Notes

Forecast Supply Energy(MWhr)	Forecast Demand Energy(MWhr)	Forecast Excess(Shortfall) Energy(MWhr)	Energy Shortfall Hours(Yes/No)
519300	514698	9498	No

System Advisory Notices-Title	Date/Time Issued	Start Date/Time	End Date/Time	Comment
System Advisory	2005/07/18 08:54	2005/07/19 08:00	2005/07/19 22:00	It is currently forecast that there is a capacity shortfall in HE12-18 and energy shortfall in HE9-22. Market participants are requested to submit new/revised offers and bids that will arrest the shortfall. Outages impacting available generation resources are at risk.
System Advisory	2005/07/18 06:04	2005/07/18 05:51	2005/07/22 06:00	Power Advisory issued for remainder of week (05-07-18 to 05-07-22) daily for hours 7-21. Electricity suppy is highly stressed.
System Emergency Advisory - high-risk operating state	2005/07/18 02:04	2005/07/18 07:00	2005/07/19 02:00	High risk limits are are being forecast in the Mississagi x Algoma zone from HE8 - HE2 (July 19). (see transmission interfaces for limitation changes)
System Emergency Advisory - high-risk operating state	2005/07/18 03:34	2005/07/18 03:30	2005/07/19 02:00	High risk limits are are being respected in the P502X zone until HE02 (July 19). (see transmission interfaces for limitation changes)

Hourly Details H1-12

System Advisory Summary Hourly Details H1-12 Hourly Details H13-24 Transmission Interfaces SAA Notes

Forecast Supply		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
Energy(MWhr)		28987.7	29337.6	28987.1	28982.7	28907.5	28921.8	28878.9	28857.9	28861.3	28781.5	28962	28936.4
Capacity(MW)		33330	33330	33330	33330	33330	33330	33330	33330	33330	33330	33330	33330
Intermittent (MWhr/hr)		70	70	70	70	70	78	87	87	87	87	87	87
Self-Sched (MWhr/hr)		684	684	684	684	684	629	629	629	629	629	629	629
Energy Limit'd (MWhr)		2923	2923	2923	2923	2923	2923	2923	2923	2923	2923	2923	2923
Energy Limit'd Cap(MW)		7631	7631	7631	7631	7631	7631	7631	7631	7631	7631	7631	7631
Imports - Est'd (MW)		690	980	710	700	700	700	700	700	700	600	700	700
Intermittent Capacity(MW)		207	207	207	207	207	207	207	207	207	207	207	207
Self-Sched Capacity(MW)		1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103
Variable Generation(MWhr)		231.7	291.6	211.1	216.7	141.5	202.8	150.9	129.9	133.3	153.5	234	208.4
Variable Generation Cap(MW)		0	0	0	0	0	0	0	0	0	0	0	0
Outages East(MW)		456	456	456	456	456	503	494	494	494	494	494	494
Outages West(MW)		100	100	100	100	100	100	100	100	100	100	100	100
Total Outages		556	556	556	556	556	603	594	594	594	594	594	594
Forecast Demand													
Primary Demand East(MW)		10980	10660	10459	10420	10450	10793	11127	11919	12680	13249	13592	13726
Primary Demand West(MW)		441	465	465	453	463	475	461	463	477	465	482	500
Primary Demand Total(MW)		11421	11125	10924	10873	10913	11268	11588	12382	13157	13714	14074	14226
Dispatchable Load(MW)		108	108	108	108	108	108	108	108	108	108	108	108
GRH(MW)	Total Operating Reserve(MW)	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620
	Min. 10-Minute OR	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080
	Min. 10-Minute Spin OR	270	270	270	270	270	270	270	270	270	270	270	270
	Load Forecast Uncertainty	0	0	0	0	0	0	0	0	0	0	0	0
	Add. Cont. Allowance	0	0	0	0	0	0	0	0	0	0	0	0
	Intrahour Margin(MW)	0	0	0	0	0	0	0	0	0	0	0	0
Excess(Shortfall)													
Energy(MWhr)		17674.7	18320.6	18171.1	18217.7	18102.5	17761.8	17398.9	16583.9	15812.3	15175.5	14996	14818.4
Capacity(MW)		20762.7	21408.6	21259.1	21305.7	21190.5	20849.8	20486.9	19671.9	18900.3	18263.5	18084	17906.4
Ancillary Services													
AGC Range Required (MW)		100	100	100	100	100	100	100	100	100	100	100	100
AGC Rate Required (MW/Min)		50	50	50	50	50	50	50	50	50	50	50	50
AGC Range Available (MW)		200	200	200	200	200	200	200	200	200	200	200	200
Reliability Must Run Required (MW)		0	0	0	0	0	0	0	0	0	0	0	0
Black Start Adequate(Y/N)		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Minimum Operating Reserve Requirements													
East(MW)		0	0	0	0	0	0	0	0	0	0	0	0
West(MW)		0	0	0	0	0	0	0	0	0	0	0	0

Hourly Details H13-24

System Advisory Summary Hourly Details H1-12 Hourly Details H13-24 Transmission Interfaces SAA Notes

