

30 March 2023

Anna Collyer
Chair
Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2001

Unlocking CER Benefits Through Flexible Trading

Dear Anna

Energy Consumers Australia appreciates the opportunity to provide comments on the Australian Energy Market Commission's (AEMC) consultation paper: Unlocking consumer energy resources (CER) benefits through flexible trading. As we were unable to make a submission during the consultation period, rather than responding to the detailed questions we have considered the case for change.

Key to this case for change is thinking about the CER future and reframing our ideas around demand and what this means and looks like. This means considering elements such as energy efficiency, load shifting and behaviour change, and how these interplay with the increasing uptake of CER assets in communities, and across the country. In this future, consumers are a great asset and strength to the system. We can realise this outcome if the focus is on designing the future system to enable consumers to genuinely participate and help create a thriving energy system that benefits everyone.

For clarity, we use the same definition for CER as the Australian Energy Regulator, that is,

consumer energy resources that are owned or leased by residential and small-business consumers (or groups of consumers) that: generate or store electricity, or can alter demand in response to external signals, and includes consumer loads that are flexible and efficiently optimised either through automation or direct behavioural response.

As the national voice for residential and small business energy users, Energy Consumers Australia advocates for a future Australian energy system that works for, and benefits, the households and small businesses who use it. We are seeing more and more of these households and small businesses investing in different forms of CER. The flexible trading arrangement (FTA) rule change, proposed by the Australian Energy Market Operator (AEMO), has been positioned as a way consumers can access more value from their CER, by incentivising flexible demand that can support the operation of the system, while not needing to change their behaviour for their everyday electricity use. As the Consultation Paper observes:

The Energy Security Board in its post-2025 review proposed several reforms seeking to achieve better integration of CER so that consumers have opportunities to receive new products and services, including being rewarded for flexible demand and generation. It highlighted the need to set up arrangements and remove barriers so new business models and innovative offerings can emerge to offer greater choices to customers - while ensuring they remain appropriately protected.

Our recommendation

We support the proposed outcomes of the rule change, to increase the value of CER for consumers and the system overall, though the proposed mechanisms do raise challenges of how to achieve this at least cost and complexity.

Under the arrangements for flexible trading proposed by AEMO, households and small business would be able to have their CER independently identified and treated in market settlements and could engage with multiple service providers if they chose to.

In order to thoroughly consider the proposed rule change, we engaged Baringa to assess the benefits of the FTA proposal from a consumer perspective. The report is attached for your consideration.

Baringa's assessment is that the flexible trading arrangements as proposed are unlikely to provide a net benefit for consumers. This is because the additional costs and increased complexity could outweigh the benefits of increased choice of multiple service providers. An alternate solution for optimising CER benefits by disaggregating "flexible" and "inflexible" loads and generation – with the distinction to be drawn by a consumer - could be leveraging smart technology embedded in the CER assets.

Noting the Baringa assessment, in our view there is value in enabling choice of different service providers for the electricity supplied to the household or small business premise, and for charging electric vehicles or their "vehicle to X" generation.

The remainder of this letter outlines the areas which we think the AEMC could address in order to realise the best consumer outcomes.

The future energy system

In order to critically examine the role of FTA's, it is useful to adopt the framing of the future energy system and the needs of *these* future households and small businesses. With underlying uncertainty framing a lot of the conversations around FTA's, it is useful to think about how the energy system is transforming, what this transformation will deliver, and consider how people living in the new energy system may critique the decisions we are making in the here and now.

From our perspective, the future is one with a system reliant on renewable energy, where there are going to be periods of energy scarcity and energy abundance. This means that some of the people, some of the time, will be asked to be more flexible in how they generate, store and export energy from their CER assets in their homes and businesses. It also means asking them to adapt to how they consume energy at certain times, undoubtedly influencing routines and rituals of daily life or business processes where possible and convenient. Rather than the current "all or nothing" arrangements that consumers face in being flexible in their demand or generation, the ability to distinguish between inflexible capacity and flexible capacity could be beneficial in increasing participation and rewarding consumers.

Consumer outcomes

In this future of scarcity and abundance, good consumer outcomes need to be front and centre. We define this as broadly; energy that is affordable and reliable, consumers having flexibility and choice over different products and services that suit their needs as life stages change or their business dictates, consumers having control over their own assets and use, and consumers having access to trusted and independent information to be empowered to make informed decisions.

Not getting there with the current approach

We cannot get to this future with a regulatory framework that constrains innovation and new business models from incentivising and rewarding flexible demand and generation. In our view, this is what is revealed in the Baringa report, which outlines the numerous challenges in taking such an approach. The report offers us an insight into how the proposed rule change negatively interacts with current regulatory structures and the design of proposed reforms. While the report does outline the benefits of FTA, these are outweighed by the costs of implementation and how this implementation impacts how the current market operates.

Looking at the consumer outcomes not the mechanism

Our interpretation of Baringa's analysis is that there are potentially good *outcomes* that could be achieved by something like FTA, but the *mechanism* as proposed is problematic, offsetting any benefit FTA may be able to provide. This is integral to the conversation around FTA which encompasses broadly, two main points.

1. Multiple service offerings
2. Settlement

The majority of the challenges revealed in Baringa's report are related to the settlement aspect of the proposed rule change. So, the question then becomes, are there different ways to achieve settlement? One possibility to tackle this challenge, which is evident in the report, is technology. For example, many EV's have built in technology inside the charger or the cars themselves, allowing variable pricing to be applied and settled without the need for a second meter.

In the UK, they have recently been focussing on the demand side response and data elements of CER integration, mandating the standards for smart appliances and assets so that the technological equivalent to sub-meters is embedded in the asset itself. They are also considering linking smart data architecture to the smart meter and grid which means Demand Response Service Provider's (DRSPs) are able to operate the asset more effectively, balancing the grid, and in turn, rewarding consumers for demand response. Focussing on the technology side of innovation to deliver good consumer outcomes in the absence of a separate metering arrangement may be a way forward.

Choices in a CER future

The energy industry faces a number of challenges in coming years to facilitate a net zero energy system with a high penetration of CER.

Historically, energy needs have been met via fossil fuel generators, with storable fuel (coal and gas) generally available when required. In the future, electricity will be abundant and cheap on sunny and/or windy days and nights, and scarcer and more expensive on overcast and/or still days and nights. Storage will help fill the gap, but consumers are expected to have a role to play to help keep system costs down by changing the way they use energy.

At the same time, the uptake of solar PV and the anticipated uptake of electric vehicles is creating challenges for the grid. High penetration of solar contributes to voltage variations that must be managed to maintain quality of supply, and there is concern within industry about the capacity of networks to manage high penetration of electric vehicles if they are not charged in a coordinated way. More consumers are also now starting to consider what the transition away from fossil fuel gas means for the household or small business.

Ultimately, these changes will place pressure on the system, and so the system needs to adapt in a way that:

- is affordable,
- preserves customer agency, and
- meets current reliability expectations.

Balancing these separate but related concerns is a key challenge, and one in which consumer participation will be essential.

One option for adaptation is to control when and how consumers use and export energy. This approach has already been implemented in some jurisdictions, where consumer behaviour is controlled directly by imposing limits on small customer exports, and potentially imports. Alternatively, we could build a bigger, more flexible (and more costly) network, which can cope with the variable use and higher peak demands.

Clearly, neither of these extremes (i.e. forced behaviour change or building out the grid at high cost) will be appealing to consumers. This is where we see FTAs as playing a role, by enabling consumers to separate some of their load for either different control requirements and or a different price, helps to shape some of this picture and gives consumers some agency in deciding the future system.

However, we acknowledge that some level of network cost increase and reduction in agency via third party control may be inevitable, particularly where incentives alone are not sufficient to engender behaviour change. The challenge is to identify the tipping point between these three options that best meets consumer expectations.

Service adaptation

As the system is faced with these considerations, service providers will need to innovate, to create new product offerings that already consider what outcomes consumers want in terms of these three choices. A poor outcome would be a reliance on penalising consumers who simply can't change their energy use during these times of scarcity, which is likely to be the case for cooling and heating needs given the poor quality of Australia's housing and building stock.

Outlined in the report is a preference for a one stop shop model or bundling of services model to optimise the household, and we agree that there is a market for this. Equally though, we don't want this to be the *only* choice available to consumers in this CER future. It is just as likely a household may want someone to optimise their EV as one service and everything else (household load) as another service. In this future, with scarcity and abundance and CER uptake pressuring the system to adapt, the ability to separate flexible load and inflexible load will be valuable. And as service providers adapt, FTA will make this process easier.

It is apparent that the proposed mechanism for FTA has a lot of challenges in today's context if we frame it in the here and now. We do not disagree with this. However, we add more value by focussing on the *outcomes* rather than the mechanism aspect of the discussion. Placing ourselves in a future where energy will be scarce at times and abundant at others, the outcomes of FTA in providing increased choice of service provider and the ability to separate types of flexible and inflexible load may be valuable to consumers, and help them in decisions around energy, in their households and small businesses. In this framing, it is helpful to focus on the multiple service offerings FTA provides, and the idea of FTA as making this future easier to navigate. This means thinking about different ways settlement can be achieved in the absence of a second meter, such as technology and technical standards that may be able to deliver the consumer outcomes we need in this CER future.

Thank you for the opportunity to provide our feedback on the AEMC's consultation: Unlocking CER benefits through flexible trading. If you have any questions about our comments in this submission, or require further detail, please contact Taneesha Amos-Hampson at taneesha.a@energyconsumersaustralia.com.au

Yours sincerely

A handwritten signature in black ink, appearing to read 'Jac', written in a cursive style.

Jacqueline Crawshaw
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Flexible Trading Arrangement Rule Change

Assessment

Prepared for Energy Consumers Australia

21st March 2023



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and environmental performance,
transparency and accountability.

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Glossary

| Item | Definition |
|--------|--|
| BESS | Battery energy storage solution. |
| BtM | Behind the Meter – CER assets in the home are situated behind the consumers primary meter that is connected to the network. In the case of FTA a new sub-meter is being suggested to be made available behind the current primary utility meter connecting CER assets in a sub-metering circuit. |
| CER | Consumer Energy Resources. Resources that provide flexible capacity at a consumers site (e.g. battery, solar, EV). Previously referred to as Distributed Energy Resources (DER) |
| DNSP | Distribution Network service provider |
| DOE | Dynamic Operating Envelopes |
| DRSP | Demand Response Service Provider – A DRSP delivers market ancillary services in accordance with the national electricity rules and AEMO’s market ancillary services specifications, by offering a customers or aggregation of customers load into the FCAS markets. A DRSP also can offer wholesale demand response in accordance with National Electricity Rules and the Wholesale Demand Response guidelines by allowing large customers to enter into a contract with A DRSP to provide demand response by reducing/ curtailing load. |
| DSR | Demand Side Response – Demand response involves shifting or shedding (curtailing) electricity demand to provide flexibility in wholesale and ancillary power markets. |
| EV | Electric Vehicles |
| FRMP 1 | Financially response participant for the primary meter (connected to the grid) at a property under the FTA rule when there are multiple retailers/ energy providers operating at site |
| FRMP 2 | Financially response participant for the sub-meter at a property under the FTA rule when there are multiple retailers/ energy providers operating at site |

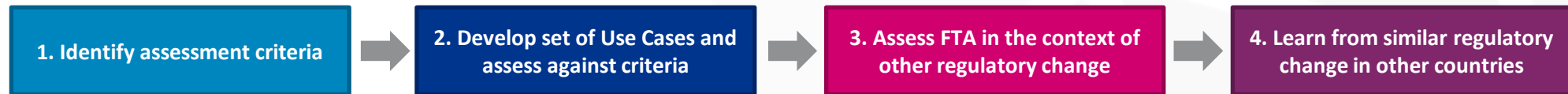
| Item | Definition |
|---------------------|--|
| Flexible Capacity | Flexible capacity refers to the ability to adjust the total production capacity of a resource in any period to enable optimisation of use. Effectively flexible capacity is discretionary in the home in that the use can be shifted within periods depending on requirements. |
| Inflexible Capacity | Inflexible capacity refers to when the curve (shape and load) of a particular asset remains relatively unchanged and uncontrolled. In the case of a consumer in energy, this usually refers to load that is inbound from the grid used to power lights, basic (not smart) appliances and other non-discretionary load. |
| FTA | Flexible Trading Arrangement |
| MDP | Metering Data provider – responsible for collating and managing data that is sent by the meters within the network and making it ready for consumption in market by stakeholders and AEMO |
| NECF | National Energy Customer Framework – a suite of legal instruments that regulate the sale and supply of electricity and gas to retailer customers. This includes the National Energy Retail Law and the National Energy Retail rules. |
| TSS | Tariff Structure Statement - each regulatory period, distributors are required to submit a TSS to the AER for approval. The TSS sets out the distributor’s proposed tariff structures and strategy to progress network tariff reform. |
| VPP | Virtual Power Plant - A Virtual Power Plant (VPP) is an aggregation of CER situated behind a consumer or business meter coordinated to deliver services for power system operations and electricity markets. The VPP is managed using aggregation and orchestration software enabling the VPP to act as a generator |

Executive Summary – Overview

It is unlikely that the FTA will provide a net benefit for consumers – any increase in choice likely offset by high complexity and unintended adverse impacts to affordability. Benefits targeted by FTA can instead be provided by existing in-train reforms and possibly an alternate solution leveraging smart technology embedded in the CERs

Overview of Approach

- The Flexible Trading Arrangement (FTA) rule change was released for public consultation in early 2023 – the AEMC requested input from stakeholders into whether FTA will achieve objectives around enabling consumers to generate more value from their CER through being able to access more offerings and incentives and to support the market and power system operation.
- Energy Consumers Australia (ECA) engaged Baringa to assess the relative impacts of the FTA rule change from a consumer lens – the intent not to answer the key questions outlined by the AEMC or to assess the rule change from a technical perspective, but to focus on the benefits or otherwise to consumers.
- We took a four-step approach, assessing the change against five consumer criteria – affordability, choice, control, optimisation, complexity – with consideration also as to the impost and cost for stakeholders.



