

ENABLING SYSTEM FLEXIBILITY

Meeting #7

April 20, 2018

Agenda

- Engagement recap
- Process to use 30-minute operating reserve for flexibility
- Next steps

Engagement Recap

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- Objective: To determine potential solutions that can enable and achieve flexibility to meet evolving system needs
- Proposed solution: Schedule additional 30-minute OR using existing market processes
 - Indicate flexibility need by increasing 30-minute OR in pre-dispatch
 - Schedule/commit resources as required in pre-dispatch

Process to Use 30-Minute OR for Flexibility

Market Rule Changes

- Existing market rules allow the IESO to increase OR to cover for uncertainty
- However, related market rules for OR amended to improve the overall clarity and consistency
- Chapter 5, Sections 4.5.19 and 4.5.20 amended
 - March 6th, the Technical Panel recommended the rule amendments to the IESO Board for consideration
 - April 11th, the Board approved the rule amendments
 - May 4th, the amended rules will be in effect

Market Manual 7.1 Changes in Effect

2.4.2 System Flexibility Events

System flexibility is the ability of the system to respond to intra-hour differences between:

- Expected supply and actual production, and/or
- Expected demand levels and actual consumption.

System flexibility events occur when conditions are such that there is increased risk for material differences between supply and demand in future hours.

Table 2-3 provides examples of conditions that may require the *IESO* to take actions when we anticipate or are experiencing a system flexibility event.

The *IESO* may issue an advisory notice in advance of or during a system flexibility event as appropriate. The alert will notify the market of:

- A system flexibility event is expected or in progress, and
- The action(s) the *IESO* is taking.

Market Manual 7.1 Changes in Effect

Table 2-3: IESO Actions to Manage Variable Generation Events

If...	Then...
<p>The <i>IESO</i> experiences or expects conditions that may require additional system flexibility to address, such as:</p> <ul style="list-style-type: none">• Material differences between forecasted and actual <i>variable generation</i> output, or• Significant <i>variable generation</i> ramp events, or• Material differences between forecasted and actual Ontario demand	<p>The <i>IESO</i> may:</p> <ul style="list-style-type: none">• Adjust the 30-minute <i>operating reserve</i> requirement to indicate the system flexibility need,• Manually adjust the <i>variable generation</i> forecast to align it with expected <i>variable generation</i> output,• Commit/constrain on/ constrain off <i>dispatchable</i> resources,• Curtail export transactions mid-hour, or• Take other actions appropriate for the circumstances.

Business As Usual

- 30-minute OR increases for flexibility are no different than when OR requirements are increased for contingency changes
- Resources are economically scheduled / committed to meet the OR requirement changes throughout the pre-dispatch and real-time processes

OR Increases for Flexibility

- An Advisory Notice will be issued in advance indicating the amounts and hours of increase
 - Flexibility OR increases to occur many hours in advance of need and possibly in the day-ahead
- The OR increases will be reflected in the “Total Operating Reserve Requirement” row of the Adequacy Report
 - An additional row to separate out the OR amount for flexibility may be added in the future

Advisory Notice

The screenshot shows the IESO website's 'Day 0 Advisory Notices Summary' page. The page features a navigation menu with links for 'Learn', 'Get Involved', 'Power Data', and 'Powering Tomorrow'. A sidebar on the left lists various advisory notice categories, with 'Day 0 Advisory Notices Summary' highlighted. The main content area displays a table of notices, with the first entry, 'Flexibility Event Forecasted', highlighted by a red box and a red arrow.

[Sector Participants](#) > [RSS Feeds](#) > Day 0 Advisory Notices Summary

IN THIS SECTION...

