

DR Measurement Data Audit Process and Data Acquisition (Virtual – C&I)

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DR Audit– Market Rule References

- Ch. 9 section 4.7J.4 states:
 - At any time, the *IESO* may audit any submitted *demand* response measurement data and supporting information and a *demand response market participant* shall provide such information in the time and manner specified by the *IESO*. If, as a result of such an audit, the *IESO* determines that actual measurement data and supporting information differed from the submitted measurement data and supporting information, the *IESO* shall recover from or distribute to a *demand response market participant* any resulting over or under payment, as applicable. Any amounts recovered or distributed to a *demand response market participant* shall be distributed to or recovered from *market participants* in accordance with sections 4.8.3 and 4.8.4.

Ch. 9 section 4.7J.4 gives the IESO provisions to:

- Conduct an audit of DR measurement data and supporting information **at any time**.
- Collect **actual measurement data** (per contributor) and all **supporting documentation** from the DRMP at the time of the audit
- Recover/Distribute **payments** to the DRMP if **submitted measurement data differs from actual measurement data**

DR Audit– Market Rule Reference

- Ch. 9 section 4.8.3 states:
 - The *IESO* shall, at the end of each *energy market billing period*, recover from *market participants*, in the manner specified in the applicable *market manual*, the following amounts:
 - 4.8.3.3 any compensation for *demand response market participants* paid in that *energy market billing period* by the *IESO* pursuant to section 4.7J.

Chapter 9 section 4.8.3 allows the IESO to **recover** any payment made to the DRMP if the DR Audit results in a failure

- Ch. 9 section 4.8.4 states:
 - The *IESO* shall distribute to *market participants*, in the manner specified in the applicable *market manual*, the following amounts:
 - 4.8.4.3 any adjustments to *demand response market participant* payments pursuant to section 4.7J.

Chapter 9 section 4.8.4 allows the IESO to **distribute** any adjustments to the payment made to the DRMP if, as a result of the DR Audit, it is determined that an under payment was made to the DRMP for a particular settlement month.

DR Audit – Process

Upon notification of DR audit, the DRMP is required to provide to IESO;

- 3 months of actual measurement data for each contributor (audit month and the two previous months)
- LDC statements for each contributor for the 3 month period
 - LDC statements contain the legal unit of measurement in accordance with Measurement Canada standards. These statements are essential in conducting the DR measurement data audits and currently the only source available to the IESO to validate DR contributor data
- Contributor Agreement with the DRMP
 - Provides confirmation that there is a Contractual Agreement between the contributor and the DRMP

DR Audit – Process

- DR audit process is a two step process
 - Step 1 is to reconcile actual contributor measurement data to the contributors LDC billing statement
 - Step 2 is to reconcile the sum of the contributor's actual measurement data to submitted measurement data (this is the monthly measurement data provided by the DRMP in accordance with DR Settlement Calendar).
- DR audit is considered 'Complete' when
 - Contributors actual measurement data reconciles with associated LDC billing statement (tolerance of +/- 1%) **and**
 - Sum of actual measurement data reconciles with submitted measurement data (tolerance of +/- 1%)

A threshold of 1% is used to account for any rounding that may occur between LDC billing process and the DRMP's processing of measurement data.

