



Gerdau Long Steel North America

June 30th, 2022

IESO Stakeholder Relations

Andrew Duncan, Senior Advisor, Business Advisor - Industrial

Independent Electricity System Operator

Re: Gerdau's comments regarding the Independent Electricity System Operator (IESO) staff's proposal to clarify and reconsider Gerdau's "Exemption" (Exemption Reconsideration)

Dear Andrew,

Gerdau appreciates the opportunity to provide comments, history, and context with respect to the Exemption process for the benefit of the IESO and the IESO board of directors.

Background

In the early days of electricity market development in Ontario, the Independent Market Operator (IMO), now known as the Independent Electricity System Operator, was extremely supportive in the development of demand side participation in the Operating Reserve (OR) Market. In fact, senior leadership at the IESO was deeply involved in the technical details as well as the business case to ensure the market rules and/or market rule exemptions (the Exemption) facilitated load and specifically batch load participation in a way that improved the reliability of the grid. This was also very important to Gerdau from a competitive perspective because we were trying to retain the value of the interruptible nature of our load recognized in the tariffs in place before the market opened in 2002.

The IESO staff actively recruited load participation citing benefits such as: increased available resources; improved competition (lower prices in the OR Markets); improved visibility and understanding of behaviour with respect to batch load operational status. Importantly, the IESO recognized that batch loads will impact the supply/demand balance whether they are registered as dispatchable or not. But only if a batch load is registered as dispatchable, does the IESO then have knowledge and control over how the load is operating and is able to make better reliability decisions. Gerdau would also like to recognize the IESO's leadership in being the first Independent System Operator in North America to

facilitate a load's ability to provide ancillary services in a wholesale market. Other jurisdictions promptly followed the IESO's example to provide similar opportunities to integrate load resources.

It is important to remember that both the IESO and the Market Assessment and Compliance Division (MACD) were part of the previous Exemption process, including a 3-month monitoring period after our go-live date after which MACD provided a letter indicating the expiry of the Compliance Period Activities and a commitment to notify Gerdau regarding any market rule changes or compliance issues related to our participation as a dispatchable load. Our energy bids, OR offers, real time performance including batch load operating characteristics were reviewed, analyzed, and accepted by the IESO and MACD.

Gerdau appreciates the IESO and the Market Surveillance Panel's (MSP) concerns with respect to OR "availability" and "compensation". Both issues were considered and addressed in the original Exemption. The approach in the original Exemption was made necessary mainly because the IESO tools were not and are still not designed to facilitate a de-rate in availability for loads as they are for generators.

Had the IESO at any time during the last 20 years implemented tool changes to allow batch loads to de-rate, like generators, the current issues raised by the IESO/MSP could be easily addressed. The existing and the proposed revised Exemptions are effectively a work around until the tool changes to allow loads to de-rate are implemented. Due to the requirements of our existing Exemption, the IESO has always been made fully aware of the "availability" of our batch load resources and compensation were addressed through the removal of OR offers when not available (Subject to IESO tool limitations that do not allow bids to be removed in the current hour).

The proposed revised Exemption represents a departure and a clarification from the 2004 Exemption despite no changes in Gerdau's batch load operation or bidding and offer practices over this 18-year period.

- Clarification - The proposed revised Exemption reinforces the IESO's historical intent that the Exemption is required to facilitate participation of a batch load in both Energy and OR markets. Gerdau's consumption profile and bidding and offer practices have remained consistent since the initial Exemption was approved. In 2004 to 2005 both the IESO and MACD reviewed Gerdau's performance in both the Energy and OR Markets, known as "the initial compliance period" and effectively signed-off on Gerdau's participation in the Energy Market and provision of OR. The proposed revised Exemption makes it explicit that the purpose of the Exemption is to facilitate the load's provision of OR, rather than the implicit references to the provision of OR in the existing Exemption.
- Departure - The proposed revised Exemption proposes to change the method to calculate Gerdau's OR offer. The proposed method does not recognize the zero MW intervals in a batch load production cycle, despite the previously understood rationale that: 1) In 9 out of 12 intervals the batch load may be at or above the scheduled offer and therefore deliver more MWs than offered and 2) If the batch load is at the zero MW point of its normal cycle when OR is activated, but for being dispatchable, it would return to full load, aggravating the grid contingency. Remaining down has the same economic impacts to Gerdau regardless of what

point in the process the dispatch constrains the normal production cycle. In this case, whether the batch load is at full MW or the minimum load of its cycle, the IESO has control of the load.

Gerdau recognizes that improvements are always possible and that those solutions need to be clearly documented to ensure 1) that differences of opinion on what was intended are eliminated and 2) that the exempted party can implement a compliant solution. Gerdau has been committed to working collaboratively with the IESO in the process to develop a workable solution that improves both issues while utilizing the Exemption Reconsideration process to clarify some of the previously stated operational, reliability and value related agreements.

