SUBMITTER DETAILS

ORGANISATION: Tecasa Pty Ltd

CONTACT NAME: John Markwell

EMAIL: jmarkwell@gmail.com

PHONE: 0466078625

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PROJECT DETAILS

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PROJECT CODE:	ERC0399
PROPONENT:	Energy Consumers Australia
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Context and overview

"We seek your feedback on changes needed to improve our proposed approach

We encourage stakeholders to provide comprehensive views on our proposed approach and propose changes that lead to better outcomes for consumers.

The following questions, discussed throughout the paper, represent a non-exhaustive list of the feedback we are seeking from stakeholders.

We encourage stakeholders to highlight issues that have not been captured by or would not be resolved under our proposed approach."

Summary of main submission viewpoints

This submission is that of an individual researcher with an extensive background in complex system architecture, design, implementation and operation, including cyber-security at the highest levels, albeit not in the electrical energy industry. The author has up-to-date, detailed, hands-on, experience in most aspects of residential electrification, CER, and HEMS.

Energy Consumers Australia is an organization that does an excellent job of advocating for the consumer in many ways. The objective of pursuing real-time data for consumers and tackling the associated data ownership rights is commendable because all this data is captured at the consumer's premises, but how and by whom this data is, or might be, used is quite opaque and this is concerning.
Some aspects of the suggested approach indicate that a lot of thought has been applied before detailed suggestions were made. Unfortunately, certain other aspects of the suggested approach have a low probability of successful implementation along the lines and management timeframes suggested.

a) The grid is a complex system. This being the case, an important concept relevant to making changes of any sort is **decoupling sub-systems** wherever possible to simplify or eliminate potential feedback and feedforward loops.
Linear relationships are much preferred over more complex arrangements.
For this reason, and others, the primary customer interface for meter data handling must be a retailer relationship, as was correctly identified. DNSPs and MSPs have specific core competencies that are focused and somewhat linear.

Retailers must already deal with many market dynamics, determine detailed product offerings, and interface to consumers. Retailers are in the best position to offer real-time or other consumer electrical energy data services, or to offer more complex data driven services.

b) **The assumption that smart meters will be capable of providing the proposed real-time data services is a shaky one**.

Most of these devices are longer duration, not sub-second, interval meters operated by MSPs and are designed to intermittently communicate consumption, production, and power quality data **in a grid-facing direction** so that this data may be used mostly for distribution network management and retail billing.
These devices are not good at supplying consumers with **BTM facing** real-time data although some do provide a communications interface and/or an additional display device that may partially meet consumer needs.
Of course, some meters have limited real-time data display directly on the device, but that user interface is usually quite inconvenient and technically daunting to the consumer.

The **modern digital device management paradigm requires processing power, communications interface options, and software characteristics** that enable a degree of flexibility to adapt to quite rapid change. Over-the-air updates has become a standard method of adapting to changing standards, functionality, consumer interfaces, and tightening cyber-security requirements.
With 18 odd (non-gas) DNSPs, multiple MSPs and multiple smart meter models of differing specifications and performance capabilities being installed, it is very difficult to envision a situation where broadly consistent real-time data delivery to consumers is happening.
The 15-year time frame does not help. It makes matters worse due to the rate of technological change rendering old smart meters technically obsolete for new requirements. Smart meters may be quite fit for purpose if that purpose remains online interval metering and PQD measurement. The 15-year time frame is also long enough for those involved to *kick the can down the road* and not do much about the issue in the near term.

c) What sort of data is required by consumers so that they may reduce the size of their electricity bills?
I would argue that real-time smart-meter data is useful in some particular use cases, but as an overall driver of consumer behavioural change, it is not a particularly good change agent.
Price signalling is more powerful; it goes straight to the bottom line. Putting aside many of the complications of time-of-use tariffs for the moment, most consumers understand supply and demand, and most consumers understand peak and off-peak tariffs. As retail pricing slowly evolves towards a closer relationship to wholesale pricing, consumers can reduce bills by consuming, or storing, more when electricity is cheaper, or off the roof, and shifting their demand out of peak times to the maximum practical extent possible.

