COMPETITIVE METER OWNERSHIP – OPPORTUNITIES, RISKS & REWARDS

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Delivered at:

MMI Conference
Darling Harbour Sydney
23-25 May 2005

ABSTRACT

Since the inception of full retail contestability, electricity Distributors have maintained effective control over the provision of metering services – supported by jurisdictional metering regulations and derogations to the National Electricity Code.

Now, encouraged by a more certain regulatory framework, competition for metering services is set to increase for that part of the market specifically excluded from a regulated monopoly – remote-polling (aka. Automated Meter Reading or Advanced Metering). Innovative technologies and reducing costs allows competitive *meter owners* to enter the market – encroaching on the Distributors' market share.

For Meter Owners (both new and incumbent) the acquisition of electricity meters now becomes more than a purchasing decision – it is an investment decision. And for the investment to remain secure the risk of meter churn must be diminished. The choice of technologies is paramount if an effective return on investment is to be achieved.

Interval meters deployed today that cannot technically or commercially meet the challenges of tomorrow are in jeopardy of being replaced – with the meter owner, not the end data user, bearing the financial penalties.

All businesses intending to *invest* in meter asset ownership must cautiously select which meters to install – with a view to meeting the future needs of the market.

METERING COMPETITION

Derogations to the National Electricity Code in each of the state jurisdictions, require that the Distributor "be the Responsible Person for all type 5, type 6 and type 7 metering installations"[1]. That is, the Distributor is responsible for meter provisioning and data collection for any connection points where data is manually collected.

Such derogations do not extend to metering types 1-4 where data is collected using remote-polling technologies – providing for some level of competition for metering services.

However, Chapter 7 of the National Electricity Code applies only to second-tier connection points. That is, connection points that have transferred from the host Retailer to a second-tier Retailer. First tier metering is separately regulated by the Metrology Co-ordinator within each jurisdiction, with generally no allowance for competitive metering services. The Victorian Electricity Customer Metering Code, for example, obligates "the Distributor (to) provide, install, commission, test and maintain metering equipment"[2], and "collect data stored in metering equipment"[3] for first tier sites.

Chapter 7 of the National Electricity Code[4] also allows the jurisdictional Metrology Co-ordinator to set an annual volume limit per connection point (up to 750MWh) above which remotely-polled interval meters must be

1 Refer National Electricity Code – Sections 9.9A2(a), 9.17A.1(a) and 9.24A.2(a)
2 Electricity Customer Metering Code, 28 January 2004 - Clause 7.1(a) – page 20
3 Ibid – Clause 15.1 – page 36
4 Refer Note 3, Table S7.2.3.1 of the National Electricity Code

installed; and below which either manually read accumulation (type 6) meters or interval (type 5) meters may be installed. This discretionary value – set at 160MWh in Victoria for example, – has come to define what are called 'small' and 'large' customers.

But this discretionary level has also generally been misinterpreted as setting a limit below which no competition for metering services can occur – even for second-tier connection points. A notion which has remained unchallenged largely because the cost of remote-polling technologies has not been suited to smaller sites and because there is a disincentive for Retailers to explore alternative service options while Distributor metering charges are bundled within Distribution Use of System Charges (DuoS), forcing them to continue paying for a service they would no longer use.

In authorising the introduction of full retail competition, the Australian Competition and Consumer Commission (ACCC) imposed a condition upon the state jurisdictional regulators[5] that they must conduct a joint review of the metrology procedures to consider "whether barriers exist to consumers adopting economically efficient metering solutions"[6] and engaing in demand side participation[7].

In August 2003 the regulators jointly commenced a review of the metrology procedures. The outcome of this review were recommendations that, amongst other things:

- Chapter 7 of the National Electricity Code be extended to include first tier metering[8];
- Distributor exclusivity for the provision of metering services extend only to first and second tier connection points that do not meet the requirements of a metering installation type 1, 2, 3 or 4[9]; and
- Each jurisdiction unbundle metering services charges from the Distribution Use of System (DUoS) charges[10].

