

# MRP Energy Detailed Design Engagement

## Non-Quick Start Lead Time and Offer Price Changes

### Meeting Summary

#### Background:

The IESO hosted a technical session on the Non-Quick Start Lead Time and Offer Price Changes topics of the Energy detailed design within the Market Renewal Program (MRP) on November 1, 2019 in downtown Toronto (IESO Offices) from 9 a.m. to 2 p.m.

The focus of the discussion was on Non-Quick Start resources, specifically the introduction of new lead time parameters for these resources and offer price change restrictions that will apply. [Required reading material](#) on these design topics was shared two weeks in advance to support the discussion on November 1.

The purpose of the in-person session was to understand stakeholder questions and perspectives based on the reading material provided in advance to inform the release of the draft detailed design section. The design section when fully released will be open to additional engagement, feedback and discussion with stakeholders.

#### Attendance:

The following organizations participated in the session:

- Association of Major Power Consumers of Ontario
- Bruce Power
- Capital Power
- Carleton University
- Customized Energy Solutions
- Enel X
- Greater Toronto Airports Authority
- Ministry of Energy, Northern Development and Mines
- Northland Power
- Ontario Energy Association
- Ontario Power Generation
- Power Advisory LLC
- TC Energy
- TransAlta
- Workbench

#### Discussion Topics:

Overall, the discussion with stakeholders focused around how Non-Quick Start resources will be scheduled in the pre-dispatch timeframe. The following themes emerged from stakeholder questions and comments during the session:

## Non-Quick Start Lead Time

- Participants discussed how NQS resources will be scheduled for their ramping hours once they receive a commitment through pre-dispatch. There is a difference between modelling in the optimization and physically ramping to MLP.
  - The process will be the same as it is today, the market participant will have to submit offers for the ramping hours.
  - Market participants could face challenges if they receive a commitment within the mandatory window (e.g. two hours prior to real-time) and they do not already have offers in for their ramp hours.
    - A market participant suggested that this issue could be avoided if NQS resources submit rolling offers for their ramp hours.
- Market participants commented that they would prefer to have additional thermal states. Specifically, the following additional states were discussed:
  - Full speed no load: resources in this state would have a shorter lead time than the 'hot' state.
  - Very cold: resources in this state would have a longer lead time than the 'cold' state.
- Participants discussed the impact on timing (e.g. sync, reaching MLP) given that commitments will be determined by the optimization engine.
  - The ramp profile will allow the engine to estimate when the resource will sync and reach MLP, but there will still be communication back and forth between the market participant and the IESO. Commitments will start at the top of the hour.
  - Market participants had questions about the impact on compliance and settlement (e.g. cost guarantee eligibility) if sync or ramp is faster or slower than planned. The IESO took these questions back for consideration in the detailed design.
- Participants indicated a preference for being able to update lead time parameters more frequently.
- Market participants had questions about how lead time parameters will be used in the Day- Ahead Market. The IESO committed to including these details in the detailed design.

## Non-Quick Start Offer Price Changes

- Market participants had mixed opinions on whether or not offer price restrictions are necessary. Some participants expressed a preference to let market mechanisms play out rather than enforcing restrictions, while others agreed with the IESO's rationale.
- Participants commented that linking offer price changes to intra-day reference level revisions increases the need to make the process for requesting temporary reference level revisions as efficient as possible.

- Market participants can share common reasons why they would need to revise their reference levels with the IESO. Understanding the common scenarios and the supporting evidence that market participants could provide will help the IESO to develop templates and guides.
- Market participants would like to have the costs that are considered when allowing intra-day reference level revisions to be clearly defined.
- The intra-day reference level revision process will be developed as part of the new market power mitigation framework. Reference level consultations will begin in Q2 2020.

#### Next Steps:

The feedback and discussion with stakeholders at these sessions is being used to inform the detailed design sections which will be released and subject to stakeholder comment and discussion in the upcoming few months.

#### Feedback:

Written feedback that was received (with permission to make public by the submitter) has been appended to this meeting summary.