- Administrative Pricing
- DACP Notifications
- Emergency Advisory Notices
- Day 0 Advisory Notices Summary**
- Day 1 to 34 Advisory Notices Summary
- Advisory Notices Archive

Day 0 Advisory Notices Summary

[RSS Feed](#)

Notice	Issued	Updated
Flexibility Event Forecasted Start: 2018/04/04 06:00 End: 2018/04/04 10:00	2018/04/03 22:27	2018/04/03 22:27
CAOR Derate Start: 2018/04/04 00:00 End: 2018/04/05 00:00	2018/04/03 09:41	2018/04/03 09:41
Pre-emptive Curtailments Beginning Start: 2018/04/04 00:17 End: 2018/04/04 23:59	2018/04/04 00:18	2018/04/04 00:18
Pre-emptive Curtailments Beginning Start: 2018/04/04 07:39 End: 2018/04/04 23:59	2018/04/04 07:41	2018/04/04 07:41

Advisory Notice

The screenshot shows a web browser window with the URL <http://www.ieso.ca/en/sector-participants/rss-feeds/day-0-advisory-notices>. The IESO logo is in the top left, and navigation links for 'Learn', 'Get Involved', 'Power Data', and 'Powering Tomorrow' are in the top right. The main heading is 'Flexibility Event Forecasted'. A red box highlights the event details: 'Start: Wed, 03 Apr 2018 06:00 EST', 'End: Wed, 03 Apr 2018 10:00 EST', and the text 'The IESO will increase 30-minute reserve by 200MW for a forecasted flexibility event'. A red arrow points from the heading to the start time. A table shows the notice was issued and updated on Tue, 03 Apr 2018 at 22:27 EST. A link at the bottom reads '< Return to Day 0 Advisory Notices Summary'.

Flexibility Event Forecasted

Start: Wed, 03 Apr 2018 06:00 EST
End: Wed, 03 Apr 2018 10:00 EST

The IESO will increase 30-minute reserve by 200MW for a forecasted flexibility event

Issued	Updated
Tue, 03 Apr 2018 22:27 EST	Tue, 03 Apr 2018 22:27 EST

[< Return to Day 0 Advisory Notices Summary](#)

Adequacy Report



Adequacy Report

		2019	2020	2021	2022	2023	2024	2025	2026
Generation Reserve Holdback	Total Operating Reserve Requirement	1418	1418	1418	1418	1418	1418	1418	1418
	Minimum 10-Minute OR	945	945	945	945	945	945	945	945
	Minimum 10-Minute Spin OR	237	237	237	237	237	237	237	237
	Load Forecast Uncertainty	545	535	531	534	554	593	633	639
	Additional Contingency Allowance	796	796	796	796	796	796	796	796
Total Requirement		15168	14917	14829	14898	15363	16318	17265	17408

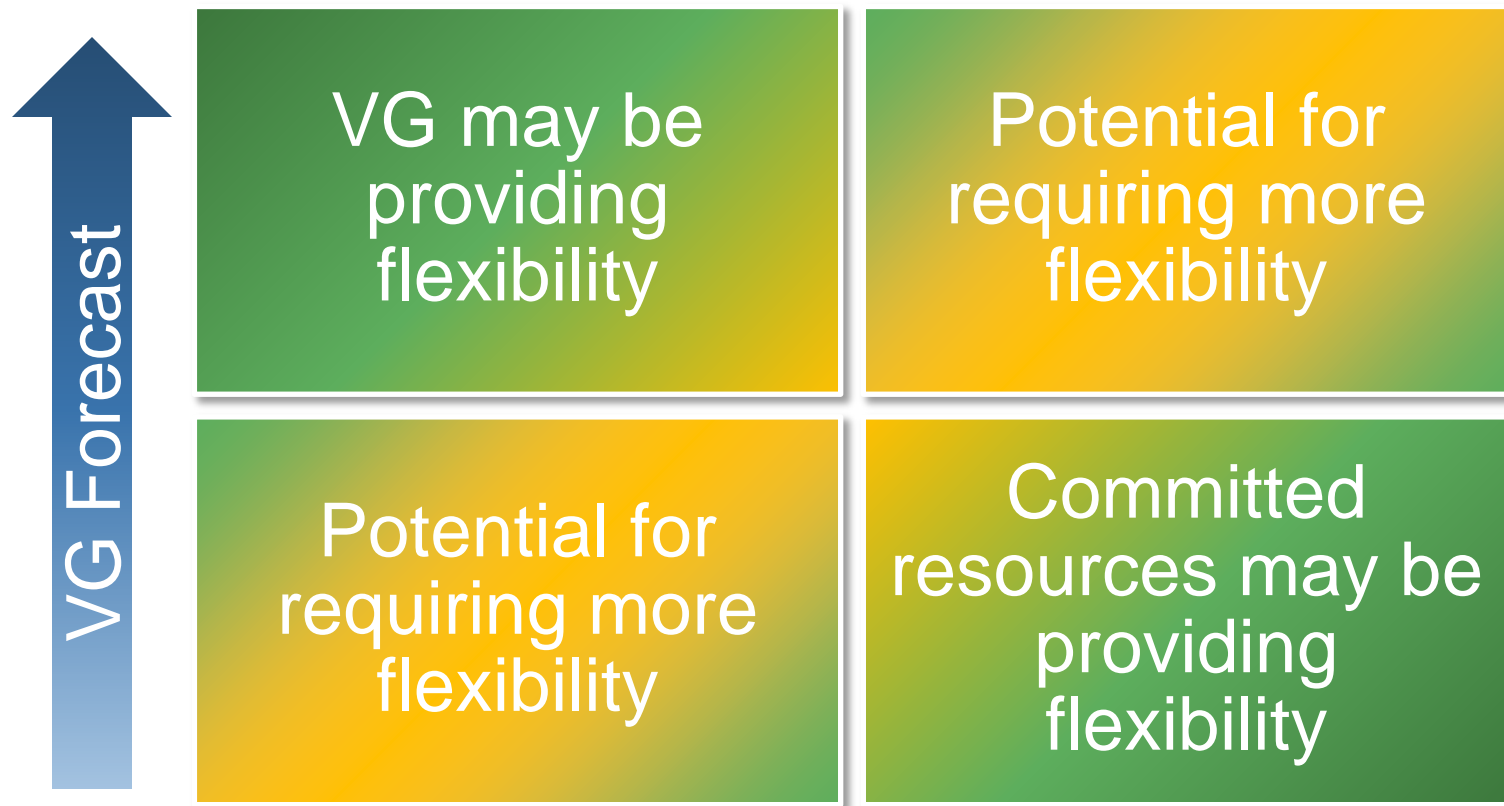
Total OR will include Flexibility OR amount