Key insights of the assessment

- Although the FTA rule change may provide increased choice of providers and offerings, the high cost for stakeholders to deliver the change, the complexity it introduces, and the uncertainty around affordability and optimisation, make it unlikely to provide any significant net benefit to consumers, and could result in the consumer paying more overall for their energy.
 - The FTA rule change will lower barriers to entry for energy service providers to enter the flexible capacity market without the need for a retail licence, commercial partnership arrangements with retailers, and without needing to take on the risk of inflexible load.
 - It is uncertain, however, whether the opportunity to engage with multiple energy providers on separate contracts will make energy more affordable for the consumer. Availability of competitive energy plans for inflexible load may reduce as primary retailers mitigate the increased risk, and consumers may face a relative increase to energy charges due to duplication of service and metering, and risk to optimisation of on-site solar generation as multiple providers with different objectives operate in the home.
 - Consumers may also find the effort and complexity associated with engaging a second provider undesirable. A single energy provider, bundling services across the home, may be more attractive, providing simplicity and a single point of contact – flexible and inflexible load can potentially be separated leveraging other technologies enabling different products and services without the FTA.
- Energy providers and retailers are today innovating and partnering to provide offerings that enable CER in market. While the FTA rule change may accelerate the creation of new offerings and incentivise retailers to innovate to protect their market position, existing in-train regulatory reform such as tariff reform, interoperability and metering reform, is already helping accelerate innovation and enable dynamic pricing. This puts in question the need for the additional costly intervention associated with FTA.
- Although it is considered premature for any further intervention like FTA at this stage, it is suggested that in the future there may be alternate options to FTA that could provide specific benefits for DSR solutions without the need for a second physical meter. A solution that leverages existing sub-meters/ smart technology embedded within devices may enable accurate measurement of load at the smart device level and enable settlement of DSR, providing opportunity for DRSPs to optimise and potentially innovate in the Australian market. The UK has recently implemented a smart architecture solution and associated rule change to enable DRSP participants – this could be observed as it is delivered in the UK market and subsequently assessed for applicability to the NEM.

Executive Summary – Summary of assessment against consumer criteria

FTA was assessed against six key criteria – this assessment suggests that the change is unlikely to result in a net benefit for consumers. Due to the complexity, consumers will be more likely to elect for a single retailer who can, without the FTA, offer multiple products and services via partnering and value chain solutions

Assessment Criteria

Summary of Outcome

Affordability

- Increased choice provided by a second meter may provide an opportunity for consumers to access more variable pricing and additional offers for flexible capacity. However, this will likely increase risk for the primary retailer constraining competition and resulting in the potential for primary retailers to limit discounting for inflexible load – effectively creating a two-tier market.
- There will also be potential for increased costs associated with a second provider (metering, servicing, installation and compliance) – these costs will likely be passed onto the consumer
- Without FTA, tariff reform will provide network tariffs with TOU and demand pricing for more consumers providing an opportunity for retailers in the current market to offer variable pricing to consumers. Under FTA the impact of these tariffs may be diluted and primary retailers may not be in a position to pass on the benefits of the tariff reform to consumers.
- Overall, costs to consumers of enabling and leveraging an FTA solution are unlikely to be outweighed by any benefits from improved pricing and innovation.

Choice

- Although some innovation is already happening in Australia, FTA could accelerate this innovation by providing increased choice from a broader range of providers. Opening the market up to new entrants who can have control of flexible capability with separate settlement arrangements, enabling innovative offerings without needing to take on risk associated with inflexible capacity. FTA could also incentivise current retailers to innovate faster by bundling services at site to retain customers and counter the threat of new competitors.
- Countering this however, is the impact on the primary retailer. An FTA rule change may impact the position in market and viability of the primary retailer. They will likely face an increased risk profile by only having responsibility for inflexible load. This increased risk may reduce competition and limit discounting for the load at the primary meter.
- Without FTA the market is developing with new entrants starting to innovate and will likely start to challenge the main players as has been seen in the UK from OVO and Octopus. New technologies and tariff reform will make it easier for retailers to offer cost reflective pricing.

Control

- Control is enabled through Home Energy management systems (HEMS) integrated to inverters and metering. The technology in market for HEMS will enable control both with and without FTA with little difference. The only consideration is that with multiple energy providers there is a potential risk of conflicting objectives (e.g. cost/ lifestyle) which could result in some loss of control for the consumer, in particular in terms of optimising use of excess solar.

Optimisation

- A second energy provider engaged to service the customer at the sub-meter will likely have different objectives to the primary retailer in terms of networks and service optimisation. The primary retailer, due to their integration to the network, will have greater incentive to optimise across network as well as FCAS and wholesale, where the secondary provider, being isolated from network, may prioritise wholesale and FCAS market arbitrage over network and home system optimisation.
- There are already a number of reforms underway to enable optimisation of the system (e.g. interoperability, Dynamic Operating Envelopes). There is unlikely to be any additional benefit to optimisation from FTA and possibly could make it more complex.

Complexity

- FTA rule change will introduce additional complexity and require greater effort from consumers across customer journeys such as billing, account management, moving home. Two or more providers will be involved with different responsibilities, creating confusion as to who to contact for what services and a greater risk of misunderstanding.
- Consumers will also face complexity in pricing and ability to compare energy plans impacting how they select energy providers.
- Consumer protections including disconnection rules, and billing compliance will require review before the FTA rule change takes effect to take into consideration additional setup at the home. Default pricing (DMO/VDO) for example would need review to determine if the methodology needs to be changed to maintain consumer protection.

Stakeholder costs

- Costs to deliver and support ongoing the FTA capability may be significant for retailers, AEMO (MSATS), networks and metering providers.
- Retailers will need to update systems to manage additional participants and standing data, update B2B market transactions and change operational processes to reflect the additional contract arrangements at site. This will likely increase underlying cost to serve, depreciation costs incorporated into the default pricing and retail margins.

Executive Summary – Summary of existing reform and FTA impact

While the FTA rule change could complement some in-train reforms, it is likely to potentially conflict or create additional implementation difficulties for other in-train CER integration reforms without adding sufficient additional benefit

- Other in-train regulatory reform will likely capture significant benefit across consumer needs and will address the majority of the objectives FTA is targeting.
- As outlined in the table below, FTA could in some instances conflict, create complexity, and/or provide little additional benefit on top of what already in-train reforms are seeking to achieve
- Introducing FTA at this stage could be considered premature in terms of what consumers want, as well as uncertainty around impact in the context of other reforms already underway

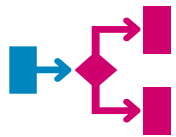
Overview of other regulatory reforms outlining how FTA would likely interact with the reform

| Regulation | Overview of regulation and relative impact on consumer needs | Impact of FTA on regulation |
|---|--|--|
| Scheduled Lite | Scheduled Lite is an opt-in mechanism that incentivises CER aggregators to provide greater visibility to AEMO and to participate directly in scheduling dispatch processes. Consultation is currently being held on the proposed mechanism via AEMO's <i>Consultation Paper - Draft High Level Design for Scheduled Lite</i> . | While the FTA rule change is proposed as an enabling tool for Scheduled Lite, FTA is likely to add costs and risks to the implementation of the Scheduled Lite reform, and the likely benefits of choice and optimization may not be sufficient to encourage customer participation. |
| Dynamic Operating Envelopes (DOEs) | DOEs are an approach to managing network capacity by allowing DNSPs to vary customer export limits dynamically (by time and location) which optimises existing network utilisation. As the flow of energy becomes more two sided, customers can both export and import energy and this creates challenges as well as opportunities for networks to manage via DOEs. | FTA could result in conflicting outcomes with DOEs as they each target different sectors of the electricity system, with FTA incentivising consumers to monetise their CER production and DOEs providing DNSPs with tools for better network optimisation. DOEs will help stabilise the network and may also enable consumers to access value from their CER through enabling variable export balanced with storage, capturing some of the benefits of FTA without the rule change. |
| NECF reform | The AER is undertaking a review of the retailer authorisation and exemption frameworks set out in the National Energy Customer Framework (NECF) to assess whether the framework remains fit for purpose with the emergence of new business models offering technologies and services to households and small businesses. | The FTA rule change is likely to create more complexity and impact the regulatory framework and rules – the NECF reforms are critical for customers and will likely require further revision if FTA comes into effect. |
| AEMC metering review | The AEMC is aiming to accelerate the smart meter roll out by adding to the regulatory mandate of new and replacement meters being smart meters. The AEMC's draft report <i>Review of the regulatory framework for metering services</i> recommends several rule changes to achieve 100% smart meter penetration across the NEM by 2030. | The smart meter rollout is being accelerated more swiftly than FTA and is likely to capture many of the benefits that are being proposed by the FTA rule change (control, choice and affordability) in advance of FTA coming into effect. |
| Tariff reform | Under second round TSS's, many jurisdictions face the outcome of all small customers having smart metering resulting in the retailer facing either cost reflective demand or TOU network tariffs. Under third round, DNSPs have proposed two-way pricing involving credits and charges depending on time of day in order to promote better utilisation of the grid and integrate CER more efficiently. | Currently, the primary retailer has an incentive to optimise a customer's CER against cost reflective network, FCAS and wholesale cost and revenue opportunities because they are exposed to and can influence the full cost stack. However, under FTA the primary retailer would be responsible for 100% of network tariff costs, even though the impact of sub-metered CER on network tariff costs would be driven by the secondary retailer who has no incentive to optimize CER against cost reflective network price signals. This increases risk to the primary retailer, could result in a direct pass-through of network tariffs into retail tariffs to limit the primary retailer's risk reducing customer choice, and mean CER is no longer being optimized against network price signals. |
| Interoperability | Interoperability refers to the multiple relationships customers can have with a range of energy providers and services to utilise their CER and enable effective communication and operation of these devices. The ESB is leading the development of the overall policy and technical standards with its <i>Interoperability – Directions Paper</i> . | FTA may provide incremental customer benefits in the context of the development of interoperability policy and technical standards, provided that FTA and the operation of technical devices are well understood. |
| EV smart charging standards | Standards to support integration of EV charging devices are a key activity under the ESB's CER Implementation Plan. The policy framework to define the technical foundations on which EV smart charging will be integrated into the NEM is being developed through the ESB's <i>Electric Vehicle Smart Charging – Issues Paper</i> . | FTA does not interfere with this reform – there may be some advantages such as the potential increased choice and ability to access pricing, as new providers operating under FTA would need to align with EV standards like primary retailers. This is likely to come, however, with increased servicing costs, complexity and risks. |

Executive Summary – Benefits of existing reform as compared to FTA

In the context of other regulatory change, the FTA rule change is assessed at providing little to no additional benefit beyond the current in-train reforms and it is premature to consider a further intervention – alternate simpler solutions could be considered in the future

The FTA rule change is intended to provide a number of benefits to unlock value of CER for consumers



According to its proponents, the FTA rule change is intended to drive improved **affordability**, greater **choice** and allow consumers greater **control** over their CER. Some of the targeted objectives of the FTA include:

- **Bill reduction** or other financial benefits – provide access to variable pricing eg off peak pricing to complement energy use and encourage bundling of services
- **Reduced dependency on the grid** – encourage consumers to generate their own energy and take control of their use
- **Increased choice** – eliminate the barriers to entry for existing and new entrants and enable multiple providers at a consumers site.
- **Benefits of a more efficient system** – benefits for all of a more reliable system

CER related regulatory reform already in-train is also targeting a number of benefits to enable CER for consumers



Each of the different regulatory reforms will provide benefits to consumers. For example:

- Smart metering, tariff reform, DOEs and scheduled lite collectively should be expected to lead to greater **choice** of offers between retailers, including potentially separate retail offers between CER and passive load from the primary retailer, promoting greater **affordability** for households and small businesses.
- The above reforms, together with EV charging standards and interoperability, can also be expected to enable individuals and businesses to better **control** and manage their energy use, and greater **optimisation**.
- The AER's review into NECF reform will prioritise the customer experience ensuring that interactions with energy providers are **not overly complex**.
- As markets change and different capabilities emerge, it is important that **costs and risk to key stakeholders** in enabling these reforms are minimised.

The benefits targeted by the FTA are in the main covered by in-train reforms – a less complex alternative could be considered in the future



Without the FTA rule change, a customer would not be able to have separate retailers for CER and passive load. However, the purpose of separate retailers – choice of different pricing for CER and passive load and therefore better optimization and affordability – will likely be achieved through existing in-train reforms. For example, tariff reform and smart metering roll out enabling variable pricing, interoperability and EV charging standards enabling control and optimization.

One benefit seemingly not fully addressed by other reforms that would be enabled by FTA is the accurate measurement of flexible capacity loads and subsequent settlement of a DSR service. There are however likely alternate simpler solutions to achieve this. For example, a data solution that leverages smart technology embedded in the assets, eliminating the need for a second meter, could be considered in the future once existing in-train reforms are implemented and outcomes known.

