

# MEASUREMENT ERROR NOTIFICATION GUIDELINES FOR NTS TO LDZ AND LDZ TO LDZ MEASUREMENT INSTALLATIONS

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**Document Control**

<b>Version</b>	<b>Date</b>	<b>Reason for Change</b>
1.0	01 September 2008	Implementation version
2.0	16 October 2008	Amendments to wording on pages 14, 15, and 32 (as agreed at Offtake Arrangements Workstream 12/09/08). Approved by UNC Committee 16 October 2008
<u>2.1</u>	<u>29 July 2010</u>	<u>Upstream Transporter proposed amendments</u>

**Development of Rules**

1. The requirement to publish the Measurement Error Notification Guidelines is specified in Section V12.1(d) of the Transportation Principal Document (TPD) of the Uniform Network Code (UNC). This section also provides for the document to be published and revised from time to time. The provision (TPD V12.2) reads :  
 “Each Document shall be kept up to date and published by the Transporters on the Joint Office of Gas Transporters’ website.”
2. The Rules set out below meet the Transporters’ obligation to prepare Guidelines, while the Document Control Section records changes which have been made to the Guidelines. The document is published on the Joint Office of Gas Transporters’ website, [www.gasgovernance.co.uk](http://www.gasgovernance.co.uk).
3. These Guidelines can only be modified in accordance with the requirements set out in paragraph 12 of Section V of the UNC Transportation Principal Document, which reads as follows:

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**UNIFORM NETWORK CODE – TRANSPORTATION PRINCIPAL DOCUMENT**

**SECTION V - GENERAL**

**12 GENERAL PROVISIONS RELATING TO UNC RELATED DOCUMENTS**

**12.1 Purpose**

The purpose of this Section is to establish generic governance arrangements in respect of the following UNC Related Documents (each a “**Document**” and collectively the “**Documents**”):-

- (a) Network Code Operations Reporting Manual as referenced in Section V9.4;
- (b) Network Code Validation Rules referenced in Section M1.5.3;
- (c) ECQ Methodology as referenced in Section Q6.1.1(c); and
- (d) Measurement Error Notification Guidelines for NTS to LDZ and LDZ to LDZ Measurement Installations as referenced in OAD Section D 3.1.5.

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## 12.2 Publication Requirements

Each Document shall be kept up to date and published by the Transporters on the Joint Office of Gas Transporters' website.

## 12.3 Modifications

Should a User or Transporter wish to propose modifications to any of the Documents, such proposed modifications shall be submitted to the Uniform Network Code Committee and considered by the Uniform Network Committee or any relevant sub-committee where the Uniform Network Code Committee so decide by majority vote.

## 12.4 Approved Modifications

**12.4.1** In the event that a proposed modification is approved by a majority vote of the Uniform Network Code Committee, the modification shall be implemented. Where the Uniform Network Code Committee fails to achieve majority approval the proposed modification shall be considered in accordance with the provisions set out in Section 7 of the Uniform Network Code Modification Rules unless the Uniform Network Code Committee determines otherwise.

**12.4.2** Each revised version of a Document shall be version controlled and retained by the Transporters. It shall be made available on the Joint Office of Gas Transporters' website.

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## 1. Definitions

Unless otherwise stated, terms in these Measurement Error Notification Guidelines (“**these Guidelines**”) shall have the meanings given to them in the Uniform Network Code. Such terms will be capitalised within quotation marks where first used in the Guidelines.

In these Guidelines:

“**Measurement Error**” – any “**Fault**” which results in a systematic bias to measured quantities.

“**Measurement Error Report**” or “**MER**” – a document compiled by the Downstream Party for Measurement Errors less than 50 GWh, detailing the nature of the Measurement Error identified, the corrected readings and the methodology used in the technical evaluation of the Measurement Error.

“**Significant Measurement Error**” - a Measurement Error that is estimated to exceed the 50 GWh threshold referred to in these Guidelines

Or

Where the combined effect of a series of Measurement Errors is estimated to exceed 50 GWh and the following criteria are satisfied then all the individual Measurement Errors will be evaluated in accordance with these Guidelines as “Significant Measurement Errors”:-

- The Faults resulting in the Measurement Errors are introduced by a common mode of failure;
- The Measurement Errors are likely to have a common adjustment methodology.

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“**Significant Measurement Error Report**” or “**SMER**” – a document compiled by an Appointed Independent Technical Expert, detailing the nature of the Measurement Error identified, the corrected readings and the methodology used in the technical evaluation of the Measurement Error. The SMER is only compiled for Measurement Errors that are either deemed to be 50 GWh or greater, as defined in these guidelines or where it is believed that the Measurement Error has the potential on the production of the final Measurement Error Report to be greater than the Significant Measurement Error threshold (50 GWh) or the Measurement Error could have significant implications for the industry. As the corrected readings provided within the SMER have been derived by an Appointed Independent Technical Expert in consultation with the Downstream Party, the Upstream Party and Users, they represent a final binding technical evaluation of the magnitude of Measurement Error.

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“**Independent Technical Expert**” – an independent measurement expert who has been nominated by one of the Parties (Downstream Party, Upstream Party or Users) to be used in the compilation of a Significant Measurement Error Report. The Independent Technical Expert should not, at the time of endorsement of appointment, be directly employed by the Upstream Transporter, the Downstream Transporter or Users. As a consequence of appointment, the Independent Technical Expert will subsequently be in the employment of the Downstream Party by means of a contractual arrangement for the purposes of the compilation of the Significant Measurement Error Report.

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**“Appointed Independent Technical Expert”** – the Independent Technical Expert proposed by the Offtake Arrangements Workstream, endorsed by the Offtake Committee and subsequently contracted by the Downstream Party to construct the SMER for the Measurement Error identified.

**“Listed Independent Technical Experts”** – an Independent Technical Expert that has been approved by the Offtake Committee and appears on the Independent Technical Expert Log.

**“Generic Terms of Reference”** – the standard terms of reference to be applied as the basis of the contracts between the Downstream Party and the Appointed Independent Technical Expert for the compilation of a Significant Measurement Error Report.

**“Technical Measurement Issue”** – any issue that may have a material impact on any critical data item connected directly to the identified Measurement Error.

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## 2. The Guidelines

These Guidelines set out the means by which Measurement Error information is published on the Joint Office of Gas Transporters' website ([www.gasgovernance.co.uk](http://www.gasgovernance.co.uk)) and outline the process to be followed for all Measurement Errors associated with “**Measurement Equipment**” between the “**National Transmission System (NTS)**” and “**Local Distribution Zones LDZs**” or the Measurement Equipment between two LDZs. For Measurement Errors estimated to exceed the 50 GWh threshold, referred to as Significant Measurement Errors, these Guidelines detail how they should be notified to interested parties via the Offtake Arrangements Workstream or Offtake Committee.

