

Reference number(s)	016 - Error Calculations at Certification
Relevant clause(s)	Clause 22 of Schedule 10.7 – Error calculation
Problem definition	<p>Under clause 22 of Schedule 10.7, an ATH must, before it certifies a metering installation under clauses 12 or 13, calculate the percentage error of the metering installation using appropriate mathematical methods.</p> <p>The error calculation must include uncertainty in measurement, with the ATH required to calculate uncertainty at a 95 % level of confidence and in compliance with JCGM 100:2008.</p> <p>Calculating the uncertainty in a metering installation’s measurement of electricity helps to ensure the metering installation:</p> <ul style="list-style-type: none"> a) is accurate within a certain percentage of error b) will remain so at the levels of electricity that will typically flow through the metering installation. <p><u>Problem 1</u></p> <p>Some class B ATHs have requested the Authority review the error calculation obligations in clause 22(1) of Schedule 10.7. We have been asked to consider a simplified process for category 2 metering installations in particular.</p> <p><u>Problem 2</u></p> <p>Clause 22(1)(a) requires an ATH to calculate the percentage error of a metering installation taking account of “the estimated total quantity of electricity to be conveyed through the metering installation over the next 12 months”.</p> <p>The use of the words “total quantity” is not strictly correct. An ATH needs to take account of:</p> <ul style="list-style-type: none"> a) the ICP’s load profile, including the ICP’s upper and lower load limits b) the upper and lower limits of the ICP’s power factor. <p>This information is required to determine whether the expected load or power factor will exceed the accurate operating range of the metering installation’s components. For example, a metering installation:</p> <ul style="list-style-type: none"> a) that is oversized can become inaccurate at low loads b) supplying a load that varies between being high and low, especially outside the normal test points, may be inaccurate c) that is expected to supply a load with power factors that vary outside the normal test points, may be inaccurate. <p>Some ATH audits show the ATH is not taking into account the correct load and power factor information listed above.</p> <p>ATHs should be requesting this information from the MEP responsible for the metering installation. However, MEPs are not required to give expected load information to ATHs. MEPs can source load information from the retailer or customer for new and existing metering installations, or from their meter reading records for existing metering installations.</p>

<p>Proposal</p>	<p><u>Problem 1</u></p> <p>The Authority proposes to take no further action in relation to the first problem described above.</p> <p>This is based on advice from New Zealand’s Chief Metrologist. The Chief Metrologist has advised us that the requirements of clause 22(1) of Schedule 10.7 are necessary to ensure the metering installation is accurate at the extremes of its expected range of operation.</p> <p><u>Problem 2</u></p> <p>The Authority proposes to address the second problem described above by amending clause 22(1)(a) to specify that an ATH must take account of:</p> <ul style="list-style-type: none"> a) the estimated load profile at the ICP over the next 12 months, and b) the estimated power factor of the load at the ICP over the next 12 months. <p>The Authority does not propose to make any changes to the Code to require MEPs or retailers to supply expected load information under clause 22 of Schedule 10.7. This is because there are likely to be varying sources for this information, depending on the characteristics of the ICP. The Authority expects ATHs to request this information for an ICP from the most appropriate information source for that ICP.</p>
<p>Proposed Code amendment</p>	<p>22 Error Calculation</p> <p>(1) An ATH must, before it certifies a metering installation under clauses 12 or 13, calculate the error of the metering installation in accordance with the following:</p> <ul style="list-style-type: none"> (a) the ATH must calculate the percentage error of the metering installation using appropriate mathematical methods, taking account of— <ul style="list-style-type: none"> (i) all sources of measurement error; and (ii) the <u>expected profile of the electricity expected to be conveyed through the metering installation over the next 12 months including, for the avoidance of doubt, the estimated <u>maximum and minimum load amounts total quantity of electricity expected to be conveyed at any one time</u> through the metering installation over the next 12 months; and</u> (iii) the <u>estimated maximum and minimum power factors for the electricity expected to be conveyed at any one time through the metering installation over the next 12 months; and</u> (b) the error calculation must include uncertainty in measurement; and (c) for the purposes of paragraph (b), the ATH must calculate uncertainty at a 95% level of confidence and in compliance with JCGM 100:2008.
<p>Assessment of proposed Code amendment against</p>	<p>The proposed Code amendment is consistent with the Authority’s objective, and section 32(1)(c) of the Act, because it would contribute to the efficient operation of the electricity industry.</p>

section 32(1) of the Act	<p>It would do this by clarifying what is needed to correctly calculate the error of the metering installation, thereby improving the accuracy of metering installations.</p> <p>The proposed Code amendment is expected to have little or no effect on competition or reliability of supply.</p>
Assessment against Code amendment principles	The Authority is satisfied the proposed Code amendment is consistent with the Code amendment principles, to the extent they are relevant.
Principle 1: Lawfulness.	The proposed Code amendment is consistent with the Act, as discussed above in relation to the Authority's statutory objective and the requirements set out in section 32(1) of the Act.
Principle 2: Clearly Identified Efficiency Gain or Market or Regulatory Failure	The proposed Code amendment is consistent with principle 2 in that it addresses an identified efficiency gain, which requires a Code amendment to resolve.
Principle 3: Quantitative Assessment	Please refer to the assessment of costs and benefits in section 3 of the consultation paper.
Regulatory statement	
Objectives of the proposed amendment	The objective of the proposal is to clarify the information that ATHs must use when calculating the uncertainty in a metering installation's measurement of electricity.
Evaluation of the costs and benefits of the proposed amendment	Please refer to the assessment of costs and benefits in section 3 of the consultation paper.
Evaluation of alternative means of achieving the objectives of the proposed amendment	The Authority has not identified an alternative means of achieving the objectives of the proposed Code amendment.