Forecast Supply		H13	H14	H15	H16	H17	H18	H19	H20	H21	H22	H23	H24
Energy(MWhr)		28907.3	28902.4	28906.1	28897.5	28885.2	28882.1	28911.7	28897.9	28959.7	29031.2	29065	29105.6
Capacity(MW)		33330	33330	33330	33330	33330	33330	33330	33330	33330	33330	33330	33330
Intermittent (MWhr/hr)		87	87	87	87	87	87	87	87	87	87	78	70
Self-Sched (MWhr/hr)		629	629	629	629	629	629	629	629	629	629	629	629
Energy Limit'd (MWhr)		2923	2923	2923	2923	2923	2923	2923	2923	2923	2923	2923	2923
Energy Limit'd Cap(MW)		7631	7631	7631	7631	7631	7631	7631	7631	7631	7631	7631	7631
Imports - Est'd (MW)		700	700	700	700	700	700	700	700	700	700	700	700
Intermittent Capacity(MW)		207	207	207	207	207	207	207	207	207	207	207	207
Self-Sched Capacity(MW)		1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103	1103
Variable Generation(MWhr)		179.3	174.4	178.1	169.5	157.2	154.1	183.7	169.9	231.7	303.2	346	394.6
Variable Generation Cap(MW)		0	0	0	0	0	0	0	0	0	0	0	0
Outages East(MW)		494	494	494	494	494	494	494	494	494	494	503	511
Outages West(MW)		100	100	100	100	100	100	100	100	100	100	100	100
Total Outages		594	594	594	594	594	594	594	594	594	594	603	611
Forecast Demand													
Primary Demand East(MW)		13674	13631	13644	13851	14072	13984	14372	14741	14164	13225	12262	11626
Primary Demand West(MW)		505	461	461	463	503	497	504	530	535	517	496	476
Primary Demand Total(MW)		14179	14092	14105	14314	14575	14481	14876	15271	14699	13742	12758	12102
Dispatchable Load(MW)		108	108	108	108	108	108	108	108	108	108	108	108
GRH(MW)	Total Operating Reserve(MW)	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620	1620
	Min. 10-Minute OR	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080
	Min. 10-Minute Spin OR	270	270	270	270	270	270	270	270	270	270	270	270
	Load Forecast Uncertainty	0	0	0	0	0	0	0	0	0	0	0	0
	Add. Cont. Allowance	0	0	0	0	0	0	0	0	0	0	0	0
	Intrahour Margin(MW)	0	0	0	0	0	0	0	0	0	0	0	0
Excess(Shortfall)													
Energy(MWhr)		14836.3	14918.4	14909.1	14691.5	14418.2	14509.1	14143.7	13734.9	14368.7	15397.2	16415	17111.6
Capacity(MW)		17924.3	18006.4	17997.1	17779.5	17506.2	17597.1	17231.7	16822.9	17456.7	18485.2	19503	20199.6
Ancillary Services													
AGC Range Required (MW)		100	100	100	100	100	100	100	100	100	100	100	100
AGC Rate Required (MW/Min)		50	50	50	50	50	50	50	50	50	50	50	50
AGC Range Available (MW)		200	200	200	200	200	200	200	200	200	200	200	200
Reliability Must Run Required (MW)		0	0	0	0	0	0	0	0	0	0	0	0
Black Start Adequate(Y/N)		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Minimum Operating Reserve Requirements													
East(MW)		0	0	0	0	0	0	0	0	0	0	0	0
West(MW)		0	0	0	0	0	0	0	0	0	0	0	0

SAA Notes

System Advisory/Summary Hourly Details H1-12 Hourly Details H13-24 Transmission Interfaces SAA Notes

Security and Adequacy Assesment Notes-Title	Date/Time Issued	Start Date/Time	End Date/Time	Comment

Transmission Interfaces

System Advisory/Summary Hourly Details H1-12 Hourly Details H13-24 Transmission Interfaces SAA Notes

Internal Transmission Interface Limitations

Facility	Penalty Applied	Date/Time Issued	Start Date/Time	End Date/Time	Comments
Other	0	2005/07/15 13:55	2005/02/26 06:30	2005/12/31 23:59	Wawa 115 to 230 kV transfer must be less than 140 MW. Flow east from Wawa on P25W + P26W must be less than 350 MW.
Positive BLIP - Positive Buchanan Longwood Input	500	2005/05/02 12:53	2005/05/07 00:01	2005/09/30 23:59	B3N O/S
Negative BLIP - Negative Buchanan Longwood Input	500	2005/05/02 12:53	2005/05/07 00:01	2005/09/30 23:59	B3N O/S
P502X+A8K+A9K(South) - flow south on circuits P502X plus A8K & A9K	0	2005/07/18 03:34	2005/07/18 03:30	2005/07/19 02:00	Flow south is limited to 650 MW during high risk for P502X.
P502X+A8K+A9K(North) - flow north on circuits P502X plus A8K & A9K	0	2005/07/18 03:35	2005/07/18 03:30	2005/07/19 02:00	Flow north is limited to 0 MW during high risk for P502X.
Miss(Ecct)E - Mississagi East Circuits Flow East	0	2005/07/18 02:03	2005/07/18 07:00	2005/07/19 02:00	High risk forecast for the Mississagi x Algoma zone. Flow is limited to a maximum of 560 MW.
Miss(Ecct)W - Mississagi East Circuits Flow West	0	2005/07/18 02:03	2005/07/18 07:00	2005/07/19 02:00	High risk forecast for the Mississagi x Algoma zone. Flow is limited to a maximum of 500 MW.
FETT - Flow East To Toronto	200	2005/07/15 13:58	2005/07/19 04:00	2005/07/23 20:00	C11R O/S

Intertie Transmission Interface Limitations

Facility	Penalty Applied	Date/Time Issued	Start Date/Time	End Date/Time	Comments
Ontario - Michigan Export Summer	0	2005/04/25 09:09	2005/04/14 07:00	2005/10/31 07:00	B3N O/S, PS4 & PS51 I/S. Summer ratings of 35 degrees C, 4 km/hr winds and LTE ratings. The forecasted Ontario - Michigan flowgate limit is 1620 mw.
Ontario - Michigan Import Summer	0	2005/04/25 09:09	2005/04/14 07:00	2005/10/31 07:00	B3N O/S, PS4 & PS51 I/S. Summer ratings of 35 degrees C, 4 km/hr winds and LTE ratings. The forecasted Michigan - Ontario flowgate limit is 1210 mw.
Ontario Niagara - New York Export Summer	0	2005/04/06 11:50	2005/04/14 07:00	2005/10/31 07:00	Summer ratings of 30 degrees C, 5 km/hr winds and LTE ratings. With 400 mw out on L33P+L34P, the forecasted Ontario-Niagara flowgate limit is 2100 mw.
Ontario Niagara - New York Import Summer	0	2005/04/06 11:52	2005/04/14 07:00	2005/10/31 07:00	Summer ratings of 30 degrees C, 5 km/hr winds and LTE ratings. With 400 mw in on L33P+L34P, the forecasted Niagara - Ontario flowgate limit is 1290 mw.
Ontario - Quebec Rapide 115 kV Import Winter or Summer	55	2005/07/17 01:14	2005/07/18 07:00	2005/08/17 00:00	D4Z transfer limited to 65 MW with circuit D2L O/S.
Ontario - Quebec Kipawa 115 kV Export Winter or Summer	95	2005/07/15 08:41	2005/07/18 08:00	2005/07/25 17:00	H4Z o/s.

– End of Section –

Appendix C: Method to Prepare Weekly and Daily Ontario Demand Forecast

In accordance with C.5, S 7.1.3 of the *market rules*, this appendix describes the method used to prepare the hourly Ontario *demand* forecasts used as an input to the near-term *security* and *adequacy* assessments and presented in the:

- System Status Report,
- Daily *Security* and *Adequacy* Assessment Report, and
- Weekly *Security* and *Adequacy* Assessment Report.