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## 3. Measurement Equipment Validation

Section D of the Offtake Arrangements Document (OAD) sets out the responsibilities for the maintenance and “**Routine Validation**” of Measurement Equipment, at an “**Offtake**”, by the “**Downstream Party**”. The procedures for Routine Validation (T/PR/ME2 Parts 1, 2 and 3 and T/PR/GQ/3, available from the Joint Office of Gas Transporters' website at [www.gasgovernance.co.uk](http://www.gasgovernance.co.uk)), are also referenced.

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A Routine Validation (OAD D3.2) takes place at least once every twelve (12) months or when the Measurement Equipment is significantly modified or replaced. The Validation is undertaken by the Downstream Party.

An “**Exceptional Validation**” (OAD D3.3) is performed at the request of the “**Upstream Party**”.

Following the completion of a Routine or Exceptional Validation the Downstream Party is required to compile a “**Validation Report**” (OAD D3.4). The Downstream Party is required to supply the Validation Report to the Upstream Party within fourteen (14) days for a Routine Validation and within twelve (12) hours for an Exceptional Validation.

## 4. Action on Identification of a Measurement Error

The OAD requires the Measurement Equipment to be operating within its “**Permitted Range**” (OAD D1.4) as indicated in the site specific “**Supplemental Agreement**”. If the Measurement Equipment is found to be operating outside its Permitted Range or with a systematic bias it is classed to be a “**Fault**” (OAD D4.1). Upon identification of a Fault, the Downstream Party is required to correct the Fault and notify the Upstream Party.

These Guidelines only require the notification of Faults which are likely to result in a systematic bias to the measured quantity. They do not cover Faults associated with equipment operating outside its Permitted Range when the mis-measurement is of a random nature displaying a symmetrical statistical distribution around the actual measurement.

Systematic bias is deemed to be a bias resulting from the measurement system, leading on average to biases in measurement which result in measured values being systematically too high or too low.

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There are various Measurement Error trigger points within OAD activities which will link into these Guidelines which form the “**UNC Related Document**”.

Some trigger points identified that may lead to Measurement Errors are:

- Daily processing of meter readings
- Site maintenance visits
- Routine Validation
- Exceptional Validation
- Site Audits
- Any other event that causes the Downstream Party directly or indirectly to carry out checks.

The OAD requires that the Downstream Party supplies corrected readings to the Upstream Party only when the Fault identified is a systematic bias. These corrected readings are supplied as part of the “**Measurement Error Report (MER)**” or “**Significant Measurement Error Report (SMER)**” described in these Guidelines.

For the purpose of these Guidelines, a “**Measurement Error**” is deemed to be where:

- A Fault is discovered in the Measurement Equipment which results in a systematic bias.

The Downstream Party will inform the Joint Office of Gas Transporters whenever a Measurement Error is identified.

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## 5. Template for “Measurement Error Notification Mechanism”

### Framework for Measurement Error Notification

- Unique Reference Number;
- Date Measurement Error first notified;
- Gas Transporter (downstream and upstream);
- LDZ;
- Offtake;
- Average flow rates for the meter for the perceived duration of the Measurement Error
- A brief description of the believed Measurement Error cause and effect;
- The date when the Measurement Error was discovered, started (or last good read) and corrected;
- Systematic bias? (yes or no);
- Reason Measurement Error was detected;
- Estimated significance (Low/Medium/High);
  - (Low – 0 to less than 30 GWh, Medium - 30 to less than 50 GWh, High - Over 50 GWh);
- Assessed “**volume**” impact in MCM;
- Estimated “**quantity**” in GWh;
- Over or under read;
- Error status (one of the following):
  - Error notified;
  - MER in compilation;
  - SMER in compilation;
  - MER published;
  - SMER published;
  - Awaiting first available invoice;
  - Invoiced;
  - Closed / no rec required.
- Anticipated MER/SMER publication date;
- Date of latest notification update.

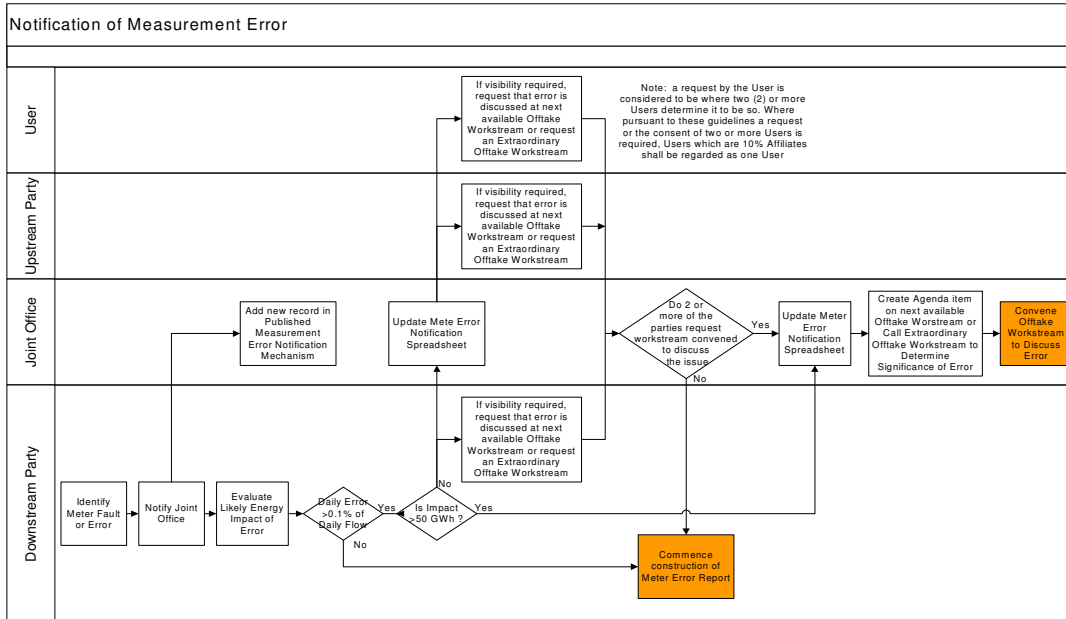
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## 6. Identification and Notification of Potential Measurement Errors