As the first state to undertake an Electricity Distribution Price Review (EDPR) since publication of the Final Report, Victoria is the first jurisdiction to implement these recommendations. The Essential Services Commission (ESC) final approach to the regulation of metering services for the 2006-2010 regulatory period states that:

> The retailer will have the choice as to whether the retailer or the distributor will be responsible for metering services for all "large" first tier customers and second tier customers with a metering installation type 1, 2, 3 or 4.[11]

To ensure that there are consistent arrangements between first and second tier customers:

> A "large" first tier customer will be defined to be a first tier customer that consumes more than 160 Mwh per annum or has a meter installed that has the capability to meet the requirements of a metering installation type 1,2 3, or 4.[12]

The ESC has clearly and unambiguously affirmed the position that by installing a meter with remote-polling capabilities, a connection point can be considered 'large' regardless of the level of actual consumption "so that the distributor (will) no longer be responsible for the metering"[13] and metering services.

While some Distributors have voiced opposition to this approach, the ESC:

> .... points out that a small customer or its retailer will only have an incentive to install a meter that has the capability to meet the requirements of a metering installation type 4, and for the retailer to assume responsibility for the metering services, where there is a benefit for the customer or the retailer to do so..... If the distributors' charges are competitive and they also provide appropriate customer service, then retailers will not have an incentive to assume the responsibility for a metering installation type 4.[14]

5 Essential Services Commission (Victoria), Essential services Commission of South australia, Independent Competition & Regulatory Commission (ACT), Independent Pricing 7 Regulatory Tribunal (NSW), Office of the Tasmanian Energy regulator, and the Queensland Competition Authority.
6 National Electricity Code – Clause 7.13(g)
7 Joint Jurisdictional Review of the Metrology Procedures *Issues Paper*, August 2003 – page 3
8 Joint Jurisdictional Review of the Metrology Procedures *Final Report*, October 2004 – page 39
9 Ibid. - page 52
10 Ibid. - page 58
11 Electricity Distribution Price Review 2006 Final Framework and Approach: Volume 1, Guidance Paper, June 2004 – page 137
12 Ibid.
13 Ibid. - page 133
14 Ibid.

The ESC has also implemented the recommendation to unbundle "the charges for ...metering services ... separately to the charges for distribution use of system services"[15] from 1 January 2006.

At the same time, the Victorian and New South Wales derogations to the National Electricity Code, providing distributor exclusivity for type 5, 6 and 7 metering installations, were due to expire from 1 July 2004. Applications to extend the derogations were lodged by the Victorian *Minister for Energy and Resources* in April 2004 and New South Wales *Department of Energy, Utilities and Sustainability* in August 2004. Interim extensions to 30 June 2006 were granted while the ACCC requested and considered participant submissions.

The ACCC released final determinations authorising the Victorian and New South Wales' applications subject to the condition that Distributor exclusivity for the provision of metering services not include remotely read interval meters for small customers:

> ....regardless of the frequency with which (an) interval meter is read .....and includes, but is not limited to, an interval meter that transmits metering data via:
>
> 1) Direct dial-up;
> 2) Satellite;
> 3) The Internet;
> 4) General Packet Radio Service;
> 5) Power line carrier; or
> 6) Any other equivalent technology[16].

There now exists a competitive metering services market, recommended by the jurisdictional regulators, supported by the Australian Competition and Consumer Commission and implemented through the Electricity Distribution Price Review, that allows metering service providers to extend the application of remote polling across the market.

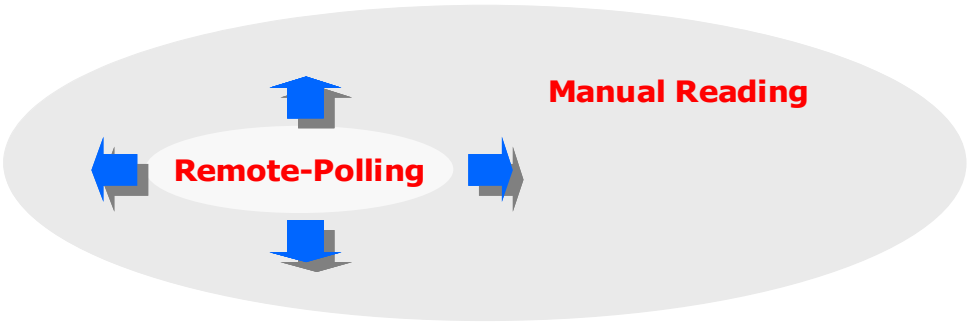

Figure 1: Competitive Metering Services Market

METER OWNERHIP

"Legislation and supporting regulations in each of the state jurisdictions generally do not place any restrictions on which party may own a meter – except in Victoria and Queensland where customers cannot own their meters"[17]. In fact, regulations encourage "investors who wish to consider the application of evolving technologies and processes that might be suitable for use in the National Electricity Market"[18].