Overall, it is unlikely that FTA will provide any significant net benefit to consumers beyond that covered by alternate in-train reforms. It is considered premature to consider further intervention but once the market matures possibly alternatives to the FTA could be investigated to aid settlements.

Introduction

Overview of rule change

Overview of assessment approach

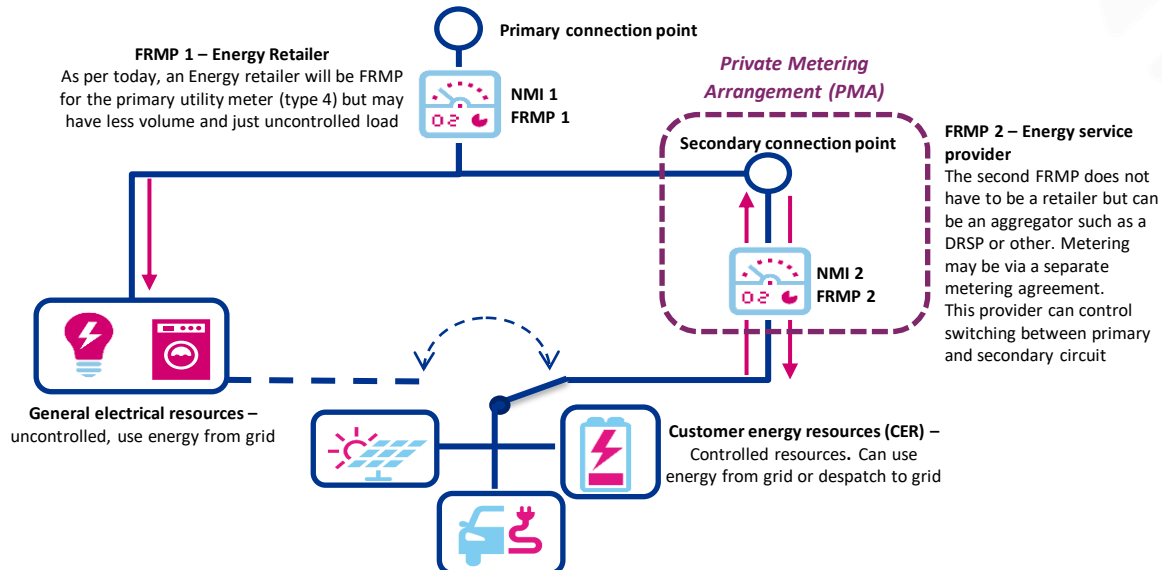
Assessment criteria

Overview of Flexible Trading Arrangement Rule Change

The FTA rule change seeks to enable greater access to CER by providing opportunity for consumers to engage multiple energy providers for flexible and inflexible load – encouraging innovation and unlocking value for the consumer

Overview of the proposed FTA rule change

- The flexible trading arrangement (FTA) is a rule change enabling new submetering arrangement(s) behind the customer's primary meter, effectively creating secondary settlement point(s) for CERs. AEMO postulates that this will enable consumers to access greater value from their CER by enabling access to multiple energy providers and greater breadth of offerings, subsequently being rewarded for flexible demand.
- The rule provides opportunity for consumers to contract with multiple FRMPs creating a scenario where one FRMP (FRMP1) services less flexible services, such as lights and appliances, and a second FRMP (FRMP2) services flexible load such as batteries, solar and EVs. The set up aims to enable the consumer to more easily access variable pricing by effectively separating settlement of inflexible and flexible loads.
- The primary connection point (FRMP 1) will remain the only connection point to the grid, a retailer remaining FRMP for that metering point – effectively managing imported or uncontrolled energy use.
- To enable FTA, one or more secondary meters (proposed as minor energy flow meters with different specifications to primary meter) will be installed as sub-meters where the FRMP for these meters can be different to FRMP 1 and may be energy retailers, aggregators or other service providers.
- The appliances, storage and PV systems which are controllable energy will likely be linked to the secondary meter.



Overview of Objectives of the FTA rule change

- In early 2023 AEMC released a consultation paper for the flexible trading rule change as proposed by AEMO.
- In the consultation paper they highlighted a number of perceived benefits and risks that they were seeking input on to validate or otherwise which are outline below.

Overview of proposed benefits and risks of FTA as outlined in AEMC Consultation Paper

Benefits that the CER and FTA seeks to address

- Enable variable pricing** – provide access to variable pricing to complement energy use.
- Reduced dependency on the grid** – encourage consumers to generate their own energy and have greater control of when they use that stored energy or despatch energy to the grid.
- Encourage competition** – eliminate the barriers to entry for existing and new entrants.
- Bundling of electricity services** – encourage bundling of services e.g. assets (EV) with electricity
- Vulnerable customer support** – provide opportunity to aggregate certain services for particular users such as vulnerable customers or community groups
- Benefits of a more efficient system** – provide greater opportunity for consumers to participate in CER accelerating the transition to a distributed energy system

Potential Risks and Challenges of FTA to be considered

- Market and competition challenges** – difference in cost to serve creating competitive tension, hollowing out of value add services for FRMP1, potential for tariff arbitrage, and challenges for data access between the service providers.
- Network relationship challenges** – the proposal is for network charges to be the sole responsibility of the primary retailer (FRMP1), but this may create issues in cost allocation and managing capacity limits
- Consumer protections** – dilution of incentives to serve customers due to potential lower revenue and the need to consider consumer protections at the primary and secondary connection point.

Source: AEMC Consultation Paper, National Energy Retail Amendment: Unlocking CER benefits through Flexible Trading Rule

Overview of assessment approach

We reviewed FTA in the context of key consumer use cases and in the current regulatory context to identify if FTA will likely provide benefit and, if not, identify if there is an alternative way to achieve the FTA objectives.

- The AEMC rule change consultation sets out opportunities presented for consumers from flexible trading. This paper examines if these opportunities are likely to be realized in addition to balancing those considerations with any risks identified.
- Specifically, for consumers who can use, and choose to use, flexible trading, this paper examines:
 - Will consumers be appropriately protected when dealing with multiple FRMPs?
 - Will the change give consumers a more direct connection to price incentives in a way that allows them to get more value out of their CER?
 - Benefits that might be created for all consumers including those without CER, such as increased security and reliability of the system, or lower prices.
- The assessment was conducted across four key steps – the following sections provides the outcomes of the assessment within these four areas.

| We identified assessment criteria | We developed set of use cases and assessed impact of FTA | We reviewed FTA in the current regulatory context | We reviewed like regulations internationally |
|--|---|--|---|
| <ul style="list-style-type: none">▶ Identification of assessment criteria that will help assess consumer benefits▶ The assessment criteria are based on the ECA vision and objectives and known drivers of consumer needs▶ The assessment criteria represent key concerns for consumers in the energy market | <ul style="list-style-type: none">▶ Using CER use cases to illustrate, we conducted a qualitative assessment of whether the FTA rule change will likely provide any incremental change to the consumer assessment criteria as compared to status quo▶ The Use cases explored include<ul style="list-style-type: none">▶ Electric Vehicles – Uni-directional charging▶ Electric Vehicles – Bi-directional V2X▶ Battery/ solar and Home Energy Management Systems▶ Virtual Power plants▶ Discover and Join customer journey▶ Disconnection for non-payment▶ Home move▶ Customer Service and Billing | <ul style="list-style-type: none">▶ We reviewed the FTA rule change with respect to other concurrent regulatory reform agendas, in the context of the ESB's CER Implementation Plan.▶ We identified any incremental benefit, dependencies or potential conflicts with other policy changes▶ There are many regulatory changes in train and assessment included whether the objectives targeted for FTA can be achieved with other regulatory change.▶ Regulatory changes reviewed include:<ul style="list-style-type: none">▶ Dynamic Operating Envelopes▶ Scheduled lite▶ Tariff reform▶ Metering reform▶ Interoperability▶ NECF reform▶ EV Smart Charging | <ul style="list-style-type: none">▶ We conducted a high level review of two jurisdictions – United Kingdom and California▶ Both of these jurisdictions have considered the need to encourage uptake of CER and ensure consumers receive financial and other benefits from their EVs or CER.▶ In the United Kingdom a similar rule to FTA was withdrawn, and alternatively an architecture to enable bypassing of smart meters was approved▶ In California a sub-metering for EVs was approved▶ The assessment considers whether there are lessons learned for FTA and/or whether the approach in these jurisdictions could be alternatives to FTA |

Assessment Criteria

Assessment of the FTA rule change considered 6 criteria that are important in the context of ECA priorities around consumer benefits and enabling consumers to access CER into the future

| | |
|--|---|
| <p>Supports the objective of <u>affordable</u> energy for households and small business</p> | <ul style="list-style-type: none"> ▶ <i>In what ways may the FTA rule change impact affordability of energy and energy solutions to consumers as compared to a system without FTA?</i> ▶ Affordability of energy is a top concern for consumers and the ECA and in particular vulnerable consumers. March 2023 release of draft determinations for the default offers (DMO and VDO) have indicated increase in the default prices by approx. 20% depending on state from 1 July 2023¹. As CER markets develop, consumers will look increasingly to capture economic benefit from procuring CER solutions offsetting the risk of price increases and helping with surety of supply. ▶ Assessment of affordability in this report considers accessibility to variable pricing, potential changes to servicing costs, installation costs and any other financial impact. |
| <p>Enables improved <u>choice</u> through encouraging competition and innovation.</p> | <ul style="list-style-type: none"> ▶ <i>Does the FTA rule change remove barriers to entry and innovation for energy providers creating opportunity for more competition and choice? Is the FTA rule change likely to provide access to multiple service providers, and a variety of market offerings for the consumer that they may otherwise have not been able to access?</i> ▶ Choice results from having access to multiple and a variety of offerings and energy providers. In the case of CER engaged consumers in particular are likely to look for choice. For example, the latest ECA behaviour survey identified that small businesses are looking for tailored advice and access to solutions that help them reduce dependency on grid power through storage and generation solutions. These businesses are looking for CER choices beyond what is readily available in market today. |
| <p>Enables individuals and businesses to take <u>control</u> of their own energy use</p> | <ul style="list-style-type: none"> ▶ <i>Will the FTA rule change impact the control consumers will have of their energy use either increasing or decreasing control as compared to a system without FTA?</i> ▶ Results from the recent ECA survey suggests that energy consumers want to retain control of their own energy use and will be reluctant to give up full control to an energy provider. Consumers will prefer to set timers themselves to turn off assets/ appliances to reduce usage, or they want to ensure that, if automated, they can override the controls. Small businesses also have a desire for greater visibility of their usage via web apps in order to understand when and how they use energy thus retaining control. |
| <p>Supports the <u>optimisation</u> of the energy system providing security and reliability, benefiting all</p> | <ul style="list-style-type: none"> ▶ <i>Will the FTA rule change enable optimisation of the energy system and help accelerate the shift to renewables?</i> ▶ In the recent ECA behaviour survey it was noted that consumers generally believe that the Australian energy system is ageing - is broken and not fit for purpose. The sentiment is that the transition to renewables is slow and, as we transition, security and reliability of energy may be put at risk. Consumers want to see accelerated momentum in transition to renewables whilst also having confidence and trust in the market and suppliers to provide reliable energy. |
| <p>Ensures solutions and engagement with energy providers is <u>not overly complex</u> requires minimal <u>effort</u> maintaining consumer protections</p> | <ul style="list-style-type: none"> ▶ <i>Will the FTA rule change increase or decrease the effort for consumers in being able to access CER? For key customer journeys (eg billing, move home) will this rule change add complexity or put at risk consumer protections such that consumers are negatively impacted or require increased effort to engage and resolve issues?</i> ▶ The Oct 2022 ECA behaviour survey suggests that 85% of businesses 77% of households are willing to change behaviour around energy use if they get the right information (via a campaign) with less than half of these requiring financial incentive. The campaign is important to help consumers understand and provide purpose around energy saving opportunities, de-carbonisation and making the energy system more stable and reliable. The challenge is to remove the complexity, make it simple to understand, and ensure low effort to engage. It is important that the effort placed on consumers through the FTA rule change to access solutions and maintain their consumer protections is not overly complex. If complex then consumers are unlikely to engage. |
| <p><u>Costs and risks</u> for key stakeholders in enabling the rule change and delivering the capability and required market change</p> | <ul style="list-style-type: none"> ▶ <i>What is the likely impact on capital expenditure and operational processes for retailers and stakeholders and will this impact affordability or other services for consumers?</i> ▶ The ECA's primary focus is on consumers and supporting initiatives that help engage consumers in energy decisions, providing them affordability and choice. Secondary is the impact on other stakeholders (eg retailers, networks, metering providers) and the cost to implement new capability. Despite the impact to these stakeholders being secondary in importance for the ECA, it is a consideration in assessment of the FTA. If FTA rule change has high costs of implementation, and puts at risk a stakeholders profitability and position in the market, then the FTA rule change may inconsequently stifle innovation, create complexity or impact viability of some stakeholders business models negatively impacting consumer choice and affordability. |

Use Case Assessment – Electric Vehicles

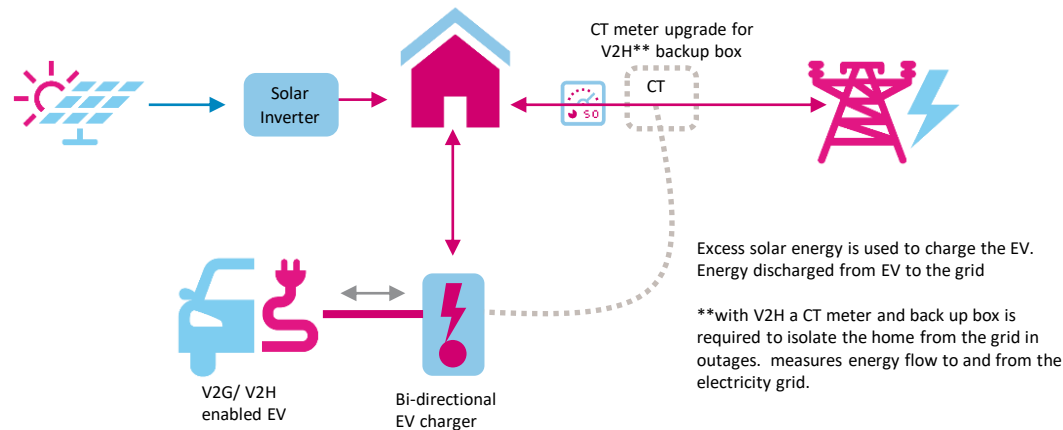
Does FTA rule change add additional value for a consumer seeking offerings to enable an EV use case?