- The Downstream Party must upon identification of a potential Measurement Error:
  - Provide details to the Joint Office of Gas Transporters for publication as part of the agreed **“Measurement Error Notification Mechanism”**;
  - Undertake a reasonable estimate as to the likely quantity in GWh;
  - Identify if the estimated impact exceeds 50 GWh;
  - For Measurement Errors estimated to be greater than 50 GWh, submit a request to the Joint Office of Gas Transporters, either for inclusion on the agenda of the next available Offtake Arrangements Workstream or that an extraordinary Offtake Arrangements Workstream be convened to discuss the issue;
  - For Measurement Errors estimated to be less than 50 GWh, determine within twenty one (21) Business Days of a material update to the Measurement Error Notification Mechanism whether it merits submitting a request to the Joint Office of Gas Transporters for inclusion on the agenda of the next available Offtake Arrangements Workstream or that an extraordinary Offtake Arrangements Workstream be convened to discuss the issue;
  - If, for every day within the identified error duration, the error represents less than 0.1% of the end of Day quantities measured at that Offtake, then no reconciliation will be made for any day within the error duration and a null report written;

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- Update the Measurement Error Notification Mechanism with the latest available information, at a frequency of at least once every twenty one (21) Business Days.
- The Upstream Party will:
  - For notified Measurement Errors estimated to be less than 50 GWh, determine within twenty one (21) Business Days of a material update to the Measurement Error Notification Mechanism whether it merits submitting a request to the Joint Office of Gas Transporters for inclusion on the agenda of the next available Offtake Arrangements Workstream or request that an extraordinary Offtake Arrangements Workstream be convened to discuss the issue.
  - Provide notification to the Downstream Party when reconciliation quantities for Measurement Error Reports are passed to xoserve for invoicing.
- Users will:
  - For notified Measurement Errors estimated to be less than 50 GWh, determine within twenty one (21) Business Days of a material update to the Measurement Error Notification Mechanism whether it merits submitting a request to the Joint Office of Gas Transporters for inclusion on the agenda of the next available Offtake Arrangements Workstream or request that an extraordinary Offtake Arrangements Workstream be convened to discuss the issue.
- The Joint Office of Gas Transporters will:
  - Create a new record on the Measurement Error Notification Mechanism for any new errors identified by a Downstream Party;
  - Update the Measurement Error Notification Mechanism with all updated information supplied by the relevant Downstream Party;
  - Track requests for the Offtake Arrangements Workstream to be convened on a specific issue and determine where a consensus for a meeting is reached;
  - Convene Offtake Arrangements Workstream meetings to discuss Measurement Error Issues identified by the Upstream Party/the Downstream Party/Users in accordance with the Chairman's Guidelines, including:
    - Notification of meetings at least ten (10) Business Days in advance;
    - Agenda publication at least five (5) Business Days in advance;
    - Meetings chaired by the Joint Office of Gas Transporters;
    - Minutes, other relevant papers and presentations published within five (5) Business Days of the meeting;
    - Establish general principles of consensus.
- A request or consent from two (2) or more of the three (3) Parties (Downstream Party, Upstream Party or Users) is required for any issue estimated at <50 GWh to be submitted to the Joint Office of Gas Transporters for inclusion on the agenda of

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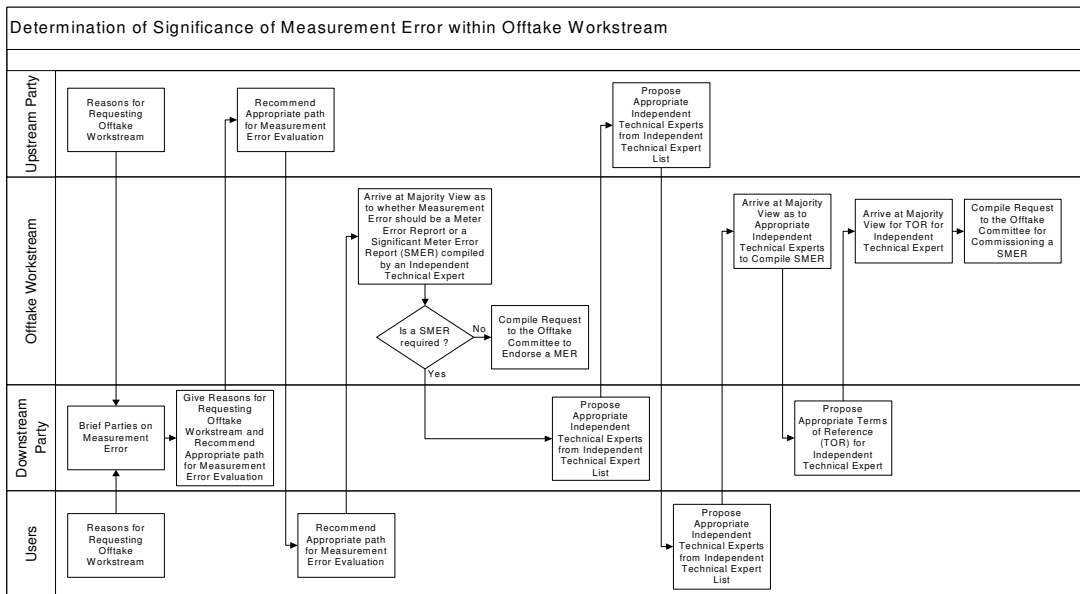
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the next available Offtake Arrangements Workstream or to request that an extraordinary Offtake Arrangements Workstream be convened to discuss the issue (where the next scheduled Offtake Arrangements Workstream is over one (1) calendar month from the date of the request).

- For the purposes of these Guidelines, a request by the User is considered to be where two (2) or more companies who are not affiliates and who are registered as Users determine it to be so.

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## 7. Determination of the Significance of the Measurement Error and Appropriate Path



In this Section the term “**majority view**” shall mean the agreement of two (2) or more of the following three (3) Parties, or constituencies of Parties:

- The Downstream Party;
- The Upstream Party;
- Two (2) or more companies who are not affiliates and who are registered as Users.
- The Upstream Party or Users will:
  - If convening Parties, provide an outline justification for requesting submission of potential Measurement Error that is estimated at <50 GWh to the Offtake Arrangements Workstream.
- The Downstream Party, at the first meeting of the Offtake Arrangements Workstream, will:
  - Present a report of the Measurement Error to the Offtake Arrangements Workstream including:
    - Background to the Measurement Error;
    - Cause of the Measurement Error; and
    - Estimated impact of the Measurement Error.
  - Where the estimated error is <50 GWh:
    - Propose whether the evaluation of the Measurement Error should be undertaken by an “**Independent Technical Expert**” as a

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SMER, or whether a MER should be compiled by the Downstream Party, giving the reasoning behind the approach.