## IESO Engagement

---

**From:** Mike Zajmalowski  
**Sent:** October 25, 2019 2:20 PM  
**To:** IESO Engagement  
**Subject:** Market Renewal Detailed Design - Non quick start resources  
**Attachments:** Non-Quick start resources - 20191101-nqs-resources-pre-dispatch-scheduling\_MZ.pdf

Hi Please find my questions in advance of the detailed design session on November 1<sup>st</sup> for non-quick start resources

- Section 2.3 – the IESO introduces a new term (lead time) – which is defined as “Lead Time (LT) is the amount of time (in hours) that a resource needs to reach MLP from an offline state. Lead time includes start-up initialization, synchronization and ramp to MLP”. How is this definition different than the existing definition of elapsed time to dispatch which as per Chapter 11 of the market rules is defined as “*elapsed time to dispatch* is the minimum amount of time, in minutes, between the time at which a start-up sequence is initiated for a generation unit and the time at which it becomes dispatchable by reaching its minimum loading point? Also, whereas elapsed time to dispatch is measured in minutes, why is lead time measured in hours? This seems too bulky, is it not more efficient to measure this in 5-minute increments?
- How will participants be assessed against their Lead Time Ramp Profile? When a generation facility initiates a start, it must perform hundreds of individual tasks in order to come online safely. There’s mechanical risk of breakdown if that sequence is disrupted because a participant is trying to follow dispatch instead of just trying to get its resources on safely without damaging equipment. How will participants be assessed from either a compliance standpoint or good will from the IESO if their dispatch deviates from their estimate of generation during the ramp profile. While I expect that participants can likely provide good estimates of these values, when there are deviations from expectations, the facility must be able to address those issues and not be pursued by their submitted ramp profile as this can have negative impacts on the facility itself.
- Is Minimum Generation Block Down time only relevant for Non-Quick start resources?
- Section 4.1 – The first paragraph states that there is a correlation between how long a NQS resource has been offline and the length of its lead time. Generally speaking, the longer a resource has been offline, the longer its lead time will be. This is a fair statement, however we just want to acknowledge that there are other factors (technical) that would impact this relationship as well. It’s not just time, but the state that a resource is in after shutting down. For e.g. if there’s a higher degree of probability that a resource will be coming back online shortly after being categorized as a cold start vs. expecting to be offline for weeks once reaching a cold start, this could cause different preparations with the facility that will impact it’s response time to come back online.
- It’s noted in section 4.1 – that “On a daily basis, market participants will have the opportunity to submit lead time parameters<sup>3</sup> for three temperature scenarios – hot, warm, and cold – and indicate what the corresponding data will be for each scenario. Three scenarios were selected as the number of thermal states required to model an NQS resource’s lead time and MGBDT.” We would encourage the IESO to consider at least a 4<sup>th</sup> and maybe a 5<sup>th</sup> scenario.
  - The 4<sup>th</sup> should be “very cold” and addresses some of the items in the bullet above. If a facility is not expected to be online for a long time, it could purge the boiler, whereas in a scenario where it’s expected to come back online after a weekend, it would maybe not purge the boiler. Both could be cold starts, but if a boiler is purged, it would take longer to come online vs. not. Another example could be whether the facility maintains vacuum or not.
  - The 5<sup>th</sup> may be a Full Speed No Load (FSNL) where a resource can desynch but maintain full speed no load and can come back online very quickly (under an hour). This type of operation consumes significant

fuel however avoids per start O&M costs to be incurred. Not all facilities are able to FSNL, so ones that do, it may be beneficial to define this operating state.

- Is Table 1 (Daily Dispatch Data for Generator A) – Hot section correct? It indicates a lead time of 1 hour and ramp profile of 1 hour (at 85 MW). If the MLP is 125 MW, wouldn't the lead time have to be greater than 1 hour? With the IESO's current design which is asking for values to be registered in hour increments, I'm assuming participants would round up, not down, and therefore lead time in this example would be 2 hours? Can you please confirm?
- Section 7 – The reference to Reference Level changes it states that "An increase to the energy reference level must have been approved after the commitment was issued, prior to the mandatory window." – assuming this would follow the process where participants have a short window of time to seek an exemption to their reference level price. As was discussed in the previous detailed design session if a decision is not made by the IESO in a timely fashion and a participant still believes it should be allowed to submit a value different than the reference value, that they have the dispute resolution process to fall back on. Can you confirm that would be the case here as well?