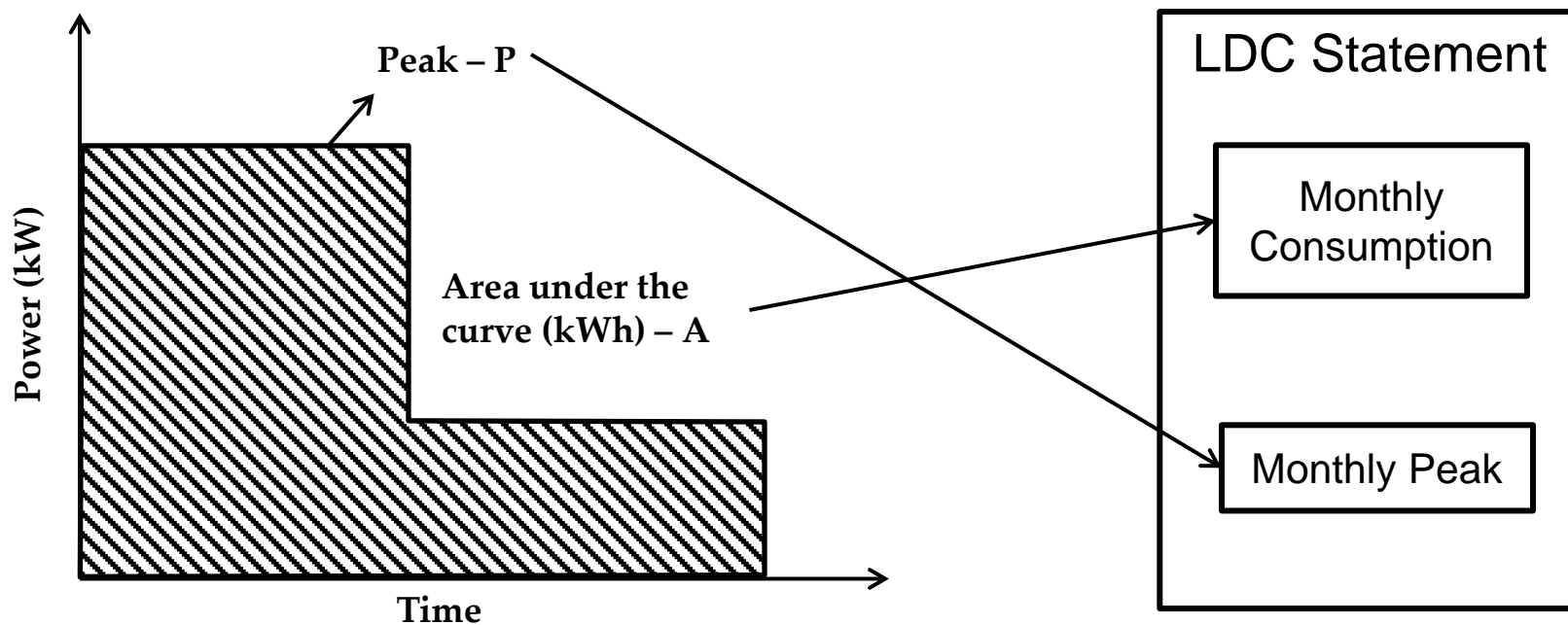
- A DR Audit is 'Closed with Observations' when it is concluded that actual measurement data and supporting documentation differs from submitted measurement data and supporting documentation (Ch. 9 s.4.7J.4).
 - If the DRMP fails to satisfy either step 1 or step 2 of the audit process

DR Audit – Process

- Step 1 of the audit process consists of two individual reconciliation checks
 1. Comparing the total kWh (energy) for a given month – Area under the curve
 2. Comparing the highest kW (Power) value – Peak Demand