- Where a majority view is reached that a SMER is required the Downstream Party will:

- Using the Nomination Form provided, ~~nominate up to three (3)~~ Independent Technical Experts from the **“Listed Independent Technical Experts”** to the Workstream Chairman; and

- Upon receipt from the Workstream Chairman of the list of all unique Independent Technical Experts proposed by the Upstream Transporter, Downstream Transporter and Users, using the Voting Form provided, rank in order of preference (1 to n, where 1 is the least favoured and n the most favoured) and provide to the Workstream Chairman;

- Propose appropriate terms of reference (incorporating the **“Generic Terms of Reference”** contained within these Guidelines) for the **“Appointed Independent Technical Expert”** that would undertake the compilation of a SMER.

- The Users present at the first meeting of the Offtake Arrangements Workstream will:

- Where the estimated error is <50 GWh;

- Propose whether the evaluation of the Measurement Error should be undertaken by an Independent Technical Expert as a SMER (two (2) or more companies who are not affiliates and who are registered as Users must agree), or whether a MER should be compiled by the Downstream Party, giving the reasoning behind the approach.

- Where the majority view is that a SMER is required:

- ~~Using~~ the Nomination Form provided, ~~collectively~~ nominate up to three (3) Independent Technical Experts from the **“Listed Independent Technical Experts”** to the Workstream Chairman; and

- Upon receipt from the Workstream Chairman of the list of all unique Independent Technical Experts proposed by the Upstream Transporter, Downstream Transporter and Users, using the Voting Form provided, rank in order of preference (1 to n, where 1 is the least favoured and n the most favoured) and provide to the Workstream Chairman.

- The Upstream Party, at the first meeting of the Offtake Arrangements Workstream, will:

- Where the estimated error is <50 GWh:

- Propose whether the evaluation of the Measurement Error should be undertaken by an Independent Technical Expert as a SMER or whether a MER should be compiled by the Downstream Party, giving the reasoning behind the approach.

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- Where the majority view is that a SMER is required:
  - Using the Nomination Form provided, nominate up to three (3) Independent Technical Experts from the **“Listed Independent Technical Experts”**, to the Workstream Chairman; **and**
  - Upon receipt from the Workstream Chairman of the list of all unique Independent Technical Experts proposed by the Upstream Transporter, Downstream Transporter and Users, using the Voting Form provided, rank in order of preference (1 to n, where 1 is the least favoured and n the most favoured) and provide to the Workstream Chairman.
- The Offtake Arrangements Workstream will seek to:
  - Arrive at a majority view, that the request will be a SMER compiled by an Independent Technical Expert from the predefined approved list of Independent Technical Experts, or a MER compiled by the relevant Downstream Party.
  - As necessary, arrive at a majority view on the appropriate Independent Technical Expert(s) that should be proposed to compile the SMER from the predefined approved list of Independent Technical Experts.
  - As necessary, arrive at consensus, or failing this arrive at a majority view on the appropriate terms of reference for the Appointed Independent Technical Expert to compile the SMER.
- If the Offtake Arrangements Workstream is unable to reach either a consensus or majority view on the terms of reference, the Downstream Party shall submit its recommendations to the Chairman of the Offtake Arrangements Workstream for submission to the Offtake Committee for approval.
- The Chairman of the Offtake Arrangements Workstream will:
  - Receive the completed nomination forms and collate the list of nominated Independent Technical Experts (n) and provide the final selection to the Downstream Party, the Upstream Party and Users for scoring purposes;
  - Collate aggregated scores for the nominated Independent Technical Experts and propose the highest scoring Independent Technical Expert (or in the case of a tie, all the highest scoring Independent Technical Experts) to the Offtake Committee for endorsement.
  - Make the request to the Offtake Committee to authorise the compilation of a MER; or
  - Make the request to the Offtake Committee to authorise the compilation of a SMER (including terms of reference and proposed Independent Technical Experts).

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 <#>Receive the completed nomination forms and collate the list of nominated Independent Technical Experts (n) and provide the final selection to the Downstream Party, the Upstream Party and Users for scoring purposes;  
 <#>Collate aggregated scores for the nominated Independent Technical Experts and propose the highest scoring Independent Technical Expert (or in the case of a tie, all the highest scoring Independent Technical Experts) to the Offtake Committee for endorsement;

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A majority view is required for any potential Measurement Error that is estimated to be less than 50 GWh to be compiled by an Appointed Independent Technical Expert as a SMER.

For clarity it is expected that Measurement Errors of less than 50 GWh will only follow the process for Significant Measurement Errors when it is believed that the error has the potential on the production of the final Measurement Error Report to be greater than the Significant

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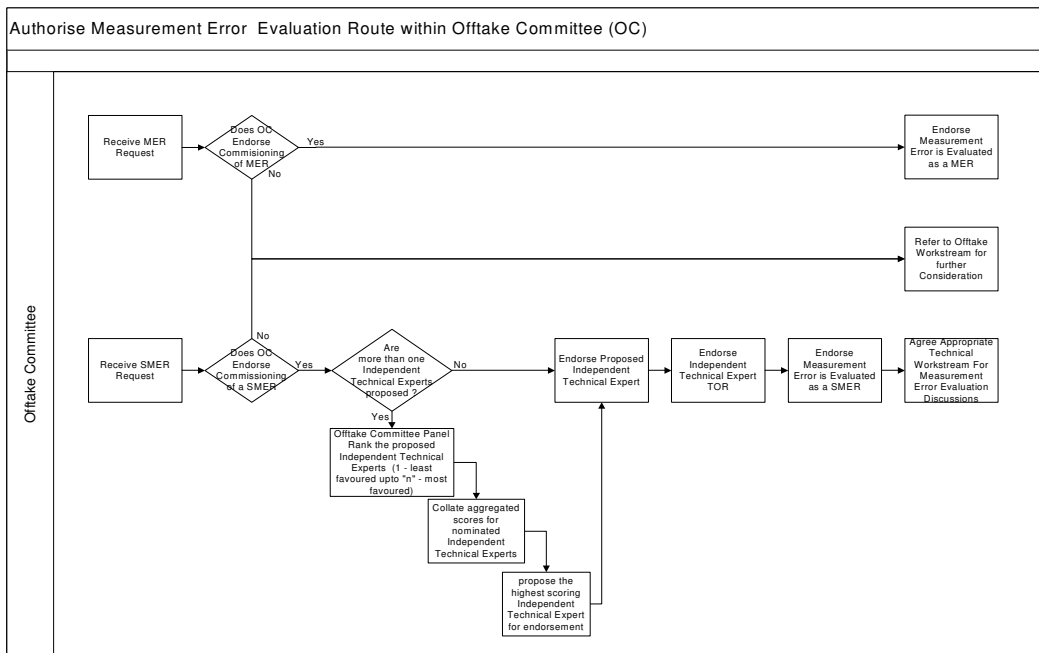
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Measurement Error threshold (50 GWh) or the error could have significant implications for the industry.