High level principals/feedback

The Exemption compliance obligations must be clear:

Gerdau has always recognized the critical role that OR plays in the reliability of the IESO administered markets, and therefore Gerdau's responsibility to participate as a reliable OR resource. Gerdau desires to have a simple, clear set of rules that can be easily understood and incorporated into our operational routine while not leaving the batch load's compliance subject to changes in opinion or interpretation in the future. The "test" for compliance must be clearly articulated in the Exemption.

Normal Consumption Profile (NCP):

Given that by its nature, the operation of an Electric Arc Furnace (EAF) is considered a highly variable load, Gerdau has been clear with the IESO staff that the NCP must be viewed as the result of an average, over time. The proposed revised Exemption must recognize and not penalize deviations around the average that will be picked up in the Hourly Energy Consumption (HEC) validation process. Instead, the IESO should maintain the concept of "Normal" operations contained in the existing Exemption, defined as being at minimum consumption for more than "X" intervals and a requirement to notify in that circumstance.

Annual Review Process:

An annual review process that confirms the IESO's satisfaction or dissatisfaction with the exempted facility's compliance is necessary to provide reasonable regulatory certainty. This represents a relaxing of the IESO's current 6-month review responsibilities under Gerdau's existing Exemption.

Upgrade the IESO tools to simplify the Exemption:

The best solution to resolve the IESO's concerns would be to enhance the IESO tools to allow a load to de-rate. Gerdau has tried to clarify if the IESO intends to complete this enhancement in the Market Renewal Process but has not yet received confirmation. If the tool was enhanced, the proposed revised Exemption would be greatly simplified. Gerdau understands that it is possible today, for the IESO operator to make a manual adjustment when notified of a production delay by an exempted facility. As an alternative to the major tool upgrade discussed above, is it possible for the IESO to automate this manual adjustment that would effectively remove the load from the schedule, solving the problem of both availability and compensation? Gerdau urges the IESO to develop a de-rating solution given that this issue remains unresolved since the Exemption was approved by IESO in 2004.

Stakeholder process requires collaboration:

When the Exemption reconsideration process started over a year ago, the IESO stated that the process to develop a clarified Exemption would be collaborative. Our experience has been different. Gerdau worked diligently to have the IESO staff understand the history of how the current Exemption was developed to facilitate the participation of a batch load into a market designed for generators and importantly put forward numerous suggestions to IESO staff for improvements that worked for batch loads and addressed the IESO's stated concerns. These comments were submitted on November 11, 2021, after which Gerdau waited for a response and a chance to "collaborate". The IESO's response was not received until May 2022, and it was not a discussion, but draft new Exemption conditions with decisions made without explanation or rationale. Gerdau was afforded the opportunity to clarify the IESO staff's intent through a conference call and again, Gerdau provided comments and concerns with the complexity, overly prescriptive rules and duplicative charges and lack of recognition of the "batch load intervals". Despite Gerdau's good faith efforts to provide comments, data and to collaborate on a solution, the response time by the IESO has created a rushed and less than collaborative process. Gerdau remains disappointed with IESO's stakeholder process on the Exemption clarification.

HEC solves many of the IESO's concerns:

The proposed Exemption is overly, and needlessly complex. Many provisions are duplicative and unnecessary considering the IESO's proposal to use the HEC, defined by the IESO as the average MW while OR offers are in place. Although Gerdau continues to believe that the HEC should not include the periods of minimal consumption in the "Normal" batch load cycle, we do agree that the HEC longer term average approach to forecast expected performance is appropriate due to the highly variable nature of an EAF load. The HEC method recognizes the arc furnace is not predictable in any given interval but will reflect that actual value on average, that the furnace can reduce, or prevent from starting during an event. Gerdau continues to believe that the HEC, the six-month trailing average of Gerdau's average load while OR offers are in the system, is a simple, transparent, and elegant way to eliminate many other provisions. The only recommended modification to the HEC would be to exclude the intervals of minimum consumption in the normal batch load cycle. The IESO should read any references to the HEC by Gerdau as including this batch load adjustment.

The IESO is trying to address both availability and compensation. The HEC helps with both in the following ways:

- Availability – The load can only offer what it has been historically delivering, it is self adjusting and self policing. In real time, due to the lack of an IESO tool allowing loads to de-rate, the notification provisions in the proposed Exemption must still apply.
- Compensation – Since the availability reflects actual historical consumption, all compensation reflects only what is delivered. From an offer perspective, the HEC incents the load to remove offers as quickly as possible. Anytime the load offers OR and it is not truly available, the MW offer, and compensation is reduced for the subsequent 6-month period.