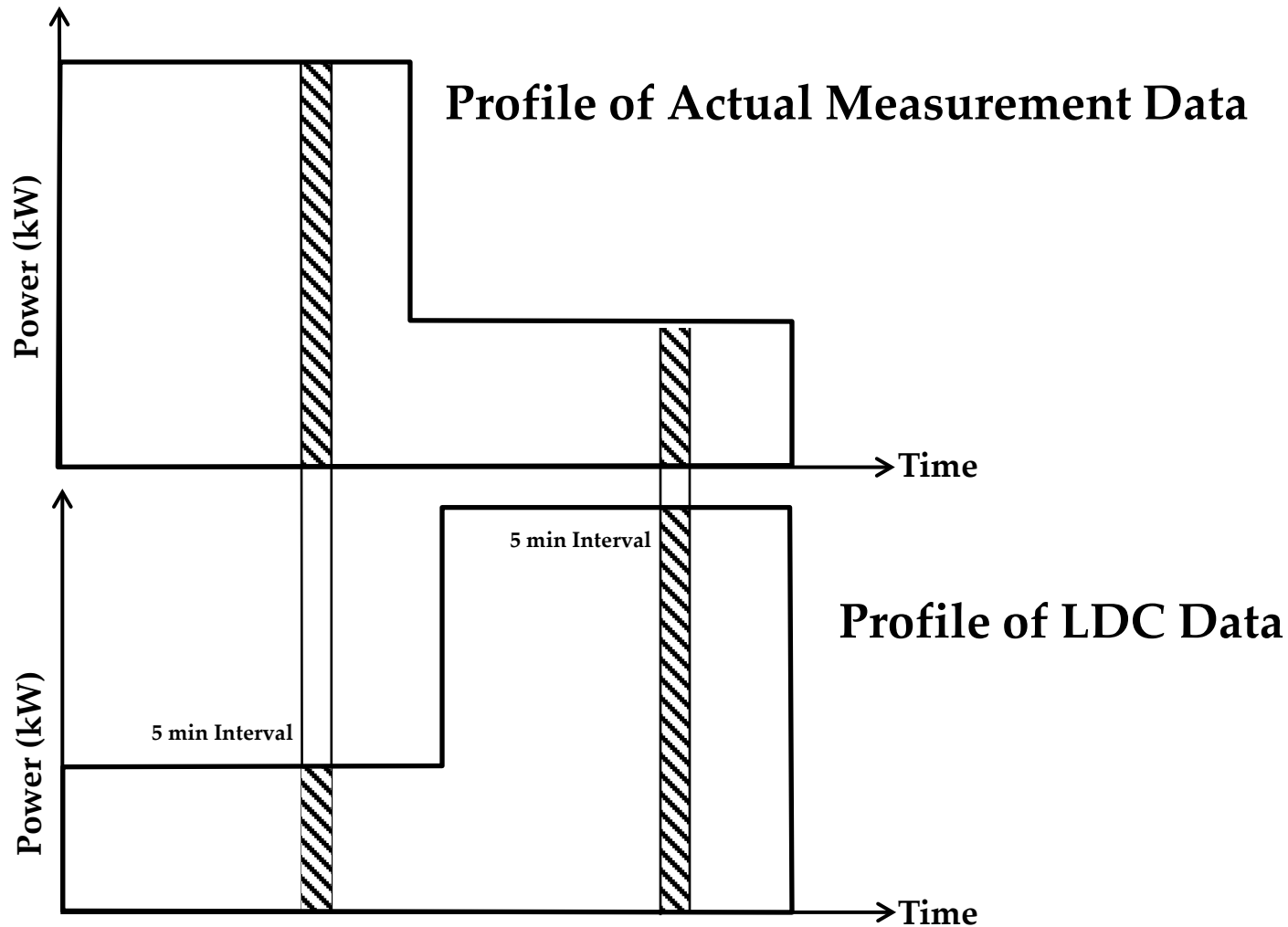
Note: These reconciliation checks verify the contributor's data against the monthly consumption and the peak demand as indicated in the LDC statement. However, these checks do not provide assurance that the data will reconcile on an interval by interval basis.

DR Audit – Process



- **Area under the curve (A)= Monthly Consumption**
- **Peak (P)= Monthly Peak**

DR Audit – Process



DR Audit – Observations

Some of the observations resulting from the DR Audit can be categorized as follows:

1. Actual contributor data does not reconcile with LDC statement (Step 1 of DR audit process)
 - This may be limited to just one contributor or include multiple contributors in a single resource.
 - This may be limited to a single settlement month or all three settlement months of a contributor.
2. LDC statement not provided (preventing IESO from completing Step 1 of DR audit process)
 - LDC statements contain the legal unit of measurement in accordance with Measurement Canada standards. These statements are essential in conducting the DR measurement data audits and currently the only source available to the IESO to validate DR contributor data

DR Audit – Observations

3. Three (3) months of actual contributor data not provided
 - In some cases, contributors were registered the same month an LDC interval meter was installed. Hence, two month historical data wasn't available.
4. Additional actual contributor data required in order to complete Step 1 of DR audit process (occurs when LDC statement is not on calendar month billing)
 - Even though majority of the LDC statements are on calendar month bill cycle, there are cases where an LDC statement is not on calendar month bill cycle.
5. Sum of actual contributor data does not equal submitted measurement data (Step 2 of DR audit process)
6. Physical Contributor incorrectly registered as a virtual DR contributor

Note: Failure to provide the requested information will result in the audit to be “Closed with Observations”.