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## 8. Business Rules for the Authorisation of the Significance of the Measurement Error by the Offtake Committee



### Actions associated with a request for a Significant Meter Error Report (SMER):

- The Offtake Committee, upon the receipt of a request for a SMER, will:
  - Endorse the recommendation for the compilation of a SMER; or
  - Refer to the Offtake Arrangements Workstream for further consideration of the Measurement Error.
- Upon endorsement of a SMER request, the Offtake Committee will:
  - Where more than one (1) Independent Technical Expert is proposed:
    - Rank the proposed Independent Technical Experts from 1-n (1 least favoured, n most favoured) and provide the ranking to the Joint Office of Gas Transporters;
    - Collate the aggregated scores for the nominated Independent Technical Experts from the Offtake Committee review; and
    - Propose the highest scoring Independent Technical Expert for endorsement.
  - Endorse the appropriate person as the Appointed Independent Technical Expert;
  - Review the proposed terms of reference and approve terms of reference for use in this SMER; and

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- Authorise and establish an appropriate technical workstream or sub committee for discussions of this SMER.
- The Downstream Party will:
  - Invite the endorsed Independent Technical Expert to take up the appointment;
  - Where the favoured Independent Technical Expert does not accept the appointment, invite the next most favoured Independent Technical Experts in turn.
  - Upon acceptance of the appointment, establish the contract with the Independent Technical Expert, including the agreed terms of reference.
    - Upon confirmation that the Independent Technical Expert endorsed by the Offtake Committee is available, has no conflict of interest that prohibits his construction of the SMER, and has contracted with the Downstream Party to undertake the construction of the SMER, he will be known as the Appointed Independent Technical Expert.
- Costs:
  - Each Party shall bear its own costs including without limitation costs of providing documentation, information, data, submissions or comments, and all costs and expenses of all witnesses and other persons retained by it.
  - The Appointed Independent Technical Expert shall provide the Downstream Party with a breakdown of:
    - His fees; and
    - His reasonable expenses, including the fees of and reasonable expenses incurred by any technical or professional advisers.
  - The Appointed Independent Technical Expert's fees and expenses shall be payable by the Downstream Party.
- Conflict of Interest:
  - The Independent Technical Expert shall confirm to the Downstream Party before his appointment that he does not hold any interest or duty which would, or potentially would, conflict with the performance of his duties under his contract with the Downstream Party.
  - If, after his appointment the Appointed Independent Technical Expert becomes aware of any interest or duty which conflicts or potentially conflicts with the performance of his duties under his contract with the Downstream Party, the Appointed Independent Technical Expert shall inform the Downstream Party forthwith of such conflict giving full details thereof.
  - The Downstream Party shall forward any such information to the Joint Office of Gas Transporters who shall forward this to all Users and Offtake Committee Members as soon as reasonably practicable.
  - Any User or Offtake Committee Member may, within five (5) Business Days of the disclosure of any such conflict or potential conflict, object to the appointment or continued appointment of an Appointed Independent

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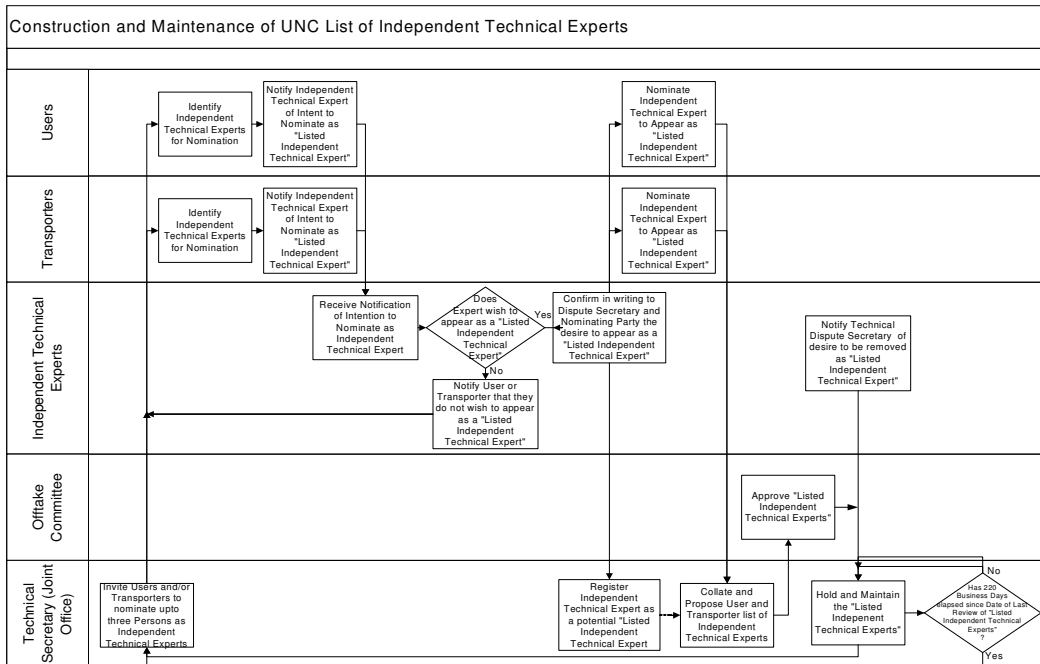
Technical Expert, in which case the Appointed Independent Technical Expert shall not be or shall cease to be appointed and a new Independent Technical Expert shall be selected and appointed by the Offtake Committee.

**Actions Associated with a Request for a Measurement Error Report:**

- The Offtake Committee, upon the receipt of a request for a MER, will:
  - Endorse the recommendation for the compilation of a MER; or
  - Refer to the Offtake Arrangements Workstream for further consideration of the Measurement Error.