Electric Vehicles | Overview of EV use cases

There are three distinct use cases for Electric Vehicles including with or without solar, standard load on network or V2X services.

- Electric Vehicles currently account for less than 4% of all new vehicles purchased in Australia. However this is growing significantly with up to 30% of car sales expected to be electric by 2030 and close to 100% by 2050. In the ACT this will be further accelerated with a target to ban ICE car sales from 2035.
- Considering this, an EV is one of the most likely CER products/ services that consumers will invest in in the future and needs to be considered for assessment of the FTA rule change.
- There are a number of different use cases for EVs that can broadly be classified into 3 groups: 1) Uni-directional charging with and without rooftop solar 2) bi-directional charging within the home eco system and 3) bi-directional charging to the grid.
- Uni-directional charging is an existing use case in market albeit for small volume but is developing rapidly.
- Bi-directional charging is a future use case with few examples of implementation in Australia due to the limited availability of V2G enabled cars – noting that South Australia recently approved V2G bi-directional enabled cars and chargers opening up the market to develop.
- This section will assess the FTA rule change impact on EV use cases focussing on use case 1. Uni directional charging and use case 3. V2G.

Overview of V2X technical capability – a key use case to assess FTA impact



| EV Use case | | Description of Use Case |
|--|----------------------------|--|
| 1. Uni directional charging | Load on network | EV that is only one directional charging via the grid. Capability exists today and all EVs are capable of this |
| | Load on network with solar | EV that is only one directional charging via the grid. The user also has rooftop solar installed which can be used to charge the EV. Existing inverters are capable of being programmed to optimise use of solar charging the car and/or the house depending on needs of the consumer. |
| 2. Bi directional charge/ discharge within the home eco system | V2L (Vehicle to Load) | EV that is able to charge and discharge but off market. EV can be used as a battery to charge a specific device (load). Vehicle already has an existing AC power outlet which can be used to run specific appliances – no additional technology required. |
| | V2H (Vehicle to Home) | EV that is bi-directional and can discharge but off market to the home during peak periods rather than import from the grid. Although this use case is aligned to the V2L the capabilities to deliver are different. This service requires an EV with built in bi-directional capability (majority of EVs do not have this), a bi-directional charger, a transfer switch on switchboard to direct to the home, and will need an upgrade to the smart meter to include a CT to enable isolation from the grid and control flow. This is illustrated conceptually in diagram opposite. |
| 3. V2G (bi-directional charge/ discharge to the grid) | V2G (Vehicle to Grid) | EV that is bi-directional, able to charge and discharge including able to discharge to the grid. Able to generate arbitrage benefits and grid stabilisation benefits through discharging to the grid. This use case requires the vehicle to be bi-directional capable (noting that very few are capable today) and requires a synchronisation inverter package outside EV drawing DC from Vehicle and requires an intermediary to manage the orchestration with the network within DOE and via pricing signals. This is illustrated conceptually in diagram opposite. |

Sources:
1 TBC

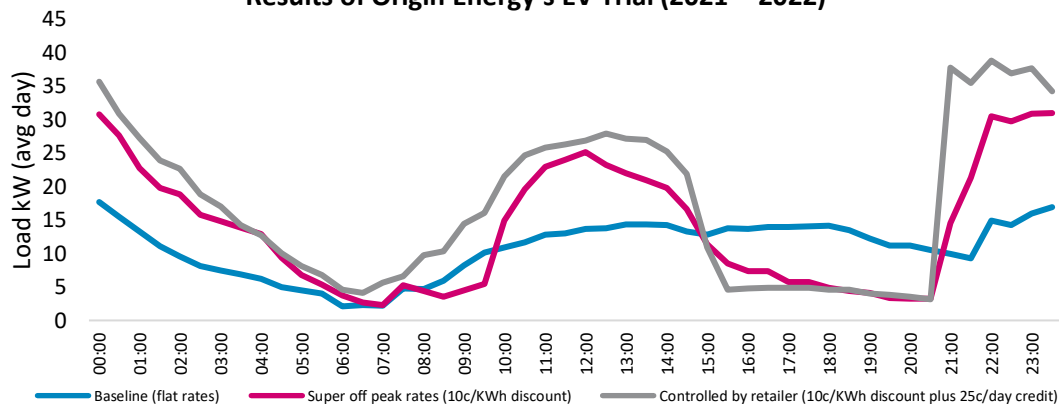
Electric Vehicles | Uni-directional charging use case

For uni-directional charging, variable pricing is already available and will be increasingly innovated for, with or without an FTA rule change – the question is whether FTA can provide additional benefit

EV owners will likely change behaviour when incentivised to reduce their overall cost of energy – this can be done without the FTA rule change.

- Recent research suggests that electric vehicle owners will shift their charging behaviour if incentivised. It is easy for EV owners to set limits and rules for charging times leveraging current capability in their cars.
- Origin Energy’s recent EV trial showed a marked drop in charging at peak times when drivers were incentivised with discounted off-peak rates offered in middle of day and overnight. A further drop in charging at peak times was demonstrated when consumers were given an additional incentive to give over control to Origin energy to optimise charging for the consumer¹.
- The EV Council’s survey of 741 Tesla drivers in Australia illustrated the same shift in behaviour with reduced off-peak rates. The EVC identified two peak charging times, 1pm and 1am² with 48% of consumers happy to automate charging providing they have access to an override capability to maintain control.
- For EV drivers with solar PV, car owners had incentive to charge their EVs using excess solar generation in middle of the day rather than export to the grid. Feed in tariffs have dropped as the system experiences times of excess solar and so provide little benefit for the customer especially in AER states (NSW,QLD,SA,ACT) where there is no regulated solar feed in tariff. EV drivers are financially better off using solar to charge their cars.
- This research into EV charging demonstrates that without FTA, retailers can offer off peak/ variable pricing and consumers will change behaviours to take advantage of this and extract value from their EV as a CER.

Results of Origin Energy’s EV Trial (2021 – 2022)¹



Industry (retailers and networks) are already innovating, offering EV plans and tariffs. This innovation will likely continue irrespective of the FTA rule change.

- Retailers today, using a smart meter and with no additional wiring, are offering EV plans that incorporate super low off-peak rates overnight and during high solar periods in middle of day. A sample of offers and EV activity is included in the below table. In addition, tariff reform will provide further opportunity for retailers.
- EV technology already has a sub-meter in the EV/ charger and as such has the capability to measure output and effectively charge variable pricing only for the EV irrespective of the tariff applied to the home. By accessing this data retailers or others can already offer different pricing for the EV to the home. In California a new protocol has been approved to enable settlement at this meter in market⁴.
- Further enabling variable pricing is the network tariff reform that is underway across the NEM and is discussed later in this report. In SA, where excess solar generation in middle of the day can result in negative spot pricing, SAPN has recently launched a solar sponge tariff offering super low rates in middle of the day to encourage EV charging or other discretionary load when renewable generation is high.
- Retailer activity in the EV space is increasing leveraging existing technology. Partnerships are forming and new plans are being launched in market. This suggests that retailers see EVs as important offerings to help remain relevant in the transitioning market. They will likely drive change without the need for FTA.
- The question is whether FTA rule change provides any additional benefit beyond what is likely to evolve as industry innovates.

Sample of EV plans in Australian market March 2023 – incentivising off peak charging

| Retailer | Current EV plan and offerings |
|-----------------|---|
| Simply Energy | 6c/KWh discount between 12am and 6am |
| Red Energy | Free electricity usage between 12-2pm Saturday and Sunday for EV car owners |
| Powershop | EV super off peak rate discount 12am to 4am which is significantly reduced as compared to the standard off-peak rate |
| OVO energy | OVO drive tariff 5c/KWh discount 12am – 5am |
| AGL energy | EV plan providing credits to EV drivers up to \$120 per annum Subscription for EV cars and chargers AGL has recently launched a smart charger trial (uni-directional) providing a charger and taking control of the EV to help balance grid and provide credits to consumers. |
| EnergyAustralia | Focussed on business customers with EV buses and transport solutions |

Sources:

1 Origin EV smart charging trial Lessons Learned report May 2022; 2 Electric Vehicle Council (EVC) Home EV charging and the grid: impact to 2030 in Australia; 3 EVC: Insights into EV ownership 2022

4 Decision adopting plug-in electric vehicle submetering protocol and electric vehicle supply equipment communication protocols, State of California Legislation, 2022

Electric Vehicles | Assessment of Uni-directional EV Use Case in context of FTA

The FTA rule change does not provide any clear advantage to the consumer for addressing simple charging EV use cases. The potential increased choice and ability to access innovative pricing is likely to come with increased servicing costs, complexity and a risk that rooftop solar PV is not optimised.

Overview of impact of FTA rule change to an EV uni-direction use case with and without solar PV

| Criteria | Without Solar | With Solar | Comments of impact with FTA rule change |
|------------------------------|---------------|------------|--|
| Affordability | ● | ● | <ul style="list-style-type: none"> Secondary provider may offer variable or spot pricing to charge the EV from the grid, different to home tariffs, providing some potential benefit. Tariff reform will increase the ability of retailers to offer EV specific tariffs – even without tariff reform retailers are offering super off peak rates. Without FTA one retailer remains responsible for network, FCAS and wholesale optimisation, as such the benefits of tariff reform and TOU network prices are likely to be passed through to the customer. With FTA there is a risk that the primary retailer does not pass through all network benefits as they are not responsible or in control of the flexible capacity that the tariff reform is seeking to enable. Additional service, metering rentals and metering/ wiring install costs are likely with FTA as compared to without. In a scenario where solar PV is linked to the EV and second circuit there is a risk that the excess solar generation is not optimised across the home to the benefit of the consumer – potentially the EV may be charged by the solar instead of powering the house. |
| Choice | ● | ● | <ul style="list-style-type: none"> Market is already innovating in EV charging – there are a variety of EV plans in market and it is expected to further develop. If we use UK as a further example of where we may go, we are seeing EV offers that incorporate on street public charging as well (eg Octopus UK) FTA will enable a consumer to split their EV offerings from rest of home. FTA rule change increases competition to the extent that it introduces new offers to the market from players who do not want to have FRMP responsibility for the full load but may be able to offer a better deal on the EV component. This could enable niche offerings such as bundled EV packages from a provider such as Tesla that includes an EV car, home charger, public charging, and energy at home. A further example would include a corporate fleet offering or lease and charging packages from a separate provider to the main retailer. It should be noted, however, that potentially this could be achieved using existing sub-metering capability within the EV eliminating the need for FTA for this use case. |
| Control | ● | ● | <ul style="list-style-type: none"> Existing EV capabilities and web applications for home energy management provide an ability for consumers to set limits for charging and mileage requirements and control how solar is leveraged or to charge the car overnight. There is no additional control provided by the secondary circuit. There is a risk of loss of control if solar PV is linked to the secondary circuit as the consumer would need to control switching solar between the home circuit and the sub-meter/ EV or leave it to the secondary provider who may look to leverage solar to its benefit and not benefit of the home as a whole. |
| Optimisation | ● | ● | <ul style="list-style-type: none"> Optimisation of EV charging without solar is simple and can be done with the existing smarts in an EV. FTA does not add additional value. If the solar was linked to the secondary circuit, separate from the home, the optimisation of the whole home eco-system could be compromised with objectives of the two retailers not necessarily aligned. |
| Complexity and Effort | ● | ● | <ul style="list-style-type: none"> Engaging a second provider and installing a secondary meter will increase effort and complexity for the consumer Multiple bills, service providers, meters, and pricing structures and approaches creates complexity for the consumer to understand and engage |

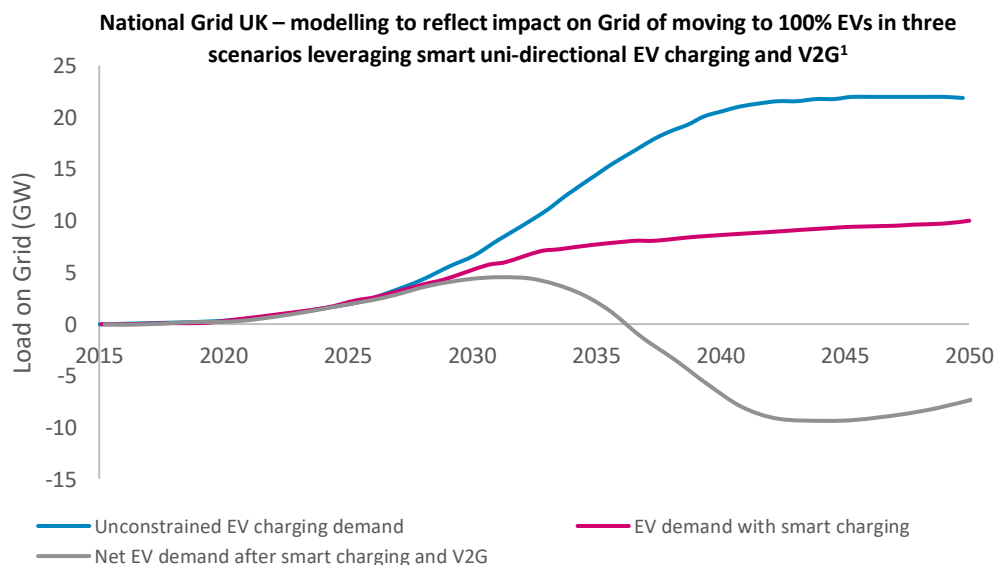
● Likely Negative impact ● Potential negative impact ● Uncertain or neutral impact ● Likely positive impact

Electric Vehicles | V2G use case

V2G has limited availability in Australia today but is an important future use case. Using UK market as a guide for future Australian market, key players in the value chain may form partnerships and V2G offerings to meet consumer needs without FTA

Bi-directional capabilities in EVs are a developing capability in Australia – as EV volumes increase, V2G offerings are important to enable resilience in the system.