Because of these above noted features, some provisions in the draft Exemption are not necessary and will make the proposed Exemption more complex, subject to interpretation, more difficult to implement and not provide additional benefits. Gerdau believes because the IESO is using the HEC the Exemption

could be simplified. The IESO could for the most part eliminate the Appendix A provisions. At a high level a simplified Exemption would:

- Utilize the HEC for limiting OR offers and to calculate Energy bids as proposed
- Require notification if not operating normally, defined as not operating for more than X intervals
- Require notification to restart the operation after a delay
- Recognize EAFs will be off dispatch in any given interval, but the HEC and notification requirements will ensure the IESO is aware of availability and compensate according to what was delivered.
- Update bids/offers to reflect expected operations (already in the market rules).

Gerdau would be pleased to discuss any matter raised herein at your convenience.

Best Regards,



Sam Harper
Director of Energy
Gerdau

Appendix A

Direct Feedback on the Draft Exemption

Suggested Reconsideration or Removal

IESO's Proposal (Opening Table):

The Exemption may be reconsidered, at the sole discretion of the IESO, if:

- *the dispatchable consumption of the <facility> deviates significantly from its Normal Consumption Pattern, including in the following circumstances:*
 1. *the peak dispatchable consumption of the <facility> exceeds the <insert value of maximum dispatchable consumption from NCP multiplied by 1.25> in 10% or more of peak meter intervals over any consecutive 6-month period, where peak meter intervals refers to the meter interval within each settlement hour during business hours where the <facility>'s consumption is the greatest.*
 2. *the timing of the production cycle consistently deviates from its Normal Consumption Pattern, as determined by the IESO*

Gerdau Comments:

The "tests" described as examples for when the IESO may consider that an Exemption reconsideration is warranted, refer to details of the Normal Consumption Profile (NCP) defined in Appendix A. Given that by its nature, the operation of an Electric Arc Furnace (EAF) is considered a highly variable load, Gerdau has been clear with the IESO staff that the NCP is the result of an average, over time and that there are large deviations around the average that might in future be mis-understood as process changes. In addition, with reference to 2. above, Gerdau has shared a histogram of the variability of its operation and therefore has established an understanding with the IESO as to what should be considered "Normal" deviations in the timing of its consumption pattern.

Recommendation – It would be helpful to include baseline values for peak and variability (histogram) in the **proposed** revised Exemption to provide a basis for future discussions.

In general, using arbitrary language such as "consistently deviates" as used in 2. above, sets up an opportunity future disagreement.

Recommendation – Include a Bright-line rule or test such as the production delays, following notification to the IESO increase by 25% over the baseline.

As discussed above, the Operating parameters and specific details requested to define the Normal Consumption Profile (NCP) as defined do not work well for an EAF. It would be impossible to generate notifications every time the EAF was not ramping up/down or exactly on dispatch according to the NCP.

Recommendation - Gerdau's recommendation on NCP is to use the Bright-line test indicating that if the batch load has been at its minimum consumption in its batch load profile for more

than “X” intervals, it will be considered to no longer be operating “Normally” and must notify the IESO per the terms of the Exemption. This is manageable for the EAF operator. This tried-and-true method balances the number of notifications while providing the IESO operators a clear understanding of the load’s availability.

Paragraph 3:

This clause is to ensure “availability”. The batch load and the IESO have aligned incentives in this case. The load is trying to maximize production (minimize downtime) and the IESO wants a reliable OR resource (minimize downtime). However, due to the batch load minimum MW intervals, the variable nature of the EAF process and the inability for a load to de-rate, the Exemption must provide a clear test of compliance.

Recommendation - Gerdau believes an appropriate test for compliance is simply to review the following aspects: If the load is consuming, it may consume higher or lower MW than the 6-month HEC. If not consuming, for more than X intervals, the test for not operating “Normally”, notify IESO control room. This process is simple, transparent, and manageable for the EAF and IESO operators. The notification to the IESO control room, after X intervals of downtime ensures understanding that the load not be counted on for OR. The next step, not directly related to this clause but important to include here, is that the load must adjust bids and offers to reflect the anticipated operating schedule. The HEC creates an incentive for bids/offers to be as accurate as possible because any operation at zero MW while bids/offers are active will get picked up in the HEC, ensuring compensation is limited to the OR actually delivered over the 6-month period on average.

Paragraph 8:

Paragraph 8 is related to Paragraph 3. The “availability” and the comments overlap when it relates to defining when the load is materially “off-dispatch” and materially is an undefined term. As discussed previously the EAF is a highly variable load and might be off dispatch in any given interval, however the HEC will automatically adjust the compensation to reflect the OR actually delivered by the resource. Again, the load is incented to remove OR offers when the load is not available because any deviation is picked up in the HEC and reduces the available MW that can be offered in the future.

