

# **Submission to Joint Jurisdictional Review of Metrology Procedures**

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## ***The role of single phase meters under full retail competition***

Small end-users taking single-phase electricity supply have become contestable under full retail competition in some jurisdictions. Under full retail competition, each end-user has two interfaces with the supply industry (which may be subsumed into a single contract with a retailer):

- To their retailer of choice for the provision of electrical energy
- To their distribution network service provider (DNSP) for connection to their local distribution network and, through that network, to the main transmission network. This interface also manages availability and quality of supply at the point of connection.

The electricity meter at the end-user's point of connection can play several important roles:

- Providing a record of electrical energy flow (potentially bi-directional in the presence of small embedded generation) for each (half-hour) market interval
- Providing a record of key indicators of availability and quality of supply at the point of connection, such as frequency and duration of outages, distribution of voltage magnitude and total harmonic distortion
- Supporting a range of mechanisms (price based or otherwise) by which end-users contribute to the overall economic efficiency and security of the industry. Price-based mechanisms could include spot & forward retail tariffs, which rewarded end-users for reducing demand in the presence of high spot prices. Ancillary service mechanisms could include appropriate responses to off-nominal voltage or frequency.

Market interval information will become steadily more important for determining commercial outcomes and for dispute resolution purposes. End-user participation will become steadily more important in efficiently managing peak load conditions and threats to system security characterised by abnormal voltage and/or frequency behaviour. Profiling can be no more than a transition option.

## ***Responses to the issues raised in the issues paper***

### **Issue 1**

The assessment framework is too narrow. In particular, it fails to discuss adequately:

- How end-users could contribute to improved economic efficiency
- What should be measured to support effective end-user participation
- What measurements the various metering options can support.

Because of the physical characteristics of the electricity industry, active end-user participation is very important in delivering economically efficient outcomes. In broad terms, end-users can contribute to improved economic efficiency by responding to appropriate price signals (spot and forward) where these can be implemented and to technical indicators of industry state for phenomena that cannot be effectively priced. The issues paper identifies the importance of market

interval (30 minute) metering, however it ignores phenomena that 30-minute spot prices cannot reflect. Unfortunately, these are important. For example, much network investment is driven by quality or availability of supply concerns, and one of the most prospective options to improve power system security against multiple contingencies is to enhance end-user responsiveness to abnormal voltage and/or frequency conditions.

The key indicators of quality of supply are voltage and frequency magnitude and waveform purity. The key indicators of availability of supply are frequency and duration of outages. Electronic meters could record these indicators and compute summary information at little additional cost, however this is not the case with other meter types.

Information of this kind could enhance economic efficiency in several ways:

- by providing a sound basis for an incentive regulation scheme for distributors
- by providing information that would facilitate the resolution of disputes between end-users and distributors and/or retailers over service availability or quality
- by supporting schemes that reward end-users for appropriate responses to abnormal quality of supply, which may both enhance system security and defer network investment
- by allowing more objective comparison of the cost-effectiveness of supply side responses (eg network augmentation) and demand side responses (eg UPS) to poor availability of supply
- by allowing the contributions of distributed resource options, such as embedded generation, reversible storage or responsive demand to be correctly valued.

*By failing to consider these opportunities to improve economic efficiency, the issues paper seriously understates the potential benefits of electronic metering.*

## **Issues 2-9**

In each case, consideration should be given to meter functionality beyond energy metering and the associated economic efficiency benefits that might accrue. In general, such consideration will strengthen the case for electronic metering with provision for measuring key indicators of availability and quality of supply. It will also strengthen the case for implementing a standardised metering functionality across all jurisdictions and rolling out complying meters to all end-users.

## **Conclusions**

The physics of electricity industry operation requires close cooperation between all industry participants to deliver economically efficient outcomes. For example, the emergence of summer “needle peaks” driven by air conditioning illustrates the important role that residential and small commercial end-users play in the industry. Advanced electronic meters, which can record key indicators of supply availability and quality as well as interval energy, could play a crucial role in facilitating effective participation by end-users and should be obligatory for all new and replacement meters.

A standardised retail market design that is compatible with the National Electricity Market should be developed and implemented in parallel with the advanced meter rollout to take advantage of the improved meter functionality. The standardised retail market should have a spot and forward structure and provide separate commercial interfaces between end-user and distributor and between end-user and retailer. Retailers should take on the more end-user focussed role of energy service providers.