- In the Australian market EV cars are generally not V2G capable and the market is in its infancy. Recently SAPN approved the sale of JET bi-directional chargers which suggests a growing market in next few years⁴.
- As volumes of EVs grow the extra load on the network is likely to reach 80TWh by 2050 if on a step change trajectory to 100% EV sales as according to modelling completed by CSIRO for AEMO⁵.
- At this volume, charging large volumes of EVs at peak times could de-stabilise the system. The EV battery capability needs to be leveraged to optimise the use of the distributed assets to the benefit of the system.
- National Grid in UK has simulated the energy system in the UK using different scenarios and assumptions around smart uni-directional charging and V2G capability as shown below. When a large volume of vehicles are V2G enabled and orchestrated by intermediaries the benefit to the system is significant.
- The question is what market constructs are required to enable suppliers to develop effective V2G offerings that are attractive to consumers while ensuring system reliability. Is FTA rule change required to enable this.



V2G offering is complex to understand – Consumers are looking for convenience, simplicity, financial incentive and a clear social environmental benefit.

- During EV trials led by OVO Energy¹ in the UK, consumers earned more than double the revenue with a V2G offering as compared to smart uni-directional offering. This was driven by market arbitrage and credits as well as optimised use of solar PV. The Octopus Powerloop V2G trial² had similar results with 85% of consumers involved happy with the result and stating they would sign up to V2G offerings in the future.
- The Octopus trial was able to define components of value for consumers. It identified that although financial gain was important, consumers also valued environmental and social impact (resilience), convenience and an ability to set mileage rules whilst also accessing override functions. Simplicity via one web application not multiple vendors with multiple applications was also considered important.
- The business models used for the trials in the UK incorporated partnerships across the value chain bringing together retailers, infrastructure/hardware providers, software/application providers and intermediaries. The solution did not require a separate meter and was able to use existing data solutions and smarts in the flexible platforms to offer variable pricing to consumers.
- Consumers in Australia are likely to demonstrate similar behaviours to UK. Monash University in their research into future living and digital energy in Australia found that consumers will look for convenience and experience and confidence that the solutions will support their family routine. They will trust in a system tailored to their own life and requirements. This is aligned to some of the findings in UK EV trials and suggests that it can be achieved without the need for intervention via FTA.

FTA rule change is likely to create complexity in a V2G offering, and could result in a sub-optimal outcome for grid optimisation.

- The second supplier (FRMP2) in an FTA world will be driven by maximising arbitrage in the wholesale market or home. The sub-metering circuit will have control to flick between grid load via the main meter (ie to take advantage of fixed prices from FRMP 1) or to leverage pricing measured at the sub-meter which could be spot or other. This activity could have little impact on overall grid or network optimisation and purely a transfer of wealth between providers.
- The second energy provider may also introduce complexity in terms of different digital applications for monitoring and control. A consumer may need to use two web applications to manage their energy use impacting convenience and making control more complex.
- Optimisation of the whole system cannot be done in isolation by one party. There are multiple roles (retailer, aggregator, intermediary, software provider, hardware provider, network services) and requires a network, market and consumer focus. Business models built by partnerships created without market intervention are likely to result in creative offerings without the need to restrict with rules such as FTA.

Sources: 1 Commercial Viability of V2G: Project Scirus white paper 2 Cenex, Jan 2021, Powerloop V2G trial, Energy savings trust UK 2022.

4 "SA leads the way on vehicle-to-grid capability", SA Power networks media release December 2022. 5 Electric Vehicle projections 2022 CSIRO – commissioned by AEMO

3 Smart Charging and consumer behaviour in the united states, world resources institute, 2022.

Electric Vehicles | Assessment of V2G use case in context of FTA

The FTA rule change is unlikely to improve affordability of energy for consumers in the case of V2G offerings – any benefits of increased competition for flexible capacity will likely be offset by increased operational costs and risk to primary retailer competition





- Multiple elements drive affordability. The V2G use case has been assessed against by looking at all four of these components noting that VPP use case further in the pack is also applicable to this assessment.
- The FTA rule will likely result in no or negative impact on overall affordability primarily due to increased servicing costs and the potential decline in competition at the primary meter. Consumers, especially if disengaged, are likely to have difficulty reconciling whether they are better or worse off splitting their flexible and inflexible load. The structure of pricing will likely be different between the 2 providers with different cost stacks and different tariffs. And as load is shifted away from FRMP1, FRMP1 faces more risk, resulting in the possibility of reduced discounting from DMO/VDO for energy prices at the primary meter drops effectively increasing prices to consumers.

| Criteria | Sub-criteria (affordability) | V2G use case (No FTA) | V2G use case with FTA rule change | Relative impact FTA |
|---------------|--|--|---|---------------------|
| Affordability | Retail and Network Tariff – TOU pricing/ demand pricing, credits for flexibility | <ul style="list-style-type: none"> • V2G technology in Australia is in its infancy but comparing to UK market and progress in SA where V2G technology has been approved, there is evidence to suggest that the market will develop without FTA. In the UK consumers have seen benefit through relationships with one retailer – and a similar rule change to FTA has been considered and withdrawn¹. • Tariff reform should also enable retailers to offer pricing to capture peak demand and time of use benefits. | <ul style="list-style-type: none"> • V2G service can be provided by a separate energy provider who may access wholesale spot pricing to enable market arbitrage. And be able to provide variable tariff options. • The challenge will be network responsibility, default pricing (DMO/VDO) and regulatory compliance costs that likely will sit with the primary retailer while revenue from EVs will sit with the secondary retailer – this could result in increased prices at the primary retailer as they seek to mitigate increased risk. This could counter any improved variable pricing accessed via the sub-meter. | ● |
| | Flexibility to central market via aggregator delivering arbitrage credits | <ul style="list-style-type: none"> • V2G offerings will provide financial benefit for discharge to the grid as well as enabling reliability. UK trials have shown that offerings developed via partnering along the value chain give consumers access to market arbitrage benefits without the need for a second meter and there is clear innovation in tariffs offered. Octopus Agile Plunge pricing provides spot pricing with a price cap and will also pay consumers if the price drops below zero informing them via text of the event. • In Australia VPP energy plans, which used BESS rather than an EV battery but is similar to V2G, offer credits linked to market arbitrage • Considering what OVO and Octopus are doing in the UK, noting both are in Australia, it is fair to assume similar tariff innovation on the future here | <ul style="list-style-type: none"> • The secondary provider will have access to the EV to charge the battery at night when spot pricing is lower and discharge to the grid when spot pricing is higher capturing market arbitrage benefits for the consumer and the energy provider to share. • Studies in UK and Australia suggest that the primary benefit to consumers of flexible assets is optimising solar and network tariffs with market arbitrage secondary. FTA although giving access to market arbitrage opportunities may lead to lower discounts at the primary retailer as identified above which is important to affordability. | ● |
| | Maximise self consumption of BtM solar PV | <ul style="list-style-type: none"> • One provider managing the home and EV network (either retailer or aggregator) has the ability to optimise use of the consumers solar depending on the consumer needs in home and EV and based on market signals to capture market arbitrage. In V2G use case this will mean using solar to charge the battery and discharging to grid or the home when it makes sense to the benefit of the consumer. | <ul style="list-style-type: none"> • With FTA solar PV will be linked to one meter, likely the sub-meter. FRMP2 will be able to switch between the main circuit and sub-metering circuit to charge the EV. • The objectives and priorities of FRMP2 are based on financial gain within the EV/ flexible capacity circuit which could be done to the detriment of the home circuit and/or network. • Having two energy providers may result in a sub-optimal use of excess solar. | ● |
| | Service costs (metering, fixed service charges etc.) | <ul style="list-style-type: none"> • A retailer has cost to serve, metering charges and network and market charges that are bundled into the price. DMO will reflect the caps on these price components based on one meter and service charges based on an average consumer and average load profile. • A retailer can gain economies in service provision. | <ul style="list-style-type: none"> • Additional service charges associated with second provider include: Metering charges to service the second meter, Meter data costs for the MDP to upgrade systems and enable data provision and reconciliation, customer service teams and billing • For the primary provider the daily service costs may increase as operational process change and capital investment is required to enable the FTA rule change. • Fixed costs, manifested in the supply charge, will need to be spread across smaller load and as such may increase for an individual consumer. | ● |

Sources: 1 CEPA (Cambridge Economic Policy Associates) P379 Impact Assessment

Electric Vehicles | Assessment of V2G use case in context of FTA

Assessment against other criteria suggest any increased choice from being able to choose different service providers with different offerings is offset by a potential loss of control, increased complexity and potential reduction in optimisation of grid services

| Criteria | V2G use case (No FTA) | V2G use case with FTA rule change | Relative Impact of FTA |
|------------------------------|--|---|---|
| Choice | <ul style="list-style-type: none"> V2G is new technology and undeveloped in Australia. In UK, a more advanced market, there is evidence of significant benefit to consumers of V2G with no FTA To enable variable pricing for V2G services retailers can use technology such as IoT devices or sub meters to isolate loads. And EVs and EV chargers already have sub-meters within the assets that could be accessed to provide offerings. Bi-directional service offerings will likely develop through partnerships across the value chain like we have seen in UK (software, hardware, retailers, aggregators). Retail market in Australia has low margins. Retailers are looking for additional value streams and as a result will provide choice through necessity | <ul style="list-style-type: none"> The consumer will be able to split their services to two providers enabling selection of best provider for them for each service. Some new business models may develop under FTA and/or new players may enter the market. For example, development of a bundled offering, EV car, home charger, public charging, and energy at home, with a single provider different to retailer. Choice in the absence of consideration of other criteria such as affordability will likely increase with FTA rule change and niche use cases may be well served. |  |
| Control | <ul style="list-style-type: none"> Existing EV capabilities and web applications for home energy management provide an ability for consumers to set limits for charging and mileage requirements and control how solar is leveraged. As demonstrated in UK, with V2G consumers can retain control through continuing to leverage this capability and ensuring an override options enables use of the EV outside routine. A single provider ensures optimisation of the solar excess in the house first with EV charged secondary to optimise solar. | <ul style="list-style-type: none"> Consumer control of their EVs is existing functionality in the car irrespective of FTA or not. The concern with 2 energy providers is a loss of control around optimisation of excess solar and decisions around charging from grid, home or solar, and discharging without impacting routine and needs. This is potentially complicated by 2 providers. |  |
| Optimisation | <ul style="list-style-type: none"> Optimisation of the system will be enabled by offerings that encourage the right behaviour in charging and discharging and balancing wholesale, network and FCAS requirements. A single energy provider aggregating at scale in market and having responsibility for network/ FCAS/ wholesale enables optimisation to the benefit of the consumer to ensure solar and EV are optimised as well as the grid reliability. | <ul style="list-style-type: none"> The secondary metering provider will look to optimise outcomes for the consumer at the wholesale energy and FCAS level. Without a connection to the grid they are less likely to consider network or other system benefits beyond market arbitrage. This could encourage actions to charge the EV from the home or discharge at sub-optimal times for financial gain and not necessarily for system optimisation. Two providers with potentially different priorities could complicate optimisation |  |
| Complexity and Effort | <ul style="list-style-type: none"> V2G offerings are difficult to understand. A single retailer is more likely to be able to help consumers navigate complexity and make it easy to understand, coordinate energy in one application and optimise the system without effort. | <ul style="list-style-type: none"> Complexity and effort is likely greater with a second provider. <ul style="list-style-type: none"> Multiple bills and call centres Installation, location and wiring of the second meter Difficulty understanding different pricing and overall bill comparison Multiple applications to use to access and control information |  |

 Likely Negative impact  Potential negative impact  Uncertain or neutral impact  Likely positive impact

Use Case Assessment – Solar and Battery with HEMs

Does FTA rule change add additional value for a consumer looking to install solar and battery solutions linked to a home energy management system (HEMS)?

Solar and Battery (no VPP, no EV) | Overview of Use Case

The most common CER use case today is solar and battery with no VPP, with consumer value driven by optimisation of solar and battery assets – this market is already well developed with high consumer engagement.

