Advanced gas metering – minimum standards Initial draft for discussion

Existing metering requirements

The Gas (Downstream Reconciliation) Rules 2008 (DR Rules) require that all metering equipment used to collect gas volume information complies with the New Zealand Standard *Gas measurement*, NZS 5259. As well, there are requirements in the DR Rules regarding the accuracy and handling of volume information. Some of these requirements seem particularly relevant to the attributes of advanced gas meters and are reproduced below for convenience.

NZS 5259

- **Integrity of data (2.2.6)**

  Data transmitted between components or stored with the GMS shall be accurate to meet the maximum permissible errors (MPEs) of Table 2 and Table 3 of NZS 5259

- **Traceability of data (2.2.7)**

  Every GMS shall accurately and traceably store or record data and transmit that data between components and indicating devices

- **Protection against external interference (2.2.8)**

  Every GMS shall, where practicable, be designed, manufactured, and installed in such a way that any interference or tampering capable of affecting the measuring accuracy is discouraged and becomes visible or readily detectable

- **Reliability (2.2.9)**

  Every GMS shall be capable of performing accurately and consistently taking into account any physical, chemical, and thermal conditions to which it is likely to be subjected and fulfil correctly its intended purpose throughout its service life.

  Electrically powered and electronic components of the GMS shall be capable of meeting the MPEs of Table 2 and Table 3 when subject to reasonably foreseeable:

  o Short-term fluctuations in electrical supply voltage;

  o Mains borne or radiated high frequency signals; or

  o Electrostatic discharge.

  Note: Electronic devices are required to meet electromagnetic compatibility requirements under the Telecommunications Act.

- **Indicating device (2.3.5)**

  Any meter or conversion device shall have a means to clearly show the quantity of gas measured.

  An indicating device shall (among other things):

  o Only be capable of being reset where the resetting is traceable or detectable

  o Be non-volatile (that is, able to show the last correct indication after the device has recovered from an intervening power failure)

- **Guidance on the accuracy requirements for the time parameter of time-stamped data (Appendix B) – References to New Zealand Standard Time**

  For time of use applications the reference shall be to NZ Standard Time (NZST)

Downstream Reconciliation Rules

- Every allocation participant must provide the information required under these rules in a manner that is

  o Accurate and complete; and

  o Not misleading or likely to mislead; and

  o Timely. (rule 26.2)

- Every retailer must ensure that the consumption information supplied to the allocation agent in accordance with rules 29 to 40 is transferred and stored in such a manner that it cannot be altered without leaving a detailed audit trail; and

- A copy of all register reading data is kept for a minimum period of 30 months and is made available to the allocation agent, industry body or an auditor on request (rule 28.4)

- Consumption days are defined in terms of New Zealand Standard Time (rules 29.4 and 30.1).

Advanced gas metering minimum standards

Function	Draft expectation / questions
Recording of consumption data	• Minimum time period for measuring? (hourly, half hourly, other?) • Metering system should include a visual indicating device that is able to be read manually (accumulating register?) • Record gas temperature and meter pressure? Faults and alarms?
Conversion of metering data	• Should the advanced meter convert gas flows into volume at standard temperature and pressure? • As per Appendix B of NZS 5259, time should be recorded in NZST; and the DR Rules require days defined by NZST. Given this, is there any need to convert to DST?
Access to metering data	• It is possible that the advanced metering services market will evolve such that one service provider will provide the metering assets, and a different service provider will remotely collect the consumption information and provide it to the retailer. Advanced meters should be configured in a way that allows third-party access. • To the extent that the advanced meter records information that could be useful for network management or reconciliation, such as gas temperature, meter pressure, faults, and alarms, those data should be able to be made available separately • Able to provide remote operation diagnostics? For example, should a CSR be able to remotely check on the status of a customer's meter? • What protocols are needed regarding access to data and protection of consumer data?
Provision of consumption data	• Should have the option of providing a single monthly consumption number for retailers with legacy systems • Should be able to provide daily consumption data to the allocation agent for D+1 allocations • Should be able to provide consumption data to consumers in a format that can be readily understood. Data should be supplied in the units for which the consumer is billed; e.g., kWh for mass market consumers.
Cybersecurity	• Particularly an issue with regard to meters that can remotely disconnect and reconnect. What protocols and protections are needed to ensure no unauthorised access of AMI functionality?