Feedback Form

Updates to IESO Monitoring Requirements: Phasor Data – November 19, 2020

Feedback Provided by:

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Following the November 19, 2020 webinar to discuss the synchrophasor technology, the IESO is seeking feedback from participants on the revised implementation plan and proposed Market Rules and Draft Market Manual. The IESO will work to consider feedback and incorporate comments as appropriate and post responses on the engagement webpage.

The referenced presentation can be found under the November 19, 2020 entry on the Updates to IESO Monitoring Requirements: Phasor Data webpage.

Please provide feedback by December 10, 2020 to engagement@ieso.ca. Please use subject: *Feedback: Phasor Data*. To promote transparency, this feedback will be posted on the Updates to IESO Monitoring Requirements: Phasor Data webpage unless otherwise requested by the sender.

Thank you for your time.

Revised Implementation Plan

Topic	Feedback
Please specify any concerns with the revised implementation dates and steps.	OPG has no concerns with the revised implementation dates and steps. OPG agrees that for Market Participants with multiple facilities, a mutually agreed, staged implementation plan is necessary.

Proposed Market Rules and Draft Market Manual

Topic	Feedback
Please specify any concerns with the Market Rule amendments.	OPG feels the IESO did an excellent job answering stakeholder questions in the November 19th webinar. The information presented on slide 8 of the presentation provided some guidance on the Market Rule changes, but a draft update of Market Rule Appendices 4.15 and 4.16 (similar to the draft version of the Market Manual provided) would need to be provided before Market Participants can make comments. High-level concepts as discussed in the webinar are helpful, but do not give sufficient guidance.

Topic	Feedback
Please specify any concerns with the proposed specifications listed on phasor data requirements in the draft Market Manual.	OPG's comments on the Draft Market Manual are as follows: 1. **Section 1.7:** The first paragraph cites an oscillation frequency of 0.1 Hz. This seems to disagree with the waveform shown in Figure 3. OPG suggests updating the x-axis on the graph to align with the specifications in the text. 2. **Section 2.1:** The second paragraph states: *"Specifications noted as 'required' must be satisfied, specifications noted as 'preferred' are not required but add additional operational value and should be satisfied wherever possible."* OPG suggests changing the phrase "wherever possible" to "wherever practical". Given the extra costs associated with meeting any one criterion, it is important the IESO clearly define preferences versus requirements. With enough time and financial support, any attribute would be technically "possible", but generators must understand which combination of attributes is satisfactory to the IESO. If the IESO does not strictly require the "preferred" attributes, OPG believes "wherever practical" aligns better with the intent. 3. **Table 1 states, under the "Measurement Point" attribute:** *"If a single generating unit is rated equal to or greater than 100 MVA and directly connected to the IESO-controlled grid, provide synchrophasor data measured at generator terminal (i.e. low side of the generator output transformer)."* Please clarify that a current transformer (CT) installed on the generator neutral side is acceptable to meet this requirement. 4. **Table 1, under the requirement for the "Coordinates" attribute,** refers to "polar coordinates" and states "magnitudes must be in SI units." Please define which SI units the IESO is requesting. An example would be helpful in this situation. 5. **In Table 1, the "Time-Tag Accuracy" attribute** cites a "1 microsecond" accuracy requirement. Note this requirement is 26 times more restrictive than the maximum error allowed by IEEE Std C37.118-2005 Level 1. While 1 microsecond accuracy may be achievable in perfect weather conditions, such a standard would require substantial upgrades to station satellite clocks. Can the IESO explain its rationale for this requirement? As it will likely be difficult and costly to achieve such accuracy, OPG proposes the standard be relaxed to comply with IEEE Std C37.118-2005 Level 1. 6. **Table 1, regarding the requirement for the "Instrument Transformer" attribute**: From the Nov 19th stakeholder engagement, OPG understands that protection instrument transformers are acceptable for PMU use. Please verify whether this understanding is correct.

7. **Table 1, under the "Latency" attribute**, OPG recommends changing the phrase "from PMU to the IESO control center" to "from PMU to IESO control center or IESO owned PDC". The time delay between IESO PDC to IESO control center is not under control of the generator owners.

8. **Table 1, under the "Latency" attribute**: meeting the IESO's preferences for 100 ms and 1 s latency would significantly increase the cost of PDC and communication channel infrastructure. Please specify a maximum latency that would meet the IESO's requirement, rather than the preference.

9. **Figure 4** shows "required" and "preferred" data measurement locations. Would the IESO accept configurations that provide synchrophasor data from the "preferred" locations, but not from the "required" locations? Would such configurations be acceptable if the value at the "required" location could be inferred from the measurements at the "preferred" locations?

General Comments/Feedback

OPG appreciates the opportunity to provide feedback on the draft market manuals presented by the IESO. The IESO's efforts to stakeholder these changes have been effective so far, and OPG looks forward to continued conversations as the process moves forward. Some general comments and questions on the Market Manual are as follows:

10. The term "sample rate" is used throughout the document. Please clarify whether this term has the same definition as "reporting rates", as defined in the IEEE Std. C37.118-2005 Section 5.1.1. The term "sample rate" normally refers to the "Numbers per Cycle" or how many times an A/D (analog digital converter) can read the immediate value of an analog wave. OPG recommends changing the term to be consistent with IEEE Std. C37.118.

11. **Section 1.7**: The second paragraph is a duplicate of the first one. OPG believes this is a printing error.

12. **Table 1** refers to Figure 3 several times. Based on context, OPG believes these references should be to Figure 4.

13. Some of the requirements shown in Figure 4 could be met by existing Hydro One equipment. Can the IESO add a clause to the Market Manual to allow Market Participants to credit such Hydro One equipment, provided it meets the prevailing requirements?

14. **General question**: OPG believes that it may be technically feasible to combine the DDR (Dynamic Disturbance Recorder) and PMU functions into the same hardware. Would the IESO accept such a configuration if it meets the prevailing requirements?

15. **General question**: Many protection relay manufacturers claim their relay products comply with IEEE C37.118 Class 1 requirements. Is it acceptable to use such relays as part of PMU?