Thanks,  
Mike

**Mike Zajmalowski** | Director Market Compliance &  
Integration Northland Power Inc.



## OPG Questions

Non-Quick Starts in Pre-Dispatch Scheduling – November 1, 2019

OPG provides the following questions/comments ahead of the November 1 detailed design meeting:

1. The definition of lead time includes start-up initialization, synchronization and ramp to MLP. During the HLD phase, OPG identified that it is possible for an NQS unit to reach MLP but not be at hot ramp rate capabilities. Based on the definition of lead time and the fact that the current DSO only accepts a single OR ramp rate offers per hour, this could lead to inaccurate scheduling of OR. One solution to ensuring it is not scheduled for more OR than capable is to change the lead time definition to include the period for the unit to reach hot ramp rates. A second solution is for market participants to have the ability to submit multiple OR ramp rates. The IESO indicated this alternative would be explored with the vendor and had included this function in the vendor RFQ. Is the IESO able to provide any updates on the feasibility of multiple OR ramp rates?
2. In section 4, the document indicates that the details on how lead time parameters will be used for scheduling in the Day-Ahead Market will be included in the detailed design document. Would the IESO please elaborate what the issues are? Is this a matter of ensuring the lead times of DAM commitments for tomorrow do not interfere with balance of today's ERUC schedules?
3. Section 4.1 discusses how the IESO "must use data on how long the resource has been offline to infer its lead time...On a daily basis, market participants will have the opportunity to submit lead time parameters for three temperature scenarios – hot, warm and cold". OPG continues to have significant concerns with the IESO committing units based on inferred data due to the number of variables that can affect unit temperature/start up status. Unit status is tied to the safety of operations and should only be informed by the controlling authority at the station. Following desynchronization, a unit's rate of temperature change is a function of ambient temperature, shutdown procedures, as well as manual intervention (e.g. steam can be injected into the boiler to advance a unit's start condition). Preventing participants to modify lead times following the 20:00 ERUC run is too restrictive and may lead to infeasible commitments.

**IESO Stakeholder Engagement**

November 5, 2019

**RE: OPG Comments for Market Renewal Energy Workstream Detailed Design; Non-Quick Starts in Pre-Dispatch Scheduling**

OPG provides the following comments for the detailed design materials<sup>1</sup> regarding Non-Quick Starts (NQS) in Pre-Dispatch Scheduling and the meeting held on November 1, 2019.

**Lead Time**

- The definition of lead time includes start-up initialization, synchronization and ramp to MLP. During the HLD phase, OPG identified that it is possible for an NQS unit to reach MLP but not be at hot ramp rate capabilities. Based on the definition of lead time and the fact that the current DSO only accepts a single OR ramp rate offer per hour, this could lead to inaccurate scheduling of OR. One solution to ensuring it is not scheduled for more OR than capable is to change the lead time definition to include the period for the unit to reach hot ramp rates. A second solution is for market participants to have the ability to submit multiple OR ramp rates. The IESO indicated this alternative would be explored with the vendor and had included this function in the vendor RFQ. Pending the vendor's capability to incorporate multiple OR ramp rates, the IESO's final design should be flexible to account for the identified OR scheduling issue.
- At the meeting, the IESO elaborated further on how lead time parameters may be used for scheduling in the DAM. Specifically, the IESO explained DAM would only use ramp profile and minimum generation block down time (MGBDT), ignoring lead time parameters.
  - OPG would like clarification of an IESO comment about the possibility for participants to submit the status of a unit (hot, very warm, warm, cold, very cold, full SNL) to be considered as part of the DAM submissions.
  - OPG recommends that the IESO provide written details on how NQS offers transition between Day Ahead, Predispatch, and Real Time. The reading material did not state how P, Q pairs and submitted ramp rates will interact with Day Ahead and Predispatch ramp profiles during real time dispatch. This transition was clarified by the IESO team at one of the two tables. For consistency to all stakeholders, this verbal clarification should be documented.
- OPG is concerned about the IESO methodology to use predispatch schedules to determine the start of MDT. There are instances where a unit that is scheduled off in Predispatch, but remains dispatched in real time for at least an additional hour.