Non-Quickstart Resources

- The pre-dispatch algorithm co-optimizes energy and OR
 - Energy schedules of non-quickstart resources may increase so that they could also provide OR
- The corresponding energy schedule increases to meet additional flexibility OR requirements may be sufficient for generator commitments
 - Current commitment processes and settlements are applicable

Some Factors Affecting Flexibility Need



Next Steps

Next Steps

- The IESO will start to issue Advisory Notices when 30-minute OR is increased for flexibility
- Any changes to the Adequacy Report will be done through the IT Change Management process
<http://www.ieso.ca/en/sector-participants/change-management/it-release-schedule>

IT Change Management

The screenshot shows a web browser window displaying the IESO website. The address bar shows the URL: <http://www.ieso.ca/en/sector-participants/change-management/it-release->. The page title is "IT Release Schedule".

The website header includes the IESO logo with the tagline "Connecting Today. Powering Tomorrow." and navigation links: "Sector Participants", "Corporate IESO", and "Media". Below the header are menu items: "Learn", "Get Involved", "Power Data", "Powering Tomorrow", and a search icon.

The main content area is titled "Change Management" and includes a sub-header "Sector Participants > IT Release Schedule". The text states: "Changes to the market rules, processes, and IT systems used to interact in the IESO-administered markets are managed using a clearly defined Baseline and IT Release process."

On the left side, there is a sidebar titled "IN THIS SECTION..." with a list of links: "Overview", "Market Rule Amendment Process", "Proposed Market Rule Amendments", "Urgent Market Rule Amendments", "Market Rule Amendment Archive", "Exemptions", "Interpretation Bulletins", "Baseline Schedule", and "Public Change Documents".

The main content area features a section titled "IT Release Schedule" with the following text: "Details of proposed changes to IESO systems and reports being revised for the current release are available here. Each release includes a preliminary, target and final plan—posted according to the IT Release Schedule. A yellow box indicates that the plan is not published for this release."

Below this text are three buttons: "Preliminary Release Plan", "Target Release Plan", and "Final Release Plan", each with a right-pointing arrow.

Conclusion

- This meeting concludes the Enabling System Flexibility Stakeholder Engagement
- Developments to system operability needs to be further investigated in future initiatives
- Please submit written questions and comments related to system flexibility to engagement@ieso.ca