To prepare near-term hourly Ontario *demand* forecasts (i.e. from current day, including pre-dispatch, out to 34 days), the *IESO* uses a load forecast tool[11]. The tool uses models consisting of linear regressions and/or neural network analysis to produce the forecasts.

C.1 Input Drivers for Demand Forecasting

The following items are used as input drivers by the demand forecasting tool:

- Weather parameters
    - Dry-Bulb Temperature
    - Wet-Bulb Temperature
    - Dew-Point Temperature
    - Wind Speed
    - Wind Direction
    - Illumination
    - Cloud Cover
- Historical Demand Data
- Historical Intermittent Generation Data
    - Solar Generation
    - Wind Generation

– End of Section –

[11] At the discretion of the *IESO,* we may manually adjust the Ontario *demand* forecasts provided by the load forecast tool to account for conditions such as, but not limited to, actual weather that differs from forecast weather.

Appendix D: Definitions of Terms in Assessment Reports

This appendix defines the terms used and presented in the:

- System Status Report (SSR),
- Daily *Security* and *Adequacy* Assessment Report, and
- Weekly *Security* and *Adequacy* Assessment Report.

D.1 Forecast Supply

In each of the three reports, the *IESO* will forecast the following elements of supply:

- ***Energy*** **(MWhr)** – the amount of *energy* available from generation sources in Ontario. This quantity is calculated from the relationship:

  Energy (MWhr)

  - [generating capacity in-service (MW)] * 1 hr

  - [capacity unavailable due to *outages* (MW)} * 1 hr

  - [capacity of *energy*-limited resources (MW)] * 1 hr

  - [capacity of *variable generation* resources (MW)] * 1 hr

  + *energy* (forecast) of *variable generation* resources (MWh)

  + *energy*-limited resource *energy* for the hour (MWhr)

  The SSR and the Daily SAA Reports include *energy* quantities for each hour. The Weekly SAA Report includes a daily *energy* quantity for each day of the report.

- **Capacity (MW)** – the net amount of *generation capacity* in-service in Ontario. This number may be revised lower if a material quantity of capacity is bottled. The SSR and the Daily SAA Reports include capacity quantities for each hour. The Weekly SAA Report includes a capacity quantity for the peak hour of each day of the report.

- ***Intermittent generator*** **schedules (MWhr/hr)** – the *IESO* will *publish* the aggregate schedules for *intermittent generators* in the SSR (*intermittent generator* schedules are not provided for the Daily SAA Reports or the Weekly SAA Reports). *Market participants* provide *dispatch data* for *intermittent generators* that represent the forecast *energy* output for these *facilities*. Since the *IESO* must *publish* the SSRs before the *dispatch data* has been submitted, the SSR will initially contain estimates of these schedules for each hour of the SSR period. The *IESO* will re-issue the SSR if there are any material differences between the *dispatch data* and the *IESO* forecast.

- ***Self-scheduling generator*** **schedules (MWhr/hr)** – the *IESO* will *publish* the aggregate schedules for *self-scheduling generators* (including *transitional scheduling generators*) in the SSR (*self-scheduling generator* schedules are not provided in the Daily SAA Reports or the Weekly SAA Reports). *Market participants* provide *dispatch data* for *self-scheduling generators* including *transitional scheduling generators* that represent the forecast *energy*

output for these *facilities*. Since the *IESO* must *publish* the SSRs before the *dispatch data* has been submitted, the SSR will initially contain estimates of these schedules for each hour of the SSR period. The *IESO* will re-issue the SSR if there are any material differences between the *dispatch data* and the *IESO* forecast.

- ***Energy*-limited *energy* (MWhr)** – the *IESO publishes* the aggregate forecast amount of *energy* available from *energy*-limited *facilities*. An *energy*-limited *facility* is a generation resource that is unable to supply *energy* equal to the capacity for each of the hours of the day (e.g. a hydro-electric *facility* with limited water in the forebay that does not allow it to produce *energy* at its rated output for each of 24 hours in the day). *Market participants* use IMO FORM 1385 to provide the *IESO* with an *energy*-limited forecast with an hourly granularity (i.e. the total forecast daily quantity of *energy* available) for each relevant *facility*. The *IESO publishes* the aggregated daily quantity for each day of the Weekly SAA Report. For each day of the Daily SAA Report or the SSR, the *IESO* calculates a daily quantity and divides this daily *energy*-limited *energy* quantity evenly amongst the 24 hourly periods and *publishes* the amount. On days when there is at least one hour for which there is an *energy* shortfall, the *IESO* will use an aggregate hourly energy profile as submitted by *market participants*.
- ***Energy*-limited capacity (MW)** – the *IESO publishes* the nominal capacity of those *facilities* that are *energy*-limited. On any day, the list of *facilities* that may be *energy*-limited may change. To place the *energy*-limited *energy* quantity in context, the nominal capacity of these *facilities* are provided to the *IESO* by the *market participants*, and the *IESO publishes* these quantities in the assessment reports. The SSR and the Daily SAA Reports include *energy*-limited capacity quantities for each hour. The Weekly SAA Report includes an *energy*-limited capacity for the peak hour of each day of the report.
- ***Variable Generation energy* (MWh) –** the *IESO publishes* the aggregate *variable generation* forecast amount of *energy* available from *variable generation* whose owners/operators are registered *market participants*. *Variable generation* means all wind and solar photovoltaic resources with an installed capacity of ≥ 5 MW, or all wind and solar photovoltaic resources that are directly connected to the *IESO-controlled grid*. The *IESO* produces and *publishes* the aggregated hourly quantity for the Weekly SAA Report and days 8 to 14 of the daily SAA report using a set of seasonal capacity factors. For days 3-7 of the daily SAA report and the SSR report the *IESO* uses a forecast produced by a *forecasting entity*[12].
- ***Variable generation* capacity (MW) –** the *IESO publishes* the nominal capacity of *variable generation* whose owners/operators are registered *market participants*. On any day, the list of *variable generation* may change. The SSR and the Daily SAA Reports include *variable generation* capacity quantities for each hour. The Weekly SAA Report includes the *variable generation* capacity for the peak hour of each day of the report.
- **Estimated imports (MW)** – the *IESO* will include, in its *adequacy* assessments, an amount to account for potential imports from other *control areas*. This amount will be the sum of

[12] At the discretion of the *IESO,* we may manually adjust the *variable generation* forecast provided by the *forecasting entity* to account for conditions such as, but not limited to, actual weather that differs from forecast weather.

scheduled *imports* from *intertie zones* for day 0 and for day 1 after the initial predispatch run. For day 1 prior to the initial predispatch run, a value of zero will be used. For all other days an estimate of up to 700 MW will be used. The 700 MW amount is based upon *IESO* experience with interchange transactions and is the amount of megawatts that are reasonably assumed to be available from the *interconnections* at any given time. A more conservative number will be used where available *interconnection* information indicates that less than 700 MW would be available. The total amount attributed to potential interchange assistance will be reviewed as the *IESO* gains more experience with the market. This quantity will be provided for each hour of each day of the SSR and the Daily SAA Report periods, and for the peak hour of each day of the Weekly SAA Report period.