Consumers with solar and battery CER are looking to optimise assets to reduce energy costs and reduce reliance on the grid

- Solar PV is a mature service offering serviced by a broad spectrum of businesses including Tier 1 retailers, solar OEM and installer businesses, and aggregator/flex platforms.
- High electricity prices have driven growth in the rate of small-scale PV installations with a forecast shorter payback period. This trend is likely to continue with ongoing price uncertainty combined with a focus on emissions reductions.
- BtM BESS are usually offered alongside small-scale PV as economics are improved when combined. Battery offerings, although often incorporated with VPP service offerings, can be purchased without a VPP. This use case looks at the base BtM solar and battery offering with no VPP. (It should be noted that the battery in this scenario could be an EV battery, providing the same capability to discharge to the home leveraging bi-directional V2H capability in the vehicle)
- Consumers with solar and battery installations and no VPP are looking to optimise the use of the solar and battery assets within the home to ensure lowest energy costs, and less reliance on the grid. Often these services come with a HEMS to give the consumer control.

A HEMS is used to help consumers control and manage their CERs – the key objectives to make the most of TOU tariffs and maximise use of solar balanced with comfort

- A home energy management system (HEMS) is a technology platform comprising both hardware and software allowing the user to monitor energy use in the home and manually control or automate use within the household. HEMS incorporates two components:
 - Hardware: usually a home hub with a unit installed on the electrical board or virtual in cloud. Smart plugs, light sensors and smart devices can connect to the hub. In this use case we consider solar and battery which will connect to HEMS via inverters.
 - Software: a web based application used to monitor data across the home. Enables users to turn devices off and on, to set up devices according to a schedule or set of rules, manage flow from solar panels and batteries and use machine learning to optimise energy use.
- One of the key objectives of a HEMS is to use the cheapest energy available in the home making the most of time of use tariffs and demand tariffs and cheap on site generated solar. This affordability objective is then balanced with the need for comfort, the controlling of air conditioning, heating, lights or other to suit the home owner's needs.
- A HEMS is already effective in market set to leverage tariffs and optimise solar. FTA sub-metering solution is not required to access this technology.

There are multiple solar and battery and HEMS providers in market operating without the need for a sub-meter and often individually without needing to partner with retailers.

- Consumers already have choice in how to engage and set up their solar and battery CER
- Although retailers partner with energy solution providers and financiers, consumers have choice to go elsewhere and engage in the market via other relationships – there is significant choice for these solutions already in market and the market is relatively well established.
- The following slide assesses whether FTA can add any value to this use case – it is unlikely that FTA will unlock any additional value from this use case especially considering the HEMS that best operate with a single view across the home, likely optimised by a single provider.

Sample of providers in market for solar and battery solutions, enabling consumers to engage

| Providers | Description |
|--|---|
| Energy retailers | Energy retailers often will own a solar/ battery provider, have an in-house solar business, or will have a partnership with an energy solutions provider. Origin and EnergyAustralia both sell solar and energy packages via their branded solar companies. AGL only sells solar and battery as a bundle. A retailer can add value to solar/ battery sales by providing bundled offerings including financing, lease, virtual power plants and other. |
| Direct to a solar/ battery solution provider or manufacturer | Consumers do not need to go via their energy retailer to gain access to solar and battery CER. There are a significant number of providers in market either direct via manufacturer or via installers. The consumer will need to engage with a retailer to upgrade the meter and gain access to any feed in tariffs for export. |
| Energy solution financing | A number of companies offer financing solutions as a lease (rental) structure or a loan. Some retailers have relationships with financing companies or offer financing backed by the retailer themselves. There are a variety of options to help the consumer gain access without up front investment. |
| HEMS software providers | There are a number of 3 rd party intermediary HEMS providers in market. Evergen, SwitchDin, Carbontrack, reposit power all provide hardware and software that can be installed with or without solar/ battery assets. |

Solar and Battery (no VPP, no EV) | Summary of assessment of FTA rule change

When there is no VPP incorporated in the home the priority is optimisation of solar within the home to reduce reliance on the grid – this capability is already provided today via a HEMS application and the FTA rule change is unlikely to offer any additional value

In Australia today there are more than approx. 2 million solar PV systems and increasingly consumers are purchasing a battery along with their solar PV. The benefit of a solar and battery set up is behind the meter optimisation of the use of solar within the home by storing solar power in the battery until it is required for use within the home eco-system. This benefit is achieved with existing capabilities within inverters and smart appliances and via a HEMS – there is little commercial opportunity for another 3rd party energy provider in this set up considering there is no VPP and no V2G capability.

| Criteria | Potential impact of FTA rule change | Comments of impact with FTA rule change |
|-----------------------|-------------------------------------|---|
| Affordability | ● | <ul style="list-style-type: none"> Today suppliers can bundle solar/ battery, finance, maintenance/warranty services, HEMS and offer that to the consumer without the need for installing a second meter. Existing technology will then enable optimisation of the on site solar generation around the home. A home battery is used primarily to store excess solar for use in the home during peak periods and is unlikely to be charged from the grid. There is little revenue opportunity then for a second energy provider based around a sub-meter that couldn't be captured using current technology – as such the additional set up costs already discussed are likely to outweigh any benefit to the consumer. In a scenario where other assets (eg pool pumps, hot water, smart appliances) are linked to the second meter, in addition to solar and battery, there is potentially an opportunity for additional services to control the load to be drawn from the grid in off peak periods. However as discussed in Baringa's report prepared for the AER, the opportunity for these smaller loads to generate value for the consumer is limited¹. The additional service, metering rentals and metering/ wiring install costs and complexity around optimisation in the home, are not likely to be offset by any benefit. |
| Choice | ● | <ul style="list-style-type: none"> The FTA rule change could provide an opportunity for a energy provider to package up solar and battery equipment and installation and maintenance, financing, solar feed in tariffs (export), controlled load for pool pumps etc, home energy management software into one offering outside of the consumers standard energy rates. It is a little uncertain however whether there is sufficient value in this for a energy provider without a VPP as the majority of the energy will be used in the home making the home self sufficient. There will be no opportunity for discharge to the grid to capture market arbitrage. |
| Control | ● | <ul style="list-style-type: none"> Control is considered to remain neutral for this use case as battery/ solar purchases made without a VPP or V2G EV offering can be controlled and optimised by the consumer using a HEMS which are already available in market. |
| Optimisation | ● | <ul style="list-style-type: none"> The home optimisation in this use case is similar to that discussed for a simple EV use case with solar. As already mentioned, if there is solar and BESS then a commercially viable solution for a secondary provider is less likely without a VPP. The likely only commercially viable model for a second service provider is when there is an EV and V2L or V2H capability is enabled. The car battery then being used as a BESS to the home but also with the need to charge the car either using solar or grid energy. The secondary provider, like in the EV use case, may complicate the optimisation by controlling the solar and EV battery which could be to the detriment of the home if the user does not have control. |
| Complexity and Effort | ● | <ul style="list-style-type: none"> FTA rule change is likely to create a small amount of additional complexity and effort for the consumer to have the meter installed and to deal with multiple providers without significant economic benefit beyond what can be achieved today. |

Sources: 1 Value of Optimised flexible DER, Baringa report prepared for AER, July 2020

● Likely Negative impact ● Potential negative impact ● Uncertain or neutral impact ● Likely positive impact

Use Case Assessment – Virtual Power Plants

Does FTA rule change add additional value for a consumer engaging in a VPP solution that leverages their behind the meter assets including solar, battery, and other appliances?

Virtual Power Plants | Current market evolution

VPPs provide financial and system benefit to consumers and the market. Providers today are innovating to capture some of this value and FTA is likely to reduce barriers to entry to enable further entrants to market. However, that there are alternate avenues for participation and two providers operating separately may complicate potential one-stop-shop models

VPPs are considered a major part of the future energy system – the key value for the consumer is BtM energy use with network support key to optimise the system

- ▲ A Virtual Power Plant (VPP) is an aggregation of distributed energy resources situated behind a consumer or business meter coordinated to deliver services for power system operations and electricity markets. The VPP is managed using aggregation and orchestration software enabling the VPP to act as a generator
- ▲ Most VPPs are based around BtM BESS but there is potential to expand into multi-asset VPPs incorporating flexible capacity services such as Demand Response, electrification, and EV V2G as those markets develop.
- ▲ BtM battery capacity is forecast to reach more than 70GWh by 2050¹ presenting an opportunity to unlock some of that capacity to help stabilise the grid and ensure a reliable energy supply. In 2019 -2021 AEMO supported a VPP demonstration program to test the value of CER for FCAS, wholesale and network markets. The trials provided 31MW of capacity across 7,150 consumers.
- ▲ Key value streams identified for a VPP as part of the AEMO demonstrations are shown below:

| Value stream of VPP identified in todays market (with no tariff reform) | Primary recipient |
|---|--------------------------|
| Increase solar self consumption | Consumer |
| Utilising back up power in event of an outage | Consumer |
| Network support through peak demand management | Network Service Provider |
| Network support through frequency control services | Network Service Provider |
| Physical hedge or arbitrage opportunity in wholesale energy market | Retailer/ Aggregator |

- ▲ For consumers, the primary benefit remains BtM solar and battery optimization and solar consumption in the home. Consumers engaged in the trials suggest they also value the community benefit of peak demand and FCAS, providing benefit to the system and other consumers beyond their home. This is supported by ECA behaviour surveys as well.
- ▲ With tariff reform and declining cost of the battery units, payback will reduce. For example, AGL estimate that incorporation of a solar sponge tariff as part of tariff reform will reduce payback by 3 years ^{2,3} Considering this, an ability to access network tariff benefits is important for consumers to be able to access – since the primary retailer will be responsible for network tariffs this benefit is best accessed from them.
- ▲ The impact of FTA on unlocking value to consumers of VPPs needs to be assessed in terms of contribution to unlocking the value of the value streams discussed above as well as the ability of FTA to aid in providing benefit to consumers through the tariff reform process.

Sources: 1 Baringa reference case December 2022, 2 AGL 3 Virtual Power plant Demonstrations, Consumer insights Report, September 2021, Customer Service Benchmarking Australia for AEMO 4 “Green Homes, The new centre of residential energy services”

Existing barriers to entry to VPP market will be reduced with FTA – the DRSP mechanism already in market will also likely provide opportunity as VPPs scale

- A large number of retailers consider that VPPs will be an important part of their future offerings and as such there is growing investment in this space. Many are setting aggressive flexible capacity targets. Origin Energy, has recently announced plans to expand its 350MW VPP to 2000MW within 4 years. A sample of plans and business models is provided on the next page to illustrate the investment to date
- For independent service providers (eg Tesla) in order to participate as a VPP they need to partner with an energy retailer. This is because CER are currently operating as behind the meter load aggregated independent of AEMO and, in order to respond to market alerts and triggers, the market participant, being a retailer, is required to generate those alerts. While this may prove a barrier to come new market entrants, we are seeing a number of creative partnerships in market as illustrated overleaf.
- One of the benefits of FTA is that service providers could operate without the need to partner removing barriers to entry. Without FTA, alternatively, there could be an opportunity for independent service providers to scale their VPP to a size that will enable them to participate in bid and dispatch functions in market. At scale the current DRSP regulation and wholesale demand response mechanism enables bid/dispatch capabilities when volumes are sufficient, albeit without the improved settlement enabled by the FTA rule.
- In the UK a new architecture specification has been approved that enables DRSPs to bypass the smart meter enabling greater access to flexible assets (see “International Examples”) – this suggests that a review of DRSP with potential to amend that rule could be an alternative avoiding the need for further intervention via FTA.

A One-Stop-Shop model is likely to be preferred by consumers – with two providers at site the opportunity for this offering could be complicated

- The AEMO VPP trials highlighted that even for highly engaged consumer groups such as early adopters, there is a need to simplify messaging, and provide ongoing communication^{2,3}. VPPs are not simple to understand. For consumers to trust in the technology they need visibility and simplicity.
- In 2020 Baringa hosted a series of “Green Homes” roundtables to discuss with industry in the UK approaches to decarbonisation in the home⁴. One of the outcomes was the need to solve the complexity for the consumer. The suggestion was that a One-Stop-Shop with a single point of contact integrating the whole value chain, would address consumer needs best. More likely to advocate for the consumer as a priority whilst also balancing other requirements of the whole “home eco system”.
- FTA introduces a second supplier with a direct relationship with the consumer. With two energy providers and two separate relationships this coordinated single view is potentially eliminated or at least complicated. A commercial partnership across the supply chain coordinated by a single one-stop-shop is more likely to simplify and provide optimization of services to the consumer benefiting the system as a whole.

