Stakeholder Comment Matrix – December 2, 2020

Proposed Final Draft Section 502.10 of the ISO Rules, *Revenue Metering System Technical and Operating Requirements*

Period of Comment: December 2, 2020 through January 8, 2021	**Contact:** Jason Zimmerman
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Date [yyyy/mm/dd]: 2021/01/08	**Email**:

Instructions:

1. **Please fill out the section above as indicated.**
2. **Please refer back to the *Letter of Notice of a Proposed Final Draft ISO Rule* under the "Attachments" section to view the materials regarding proposed final draft of Section 502.10 of the ISO rules, *Revenue Metering System Technical and Operating Requirements* ("Section 502.10").**
3. **Please respond to the questions below and provide your specific comments, proposed revisions, and reasons for your position underneath (if any). Blank boxes will be interpreted as favourable comments.**
4. **Please be advised that general comments do not give the AESO any specific issue to consider and address, and results in a general response.**

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1	Whether you understand and agree with the objective or purpose of the proposed final draft of Section 502.10 and whether, in your view, the proposed final draft of Section 502.10 meets the objective or purpose, and if not, why.	We understand and agree that the measurement standard must be updated as it expired in 2013. However, we also believe that we have taken a very well-written Measurement System Standard and simplified it too much. Revenue Metering is the financial register for the electricity industry and should be more prescriptive or leaving the meter open to potential errors, inefficiencies or tampering.
2	Whether you agree that the proposed final draft of Section 502.10 is not technically deficient, and if not, why.	**Proposed Testing Intervals** While Rodan is sympathetic to the position espoused by other stakeholders in this consultation (cost and administrative burden), we are deeply concerned that the proposed testing intervals will leave the system potentially vulnerable. Although Rodan does not agree with the test frequencies in proposed Section 502.10, we agree with a general reduction. In previous submissions, Rodan's proposed test frequencies are less frequent than the existing Measurement System Standard, but more frequent than what Section 502.10 proposes. Being the metering technicians who are commonly in the field performing tests, these are the recommendations based on best industry practices. The

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		argument presented by other stakeholders that errors are not a common occurrence is not accurate. It is not always just a measurement error of the revenue meter that we find. Rodan's metering technicians frequently find the following errors and damage when inspecting and testing revenue metering systems for our clients: • Misconfigured MV90 file causing incorrect remote reads • Mislabeled/swapped meters on 2 x parallel feeders. Example: A Bus metered by B Meter; B Bus metered by A Meter • Incorrect billing multiplier being used for 400MVA+ generation site • Shorted Current Transformers • Current Transformers on incorrect taps • Site where customer removed test switches • Faulty test switch not properly shorting CTs and arcing • Burnt test switch. Cause unknown • Instrument Transformers not Measurement Canada Approved • Blown PT fuses • Instrument Transformers Measurement Canada approved, but metering connected to an unapproved ratio. • Burden exceeded on Instrument Transformers • Burden exceed on revenue meter • Copper theft affecting grounding • Rodents building nests and chewing wire. Especially for pad-mount installations • Bees and wasp nests in meter cabinets An appropriate analogy would be the testing performed on automobiles or airplanes. The industry performs regular testing and inspections of cars, trucks, trains and planes, etc. as preventative measures – that prevent failures/errors before they happen to ensure safety, minimize the risk of injury during product use, proper technical documentation and future design improvements. The cost of regularly testing a revenue meter compared to the security, reliability and cost impact of the revenue ledger of the entire electricity system is negligible. More frequent testing intervals provide the following important benefits: a. To prevent long periods of possible inaccurate measurement which can lead to