The *IESO* may increase *imports* above 700 MW to reflect outage replacement *energy imports.* The amount in excess of 700 MW may be an aggregate of *generators* arranging for replacement *energy*.

- ***Outages*** **(MW**) – the *IESO* will *publish* the quantity of *generation facility* MWs that are unavailable in both the East and West systems due to *outage* or de-rating. This quantity will be provided for each hour of each day of the SSR and the Daily SAA Report periods, and for the peak hour of each day of the Weekly SAA Report period.

Adjusted Capacity in SSR/SAA Reports: An adjustment in the available *dispatchable capacity/generation* was made in May, 2003 in the SSR and SAA reports i.e. the "*Total Outage*" value is increased by 2% of available *dispatchable generation*. For the purposes of all days of the SSR, Daily SAA and Weekly SAA reports, this adjustment is applied to the "*Outages East (MW)"* value to compensate for the outage reporting deadband of the greater of 2% or 10 MW. This change better represents available capacity and reduces discrepancies between the SSR/SAA reports and *predispatch*. This adjustment factor of 2% may be varied by the *IESO* from time to time if considered appropriate for the above purposes.

D.2 Forecast Demand

In each of the three reports, the *IESO* will forecast the following components of *demand*:

- **Ontario *Demand*** **(MW**) – the *IESO* will forecast the Ontario *demand* (*non-dispatchable load* + *dispatchable load* + losses) for the East system and the West system, and provide the Total of these 3 quantities. The *dispatchable load* component of Ontario *demand* is the *dispatchable load* that is expected to be supplied. Ontario *demand* is forecast for each hour of the SSR, the Daily SAA Reports and the Weekly SAA Reports. The forecast Ontario *demand* for Day 0 (today) and Day 1 (tomorrow) represents the average *demand* forecast in any hour, except where peak *demand* forecasts are provided for the *IESO*-defined ramp hours (defined in Market Manual 4.2, Appendix E.1). The forecast Ontario *demand* for all other hours beyond Day 1 represents the average *demand* for the hour.
- ***Dispatchable load*** **(MW**) – the *IESO* will forecast the amount of *dispatchable load* that is expected to be available to be dispatched off. This information is presented for each hour of each day of the SSR and the Daily SAA Reports and for the peak hour of each day for the Weekly SAA Reports. *Dispatchable load* forecasts are included in capacity excess (shortfall) calculations.

- **Generation Reserve Holdback (MW)** – the *IESO* will forecast the Generation Reserve Holdback Requirements (*operating reserve*, load forecast uncertainty (LFU) and additional contingency allowance (ACA)) in accordance with the principles listed in Appendix E: Generation Reserve Holdback Requirements.
- **Minimum 10-minute *operating reserve* requirement (MW)** – the *IESO* will forecast its 10-minute *operating reserve* in accordance with *NPCC* Directory 5: Reserve. This information is presented for each hour of each day of the SSR and the Daily SAA Reports and for the peak hour of each day for the Weekly SAA Reports. Minimum 10-minute *operating reserve* requirements are not included in excess (shortfall) calculations.
- **Minimum 10-minute Spinning *operating reserve* Requirement (MW)** – the *IESO* will forecast its 10-minute spinning *operating reserve* in accordance with NERC Reliability Standard BAL-002-1 (Disturbance Control Performance) and *NPCC* Directory 5: Reserve. This information is presented for each hour of each day of the SSR and the Daily SAA Reports and for the peak hour of each day for the Weekly SAA Reports. Minimum 10-minute spinning *operating reserve* requirements are not included in excess (shortfall) calculations.
- **Intrahour Margin (MW)** – the *IESO* will forecast an amount of *demand* that will be added to the Ontario *demand* forecast for relevant hours. The intrahour margin accounts for the fact that the 20-minute peak may exceed the average hourly Ontario *demand* forecast. In general, this amount will be included in peak hours of the day, but may not be included in off-peak hours where *adequacy* is less of a concern. The intrahour margin is included in the System Status Report, Daily SAA Report and the Weekly SAA Report.

D.3 Energy and Capacity Excess (Shortfall)

Each of the three reports includes:

- *energy adequacy*, quantified by calculating and presenting the *energy* excess (or shortfall when there is insufficient *energy*), and
- capacity *adequacy*, quantified by calculating and presenting the capacity excess (or shortfall when there is insufficient capacity).

For the SSR and the Daily SAA Reports, the *energy* excess for each hour is calculated from the following formulation:

Energy excess (MWhr)

= [generating capacity in-service (MW) + estimated imports (MW) + dispatchable load] * 1 hr

- [total hourly Ontario *demand* forecast (MW) + capacity unavailable due to *outages* (MW) + capacity of *energy*-limited resources (MW)] * 1 hr

+ *energy*-limited resource *energy* for the hour (MWhr)

IF (*energy* excess < 0), then there is a shortfall of *energy*.

For the Weekly SAA Reports, the *energy* excess for each day is calculated for each day from the following formulation:

Energy excess (MWhr)

= $\sum_{\text{hrs 1-24}}$ [generating capacity in-service (MW) + estimated imports (MW) + dispatchable load] * 1 hr

- $\sum_{\text{hrs 1-24}}$ [total hourly Ontario *demand* forecast (MW) + capacity unavailable due to *outages* (MW) + capacity of *energy*-limited resources (MW)] * 1 hr

+ $\sum_{\text{hrs 1-24}}$[*energy*-limited resource *energy* for the hour (MWhr)]

IF (*energy* excess < 0), then there is a shortfall of *energy*.