<sup>1</sup> The [IESO Stakeholder Engagement Pre-Reading](#) document

---

700 University Avenue



- OPG continues to have significant concerns with the IESO committing units based on inferred data due to the number of variables that can affect unit temperature/start up status. Unit status is tied to the safety of operations and should only be informed by the controlling authority at the station. Following desynchronization, a unit's rate of temperature change is a function of ambient temperature, shutdown procedures, as well as manual intervention (e.g. steam can be injected into the boiler to advance a unit's start condition). Preventing participants to modify lead times following the 20:00 ERUC run is too restrictive and may lead to infeasible commitments and/or loss of flexibility to the market.
- Further clarification on how MDT is inferred and a market participant's ability to revise the unit status is requested prior to discussions on reference levels for NQS units.



November 8, 2019

Via Email: [engagement@ieso.ca](mailto:engagement@ieso.ca)

Independent Electricity System Operator  
1600-120 Adelaide Street W  
Toronto, Ontario  
M5H1T1

**Attention:** Darren Matsugu

Dear Mr. Matsugu,

**Re: Independent Electric System Operator (“IESO”) – Market Renewal Program (“MRP”) Detailed Energy Market Design: Non-Quick Start (“NQS”) Resource Lead Time and Offer Price Changes**

Capital Power appreciates the IESO’s ongoing engagement efforts as part of the MRP to reform the existing energy market. The technical sessions to date have provided a forum for constructive and informed discussion early in the design phase. Capital Power encourages the IESO to continue holding these sessions ahead of making key detailed design decisions.

On November 1, 2019, the IESO hosted a session to discuss proposed changes to NQS lead time in the pre-dispatch (“PD”) scheduling process and offer price increase restrictions. Unlike today where market participants initiate NQS commitments, the IESO is proposing to generate NQS dispatch schedules and commitments in the renewed market through its proposed PD process. The IESO described the process as being intended to “address deviations between day-ahead and real-time in order to reliably meet real-time demand at the lowest possible cost.” Further, the IESO is proposing to increase restrictions on market participants’ ability to change offer prices.

These changes, though they may provide the IESO with greater operational certainty, are not likely to result in the lowest possible cost. Removing market participants’ ability to initiate commitment for their resources while also increasing offer change limitations introduces additional risk for suppliers and, therefore, costs. With the Real Time Generation Cost Guarantee (“RT-GCG”) program expected to cease, efficient price signals and revenue sufficiency must be considered in the IESO’s detailed design decisions. A well-functioning market requires, among other things, that resources can reflect their underlying economics. This further ensures the fidelity of the price signal. Capital Power’s comments in these respects follow.

**1. Proposed PD Approach Could be Improved by Adding “Full Speed No Load” Profile**

On its own, Capital Power has no concerns with the proposed PD approach. In addition to the new Hot, Warm and Cold lead time profiles however, the IESO should consider an additional profile to reflect Full Speed No Load (“FSNL”) operations. This is a common operating state

for many resources. Including this profile in the PD scheduling process offers the system greater flexibility and could materially reduce the down time between commitments leading to significant savings in start-up costs.

**2. Proposed Offer Change Restrictions May Unnecessarily Add Supplier Risk Leading to Increased Consumer Costs**

The current market structure only limits NQS generators from increasing their offers during the Minimum Generation Block Run Time period up to the generator's Minimum Loading Point ("MLP"). By contrast, the IESO's recent proposal would extend restrictions beyond the MLP to a generator's maximum output and for all hours included in a binding PD advisory schedule. The restrictions also include offer changes on operating reserves. Despite including conditions for relaxing the restrictions, the proposed change nevertheless reduces a market participant's flexibility to reflect its resource's underlying costs particularly on offer volumes not included as part of the binding PD schedule.

To support its proposed offer change restrictions, the IESO outlines competitive concerns where committed NQS resources may have an advantage over non-committed ones and would be incented to raise their offer price. It should be noted that NQS generators without a day-ahead market ("DAM") schedule do not compete only among themselves. Generators with partial DAM schedules such as flexible Hydro and imports are meaningful sources of competition. These and other competing resources can act to discipline committed NQS resources reducing the incentive to increase offers as the risk of not being dispatched. It was also suggested that a real-time process could be used to revise reference level changes. Capital Power submits that this will be unnecessarily onerous on both the supplier's operations and the IESO. Instead, concerns with changes in offer price are more appropriately addressed in the IESO's design of a market power mitigation framework.