Real-time consumption data is of limited use to consumers when EVs and heat pumps are the elephants in the room.
Consumption patterns of energy versus time-of-day versus tariff/cost of the energy are what is needed.
When V2H/V2G becomes mainstream, consumers will have the option of storing and transporting some, or even a lot, of their household energy needs from solar-soaking commercial EV chargers to the home. Real-time data relevance is lost. A case study of this exact situation has recently been published.

d) **Supplementary metering** with consolidation into **meaningful consumer information reports,** that include major BTM production and consumption CER devices, can drive consumer decision-making.
Retailers could provide this service in the near term as there are many such options readily available 'off the shelf'.
Best of all, the humble CT clamp can easily provide both grid-facing and BTM bi-directional data in an **decoupled, nonintrusive** (linear) fashion that does not complicate the point-of-connection interface for the DNSPs and MSPs.

e) It must be noted that the blunt and **obsolete instrument** of ripple signalling *(Note the Executive Summary in the link)* for CER operation control, breaks complex system best practice rules and should be decoupled by **complete removal** from BTM and **from the distribution network itself**. Consumers are presently paying for this pervasive sub-system. How much does it cost?
Savings could be applied to supplementary metering through a reduction in fixed connection costs. The author anticipates that the non-trivial cost of ripple injection sub-systems feeds through statutory infrastructure electricity grid cost recovery mechanisms.

Question 1: Do you agree with a staged implementation approach for when consumers pay for access to real-time data?

I disagree with the premise that consumers should pay for their own real-time data while others derive benefits from that data at low or no cost.
I support consumers optionally paying for packaged information derived in part from their metered data.
Retailers should offer processed supplementary meter **information** (i.e., processed data) packages to consumers with real-time data display and with value-added statistics, analysis, alerts, pricing data, and bill reduction recommendations.

a) Is 15 years the right timeframe for industry to achieve cost efficiencies in delivering real-time data access from smart meters? Are there ways to support industry to reduce this timeframe?

The 2030 target for nation-wide smart meter adoption still makes sense.
Supplementary metering packages could be rolled out by retailers in a much shorter timeframe because this activity may be decoupled from smart meter rollout. Smart meter technical specifications need updating for flexibility, improved change management, and cyber-security.
A cyber-security vulnerability example is the simple pattern analysis of consumer energy data that can indicate whether or not a family is away on holidays.

b) Would the marginal cost to each consumer be material in the long-term if costs were smeared across all consumers after 15 years?

Such costs would be lost in the noise if reform of postage stamp transmission charges and cross-

subsidies, as two examples, within a high DER/CER grid, were tackled alongside the change. Grid transformation requires change on multiple fronts.

c) Are there other ways to facilitate efficiency and equity and support industry to lower costs to consumers?

Certainly, this involves a trade-off between regulation and market innovation. Consumers view the cost of their electrical energy as what is in the bill, and the major cost component for consumers is **not the cost of generation** which seems to be endlessly debated, but the cost of transmission and distribution. **Accurately** sized infrastructure without expensive over-provision and elimination of obsolete technology and uneconomic grid services to remote areas that are cheaper to service as stand-alone mini grids, should eventually bring down the cost of this major bill component for all consumers still participating in the NEM. Western Australia appears most advanced in this aspect of grid transformation.

d) What incentives would our approach create for retailers, MSPs and third parties?

-no comment-

Question 2: Should the prices for real-time data access be published by the AER?

a) How and where should the AER publish prices to access real-time data?

Provide links, e.g. a QR code, to on-line information, in consumer bills.

b) What other measures would incentivize retailers to offer real-time data at competitive prices?

The best measure would be for retailers to provide consumers with credit on their bill for their share of income from the sale of their data to third parties; once consent has been given.
The main incentive for retailers would be an opportunity to grow their market share.
Such measures would help smaller retailers better compete with larger gen-tailers because the retail product becomes an augmented product.