For the System Status Reports, the capacity excess for each hour is calculated from the following formulation:

Capacity excess (MW)

= [generating capacity in-service (MW) + estimated imports (MW) + dispatchable load]

- [total hourly Ontario *demand* forecast (MW) + capacity unavailable due to *outages* (MW) + generation reserve holdback (MW) + intrahour margin (MW)

IF (capacity excess < 0), then there is a shortfall of capacity.

For the Daily SAA Reports, the capacity excess for each hour is calculated from the following formulation:

Capacity excess (MW)

= [generating capacity in-service (MW) + estimated imports (MW) + dispatchable load]

- [total hourly Ontario *demand* forecast (MW) + capacity unavailable due to *outages* (MW) + generation reserve holdback (MW) + intrahour margin]

IF (capacity excess < 0), then there is a shortfall of capacity.

For the Weekly SAA Reports, the capacity excess for the peak hour[13] is calculated from the following formulation:

Capacity excess (MW)

= [generating capacity in-service (MW) + estimated imports (MW) + dispatchable load]

- [total hourly Ontario *demand* forecast (MW) + capacity unavailable due to *outages* (MW) +

[13] The peak hour is defined as the hour containing the largest total forecast Ontario demand.

generation reserve holdback (MW) + intrahour margin]

IF (capacity excess < 0), then there is a shortfall of capacity.

D.4 Ancillary Services

The *IESO* will forecast requirements and supply for three *ancillary services* in the three reports:

- *AGC* – the *IESO* will forecast the *AGC* range (± MW) and rate (MW/minute) required. The *Market Rules* identify that the minimum *AGC* requirements will be a range of ± 100 MW and a rate of 50 MW/minute (C.5, S. 4.4.2 of the *market rules*). The *IESO* will also identify the *AGC* range available based on the contracted quantity of *AGC* range (minus *AGC* range unavailable due to *outages* or deratings). This information is provided for each hour of each day in the SSR and in the Daily SAA Reports and for the peak hour of each day in the Weekly SAA Report.
- *Reliability* Must Run – the *IESO* will forecast the quantity (MW) of *generation capacity* for which it will invoke or expects to invoke *reliability* must run contracts. It is important to recall that *reliability* must run contracts are invoked to induce *market participants* to submit *offers* for generation. The quantity of *reliability* must run required presented in these reports does not represent a forecast of the amount of generation that may be constrained on in the *real-time schedules*. This information is provided for each hour of each day in the SSR and in the Daily SAA Reports and for the peak hour of each day in the Weekly SAA Report.
- Black Start – the *IESO* will forecast the *adequacy* of the generating units providing black start services. This information is provided for each hour of each day in the SSR and in the Daily SAA Reports and for the peak hour of each day in the Weekly SAA Report.

D.5 Minimum Operating Reserve Requirements

The *IESO* will specify minimum *operating reserve* requirements in some *local areas* of the *IESO-controlled grid* (C.5, S. 4.5 of the *market rules*). This will occur when transmission and/or generation restrictions prescribe that *operating reserve* be scheduled in the area to ensure that this reserve can be activated following the initiation of the single largest contingency in the area. This information is summarized and presented in the three reports for the East and West systems[14]:

- for each hour of each day in the SSR and in the Daily SAA Report, and
- for the peak hour of each day in the Weekly SAA Report.

D.6 Over-Generation and Under-Generation

Over-Generation

An over-generation situation is deemed to occur when the amount of dispatched generation exceeds the Ontario *demand* and net interchange. This would likely occur in real-time *operation* in low *demand* periods when one or more *generators dispatch* more generation than the *dispatch*

[14] The minimum operating reserve requirements are presented for the same areas for which Ontario demand forecasts are prepared.

instructions issued by the *IESO* and are unable to respond to *IESO*'s subsequent *dispatch instructions* for immediate corrective actions. In the event of an actual, imminent or expected over-generation situation, the *IESO* will issue a Minimum Generation Alert / Event via SSR. The SSR will indicate the amounts of over-generation with a System Advisory including the remedial actions that the *IESO* intends to take.

Under-Generation

An under-generation situation is expected to occur when a potential *energy* and capacity shortfall (see D.3 in Appendix D) is identified in the *Security* and *Adequacy* Assessment process. In the event of an expected under-generation situation, the *IESO* will issue a System Status Report with a System Advisory including the remedial actions that the *IESO* intends to take. The expected amounts of under-generation will be included in the Daily and Weekly SAA reports.

Maximum Generation Alert

If the IESO determines that there will be potential difficulty meeting *energy* and/or *operating reserve* requirements due to lack of *market participant offers*, the IESO will issue a Maximum Generation (MaxGen) Alert via SSR. The SSR will include a System Advisory requesting *market participants* to consider placing additional *offers* into the electricity market.

D.7 System Advisory Notices

System Advisories are included in System Status Reports only. If required, a SSR shall contain the following advisory notes (C.7, S 12.1.3 of the *market rules*):

- a Major Change Advisory if a major change in expected load, generation or transmission capacity has occurred since the last SSR was issued,
- a System Advisory if the *IESO* expects over-generation, under-generation or shortfalls in *operating reserve* or *contracted ancillary services*,
- a System *Emergency* Advisory if the *IESO* expects an *emergency operating state* or a high-risk operating state, and
- a Market Suspension Advisory or a Market Resumption Notice if the *IESO* is suspending or resuming *operation* of all or part of the *IESO-administered markets*.

D.8 Security and Adequacy Assessment (SAA) Notes

***Security* and Adequacy Assessment Notes** allow the *IESO* to present information to *market participants* that are not addressed by any of the other report components. For example, if the *IESO* needs to identify that a particular *local area* is projected to experience an *energy* and/or capacity shortfall, or the *variable generation* forecast is unavailable/corrupted, this will be communicated via an SAA note. The SAA notes are available for all three types of reports.

D.9 Summary Information

Four items are presented to summarize the report information in the report **Summary** that is included in the SSR and the Daily SAA Reports:

- Forecast Supply *Energy* (MWhr) – this item is a forecast of the total quantity of *energy* available to supply Ontario *demand* for the day. It is prepared from a summation of the 24 hourly quantities of *energy* available to supply Ontario *demand*. Details regarding the

calculation of the hourly quantities of *energy* available to supply Ontario *demand* are included in Section D.1, Forecast Supply.