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		difficult settlements, MC disputes, data estimations and corrections. b. To detect unauthorized access and tampering within reasonable time frames. c. For safety. Metering Equipment can experience damage from rodents (especially with pad mounted units), weather damage, corrosion, water damage, etc. that can cause the units to malfunction or become safety hazards. d. Utilities charge customers based on their ratchet demand due, because to the strain they put on the system during peak periods. Electrical services that have more impact on the grid when they are active should be tested more often. e. The most frequent testing interval in the proposed Section 502.10 is 2 years. This is not adequate for large sites in excess of 50MW. Measurement problems on sites of this magnitude should be identified within a year in order to minimize the potential financial impact to all the parties involved. The larger sites pose a bigger risk because of the financial impact even a small error would cause. The cost of annual testing for a large site (>50MW) is arguably negligible in relation to revenue earned from power production. g. Most meters currently deployed in AB have a 4-year seal (6 years after installation when new and 4 years thereafter). At that point, the meters need to be taken out of service and resealed. With a 4-year test interval, a meter will be in service for an entire seal period having only been tested once when it is first installed. There should be at least one other test performed on these meters during the 4-year seal period to ensure accuracy, particularly at larger sites. Revenue Metering Systems should be tested at each of the following trigger points: a) Prior to the energization of a new metering system (commissioning tests only). b) Within four weeks of the energization of a new or altered metering system. c) Upon the change of any equipment associated with a metering system. d) Within the time period specified in the following table:

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MW Class	Average MW Range	Testing Interval
A	<1MW	6 years
B	>=1MW and <=10MW	4 years
C	>10MW and <=20MW	3 years
D	>20MW and <=50MW	2 years
E	>50MW	1 year

Proposed MW Range Calculation

The proposed MW Range calculation has the potential of further reducing test frequencies in larger load and generation sites. In Rodan's view:

a. MW Range should be based on average demand when the electrical service being metered is active, instead of cumulative annual energy transfer.

b. The MW Range calculation should not include zero intervals. It should be calculated based on non-zero intervals only. For example, if a 50MW site is delivering/receiving 55MW for half the year, they should be in the >50MW class, as opposed to the >20MW and <=50MW class.

c. Using the methodology proposed above will ensure that electrical services which have a high average demand when operational are tested more frequently. This is important because the settlement values are much greater, and the impact on the grid during operational times is more substantial.

d. For large loads & generator sites, potential measurement issues should be identified as soon as reasonably possible to avoid difficult settlements, MC disputes, data estimations and corrections; regardless of whether the electrical service being metered is inactive for a portion of the year.

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		Other Recommendations for Best Practices AUC Rule 021 does not include any guidelines for minimum memory requirements for the storage of interval data in a revenue meter. Revenue meters should have sufficient memory to store interval data for specified duration of time in the event of a communication system failure. A minimum retention period of meter readings and clock functions in the absence of line power is necessary to prevent data loss and maintain clock synchronization if a revenue meter loses power for an extended period of time. Rodan recommends the Introduction of a sealed backup (alternate) revenue meter requirement for new meter points. The backup (alternate) meter can share Instrument Transformers with the primary meter but should have a dedicated test switch. When a meter point has a sealed backup (alternate) meter available, it eliminates the need to seek temporary dispensation from Measurement Canada in the event of a primary meter failure. Backup (alternate) meters also reduce site downtime and eliminate the need for data estimations. In many cases, proxy data used for data estimations comes from measurement systems that are not revenue grade and typically have a lower accuracy rating. Backup (alternate) meters also serve as an excellent alternate/secondary source for meter testing. If a site doesn't have sealed backup metering, the only options the client has in the event of a failure are: a. Immediately replace the meter, or b. If a suitable sealed revenue meter is not available for immediate replacement, all parties are technically forced to seek a dispensation from Measurement Canada which appears to be a laborious process. Section 502.10 should also include minimum security requirements to prevent unauthorized access and tampering of revenue metering systems including revenue meters, recorders, meter cabinets, test switches, instrument transformer cabinets, instrument transformer secondary terminals, CT shorting terminals, communications equipment, demand reset mechanisms, meter socket ring seals and meter power/potential reference fuse blocks and/or breakers. If the meter is the only