Virtual Power Plants | Examples of current business models and plans in market

The VPP market is developing without FTA – there are a number of business models and VPP plans already in market that provide some benefit to consumers

There are a number of business models developing in market without FTA rule change – as VPPs scale and technologies continues to develop there will likely be further innovation

- Retailers VPP offerings have traditionally grown from the residential sector where State Government funding for residential behind-the-meter batteries have encouraged up-take (e.g. AEMO pilot VPP scheme, and battery subsidy scheme in SA) and therefore product development from retailers.
- There are today a significant number of retailers operating in the VPP residential space. Larger retailers such as Origin, AGL, EnergyAustralia, Simply energy have set up their own VPPs. Smaller retailers participating often with niche offerings, or by forming a commercial partnerships with an independent service provider (eg Tesla, Sonnen). These commercial relationships enable a single point of contact and coordinated offering
- The market is also providing opportunity for providers of HEMS and orchestration software opportunities to carve out positions and provide offerings to customers (eg SwitchDin and Evergen)
- There is also a consideration for how new technologies will aid innovation. Technologies such as IoT devices, data solutions leveraging smart meters, may enable new entrants to enter the market creating a similar outcome to a sub-meter. In the UK, for example, a new technology architecture has been approved for market that will enable DRSPs to integrate into a consumer network without needing to be connected via the smart meter².
- Overall, the market is innovating and developing to build commercially viable business models servicing customers – an FTA rule change is not at this stage critical to build this innovation and choice.

| Bus model/ Service providers | Examples |
|--|---|
| Independent service providers VPPs selling services to retailer or participant | Reposit, Sonnen, Tesla, |
| Aggregators and WDR – managing delivery | Enel |
| Established retailers who have their own VPPs | AGL, EnergyAustralia, Origin Energy, Powershop, Simply Energy |
| Smaller retailers with VPPs | Discovery energy, EnergyLocals |
| Specialised retailers targeting CER | Pooled Energy |
| Retailers with Pool pass through | Amber, Flowpower |
| Retailers with large customers to monetize CER | AGL, Shell |
| VPP management (software) | SwitchDin, Evergen, Greensync, Reposit |

Sources: 1 AEMC, VPP offers available 2 PAS 1878:2021Energy smart appliances –System functionality and architecture – Specification, department for business energy and industrial strategy

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There are a number of VPP plans already in market – with tariff reform and scale there will be further innovation in variable pricing to the benefit of consumers

- As shown below, there are a number of VPP plans available in market providing options around sign on bonus, regular credits, feed in tariffs, financing.
- Although a retailer is required to run a VPP due to the assets being behind the meter and small in scale, there are partnerships in market where non-retailer players are leading VPPs providing increased choice to the consumer outside of the direct relationship with their retailer.
- As tariff reform happens and scale is achieved, providers will innovate further leveraging variable time of use pricing and likely passing on to the consumer network benefits and market arbitrage benefits as they optimize the flexible assets in the home.

Sample of VPP plans in market as at 14th March 2023¹

| Name of VPP | Partners/ Vendor | Key benefits/ structure |
|------------------------|------------------------------------|--|
| Origin Loop | Origin | Eligible customers can get \$2000 off solar/ battery package or \$1500 battery alone (\$400 credit for customers already with battery/solar). 24-60 month interest free payment options, \$20 credit per month, plus Feed in Tariff. 5 year term. Can discharge entire battery |
| Tesla Energy Plan | SA government, Tesla, EnergyLocals | Flexible Time of use pricing, New owners earn \$1000 in powerwall credits, once off welcome credit \$100 for existing owners, Grid support credits calculated monthly, min 20% battery back up. Can share with community |
| Simply Energy VPP | Simply Energy | \$800 sign up credit for new battery or \$300 with existing battery Ongoing \$20/mth VPP credits. |
| AGL VPP | AGL | Up to \$1000 off cost of battery/ solar. For customers with existing Solar/battery, \$100 sign on bonus. \$45 credit per quarter for VPP |
| Powershop Charge Force | Powershop/ Shinehub | Partnership with Shinehub. Participants receive 'power credits' up to \$40 per month (depending on battery size) in addition to solar feed-in tariff for VPP's discharge of battery. |
| Discover Energy VPP | Discover Energy | Low rates. Competitive feed in tariff plus profit sharing on trades managed by Discover Energy using your stored energy. Can drain battery |
| Reposit VPP | Reposit Energy | Customer buys a solar/ battery solution and has no electricity Bill guarantee for 5 years. Pay flat price for 5 years. |
| Arcstream | Arcstream/ Qcell batteries | Grid energy subscription monthly fee (\$59-\$79/ month depending on usage 20-30kWh per day). Charge for extra grid energy above subscription at 30c/kWh. Bonus credits of \$30/mth to be a part of VPP |

Virtual Power Plant | Assessment of FTA rule change on VPPs

The concept of a VPP is already complex for consumers, introducing the FTA will likely introduce additional complexity. There is also a risk that optimisation of the home-eco system and the grid are compromised

| Criteria | VPP use case (No FTA) | VPP use case with FTA rule change | Impact of FTA |
|------------------------------|---|--|---------------|
| Affordability | <ul style="list-style-type: none"> Today there is limited innovation from retailers to provide TOU pricing for consumers – likely driven by a lack of incentive and slim margins. TOU tariffs will however be enabled via tariff reform. This will provide retailers greater opportunity to offer variable pricing. There are a number of VPP plans in market today offering credits and variable tariffs. <p><i>(see page 17 – V2G for additional information which is also applicable to the VPP use case)</i></p> | <ul style="list-style-type: none"> The arguments discussed in V2G use case can be referenced for the VPP use case. The increased service costs, and potential for sub-optimal use of on-site solar generation could impact affordability. In a scenario where network charges sit at FRMP1, the primary retailer will effectively be taking on the risk of the network charges at the second meter without managing the BESS. Retailers today enjoy a natural hedge with the shape of their portfolio and average home consumption. By losing control of the EV and other flexible capacity they lose some of this natural hedge increasing their wholesale market risk. This may result in retailer 1 increasing prices (ie reduced discount to DMO/ VDO) and not passing on full benefit of network tariff reform. An alternate approach could be to disperse network charges among the 2 suppliers. This would come with other challenges such as reconciliation, allocation of charges, and impacts to default pricing. | |
| Choice | <ul style="list-style-type: none"> Commercially based business models are developing without the need for FTA with a large number of VPPs in market. Independent providers today need to establish partnership(s) with retailers to offer VPPs in market or build sufficient volume to operate as a DRSP. This effectively is a barrier to entry for new entrants. Technology may provide opportunity for innovation and new entrants – IoT devices, smart meter data solutions, and leveraging existing sub-meters within the solar/ battery/ EV/ Charger could provide opportunity | <ul style="list-style-type: none"> A second metering and settlement point will open up opportunity for new entrants to enter the market and offer different VPP service offerings to consumers without needing a retail licence and without the risk of managing inflexible load. There is a risk, however, of a negative impact on competition for FRMP1 due to hollowing out of value and a change to their risk profile. This could result in reduced energy plans in market for the primary metering point, reducing choice of supplier at FRMP1. Naturally FRMP1 may also respond with bundled and discounted offerings to the benefit of the consumer. | |
| Control | <ul style="list-style-type: none"> Existing HEMS technology are already providing consumers visibility and control. Consumers are generally okay giving some control to suppliers providing they have visibility and can override. This is existing today. | <ul style="list-style-type: none"> HEMS technology should enable users to gain visibility across their home similarly to without FTA Majority of consumers will give over control but want to override and be sure decisions to optimise use of BtM assets are made. Technology should enable this even with 2 providers providing the consumer has a single HEMS integration across the two circuits. | |
| Optimisation | <ul style="list-style-type: none"> A single energy provider having responsibility for network/ FCAS/ wholesale enables optimisation to the benefit of the consumer and networks. | <ul style="list-style-type: none"> The risk of misunderstanding and misalignment of market ancillary service provider and VPP operator is higher with multiple providers. The secondary metering provider will look to optimise outcomes for themselves and the consumer at the wholesale energy and FCAS level. Without a connection to the grid they are less likely to consider network or other system benefits beyond market arbitrage. Although wholesale and network signals are often aligned, there are times when they are not. One provider able to optimise across both value streams may offer potential for better performance. | |
| Complexity and Effort | <ul style="list-style-type: none"> VPPs have additional complexity around FCAS and wholesale markets that make it difficult for consumers to engage and understand. A single provider who advocates for the consumer across the system is more likely to unpick the complexity for the consumer and make it simple with less effort. | <ul style="list-style-type: none"> Similarly to the other use cases, complexity is increased due to additional metering and electrical work, and the need to deal with multiple bills and servicing. VPPs are complex. Consumers are likely to find it difficult to understand how it works and what benefits they can get. Consumers want simplicity and clear information. Multiple providers may over complicate for the consumer – a single point of contact provides advocacy and ease. | |

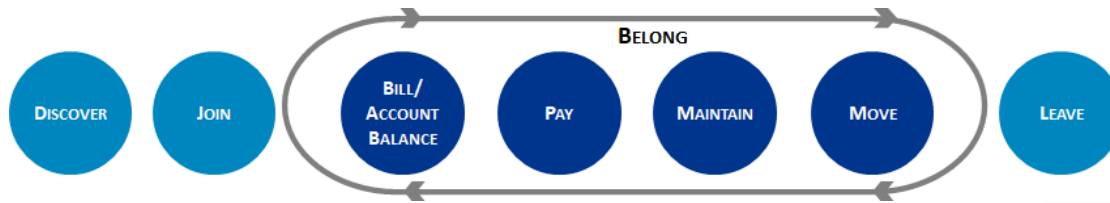
Use Case assessment – Customer journeys

Assessment of key customer journey use cases to determine impact of FTA and risk to consumer processes and protections

Customer Journey use cases | Overview of assessment

Customer service use cases are assessed to understand if the customer journey for supply of power to the home is improved with FTA – the biggest concern is potential negative impact to consumer protections, increased effort and complexity.

Energy Retail – Customer Journeys



- There are multiple customer journeys that can be considered a part of a consumers engagement with an Energy Retailer today.
- This end to end customer journey has been assessed by considering four key use cases and by exploring primarily the effort and complexity for consumers in their engagement with energy providers under an FTA environment.
 - **Pre sales use cases**
 - **Discover and Join** – How does FTA impact the effort and complexity of a consumers journey to find a retailer, assess plans against affordability, make a decision and be quickly and easily onboarded?
 - **Post sales use cases (Belong journeys)**
 - **Move Home** – How does FTA impact the effort and complexity of a consumers journey when they move out of one home and into another looking to deenergise and reenergise and close/ open accounts?
 - **Disconnection for non-payment** (Account Balance, Pay)– What challenges are likely through the disconnection process, associated with debt collection, and is there a risk to vulnerable and hardship customers?
 - **Bill and Maintain account** – How does FTA impact how the consumer will engage with their energy providers through billing and customer service transactions?

Assessment of journey use cases against criteria – Summary

| Use case | Summary of impact of FTA |
|--------------------------------------|--|
| Discover and Join | <ul style="list-style-type: none"> • Increased complexity and effort to assess offers, engage with suppliers and set up account including electrical installation • Improved choice in accessing different pricing options but difficulty to reconcile and compare offers between single and multiple providers • Potential challenges to maintain consumer pricing protection – DMO/VDO structure is likely to be challenged |
| Move Home | <ul style="list-style-type: none"> • Increased complexity and effort in moving out of one property and into another – multiple suppliers to engage to disconnect and reconnect and ensure services to the home are activated and contracted for • Greater risk of temporary loss of service resulting in potentially a site visit at an extra cost to check set up and connect the property to meet customer requirements |
| Disconnection for non-payment | <ul style="list-style-type: none"> • Risk that vulnerable, hardship and possibly Life Support customers are disconnected for essential or important services connected to the second meter. For example, hot water, which is a controlled load, and EV charging are both needed services depending on the customer and both could be connected to a secondary meter with FTA rule change. This increases the risk of disconnection separately to the primary meter. • Consumer protections and retailer processes around disconnections will be important to review and refine should this rule change go ahead |
| Bill and Maintain account | <ul style="list-style-type: none"> • Multiple bills and multiple services providers will increase complexity and potentially create confusion for a consumer trying to identify who to call in regards to outages or billing issues. • Consumer protections related to billing to aid best offer selection, easy access to outage numbers and simple billing will likely need to be reviewed in the context of FTA and whether FRMP2 is subject to the same billing compliance rules as FRMP1 |

Customer Journey use cases | Assessment of Pre-Sales use cases

The discover and join journey for a consumer will likely become more complicated – default pricing, comparator websites and onboarding are likely to be more complicated to understand and require more effort from the consumer

The ‘discover and join’ customer journey has four key components that may be impacted by FTA. The effort required to engage and make a decision around a second service provider may result in few consumers electing to install a second meter – opting instead for a single retailer.



1

**Default Pricing –
DMO/VDO**

Pricing regulation will likely need to be reviewed – FTA will add complexity to DMO/ VDO for regulators, retailers and consumers

- ▶ AER/ ESC may need to account for changes in “typical” consumer profile and consider an additional cost stack for consumers with a second meter
- ▶ If default pricing is not applied to second meter then affordability may be impacted as there will be no price cap or default price for the sub-meter.
- ▶ If default prices are made applicable to FRMP2 then the cost stack will need to be revised as network charges and cost to serve may be different.
- ▶ Pricing protection is used to illustrate the risk to consumer protections of FTA on the following page.



2

**Retailer Plans – FRMP1
offers in market**

FRMP 1 (Primary retailer) may improve innovation, re-structuring offers to disincentivise consumers to split their services across two energy providers

- ▶ With a second provider (FRMP2) at site managing flexible load, primary retailers (FRMP1) will likely will face increased risk associated with losing their current natural hedge and the change to shape and load of the consumer base. As a result they may look at restricting levels of discount and terms and conditions for consumers who choose to separate their flexible capacity aiding their desire to mitigate higher risk and to maintain margins.
- ▶ In line with this, primary retailers may introduce bundled offerings that discount price if the consumer chooses them as a single retailer for the home – a one stop shop. This could be a positive outcome for consumers encouraging FRMP1 retailers to innovate and incentivise consumers to not split services across multiple meters. Consumers may benefit with improved affordability, simplicity and optimisation across the home.