DR Audit – Lessons Learned

As a result of the DR audits, there were various issues that were brought to the IESO's attention. These issues can be categorized as follows:

1. Within DRMP's control
2. Outside of DRMP's control

Within DRMP's control

- Collecting the LDC Statement from the contributors
- Providing 3 months of complete measurement data for the purpose of the audit.
 - Prior to registering a contributor, 2 months of historical measurement data is required.
- Establish adequate internal controls to reconcile measurement data with the LDC statement
 - Ensuring correct pulse/meter multiplier is used when translating the data
 - Ensuring all the physical meters are accounted for when totalizing the data

DR Audit – Lessons Learned

Outside of DRMP's control

- Meter Maintenance by the LDC
 - This impacts the DRMP's ability to collect data in a timely manner
- Incorrect/incomplete measurement data provided by the LDC to the DRMP or the third party
 - Data for the wrong meter is provided to the DRMP or third party
- Communication issue preventing DRMP from accessing measurement data
 - Unable to access private network to collect data from the meter
 - Portal unavailable to collect monthly measurement data
- Data estimation resulting from LDC VEE process
 - LDC may replace actual meter data with estimated data for a certain time period

DR Audit – Summary

- The audit process has identified issues that are within and outside the DRMP's control
- Through our discussions with DRMPs, there is now a better understanding that with adequate measures in place, issues within their control will be addressed
- Issues outside the DRMP's control may impact their ability to provide accurate measurement data in a timely manner
- There are currently no provisions in the market rules to address measurement data issues that are outside of DRMP's control.
- At the last DRWG, some members suggested that there are alternate ways of meeting DR Audit requirements.

DR Audit Summary

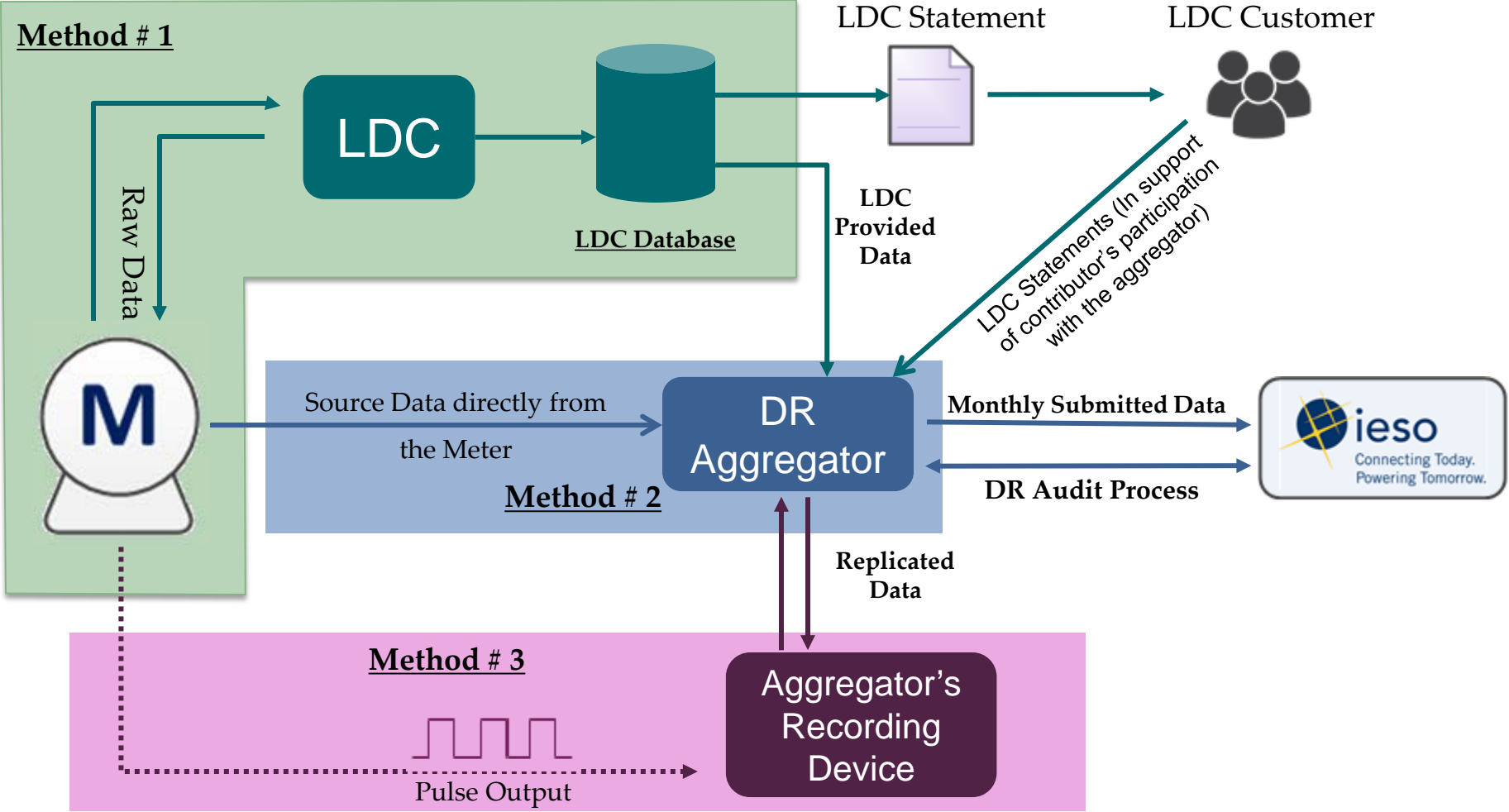
IESO is looking for feedback from the DRWG;