- Forecast *Demand Energy* (MWhr) – this item is a forecast of the total quantity of Ontario *demand* for the day. It is prepared from a summation of the 24 hourly *demand* forecast quantities for Ontario.
- Forecast Excess (Shortfall) *Energy* (MWhr) – this item is a forecast of the excess amount of *energy* available for the day. It is calculated by subtracting the forecast *demand energy* (daily total) from the forecast supply *energy* (daily total).
- *Energy* Shortfall Hours (Yes/No) – this item will indicate 'YES' if at least one hour of the assessment day forecasts an *energy* shortfall for the hour. The assessment may calculate that there is an excess of *energy* available for the day. However, there may be some hours in which *energy* supply is less than *energy demand*.

D.10 Transmission Interfaces

The three reports provide deviations in transmission *facility* ratings for major internal flowgates and all *intertie* flowgates (C.7, S. 12.1.2.1 of the *market rules*). These are the flowgates on which flows must be restricted below the limit specified to ensure the reliable *operation* of the *IESO-controlled grid*.

The following is a list of internal flowgates and external flowgates for which the *IESO* will *publish* deviations of transmission *facility* ratings from normal values. The Maximum Interface Limits posted in the three reports are representative of Available Transfer Capability (ATC) values. At any time, the actual maximum interface limits may deviate from these values. Updated versions of this table will be attached on-line to the System Status Report and the Daily SAA Reports.

Table D-1: Operating Security Limits

Interface	Description of Interface	Notes
Internal Interfaces		
TEK	Transfer East of Kenora	Voltage decline limit
TEM	Transfer East of Mackenzie	Voltage decline limit
TWM	Transfer West of Mackenzie	Voltage decline limit/transient limit
DRAI	Dryden Area Inflow Limit	No limit under normal conditions, DRAI limit of 75 MW applies when K23D(Kenora x TCPL Vermilion Bay) section is O/S
Lakehead(Ecct)E	Lakehead East Circuit Flow East	No limit under normal conditions, 100 MW Maximum Limit applies under *outage* or high risk conditions
EWTE	East-West Transfer East	Voltage decline limit

Interface	Description of Interface	Notes
EWTW	East-West Transfer West	
WMFE-230-115	Wawa-MacKay Flow East on the 230 kV and 115 kV system	Voltage stability limit
Miss(Ecct)E	Mississaugi East Circuits Flow East	Voltage stability limit
Miss(Ecct)W	Mississaugi East Circuits Flow West	No limit under normal conditions
D501P+H9K(South)	Flow South on Circuits D501P plus H9K	No limit with G/R available, limit reduced to zero with D501P out of service
D501P+H9K(North)	Flow North on Circuits D501P plus H9K	No limit with L/R available, limit reduced to zero with D501P out of service
P502X+A8K+A9K(South)	Flow South on Circuits P502X plus A8K & A9K	No limit with G/R available, limit reduced to zero with P502X out of service
P502X+A8K+A9K (North)	Flow North on Circuits P502X plus A8K & A9K	No limit with L/R available, limit reduced to zero with P502X out of service or for high risk conditions over P502X
Flow South (FS)	Flow South on Circuits X503E, X504E and D5H	Stability limit
Flow North (FN)	Flow North on Circuits X503E, X504E and D5H	Voltage decline limit
Canyon 115kV Output	Canyon 115kV Output	Normal system configuration / Configuration with Otter Rapids connected to 115 kV system
SFW Global	Sudbury Flow West Global	Voltage decline limit
FABCW	Flow Away From Bruce Complex and wind output in Bruce area.	This limit is based on 8 Bruce units I/S Limit can be improved by arming Bruce G/R. Note that only penalties due to 500kV transmission line outages will be reported for this interface.
Positive BLIP	Positive Buchanan Longwood Input	

Interface	Description of Interface	Notes
Negative BLIP	Negative Buchanan Longwood Input	
FETT	Flow East To Toronto	Voltage stability limit
CLAN	Claireville North	
CLAS	Claireville South	
Nanticoke 500 kV generation	Nanticoke 500 kV generation	
Nanticoke Total Generation	Nanticoke Total Generation	
Lauzon Transfer	Lauzon Transfer	**** No interface limit under normal conditions
Lennox Transfer	Lennox T51/T52 Transfer	**** No interface limit under normal conditions
Cataraqui Transfer	Cataraqui T1/T2 Flow	**** No interface limit under normal conditions
FIO	Flow into Ottawa	Voltage Stability Limit
FID	Flow into Dobbin	This limit is based on winter conditions. It can be improved based on the amount of L/R armed Voltage decline limit
X1P Flow Into Dobbin	X1P Flow Into Dobbin	**** No interface limit under normal conditions
115 kV Dobbin Area Load	115 kV Dobbin Area Load	**** No interface limit under normal conditions
Chats Falls Area Generation	Chats Falls GS 230 kV Area Generation	
P33C Inflow	P33C Chats Falls Inflow	P33C Chats Falls Inflow is limited to 310 MW when Chelsea generation is greater than 105 MW
P33C Inflow Plus Arnprior	P33C Chats Falls Inflow Plus Arnprior Generation	**** No interface limit under normal conditions

Interface	Description of Interface	Notes
Madawaska Generation	Madawaska 115 kV Generation	This limit is based on Chats Falls G2 & G3 I/S and connected to C7BM or 230 kV system. The limit can be improved up to 400 MW with maximum G/R armed.
Beauharnois Delivery	Beauharnois Delivery	This limit can be improved up to 800 MW with maximum G/R armed.
D5A Import	D5A Import From Maclaren	
D5A Export	D5A Export To Maclaren	
D5A Transfer	D5A Transfer	**** No interface limit under normal conditions
TEC	Transfer East From Cherrywood	**** No interface limit under normal conditions
External Interfaces		
Ramp Rate Limit	All external interfaces	Total allowable change in net interchange in any hour.
OMTE	Ontario-Manitoba Transfer East	Voltage decline limit
OMTW	Ontario-Manitoba Transfer West	Voltage decline limit
MPFN	Ontario-Minnesota Transfer North	Voltage decline, stability and thermal limit
MPFS	Ontario-Minnesota Transfer South	Voltage decline, stability and thermal limit
Ontario to Michigan Winter	Total line flow on B3N, L4D, L51D and J5D from Ontario to Michigan	This limit is based on winter thermal rating at 10 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.
Michigan to Ontario Winter	Total line flow on B3N, L4D, L51D and J5D from Michigan to Ontario	This limit is based on winter thermal rating at 10 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.