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## 9. Framework for Approved List of Independent Technical Experts



- The Joint Office of Gas Transporters will:
  - Invite all **“Shipper Users”** and **“Transporters”** to nominate up to three (3) persons per meter technology existing on NTS/LDZ or LDZ/LDZ boundaries to act as Independent Technical Experts.
  - Upon receipt in writing of desire of the nominee to appear as a Listed Independent Technical Expert, add to the register as a proposed Listed Independent Technical Expert.
  - Collate the Shipper User and Transporter list of proposed Listed Independent Technical Experts and forward to the Offtake Committee for approval.
  - Upon receipt of the approved Listed Independent Technical Experts from the Offtake Committee hold and maintain the register of Listed Independent Technical Experts.
  - Undertake a review of the Listed Independent Technical Experts register at least annually.
- The Offtake Committee will:
  - Upon receipt of the proposed list of Independent Technical Experts:
    - Endorse, or decline to endorse, the appropriateness of expertise; and
    - Agree the register of Listed Independent Technical Experts.
- The Independent Technical Experts will:

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- Confirm in writing to the Joint Office of Gas Transporters and nominating party the desire to be registered as a Listed Independent Technical Expert, or not;
- Upon desire to withdraw as a Listed Independent Technical Expert, notify the Joint Office of Gas Transporters of their wish to be removed from list.
- The Transporters will:
  - Nominate up to three (3) Independent Technical Experts per meter technology existing on NTS/LDZ or LDZ/LDZ boundaries to appear as a Listed Independent Technical Expert and notify the Joint Office of Gas Transporters.
- The Shipper Users will:
  - Nominate up to three (3) Independent Technical Experts per meter technology existing on NTS/LDZ or LDZ/LDZ boundaries to appear as a Listed Independent Technical Expert and notify the Joint Office of Gas Transporters.

### **Independent Technical Expert List Framework**

- Name of Independent Technical Expert;
- Expert organisation;
- Area of expertise (e.g. OPM - Orifice Plate Meters, TM - Turbine Meters, USM - Ultrasonic Meters, CoM - Coriolis Meters, C - Chromatographs);
- Date of first registration;
- Date of last review;
- Renewal date:
  - Auto-populated based on one (1) Calendar Year from “date of last review”;
  - and
- Associated business rules:
  - The List must contain more than one (1) Independent Technical Expert for each area of expertise.

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## 10. Generic Terms of Reference for an Appointed Independent Technical Expert

- Compile a SMER using the most appropriate data and methodologies to ensure that as accurate an error assessment of the “**Measured Data**” can be made in an economic and efficient manner reflecting the size of the error.
- The Appointed Independent Technical Expert shall be expected to comply with the terms of reference defined for the Specific Measurement Error.
- The Appointed Independent Technical Expert shall be expected to provide at least monthly updates to the technical workstream or sub committee authorised to discuss the relevant Measurement Error. This update will include a summary of developing methodologies, technical issues identified (all received within five (5) Business Days of the meeting to be reviewed), relevant queries raised, data requests submitted and evidence requested.
- The Appointed Independent Technical Expert will determine and consider which, if any, “**Technical Measurement Issues**” submitted will have a material effect on any critical data item connected with the identified Measurement Error. For all such issues, the Appointed Independent Technical Expert will evaluate their contributions to the determination of the magnitude of error in the Measured Data.
- The decision as to the most appropriate methodologies and data will rest solely with the Appointed Independent Technical Expert taking account of any Technical Measurement Issues raised during the development and compilation of the SMER.
- The decision as to when the SMER is a robust technical evaluation of the magnitude of error in Measured Data will rest solely with the Appointed Independent Technical Expert
- The Appointed Independent Technical Expert will present the SMER, in draft form, to the authorised technical workstream or sub committee and will review all the Technical Measurement Issues identified.
- The Appointed Independent Technical Expert will determine what data is required from the relevant Transporters in order to ensure appropriate data supports the evaluation of the error in the Measured Data.
- The Appointed Independent Technical Expert will determine what supporting evidence is required from the relevant Transporters in order to support the appropriate methodologies and data in the evaluation of the error in Measured Data.
- The Appointed Independent Technical Expert will determine what relevant questions should be submitted to the relevant Transporters in order to ensure appropriate methodologies and data are used in the evaluation of error in Measured Data.

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- The Appointed Independent Technical Expert will provide the final SMER to the Downstream Party in the following template for publication:
  - Executive Summary
    - Site name;
    - DNO;
    - LDZ;
    - Error start date;
    - Error corrected date;
    - Size of error (over or under read);
    - Error description; and
    - Meter type.
    - MER/SMER Unique Reference Number;
  - Compiled by;
  - Error Description;
  - Methodology; and
  - Error quantification

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## 11. Framework for the Technical Workstream or Sub Committee Meeting

- The Appointed Independent Technical Expert will:
  - Provide an update on the measurement issue;
  - Review Technical Measurement Issues raised up to five (5) Business Days prior to the technical workstream or sub committee meeting on the “**Technical Measurement Issues Log (TMIL)**” in the meeting; and
  - Make a decision on the requirement for a further meeting prior to producing the SMER.
  - Users will:
    - Submit Technical Measurement Issues to the Joint Office of Gas Transporters that may impact a critical data item affected by the identified Measurement Error.
- Transporters will:
  - Submit Technical Measurement Issues to the Joint Office of Gas Transporters that may impact a critical data item affected by the identified Measurement Error.
- The Joint Office of Gas Transporters will:
  - Capture Technical Measurement Issues on the TMIL.

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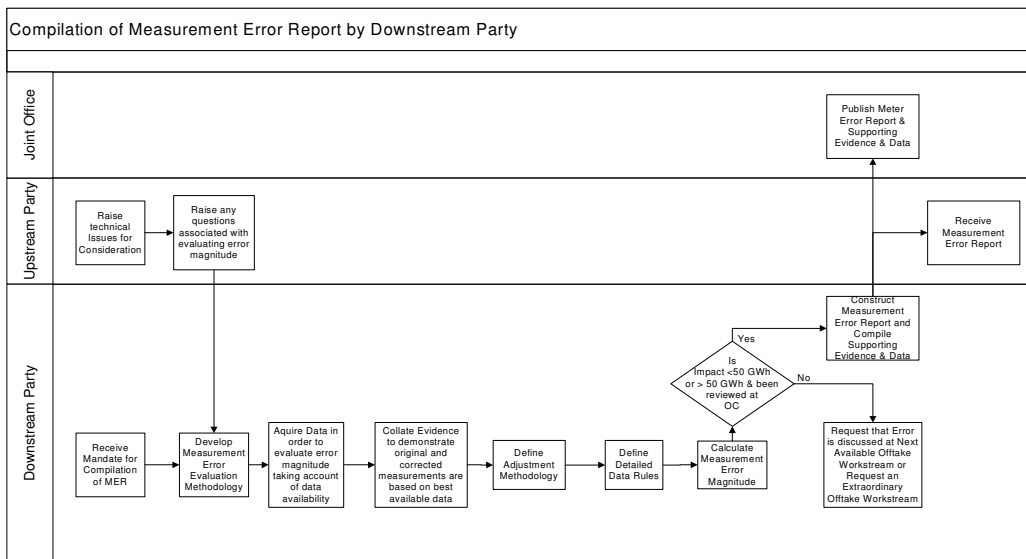


**12. Framework for the Final Meeting where the Appointed Independent Technical Expert in conjunction with the Downstream Party presents the Methodology and Data employed in the SMER**

1. Provide an overview of the methodology used in the calculation of the revised measurements;
2. Present the data rules employed in the calculation of the revised measurements;
3. Review all items on the TMIL and the reasons for accounting for/discounting; and
4. Present the corrected readings.