Capital Power recognizes the benefits of competition and appreciates that under-mitigation of market power may not result in competitive market outcomes. However, it is equally important to recognize the potential impacts of over-mitigation which may result in an unsustainable market framework. Existing and new assets must have a reasonable opportunity to recover costs, manage risks and earn a fair return on and of capital. Otherwise, the overall market framework may prompt early retirements and will be incapable of attracting required investment, all of which negatively impact reliability. Therefore, the IESO must not rely too heavily on administrative mechanisms in reforming the existing energy market. Increasing constraints on market participation would, *ceteris paribus*, lead to greater supplier risk and, ultimately, additional costs to consumers.

Capital Power appreciates the opportunity to participate in the IESO's detailed MRP design process. We would be pleased to respond to any questions or comments the IESO may have regarding our feedback. Please feel free to contact me at (403) 717- 4639.

Sincerely,



Santi Churphongphun  
Regulatory Manager, Canada

cc: Jason Comandante, Capital Power  
Kelly Lail, Capital Power  
Emma Coyle, Capital Power  
Anthony Zlahtic, Capital Power



TransAlta Corporation

T (403) 267-7110

Box 1900, Station "M"  
110 - 12<sup>th</sup> Avenue SW  
Calgary, Alberta  
T2P 2M1

www.transalta.com

Chris Codd  
Senior Regulatory Advisor



November 12, 2019

Independent Electricity System Operator  
120 Adelaide St. W  
Toronto, ON  
M5H 1T1

**Attention: Darren Matsugu, Senior Manager – Market Design and Integration**

Dear Darren:

**RE: Market Renewal Program – Detailed Design for Energy Stream  
Non-Quick Start (Lead Time and Offer Changes)  
TransAlta's Comments**

Thank you for opportunity to participate in the IESO's session on the detailed design for the NQS unit commitment relating to lead time and offer changes. TransAlta appreciates the IESO's efforts to engage with stakeholders on these issues within the Market Renewal Program Detailed Design for the Energy Workstream. TransAlta is submitting these comments to highlight issues that were raised at the November 1<sup>st</sup> session and propose potential solutions to these issues for the IESO's consideration.

TransAlta is supportive of the IESO's proposals for lead time and offer changes in the day-ahead and enhanced real-time unit commitment processes. The proposals provide NQS resources with operational flexibility that will allow these resources to manage their operational risk.

The IESO's proposal is dependent on related processes for participation and reference level changes. It is critical that these processes function as currently envisioned. Significant deviations from the processes currently contemplated have the potential to increase operational risk, which would deter NQS resources from participating in the day-ahead market and pre-dispatch in certain situations.

The High-Level Designs envision that participation in day-ahead, pre-dispatch and real-time would not be mandatory but instead participation would be encouraged by the market design. This discretion provides market participants with operational flexibility to manage their resources. The NQS commitment process may need to be changed if, for example, participation becomes compulsory.

The process for submitting reference levels must be administratively efficient in order to be viable for intra-day changes. An administratively complex process would discourage such resources

from participating in day-ahead and pre-dispatch if there is the potential to be required to maintain offers that are less than a resource's short-run marginal cost.

TransAlta provides more detailed comments on four specific issues and potential solutions in the sections that follow:

- Operator discretion to enter a “very cold” thermal state
- Full speed no load (“FSNL”) thermal state
- Changes to offer parameters that increase availability
- Participation of resources that have multiple operating modes

### **Operator discretion to enter a “very cold” state**

Some NQS resources can be placed into a very cold state that has a longer lead time than the resource's typical cold state. A resource enters this state through the deliberate action of an operator who intends to reduce the wear and tear on a resource during extended periods where the resource is not expected to be dispatched. It is important that this state be incorporated into the design of the commitment processes to allow resource owners to minimize a resource's costs.