Interface	Description of Interface	Notes
Ontario to Michigan Summer	Total line flow on B3N, L4D, L51D and J5D from Ontario to Michigan	This limit is based on summer thermal rating at 35 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.
Michigan to Ontario Summer	Total line flow on B3N, L4D, L51D and J5D from Michigan to Ontario	This limit is based on summer thermal rating at 35 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.
NY-ONT Stability Limit	New York to Ontario Stability Limit	
Ontario Niagara to New York Winter	Total line flow on PA301, PA302, PA27, BP76, L33P, and L34P from Ontario to New York	This limit is based on winter thermal rating at 10 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.
New York to Ontario Niagara Winter	Total line flow on PA301, PA302, PA27, BP76, L33P and L34P from New York to Ontario	This limit is based on winter thermal rating at 10 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.
Ontario Niagara to New York Summer	Total line flow on PA301, PA302, PA27, BP76, L33P, and L34P from Ontario to New York	This limit is based on summer thermal rating at 35 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.
New York to Ontario Niagara Summer	Total line flow on PA301, PA302, PA27, BP76, L33P, and L34P from New York to Ontario	This limit is based on summer thermal rating at 35 degree C with 0-4 km/hr wind. Ambient conditions will determine the applicable thermal limit of the tie lines.
Ontario to Quebec Beauharnois 230 kV Winter	Line flow on B31L from Ontario to Quebec Beauharnois (radial connection)	Thermal limit of B31L may be more restrictive.
Ontario to Quebec Beauharnois 230 kV Summer	Line flow on B31L from Ontario to Quebec Beauharnois (radial connection)	This limit is based on summer thermal rating at 30 degrees C. Ambient conditions will determine the applicable thermal limit of the tie line to a maximum of 470 MW.

Interface	Description of Interface	Notes
Quebec Beauharnois 230 kV to Ontario Winter or Summer	Total Line flow on B5D and B31L from Quebec Beauharnois to Ontario (radial connection)	This limit is the same as the interface limit for Beauharnois Delivery. Thermal limits of B5D and B31L may be more restrictive
Ontario to Quebec Maclaren - 230 kV - Winter or Summer	Line flow on D5A from Ontario to Maclaren	This limit is the same as the interface limit for D5A Export to Maclaren. Thermal limit of D5A may be more restrictive.
Quebec Maclaren to Ontario – 230 kV - Winter or Summer	Line flow on D5A from Maclaren to Ontario	This limit is the same as the interface limit for D5A Import from Maclaren. Thermal limit of D5A may be more restrictive.
Ontario to Quebec Masson - 115 kV - Winter or Summer	Line flow on H9A from Ontario to Masson	Concurrent *operation* of D5A with Maclaren and H9A with Masson is not permitted
Quebec Masson to Ontario - 115 kV - Winter or Summer	Line flow on H9A from Masson to Ontario	Concurrent *operation* of D5A with Maclaren and H9A with Masson is not permitted. Thermal limit of H9A may be more restricted
Ontario to Quebec Outaouais – 230kV – Winter or Summer	Line flow on A41T and A42T from Ontario to Outaouais	Limit is the minimum of 1 or 2 below: 1. 1250MW with two convertors in service or 625MW with one convertor in service 2. FIO limit – (Ottawa area load and losses) + (Generation in the Ottawa Zone)
Quebec Outaouais to Ontario – 230kV – Winter or Summer	Line flow on A41T and A42T from Outaouais to Ontario	Limit is the minimum of 1 or 2 below: 1. 1250MW with two convertors in service or 625MW with one convertor in service 2. FIO limit – (Ottawa area load and losses) + (Generation in the Ottawa Zone)
Ontario to Quebec Paugan 230 kV Winter or Summer	Line flow on P33C from Ontario to Paugan	
Quebec Paugan to Ontario - 230 kV Winter or Summer	Line flow on P33C from Paugan to Ontario	P33C Chats Falls Inflow is limited to 310 MW when Chelsea generation is greater than 105 MW
Ontario to Quebec Quyon 230 kV Winter	Line flow on Q4C from Ontario to Quyon	

Interface	Description of Interface	Notes
Quebec Quyon to Ontario 230 kV Winter	Line flow on Q4C from Quyon to Ontario	
Ontario to Quebec Quyon 230 kV Summer	Line flow on Q4C from Ontario to Quyon	
Quebec Quyon to Ontario 230 kV Summer	Line flow on Q4C from Quyon to Ontario	
Ontario to Quebec Bryson 115 kV Winter or Summer	Line flow on X2Y from Ontario to Bryson	
Quebec Bryson to Ontario - 115 kV Winter or Summer	Line flow on X2Y from Bryson to Ontario	
Quebec Rapide to Ontario (115kV) Import	Line flow on D4Z from Rapide-Des-Isles to Dymond	
Ontario to Quebec Kipawa (115kV) Export	Line flow on H4Z from Holden to Kipawa	
* Note 1: Interface Limit may be lower than the maximum limit indicated due to dependencies on other interface flows or factors such as the number of generating units on-line, amount of generation rejection armed, amount of load rejection armed, voltage levels, etc.		
* Note 2: Limits based on thermal restrictions for pre-contingency flow or post-contingency flow are monitored online and are not included in the above list. Thermal limitations indicated above for external interfaces are estimated values based on specified assumptions.		

– End of Section –

Appendix E: Generation Reserve Holdback Requirements

Generation Reserve Holdback (GRH) is an amount of generating capacity that is needed to be held in reserve, to cover for uncertainty in load forecasting, generation availability, and for the effects of special protection schemes and the commissioning of large *generation units*, so that load may be supplied with an acceptable level of *reliability*. The distribution of the Generation Reserve Holdback throughout a year is based upon a method of levelizing the risk of unsupplied load for the peak hour of each week in a year. The probability of failure of units currently in *operation* increases as time progresses but tends to level off after about one month. The GRH that is required to levelize the risk due to generating unit unreliability will, therefore, increase up to a limit as time advances from the present. On occasion, some special protection schemes, and the commissioning of large generating units, can give rise to the potential for unusually high generation contingencies. When these are taken into account, significant GRH variations from week-to-week can result, especially in the near-term.

Therefore, GRH is comprised of the combination of requirements for *operating reserve* (OR), Load Forecast Uncertainty (LFU) and Additional Contingency Allowance (ACA) and is dependent on the type of Report.