Meter ownership has traditionally been the domain of electricity Distributors – bundled as a component of network management and electricity distribution services. The emphasis has generally been on a low cost, low value metering service.

15 Ibid. - page 138
16 Amendments to the National Electricity Code Victorian Metering Derogations, 2 March 2005 – page 40; and New South Wales Metering Derogations, 2 March 2005 – page 33
17 Joint Jurisdictional Review of the Metrology Procedures *Final Report*, October 2004 – page 54
18 Metrology Procedure for Type 4 Metering Installations – page 2

But with a greater emphasis on the use of interval metering data that underpin the financial transactions in the market, demand is growing for more specialist metering services that balance reliability and accuracy with cost effectiveness.

Meter ownership now forms a service line in its own right; focussed on providing those businesses responsible for data delivery – Metering Data Agents – with access to meters from which data can be collected.

Meter Owners – and that includes Distributors – have Metering Data Agents as their clients; and must be responsive to the technical and commercial needs of Metering Data Agents so that they, in turn, can meet the needs of their customers – the Retailers (or, in some cases, the energy consumer).

As long as Metering Data Agents are contracted to provide the market with metering data then they, in effect, control which companies have the right to install and keep a meter at a connection point. Through their relationships with the electricity Retailers, Metering Data Agents can have meters, which do not meet requirements, changed.

Retailers – as the Responsible Person – may well have the *right* under the National Electricity Code to nominate the 'Metering Provider' but it is data that is of importance to them. Presented with a conflict between a Metering Data Agent relationship and 'Metering Provider' relationship – the Metering Data Agent is likely to win out.

Meter Owners are best served by forging strong relationships with Metering Data Agents.

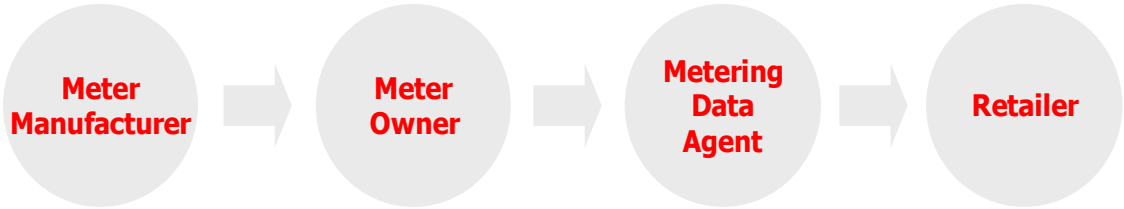

Figure 2: Metering Supply Chain

THE ROLE OF METER OWNER

Meter ownership is defined by who pays for the meter and its installation, holds it on its books, depreciates it and derives revenue from it.

The Meter Owner is responsible for establishing and managing the commercial relationships – with metering manufacturers, remote-polling technologists, telecommunications service providers and field services providers – so that Metering Data Agents are able to rely on the Meter Owner, and its assets, to efficiently and effectively deliver metering data to their systems for validation and processing.

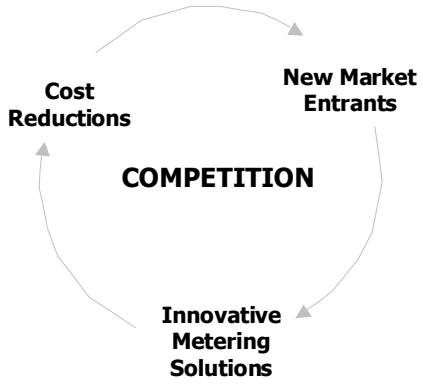

Figure 3: Benefits of Competition

The Meter Owner need not necessarily be accredited as a Metering Provider. However, the Meter Owner's responsibilities extend to ensuring the meter is properly installed, repaired in the case of a fault, and maintained, including development of an ongoing Meter Asset Management Plan.