TransAlta believes that a very cold state could be incorporated within the three proposed thermal states by allowing a resource to have a larger range of lead time parameters for the cold thermal state. This would allow a resource to maintain its cold state lead time parameters under normal operations and change those parameters to reflect the very cold state if the resource has been transitioned to that state. The IESO's day-ahead and pre-dispatch engines would automatically use cold state parameters that reflect the very cold state when the resource has been placed in that state.

Consider an example where a resource has a cold state with a lead time of 4 hours and a very cold state with a lead time of 20 hours. The resource would have a reference level for its cold state lead time equal to 20 hours. Under normal operations, the resource would submit dispatch data for its cold state lead time equal to 4 hours. When the resource is placed into a very cold state, the resource would submit dispatch data for its cold state lead time equal to 20 hours. Similar changes could be made to other dispatch parameters.

This approach would be strongly preferred to an alternative that creates a fourth thermal state. The very cold state is different from the other thermal states because a resource enters this state due to manual actions instead of automatically entering the state based on elapsed time. A separate very cold state would require a flag or other mechanism to prevent the resource from automatically entering the very cold state. This would add unneeded complexity to the commitment process.

### **Full speed no load (“FSNL”) thermal state**

Some NQS resources can be held at full speed no load where the resource is running, has not yet synchronized, and is not loaded. This FSNL state would have a shorter lead time than the hot state and could avoid a resource entering a minimum generation block down time. Allowing the pre-dispatch to consider a FSNL state could lead to lower costs because it would avoid

running an NQS resource at its minimum loading point while maintaining the resource's availability. This would also help mitigate overnight surplus baseload generation conditions.

The FSNL state would require a fourth thermal state because it would need to be considered by the pre-dispatch engine simultaneously with the other three thermal states. This thermal state would require including the FSNL costs in the financial commitment because there are costs to maintain a resource in the FSNL state.

TransAlta recommends that the IESO consider the viability of adding a fourth thermal state for FSNL operation, and if so, to explore how the FSNL state could be implemented with affected resource owners.

### **Changes to offer parameters that increase availability**

The High-Level Design focused on offer price increase restrictions because the IESO was concerned that a pre-dispatch financial commitment provides competitive advantages which could be used inappropriately by a market participant. There are no concerns with offer price reductions because these would not be an inappropriate use of that competitive advantages.

There are analogous situations relating to non-financial parameters where a resource could increase its availability, and this would lead to lower costs if the resource was dispatched. An example would be a reduction to the minimum generation block down time. A resource could have a typical down time of 48 hours but in certain situations could reduce its down time. This would make the resource available sooner and allow it to compete against other resources.

TransAlta recommends that the IESO clarify in the detailed design whether changes to non-financial parameters that increase availability would be allowed in the renewed markets.

### **Participation of resources that have multiple operating modes**

Some NQS resources are combined cycle facilities with the capability to bypass their steam turbines and operate as in a simple cycle mode. Simple cycle operation typically has a shorter lead time and a faster ramp rate but a lower maximum capacity. Today, these resources choose their operating mode. It appears that these resources would continue to choose their operational mode in the renewed markets.

The complexity in the renewed market is that the combined cycle mode of operation would likely be a default option considered by the pre-dispatch engine and the resource could receive a commitment. Once the resource has a commitment it would be discouraged from switching to simple cycle operation during its lead time because it may not be permitted to increase its offers during subsequent hours to reflect the changed mode of operation. This would prevent these resources from responding to short-term scarcity in the energy and/or operating reserve markets by switching from combined cycle to simple cycle operation.

One mechanism to provide these NQS resources with operational flexibility is to recognize high market prices during as an opportunity cost to the combined cycle mode of operation. Such opportunity costs would permit an intraday reference level change. This would ensure that the change to the reference level would only be permitted in circumstances where pre-dispatch prices are expected to be high and the resource is making itself available in those high-priced hours when it wouldn't otherwise be available.

TransAlta recommends that the IESO consider allowing reference level changes for these resources to permit a change in operating mode.

Please contact me if you have any questions about the foregoing.

Yours truly,

**TRANSALTA CORPORATION**

A handwritten signature in blue ink, appearing to read "Chris Codd".

CHRIS CODD  
Senior Regulatory Advisor