- Address the issue/concerns regarding submission of timely and accurate measurement data
- Options to improve the efficiency and effectiveness of the DR audit process

Meter Data Acquisition

- At the time of contributor registration, DRMPs are required to specify means of collecting measurement data.
- Section 6.2.1 of Market Manual 12 specifies two means of collecting data
 - Directly from the meter via remote interrogation
 - The DRMP extracts meter data from the internal register of the meter
 - LDC provided measurement data
- The audits have identified that KYZ pulses were being used to collect data from the meter.
- No provisions exist in the Market Manual 12 to allow for data collection using KYZ pulses

Meter Data Process Design



KYZ Pulses - Principles

- The KYZ pulses must originate directly from an LDC meter
- KYZ Pulse data must be time synchronized with the LDC meter
- The data produced using KYZ pulses must be within the +/-1% audit threshold
- The measurement data derived from KYZ pulses must align with the interval data utilized by the LDC for customer billing.

IESO`s Response to DRWG Feedback

LDC Statement Requirement:

- At the last DRWG, IESO had proposed the following:
 - Replace ROI requirement at time of contributor registration with an LDC Statement
 - Retain monthly LDC statements as part of DRMP`s record
 - DR Audit Process is centered around this critical document

Record Retention Period

- IESO has proposed a record retention period of seven (7) years
 - Aligns with various references in the Market Rules that obligate the IESO as well as the Market Participants to retain records for various purposes.
 - This also aligns with the record retention requirements for physical DR contributors.

IESO`s Response to DRWG Feedback

Behind the Meter Energy Storage (Battery)

- Behind the Meter Generation (BMG) is allowed in the DR program for load displacement.
 - SLD submission is a requirement for BMG at the time of contributor registration
- Behind the Meter Storage can be used for load displacement in the DR program.
- At this time, contributor management registration requirements for BMG don't apply to Behind the Meter Storage
- IESO is currently reviewing the requirements for Behind the Meter Storage as part of the broader DR Program

Next Steps

- There would be an opportunity for the DRMPs to provide feedback on the measurement data submission process, DR audit process and use of KYZ Pulses as alternate means of data collection.
- This may lead to updates to Market Manual 12 to align it with the changes.