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		component of a revenue metering system that is required to have a seal, it leaves vulnerabilities and enables tampering methods such as: • Shorting CTs via test switch or shorting terminals • Changing taps on CTs & PTs at secondary terminals or terminal blocks • Turning off meter power, or potential references via test switches, fuse blocks, and/or breakers • Removing meters from sockets • Tampering via re-programming of communications equipment Section 502.10 should include a rule stating that instrument transformers and secondary circuits must be commissioned and tested prior to energization. Commissioning/Test reports should be documented. This step is often skipped. If there is a problem with the instrument transformer installation, it can lead to large amounts of power being delivered/received to/from the grid, and not being registered correctly until the problem is corrected. Commissioning and Testing of instrument transformers prior to energization can also identify major installation problems and prevent damage to expensive equipment upon site start-up. There are several reasons why Rodan believes Instrument Transformers should be tested periodically: a. Primary current and voltage measurements are rarely possible to take in-situ due to safety restrictions. b. Secondary/alternate source checks during in-situ testing cannot identify inaccurate instrument transformers if the secondary/alternate source shares instrument transformers with the revenue meter, which is very common. c. In the event where primary measurements are possible, it is difficult to accurately test Instrument Transformer accuracy while energized (during in-situ testing for example) because the electrical service loading can fluctuate quickly and measurements need to be compared between two separate devices (revenue meter/power analyzer and primary measurement source). d. Periodic testing of Instrument Transformers can identify potential problems (related to performance and safety) and prevent failures before they happen.

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3	Whether you agree with that the proposed final draft of Section 502.10, taken together with all ISO rules, supports a fair, efficient and openly competitive market, and if not, why.	The proposed final draft of Section 502.10 does not support a fair and efficient market. Inaccurate measurement of electricity generation and consumption is not "fair" as in most cases there will be one party that will suffer financial harm – either because the revenue metering system over or under reports the amount of electricity generated or consumed. In order to ensure fairness, the minimum technical requirements for metering must be established in rules or regulations and Measurement Canada regulations must be enforced. This will mean that all meter system providers will have to bid into projects with systems that comply with these rules and regulations. When Rodan bids into a project, we propose fully MC compliant systems because we are aware of all the regulations.
4	Whether you agree that the proposed final draft of Section 502.10 supports the public interest, and if not, why.	Rodan is strongly of the opinion that the proposed final draft of Section 502.10 does not support the public interest for the reasons stated above. In addition, we offer the following recommendations that support the public interest: 1. Meter System Providers (MSP) form a large and critical component of the Alberta Electricity Market. They are responsible for the proper engineering, installation and maintenance of revenue metering systems which are used for settlement purposes on a legal owner's behalf. AUC Rule 021 contains references to MSP, but the roles and responsibilities of an MSP is not defined nor elaborated anywhere within that document. 2. Providing Meter System Services (MSS) and Meter Data Management Services (MDM) is vital to the proper and accurate operation of revenue metering systems and should be defined in Section 502.10. Market participants seldom provide Metering System Services or Meter Data Services themselves. Including a clause in Section 502.10 that owners are free to contract these responsibilities will provide clarity for market participants and would be a more accurate representation of how the Alberta Electricity Market currently operates. 3. Including the procedures and requirements for MSS in Section 502.10 will promote

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		system-wide consistency and provide market participants with assurance that providers are performing services to a provincial standard. In the absence of clearly defined procedures, an MSP may implement MSS procedures which may not comply with AESO expectations and standards.
5	Any additional comments regarding the proposed final draft of Section 502.10.	Rodan understands and agrees that there are changes needed to the current Measurement System Standard. Regardless of what changes are made, we strongly recommend that the implementation of these changes is carefully planned and considers a phased in approach and not just a blanket applied with a start date. This would especially apply to testing intervals and MW Class. Consider a plan where the new testing intervals start after their next scheduled test, or some other phase in approach. As we track most of the seals and in situ testing schedules for Alberta, we recommend including Rodan in the implementation schedule for a new Measurement System Standard.

Please provide any additional comments or views on the type of content that should be included in an information document associated with the proposed final draft of Section 502.10