Question 3: Do you agree with our proposed definition of real-time data?

I would prefer a published minimum performance interval that is practical for the metering technology and its data communications capability. For smart meters the interval would be or longer duration than what could be provided by supplementary metering, or for a supplementary interface to the smart meter. Supplementary gateway or metering devices could use local Wi-Fi LAN or Bluetooth networking to achieve one-second measurement intervals. Smart meters with cellular communications would take 10 - 100 times longer to provide round-trip data.

a) Does the proposed definition enable real-time data products and services to deliver the benefits of real-time data to consumers?

Partially, because that data is **insufficient for consumers** to optimize their overall electrical energy production, purchasing, and consumption behaviour, and therefore **minimize their bills**.

The circumstances of each consumer will differ significantly depending on factors such as owner or renter, detached or more dense housing, geographic location, and so on.
For investing in CER; size matters, and seasonality or other timing cycles matter.
For example, PV arrays may need to be sized for mid-winter production, or for EV ownership and driving patterns, or a residential BESS may need to be sized to cover evening demand peaks, or

for heat pump (heating or cooling) usage patterns.
Real-time smart meter data may help but it is nowhere near the full story for residential energy system optimization.

b) What other features of real-time data definition should be described in AEMO procedures?

AEMO does not need to extend beyond the basic framework presented. Retailers need to get creative and customer-centric in their service offerings. Retailers, especially large gen-tailers are looking to lock customers in with packaged services, and this can be detrimental to the cost to customers because their decision-making flexibility is curtailed.
It is essential that customers may elect to change their retailer, and that regulation continues to support customers who decide to switch. A degree of customer churn may be an uncomfortable reality for retailers, but that is anticipated in a healthy competitive market.

Question 4: Do you agree with the obligation on retailers to provide real-time data access?

I agree that retailers should be obliged to provide smart meter interval data at a practical level of granularity that is likely to be 10 – 100 seconds per interval. This is quite an improvement in what is commonly available at present. Retailers should be obliged to process that data and present it in graphics and other formats that may be readily interpreted by energy consumers.

a) Are the proposed timeframes of 10 business days and 20 business days sufficient to enable retailers to give customers access to real-time data?

Yes. Retailers need to develop off-the-shelf data and packaged information 'plans' that may be provisioned within those timeframes, even if supplementary metering is required.

b) Are there circumstances where the obligations on retailers to offer and give real-time data access upon customers' request, and the timeframes within which to give access should not apply?

No. Retailers should offer a range of service plans, but one of them will be the basic minimum. Such plans will likely require the use of residential data communications. The basic plan may restrict the availability distance from the meter should residential communications be inadequate for the task.

c) Are additional obligations on retailers required to enable the provision of real-time data access to consumers?

Routine consolidated reporting to a defined minimum standard should be a retailer obligation.

Question 5: Do you agree that MSPs should ensure multi-party, interoperable and secure access to real-time data?

Yes. This is a key consideration and directly relates to subsequent questions regarding the standards and processes that would need to be implemented to securely deliver the data to authorized parties.
Administration of the Consumer Data Right (CDR) provides detailed Consumer Data Standards for multi-party interoperable, secure, and authorized (consent given) access to consumer data with specific references to the energy sector using energy terminology.

Certain scheduled parties (e.g. local DNSP) should have default access to selected components of consumer data on a need-to-know basis, with others such as VPP service providers must be enabled by consumer approval.

Alongside data security considerations, the technical data standard CSIP-AUS (IEEE2030.5)

provides a comprehensive framework for high DER/CER smart-grid operational management via multi-party data interchange and interoperability. Small sections of CSIP-AUS have been, or are in the process of being implemented, by several DNSPs in several states. These early initial efforts are mostly implementing backstop mechanisms for DNSPs to curtail CER PV generation. However, the CSIP-AUS standard is comprehensive in its scope and should be a foundation for all smart-grid multi-party interoperability.