Recommendation - The Exemption must recognize that the EAF, if operating, may consume above or below dispatch however, the notification should be triggered by X intervals of zero consumption indicating the load is not operating “Normally” ensuring the IESO is aware the load is not available as an OR resource. In addition, the current practice is to notify the IESO operators when the load is ready to resume “Normal” operations and receive the IESO operator’s permission to re-start. If this practice is to be continued it should be documented in the Exemption.

Paragraph 12:

This clause requires the load to reduce its bids/offers if it anticipates operating >10% lower (should also be higher) from its HEC. Gerdau believes this adjustment is not necessary given this scenario is not likely, but if it did occur, the HEC automatically adjusts to reflect the new operating level.

Recommendation - If the IESO includes this clause, there must be an adjustment to the HEC to remove the hours that were adjusted otherwise, there will be a double counting of the

reduction (the reduction in real time MW/revenue plus a reduction in the next HEC baseline period).

Paragraph 14:

The proposed revised Exemption details the approach to calculating an OR offer using the HEC as the Maximum OR Offer (MOO). Including the phrase, "subject to the terms of this Exemption" forces the current and any future reader to try and understand exactly what terms apply.

Recommendation - Reference the clause 15 that defines the procedure. It would be helpful from a compliance perspective if the IESO would calculate the maximum OR offer, rather than requiring the exempted facility to calculate the average.

Paragraph 15:

The proposed revised Exemption includes a calculation on which the batch load is intended to calculate its MOO. The proposed calculation requires the hourly average, including the batch load intervals while the process is at minimum consumption, a calculation that is different from that agreed with IESO staff in the existing Exemption. The rationale discussed with the IESO staff at the time of the original Exemption, that resulted in an agreement to bid the average of the non-zero intervals, which in Gerdau's opinion continues to justify using the same math as included in the existing Exemption is as follows:

- Gerdau provides its full load MW, 75% of each hour and since each activation is ~15 minutes or less, the chances of our over-delivery are more likely than not.
- The OR product is an interval product, not an hourly product, again increasing the chances of over-delivery.
- If the batch load is already down when an ORA occurs, although it cannot deliver incremental MW while down, avoiding starting the load during a grid contingency (vs not being dispatchable) puts the system at greater risk.
- Preventing a manufacturing load from starting up has as much cost as shutting it down including lost production, lost efficiency, and operational challenges with major economic impacts for a steel mill, so compensation for staying down is appropriate.
- The proposed revised Exemption also codifies an IESO expectation, and recent agreement between Gerdau and the IESO, regarding a response to ORAs requiring a batch load, whose load is effectively "on" or "off" to go to zero MW for all activation levels. The result is provision of additional load curtailment and system relief beyond what is economic.

Paragraph 17:

This provision is attempting to incent the load to offer OR more consistently. As previously stated, the HEC mechanism already provides the incentive to bid as accurately as possible and any offer that is not accurate, will reduce the HEC and therefore the offered MW and revenue. The proposal is to **require**, after 7 intervals of downtime, the removal of the OR offer for the next hour regardless of whether the load expects to be back up for the next hour. Is that consistent with the market rules, where the load is expected to offer what it reasonably expects to consume? It would be appropriate to allow the load to determine when it expects to restart its operations and adjust bids/offers as necessary. The IESO suggestion will result in the unnecessary removal of available hours. Its important to note that it is not possible to "add back" OR offers that have been removed and this leaves the load non-dispatchable so not able to provide any relief during a contingency even if operating. Finally, Gerdau shared data with

the IESO that demonstrated that the vast majority of its production delays are less than 1 hour in length with the bulk being of a duration 10 minutes or less, meaning the bids/offers can not be changed for the bulk of the delays. This provision is trying to solve an issue that is not really an issue, but the solution will raise many complexities.

Recommendation - This provision should be excluded as it is not necessary. Loads are already required by the market rules to update dispatch data and the HEC already provides the incentive to remove OR offers if the load believes it will not be available.

Paragraph 19 c):

This provision allows the IESO to clawback revenue earned for OR not delivered, however the HEC mechanism to limit OR offers, already does the same adjustment. The IESO proposal would result in a double clawback of OR revenue. The IESO proposal is already measuring the HEC (6-month average) and therefore adjusts the compensation paid to batch loads to reflect actual availability. The chargeback contemplated in this provision would in fact be a double recovery or could be considered a single recovery plus a penalty. This is simply not fair, not consistent with how generators and other loads are treated and not necessary. The HEC construct provides an incentive for batch loads to remove their offers and operate as consistently as possible by virtue of the HEC being used to cap what a batch load can offer. The HEC is all that is necessary to ensure the IESO is compensating exactly what is delivered.

Recommendation - Remove this provision, it is not necessary by virtue of the adjustment already made by the HEC.