Type of Report		Time Period (beginning from present)	Generation Reserve Holdback (MW)
System Status Report	(a)	Days 0-2, where day 0 is the current day.	*Operating reserve* requirement consisting of 30-minute and 10-minute *operating reserve* requirements.
Daily SAA Report	(b)	Balance of the first two weeks (3-14 days out)	GRH = operating reserve + LFU + ACA That is, GRH equals the *operating reserve* Requirement (operating reserve) plus the Load Forecast Uncertainty (LFU) plus the Additional Contingency Allowance (ACA) In this period, the ACA consists of the next largest half contingency beyond the *operating reserve* Requirement. For the Winter Period (December, January and February) a further amount equal to half of the next largest contingency will be added.

Type of Report		Time Period (beginning from present)	Generation Reserve Holdback (MW)
Weekly SAA Report	(c)	Covers a total of 11-17 days from Day 15 out to the end of Week 4[15].	Linear interpolation between (b) and (d), except for the Winter Period when it is the same as (d).
Period beyond the days of the Weekly SAA Report	(d)	Week 5 (this quantity is not included in the Weekly SAA Report, but is used to aid in the interpolation for the Weekly SAA period).	The Week 5 Required Reserve is calculated and *published* in the Resources *Adequacy* Assessment Table, located in the "18-Month Outlook" as posted on the *IESO* Web site.

- **Total *operating reserve* (operating reserve)** forecast is composed of the addition of the 30-minute *operating reserve* requirement and the 10-minute *operating reserve* requirement.
- **Load Forecast Uncertainty (LFU)** - The process of creating a realistic operational *energy* plan includes taking into account uncertainty in the major forecast components, including Ontario *demand*. Sensitivity to extreme weather conditions subjects the power system to large swings in load, particularly during the summer and winter peak periods. Only weather-related uncertainties are considered. Load Forecast Uncertainty (LFU) is included to reflect this sensitivity in *security* and *adequacy* assessment reports.

  LFU is a statistical measure of deviations from the actual Ontario *demand* and can be considered as a target bandwidth for the forecasted error. It follows a normal distribution and is obtained from historical data. One standard deviation of error distribution becomes the factor used to determine LFU. The LFU is determined for both day 3 and for days further out.

  In the near-term, the *demand* forecast is derived using a load forecasting tool (for more information on preparing the *demand* forecast, refer to Appendix C). From day 0 to 10 days out, the current weather forecast is used as the basis for characterizing the forecast day. Beyond 10 days, normal (actual past) weather is used as the basis for characterizing the forecast day.

  From day 0 (current day) to 2 days out, there is less uncertainty in the weather forecast, therefore the LFU allowance is not included in this period. From 3 days out and beyond, the weather forecast contains more uncertainty, therefore LFU allowance is included to reflect the uncertainty. As the number of days out increases, uncertainty in the weather forecasted increases.

  For 3 days out to day 6, the LFU is a statistical measure of the error variability over the 3 to 6 day period. This data set consists of a calculated error (difference) between the forecasted and actual Ontario *demand* is evaluated to determine one standard deviation for each month. This deviation represents the uncertainty of 6 days out. As the days out

[15] A week runs Monday – Sunday. The current week is defined as Week 0.

decreases, the uncertainties in the forecasted weather decrease. Therefore, the LFU decreases.

For 7 days out and beyond, the LFU is a statistical measure of past monthly Ontario *demand* peaks and monthly *energy* usage. This data set consists of 30 years of recorded actual (normal) weather, Ontario *demand* peaks and *energy* usage. To use this data, the assumption is made that the weather in the future will be similar to the weather in the past. Again, this data is evaluated to determine a standard deviation for each month using the Ontario *demand* peaks. This deviation represents the uncertainty for 7 days out and beyond.

- **Additional Contingency Allowance (ACA)** is the forecast for *demand* to allow for contingencies. The GRH requirements may be increased for special considerations in near-term planning, such as uncertainties in return-to-service dates, known problems of operating units, hydraulic flexibility, levels and types of transactions and prevailing weather conditions. Therefore, operability studies considering generation contingencies may also be required to ensure *energy adequacy*.

The Generation Reserve Holdback (GRH) component of the *Demand* Forecast for any given hour or day plays an important role in the decision-making process of the *IESO* and ultimately, for *market participants*. For example, the forecast accuracy of the capacity of *operating reserve* plus the *demand* required to fulfill uncertainties and contingencies in the *operation* of the *IESO*-administered grid impacts directly on requests for *outages* by *market participants*. A consistently adequate supply of generation to meet capacity and *energy* requirements will be maintained in the near-term.

– End of Section –

Acronyms

The following are some specific acronyms used in SSR's and SAA's

Acronym	Description
A/R	Auto reclose
ACE	Area Control Error
AGC	Automatic Generation Control
ARFS	Automatic Removal from Service
ATC	Available Transfer Capability
AVR	Automatic Voltage Regulator
BF	Breaker Failure
CT	Current Transformer
CTU	Combustion Turbine Unit
GR	Generation Rejection
GIC	Geomagnetic Induced Current
GS	Generating Station
HT	High Tension
I/S	In Service
L/R	Load Rejection
LGR	Load & Generation Rejection
LEO	Line End Open
LTR	Limited Time Rating
LT	Low Tension
LTE	Long Time Emergency Rating

Acronym	Description
O/S	Out of Service
O/V	Overvoltage
OAAT	One at a Time
PT	Potential Transformer
RTU	Remote Terminal Unit
SCO	System Control Order
SPS	Special Protection System
SS	Station Service
STE	Short Time Emergency Rating
Term. Brkr	Terminal Breaker
TLR	Transmission Loading Relief
TS	Transmission Station
U/A	Unavailable
U/V	Under Voltage
ULTC	Under Load Tap Changer

– End of Section –

References

Document ID	Document Title
MDP_RUL_0002	Market Rules for the Ontario Electricity Market
MDP_PRO_0024	Market Manual 2: Market Administration, Part 2.8: 10-Year Outlook and Related Information Requirements
IMP_PRO_0024	Market Manual 2: Market Administration, Part 2.11: 18-Month Outlook and Related Information Requirements
IMP_MAN_0012	Market Manual 7: System Operations, Part 7.0: System Operations Overview
IMP_PRO_0035	Market Manual 7: System Operations, Part 7.3: Outage Management
MDP_PRO_0014	Market Manual 1: Market Entry, Maintenance & Exit, Part 1.1: Participant Authorization, Maintenance and Exit
	NERC Reliability Standard BAL-002-1: Disturbance Control Performance
	NPCC Directory 5: Reserve

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