A key area of activity for a Meter Owner is to co-ordinate research and development activities between the parties. In a competitive metering services environment constant innovation is necessary to reduce costs and remain relevant in the market.

It is imperative that new technologies and configurations are thouroughly tested, and that Metering Data Agents have developed the necessary applications to receive and interpret communications protocols, before any decision to invest in that technology can be considered by the Meter Owner.

METER CHURN

The primary risk for a Meter Owner is meter churn – the situation where the Meter Owner's existing meter is replaced by another Meter Owner who has been given responsibility for the metering at a connection point.

The option to replace a meter may be exercised at anytime. And it is the existing Meter Owner that bears the commercial loss if its meter is removed.

There are two reasons why a meter might be replaced:

1. The meter does not have the technical features or capabilities necessary for the market; or
2. The Meter Owner is charging too much for the right to access data from and use the meter.

In this respect, any meter is at risk – whether manually read accumulation or interval meters, or remotely-polled interval meters.

Given that a manually read meter can be replaced at anytime (albeit only with a remote-polled interval meter), future meter purchasing decisions must be considered an investment; for the key challenge of a Meter Owner in a competitive metering services market is to ensure that its assets remain technically and commercially relevant for a long-enough period to realise a *return-on-investment*.

REMOTE POLLING ARCHITECTURE

While one can speculate about the technical features the market may demand in future, there is now one *mandatory* technical capability that a meter must have in order to mitigate meter churn.

In an environment where meters need to remain *in-situ* for over ten years and Retailer and Metering Data Agent responsibilities can be expected to change several times over during that period, the principal requirement of any remote-polling solution must be the ability to redirect communications control over a meter from one Metering Data Agent to another.

Remote polling components fall into four broad categories:

1. **Interval Meters** – Single and three phase interval meters are available with a range of functional configurations, including multiple datastreams, multiple circuits and remote disconnect/reconnect facilities.

   Meters are controlled by proprietary firmware (software burned into a micrprocessor contained in the meter) developed for each model by the metering manufacturer.

   Firmware includes protocols to interface with the meter to obtain data and control other meter functions. Although there are Australian protocol standards for extracting data, most protocols contain proprietery command features.

   Interval meter protocols provide security login (such as username and password) to ensure that only authorised Metering Data Agents can access the meter.

Changes to security login are controlled by the Meter Owner as an independent third party.

2. **Remote-polling Devices** (eg. modems) interface with meters to extract and transmit data through a port (pulse output, optical, RS232, RS422, etc.).

   Depending on the meter firmware, the device might be controlled by the meter or require its own firmware and control protocols. Such devices might interface with one or several meters and allow one-way or two-way communications (there are several options currently available on the market).

   Preferably, the devices must fit inside the meter casing so that there is no need to install an external unit or disconnect the meter;

3. **Communications Mediums** – Remote-polling can be achieved using any number of communications mediums. Data might be routed through wireless telecommunications (GPRS and CDMA) and virtual private networks or directly via PSTN, GSM and the Internet.

   There are currently six terrestrial mobile telecommunications networks in Australia operated by Telstra, Optus, Vodafone and Hutchison. Wireless broadband is available in metropolitan areas. Copper networks extend across the country and satellite coverage is available for remote areas.

   Remote-polling devices tend to be designed for specific mediums and need to be selected to suit the requirements for a particular metering location.

   Generally, it is the Meter Owner that determines which communications medium is used, based on technological and commercial imperatives. Access to the medium is then provided to Metering Data Agents on commercial terms; so when the Metering Data Agent is assigned to a connection point, by a Retailer, data can be immediately re-directed.

4. **Translation Applications** – Metering Data Agents require applications to communicate with meters and translate data packets as they are received.

   Transmission applications must be developed for each proprietary protocol from which data is (or is likely to be) received via a communications medium. These might be developed by the Metering Data Agent or the Meter Owner for licensing to the Metering Data Agent.

   In order to develop such applications, meter manufacturers must be prepared to make their proprietary protocol specifications available. (There is resistance by some manufacturers. But clearly, if proprietary protocols are now not made available – on fair commercial terms – then Meter Owners cannot risk investing in those solutions.)