A potential complication of the emerging retail market model that may need to be addressed is the likelihood of situations involving more than one retailer per NMI/Point-of-connection. A VPP specialist, FACS consolidator specialist, or a community battery operator within a Community Energy Zone (CEZ), may one day co-exist alongside the traditional residential retailer.
Both the Consumer Data Standards and CSIP-AUS are designed cater for such multi-party situations so a convergence in the nation-wide application of both standards is recommended. Consistency of standard approaches will save duplication of implementation efforts and therefore costs to consumers.

a) Are there requirements that we should impose on MSPs in addition to multi-party, interoperable and secure access obligations?

- **i)** **Anonymization of data wherever possible.** E.g. In some situations, NMI could be replaced by a LV local area identifier, or some other identifier.
  NMI security should be tightened along the lines of TFN (tax file number) handling because it is the key to individual CER and property identification.
- **ii)** **Transparency** of MSPs operation financials, and third-party cash flows for data access.

Question 6: Which consumer consent pathway do you consider to be the most practical and why?

Via the retailer interacting with multiple parties as defined in the CDS .
A customer interface exists already and may be extended to cover additional obligations.
Customers have retailer accounts and retailer web access to manage the account.
Customers do not presently engage in routine access to related third parties such as DNSP and MSPs so why introduce yet another interface?

a) Are there any barriers to implementing this pathway?

Possibly additional retailer overheads in adopting standard methods and interoperability formats across all retailers. However, standardization usually saves money across the whole system.

b) Are there any viable alternative pathways that better deliver outcomes for consumers?

No obvious alternatives without more complexity.

Question 7: What should third party access consent look like?

The exact format may be derived from the Consumer Data Standard and data attributes as outlined in the CSIP-AUS standard. Note that the IEEE 2030.5 standard enables data collection and registration over and above simple generation and consumption. E.g. EVSE details, PV size, BESS capacity.
DNSPs are very interested in such data but haphazard registration is not necessarily in consumers' best interests.

a) Should the form of consent be left to third parties to determine?

No. A general lack of standards across the country is creating cost duplications that are passed on to consumers.

b) Should there be specifications placed on the form of consent that third parties must obtain from consumers? If so, what could this look like?

The Data Standards Body (DSB) would appear to be the national entity that could help manage the standardization process.

Other bodies such as the DEIP Interoperability Steering Committee (ISC) hosted by ARENA appear to working on some overlapping aspects of high DER/CER smart grid transformation:-

- *"Ensure all DER devices can communicate effectively and respond to provide communication-enabled grid support functions as required.*
- *Establish the first phase of cyber security controls required to mitigate the threats for DER integration."*

c) Should the process for the withdrawal of consent also be specified?

Yes. Flexibility is required. The CDS already provides this functionality.

Question 8: Should additional requirements be placed on third parties that request access to consumer data?

Third parties need to register and then they must comply with the data handling rules that go together with accessing the data.

a) Should third parties be accredited by AEMO under the NER?

No. The DSB framework should be implemented to manage registrations and authorizations. Let the DSB decide.
AEMO (and AGL) has a representation on the CDR Non-Functional Requirements (NFRs) Consultative Group that advises the Data Standards Chair on standards development.
Certainly the underlying technical aspects of the data involved need expert handling.

b) Are there any other safeguards required to ensure third parties do not misuse data?

The CDR framework should handle that aspect.

Question 9: What features of the consumer data right (CDR) can we adopt?

The CDR framework already includes standards for the energy sector so all the security, registration and other aspects should be adopted to the maximum extent possible to avoid duplication of effort. The Data Standards Body is there to produce working standards and to evolve them if change is required.

a) What specific features of the CDR would be beneficial to apply to third parties who seek access to real-time data?

The processes for handling registration of the third parties and consent of consumers, and other related parties.
The existence of a national standard framework is a beneficial aspect. If it falls back on

DNSPs or the states to develop their own frameworks then duplication of effort duplicates the expenses involved, and the consumer pays… again.

Conclusion:
Unless national interoperable smart-grid data management standards are adopted and enforced across the transformation of the grid to high CER/DER, it will be more expensive for all concerned.

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