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### 13. Business Rules for the Compilation of a Measurement Error Report



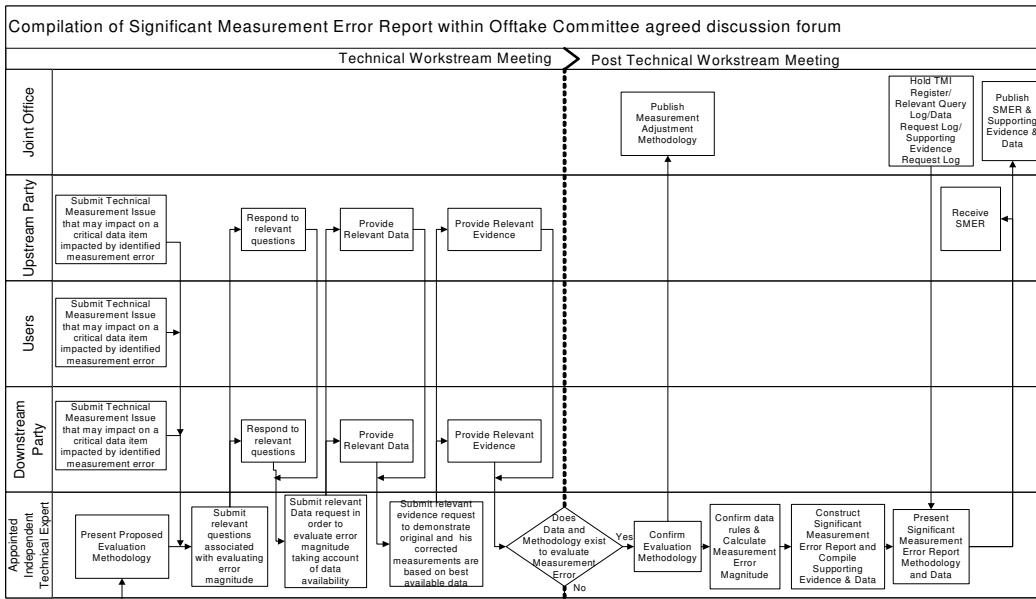
- The MER:
  - Is compiled by the Downstream Party;
  - All data and evidence gathered in order to compile the MER will be construed to be auditable records;
  - Will define the magnitude of the Measurement Error for every Day within the error period; and
  - Will give the total net error magnitude as a volume and will specify if it represents an over or under registration.
- The Downstream Party will:
  - Define the technical methodology to derive a robust evaluation of the magnitude of Measurement Error that is economic and efficient;
  - Be responsible for undertaking the calculation of the Measurement Error in accordance with the technical methodology, to the appropriate tolerances and in accordance with the defined data rules;
  - Define the data requirements for accurate evaluation of the error magnitude;
  - Define the evidence required to demonstrate that the original and corrected measurements are based on the best available data;
  - Define the duration of the Measurement Error period;
  - Be required to provide detailed data rules;
  - Be responsible for acquiring the data for the evaluation of the error magnitude in a timely manner;
  - Be required to acquire in a timely manner the evidence to demonstrate that the original and corrected measurements are robust; and

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- Provide the Joint Office of Gas Transporters with the completed MER.
- The Upstream Party will:
  - Be required in a timely manner to notify to the Downstream Party any technical issues that may impact upon the methodology or data to be employed in the evaluation of the error;
  - Be required to provide the Downstream Party with any reasonable data necessary in order to evaluate the Measurement Error; and
  - Receive the Measurement Error Report.
- The Joint Office of Gas Transporters will:
  - Be required to publish Measurement Error Reports notified to it by the Downstream Party.

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## 14. Business Rules for the Compilation of a Significant Measurement Error Report



- The SMER:
  - Is compiled by the Appointed Independent Technical Expert approved by the Offtake Committee;
  - All data and evidence required by the Appointed Independent Technical Expert in order to compile the SMER will be construed to be auditable records;
  - Will define the magnitude of the Measurement Error for every Day within the Measurement Error period; and
  - Will give the total net Measurement Error magnitude as a volume and will specify if it represents an over or under registration.
- The Effect of Determination:
  - The Appointed Independent Technical Expert's final determination shall (unless given after the appointment of another expert) be final and binding on the Parties except in the event of fraud or where the Offtake Committee considers it is so clearly erroneous on its face that it would be unconscionable for it to stand, in which case another Independent Technical Expert may be appointed.
  - Except as provided in the paragraph above, no Party shall commence proceedings in respect of or refer to any court any finding by the Appointed Independent Technical Expert, whether made at any time after his appointment or in his determination.
- The Appointed Independent Technical Expert will:
  - Define the technical methodology to derive a robust evaluation of the magnitude of Measurement Error that is economic and efficient;

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- Define the data requirements for accurate evaluation of the Measurement Error magnitude;
- Be required to provide detailed data rules;
- Define the evidence required to demonstrate that the original and corrected measurements are based on the best available data;
- Define the duration of the Measurement Error period;
- Be responsible for applying the defined methodology and data rules to quantify the Measurement Error;
- Present proposed evaluation methodology to the technical workstream or sub committee authorised by the Offtake Committee; and
- Review all technical measurement issues raised.
- The Downstream Party will be:
  - Responsible for providing in a timely manner the data requested by the Appointed Independent Technical Expert for the evaluation of the Measurement Error magnitude;
  - Required to provide in a timely manner the evidence the Appointed Independent Technical Expert has requested to demonstrate that the original and corrected measurements are robust ; and
  - Required to answer technical questions raised by the Appointed Independent Technical Expert associated with the evaluation of the Measurement Error.
- The Upstream Party will be:
  - Required to notify the Appointed Independent Technical Expert in a timely manner of any technical issues that may impact upon the methodology or data to be employed in the evaluation of the Measurement Error;
  - Responsible for providing in a timely manner the data requested by the Appointed Independent Technical Expert for the evaluation of the Measurement Error magnitude; and
  - Required to answer technical questions raised by the Appointed Independent Technical Expert associated with the evaluation of the Measurement Error.
- Users will be:
  - Required to notify the Appointed Independent Technical Expert in a timely manner of any technical issues that may impact upon the methodology or data to be employed in the evaluation of the Measurement Error.
- The Joint Office of Gas Transporters will be:
  - Required to publish evaluation methodologies and SMERs sent to it by the Appointed Independent Technical Expert.