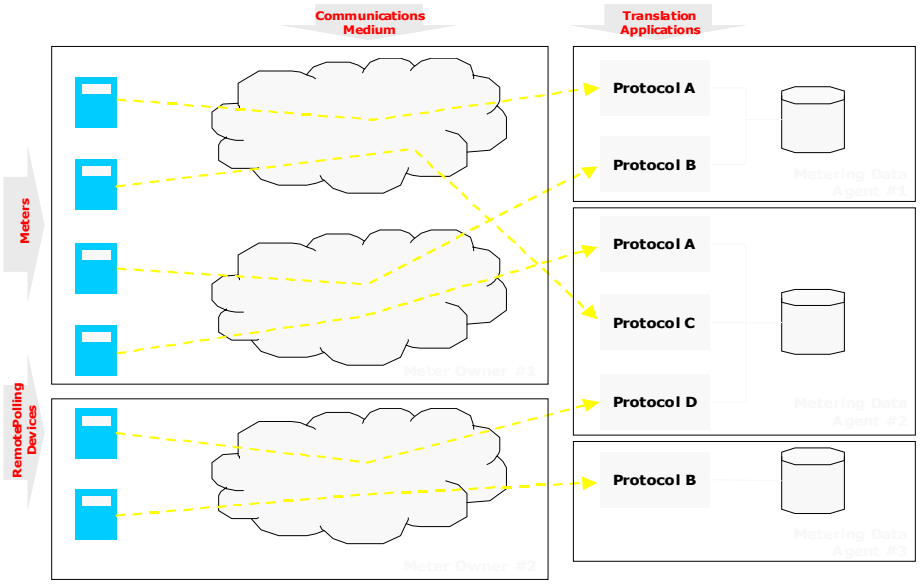

Figure 4: Conceptual Remote Polling Architecture

There are a wide range of component technologies available to establish remote-polling and it is too early in the development of each to favour particular configurations. Diversity and expirementation are necessary for technological maturity and innovation to continue.

Metering manufacturers, technologists and service providers must now co-operate to integrate proprietary technologies into end-to-end remote-polling solutions to form solution options that can be offered to the market.

The success of one solution over another will depend on the degree of flexibility, enhanced functionality, system security, value-added services and cost-effectiveness. But the success of any one component – particularly meters – will depend on the ability to effectively integrate across a broader range of solutions.

MANUALLY READ INTERVAL METERS

Remote-polling requirements might also be considered for manually read interval meters.

In July 2004 the Victorian Essential Services Commission released its Final Decision mandating an accelerated rollout of manually-read interval (type 5) meters across Victoria commencing from 2006. The Final Decision included the requirement that:

> All (interval) meters are to be communication enabled (utilising 'open systems architecture') to ensure that the meter can facilitate remote reading without the need for a further meter changeover.[19]

The mandated rollout of interval meters across Victoria attempts to accelerate the introduction and use of interval data, by requiring Distributors to replace existing accumulation meters with manually read (Type 5) interval meters.

The difficulty for Victorian Distributors is that as metering services become more competitive, these meters will be displaced if they cannot be easily converted to remote polling.

While the Essential Services Commission has not defined an ‘open systems architecture’, three general requirements can be considered:

1. The interval meter model(s) selected for rollout must have a proven remote polling capability – either using remote polling interface devices supplied by the meter manufacturer or a preferred supplier;
2. The interval meters, when installed, must have the necessary ports and power supply so that the required remote polling interface device can be retrospectively fitted; and
3. The interval meter must be preprogrammed for remote polling, in addition to manual meter reading, to avoid having to reprogramme meters in the field (which might prove more costly than replacing the meter).

CONCLUSION

With remote-polling firmly established as the only competitive avenue into the metering market; manufacturers, investors and service providers have an opportunity to rally to meet the needs of purchasers up the metering and data management supply chain.

Meter Manufacturers, Meter Owners and Metering Data Agents have the opportunity to significantly expand market share; while newer, nimbler players have an opportunity to gain a foothold in a market that has traditionally been closed to them.

But for any business with intentions of competing in this market – mutual co-operation and on-going vigilance is essential. Technical boundaries must be continually challenged in an effort to maintain competitive advantage. Every player must now accept that what they don't achieve – a competitor surely will.

19 Mandatory Rollout of Interval Meters for Electricity Customers, Final Decision, July 2004 – page 24