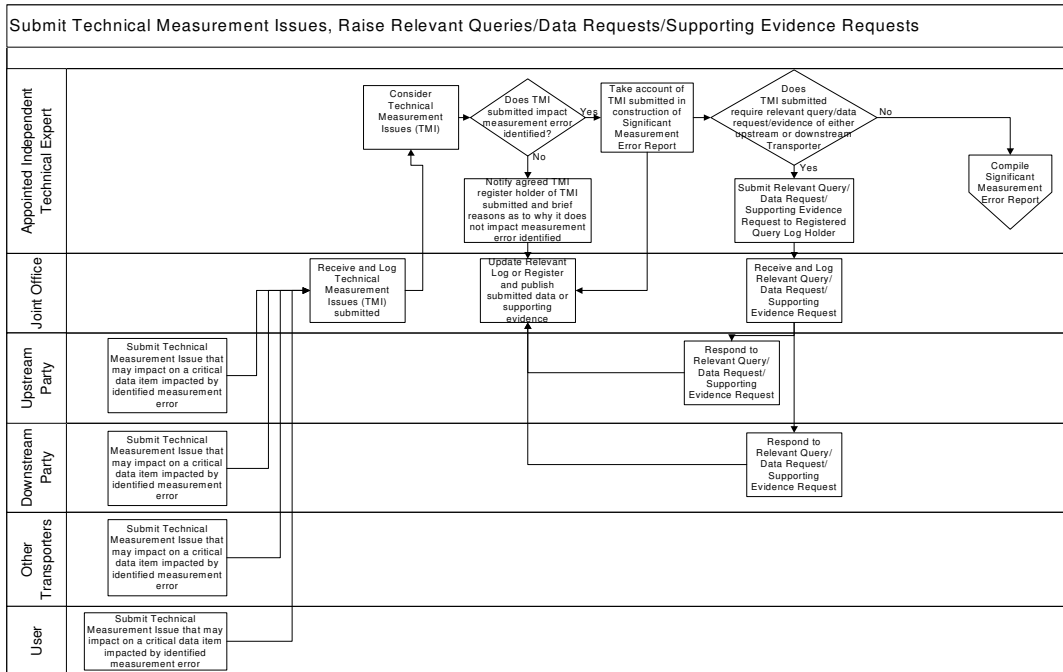
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### 15. Framework for Technical Issues, Relevant Queries, Data Requests and Supporting Evidence Requests



#### Technical Measurement Issue Framework

- Submitting Party;
- Submitting Party contact details;
  - Name;
  - Business number;
  - Mobile number;
  - Email address; and
  - Fax number.
- Technical measurement issue description;
- Anticipated impact on critical data item used in evaluation of Measurement Error magnitude; and
- Date of submission.

#### Technical Measurement Issue Log

- Unique “Query Issue ID”;
- Submitting Party;
- Submitting Party contact details;
  - Name;

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- Business number;
- Mobile number;
- Email address; and
- Fax number.
- Technical Measurement Issue description;
- Anticipated impact on critical data item used in evaluation of Measurement Error magnitude;
- Date of submission;
- Technical Measurement Issue status (accepted by Appointed Independent Technical Expert, or rejected by Appointed Independent Technical Expert);
- Rejection reason (brief narrative of reason why submitted Technical Measurement Issue would not materially impact the error assessment); and
- Date of rejection.

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### Appointed Independent Technical Expert Relevant Query Framework

- Date query submitted;
- Linkage to previous queries raised;
- Target Party for query (Upstream Party and/or Downstream Party); and
- Nature of query (a technical measurement question associated with the Measurement Error identified at the relevant measurement station which may impact the evaluation of Measurement Error).

### Appointed Independent Technical Expert Relevant Query Log

- Unique “**Query ID**”;
- Date query submitted;
- Linked Query IDs;
- Target Party for query (Upstream Party and/or Downstream Party);
- Nature of query;
- Query response;
- Query status (query submitted, awaiting response, responded); and
- Date of query response.

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### **Appointed Independent Technical Expert Data Request Framework**

- Date data request submitted;
- Linkage to previous data requests raised;
- Target Party for data request (Upstream Party and/or Downstream Party);
- Data requested (technical measurement data associated with the Measurement Error identified at the relevant measurement station which may impact the evaluation of Measurement Error); and
- Required data format.

### **Appointed Independent Technical Expert Relevant Data Request Log**

- Unique “**Data Request ID**”;
- Date data request submitted;
- Linked Data Request IDs;
- Target Party for the data request (Upstream Party and/or Downstream Party);
- Data requested;
- Data request status (data request submitted, awaiting response, retrieving data, data supplied and published, data unavailable);
- Anticipated data acquisition date (for data request status ‘retrieving data’ only);
- Data availability reason (for data request status ‘retrieving data’ and ‘data unavailable’); and
- Date of data supply.

### **Appointed Independent Technical Expert Supporting Evidence Request Framework**

- Date supporting evidence request submitted;
- Linkage to previous supporting evidence requests raised;
- Target Party for supporting evidence request (Upstream Party and/or Downstream Party); and
- Supporting evidence requested (technical supporting evidence which supports the evaluation of the Measurement Error).

### **Appointed Independent Technical Expert Supporting Evidence Request Log**

- Unique “**Supporting Evidence Request ID**”;
- Date supporting evidence request submitted;
- Linked Supporting Evidence Request IDs;
- Target Party for the supporting evidence request (Upstream Party and/or Downstream Party);



- Supporting evidence requested;
- Supporting evidence request status (supporting evidence request submitted, awaiting response, supporting evidence supplied and published, supporting evidence unavailable);
- Supporting evidence unavailable reason; and
- Date of supporting evidence supply.

**16. Publication of Evaluation Methodology for Significant Measurement Error Report**

- The Appointed Independent Technical Expert will:
  - Provide the evaluation methodology for a SMER for publication.
- The Joint Office of Gas Transporters will:
  - Publish the evaluation methodology for a SMER on the Joint Office of Gas Transporters' website.

**17. Publishing Significant Measurement Error Reports**

- The Appointed Independent Technical Expert will:
  - Provide the SMER for publication in the appropriate template in accordance with the terms of reference.
- The Downstream Party will:
  - Ensure the publication of the SMER.
- The Joint Office of Gas Transporters will:
  - Publish the SMER on the Joint Office of Gas Transporters' website.

**18. Publishing Measurement Error Reports**

- The Downstream Party will:
  - Provide the MER for publication.
- The Joint Office of Gas Transporters will:
  - Publish the MER on the Joint Office of Gas Transporters' website.