ENERGYMADE
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3

**Offer comparison –
two vs one supplier,
different pricing**

VICTORIAN ENERGY
COMPARE

Comparison and reconciliation of offers is likely to be complex for consumers with 2 meters as they navigate benefit of single versus multiple providers

- ▶ Comparator websites compare retail offers with different contract lengths, variety of credits or rewards, varied supply charge, energy rate discounts, carbon neutral and comparison to a reference that is a “typical” household. Adding a second meter and second offering will require enhancement to these websites to address the increased complexity of offers with multiple meters to minimise consumer confusion.
- ▶ By way of example; as discussed above, FRMP1 may create specific plans and conditions for consumers who are choosing to separate their services and reference prices will likely be different for households with and without FTA
- ▶ Comparing a single bundled offer from one provider against multiple offers from two different providers may be complex



4

**Onboarding –
installation and
account set up**

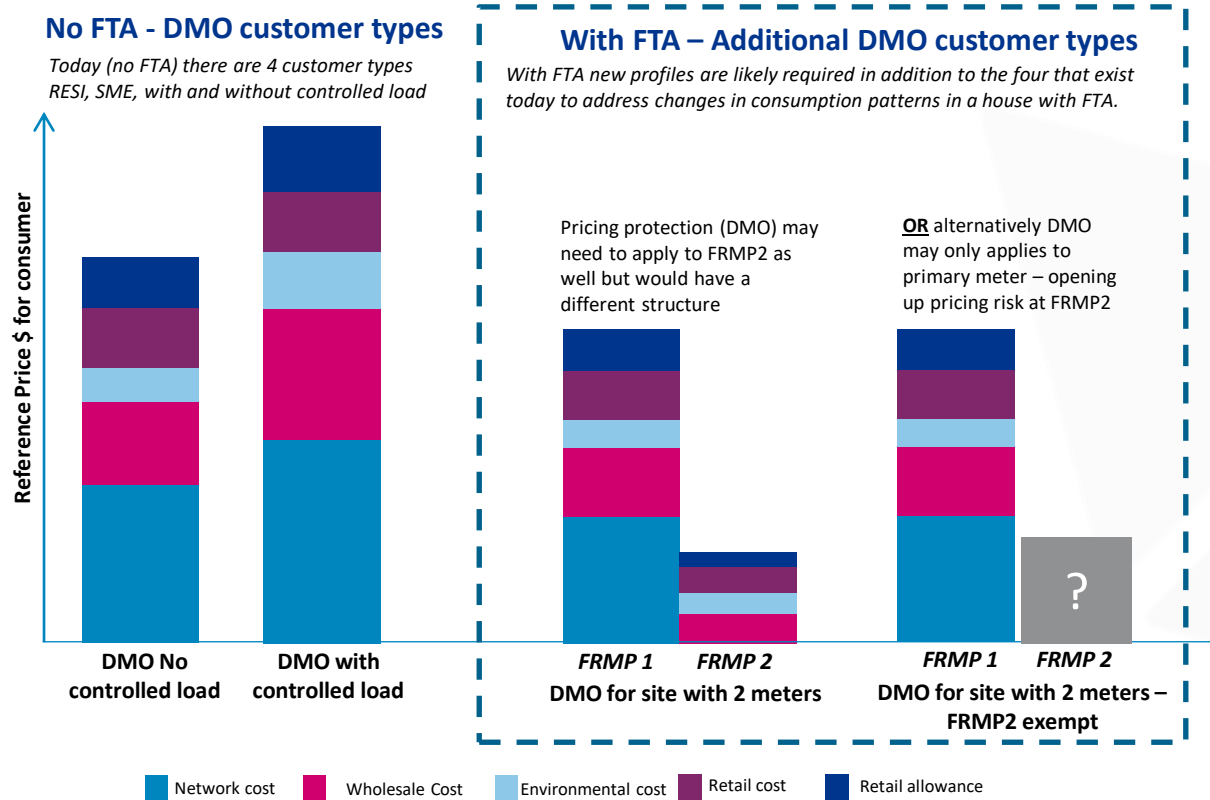


Onboarding with two retailers will require greater effort to ensure meters, electrical wiring and portal access/ controls are in place across 2 providers

- ▶ Today if a consumer wishes to install a second connection point to separate flexible services they can do so but it can be costly, requires time to set up the NMI in market, and requires additional meter on site taking up space and requiring new wiring. With FTA there will be a reduced technical requirement for installation of the sub-meter as the meter will be smaller – noting that additional wiring is still required.
- ▶ The onboarding for an FTA set up as compared to onboarding with a single provider will require more effort from the consumer and costs and time for site visit.

Customer Journey use cases | Example of impact to a consumer protection (DMO)

Pricing regulation is one example of a consumer protection that would likely need to be revised should the FTA rule change come into effect – the methodology for generating a cost stack for a “typical” customer will likely be challenged



FTA may introduce complexity in the default pricing mechanism – there may be other consumer protections that will also require consideration with FTA adding additional risk and complexity for the consumer and retailers.

- The DMO (and VDO) is a default pricing mechanism that is in place in Australia across NEM states to protect consumers (residential and small business) from high prices and enable innovation and competition.
- It represents a reference price for a standard household/ business against which consumers can compare their offers.
- Retailers discount off the default price, enabling easy comparisons for consumers.
- As shown in the diagram opposite with FTA, the methodology for DMO will likely be challenged on a number of fronts:
 - Definition of a “standard” household/ business will be challenged resulting in potentially the need to create new customer types to address FTA alternatives.
 - Methodology for calculating retail allowance is likely to be challenged to incorporate additional risk elements for FRMP1 and to help maintain competition.
 - Methodology for calculating wholesale costs and environmental costs may also be challenged considering load variation and shape risk to FRMP1 in particular
 - Cost structure of FRMP2, if not exempt from DMO, will be different and likely exclude network charges or have a different network construct. The retail cost and risk profile will also vary.
 - Pricing offered by FRMP2, if they were exempt from DMO, would be variable and difficult to compare putting consumers potentially at risk from high prices. A potential scenario of concern is that if the same retailer is FRMP for primary and secondary meter they could use the second meter to capture additional margin if pricing at the sub-meter was unregulated.
- Although this example of DMO is only illustrative it highlights the impact assessment and subsequent revision of rules that will likely be required for many consumer protections should the FTA rule change be implemented.

- Today the DMO has 4 customer types SME with CL, SME without CL, resi with CL and resi without CL.
- The cost stack is made up of 5 components.
 - Retail allowance – set as a % to cover risk, innovation and retail margin
 - Retail cost – operating costs to service customers. Includes cost to serve, cost to acquire, debt, metering
 - Environmental cost – cost of procuring green certificates as per the obligations for STCs and LGCs
 - Wholesale cost – the cost of procuring energy for consumers in market
 - Network Cost – the average network cost for the jurisdiction that the consumer resides in

Customer Journey use cases | Assessment of service (post sales) use cases

The FTA rule change has the potential to create additional complexity and effort for consumers in after sales service and billing – with some risk to consumer protections.

| Use Case | Scenario considered | Challenges and risks | Impact on customer |
|----------------------------|--|--|---|
| Move in Move out | A customer has two energy providers (2 meters) moves out of home. New home has one meter | <ul style="list-style-type: none"> Consumer will need to contact 2 providers to organise final bill and disconnection at current home - risk that they only disconnect one and continue to get billed for the second meter. As the metering set up is different at the new property with any CER linked to main meter, the customer will be unable to set up their energy plans like they have at current property. If they wish to replicate services at their new property they will need to arrange electrical services once they have moved in. | Adds complexity and effort to the customer journey. |
| | A customer has no second meter moves out of home. New home has 2 meters | <ul style="list-style-type: none"> Consumer is unlikely to be aware of the possibility of 2 meter set up unless they are provided the information. Retailers will need to update NMI discovery processes to find the second meter and then have processes to help customers through the move in process. There is a risk that the retailer does not alert the customer to the second meter which may impact services. E.g. <ul style="list-style-type: none"> If the second NMI remains inactive there is a risk that, depending on wiring, the customer loses access to the CER If the second NMI is active but the retailer fails to set up a contract incorporating the load on the second NMI, then there is a risk that the consumer does not get benefit from the CER linked to the second NMI as it remains uncontracted. Missing the second meter can happen if retailer processes are sub-optimal. Today solar export channels are sometimes missed if the consumer does not alert the retailer to the existence of solar. This results in the consumer not accessing the retail feed in tariff – a similar situation could apply here. | Risk that a consumer with CER in a new home does not get access to the services and/or does not set up a contract for service. Could impact affordability and add complexity |
| Disconnect for non-payment | Customer does not pay bill for one service provider and that provider disconnects | <ul style="list-style-type: none"> Disconnection of the primary meter (FRMP1) will result in the sub meter also losing connection. This situation could create complexities around customer experience and commercial issues between the two providers considering the customer is financial with FRMP2. Disconnection of FRMP2 only may result in loss of access to flexible services such as EV charging. The consumer will need to ensure the circuit is reconnected to main house to regain access. | Risk of loss of service impacting optimisation . Additional complexity |
| | Vulnerable or hardship or life support customer does not pay bill | <ul style="list-style-type: none"> FRMP1 will not disconnect these customers but will move the customers into their vulnerability and hardship programs There is a risk that FRMP2 will disconnect (make the sub-meter inactive) if they are not subjected to same protections as FRMP1. The impacts of this will be dependent on the assets linked to the second meter but could include – loss of access to EV charger, increased price to charge EV as will need to link to the house, loss of access to solar power, and loss of access to hot water temporarily until the assets can be switched to the primary meter. Life Support equipment should not be connected to a sub-meter Consumer protections will need to be reviewed to incorporate regulations around disconnection at FRMP2 | Adds risk for vulnerable and hardship customers in terms of disconnection. |
| Bill and Maintain account | Consumers engaging with their energy providers to discuss billing or other | <ul style="list-style-type: none"> Having two energy providers will result in two bills, two service teams, and two web portals to monitor accounts increasing complexity for the consumer. Consumer could be unsure who to call for a request. Eg outages or meter services, electrical faults, billing enquiries, solar inverter issues. Compliance rules for bill structure and format (eg emissions graphs, 12 month usage history, best offer on bill, estimated meter readings etc..) need to be explored to consider applicability to the second service provider and the risk to consumers in understanding their bills. Structure of the energy bills will likely be different across the two providers creating additional complexity in understanding and reconciling bills potentially driving calls | Increased complexity to navigate who to call for queries. Potential complexity created in bill format and risk to consumer protections |

Regulatory context assessment

Overview of the regulatory context in Australia and analysis of existing or future regulations as compared to FTA

Regulatory Context | CER Implementation Plan

The ESB proposed a suite of reforms to leverage technology and data, improve access and efficiency, enhance market participation, and strengthen customer protections and engagement for CER integration.

CER Implementation Plan

- ▶ Given the recent rapid pace of change in the consumer energy resources sector, the ESB released its Post 2025 Market Design Final Advice to Energy Ministers.
- ▶ The advice detailed models for the development of effective CER integration over staged horizons.
- ▶ The plan acknowledged the importance of engagement with consumers by policymakers and market bodies, in order to build awareness and clearly demonstrate the benefits of participation of flexible energy use.

Flexible Trading Arrangements (FTA)

- ▶ The development of flexible trading arrangements (FTA) in the NEM, forms one part of the ESB's CER Implementation Plan.
- ▶ Within this reform, the ESB considered how end users could be provided with more choice in accessing CER and the range of services that flexible forms of generation, storage and load could support.
- ▶ FTA was identified to enable the separation of controllable from uncontrollable resources and therefore enabling end users to be rewarded for flexible demand and generation.

Regulatory Context | Reforms and activities under the CER Implementation Plan

The ESB's plan to effectively integrate consumer energy resources into the NEM involves several ongoing and in-train regulatory reforms – FTA intersects with these other reforms.

Plan objectives

The CER Implementation Plan will aim to resolve the technical, regulatory and market issues creating barriers to full CER market integration. This will be achieved by addressing the following areas:

- ▶ Customers are protected and have opportunities for new products and services
- ▶ Market operation is innovative and efficient
- ▶ System security is maintained
- ▶ Network development is appropriately accommodated

Collaborating with customers

The ESB recognised that customer input is key for understanding the future interactions and engagements service and product providers will have with customers:

1. Consumers have access to secure, reliable, affordable, and sustainable energy no matter how they choose to participate
2. Consumers can realise the value of their flexible demand and CER
3. Fit for purpose protections framework improves experience for all consumers

Identified reform activities

- ▶ Dynamic Operating Envelopes (DOEs)
- ▶ Scheduled-lite
- ▶ EV smart charging standards
- ▶ Tariff reform
- ▶ Metering reform
- ▶ Interoperability
- ▶ Consumer protection reforms
- ▶ **Flexible Trading arrangements**

Regulatory Context | AEMC Metering review

The smart meter rollout is being accelerated more swiftly than FTA and metering reform is likely to capture many benefits being proposed by the FTA rule change.

Overview of regulation

The current regulatory mandate is that new and replacement meters must be smart meters. The AEMC is aiming to accelerate the smart meter roll out by adding to the regulatory mandate and removing inefficiencies in the current smart meter rollout process. The AEMC's draft report *Review of the regulatory framework for metering services* recommends several rule changes to achieve 100% smart meter penetration across the NEM by 2030, but also has a process to exempt from the rollout premises with ongoing site remediation issues. The final report and decision is expected in Q2 of 2023.

The reform is also seeking to improve the accessibility of smart meter data for network operations by distributors. The AEMC's proposes changes to the NER to better define and set a standards for 'basic' power quality data. The AEMC would also develop an access framework for data exchange.

Benefits, conflicts and constraints

- The minimum technical standards for smart meters do not require separate functionality for controlled load (that is either retailer or DNSP led), but at least some major smart metering providers are incorporating technical specifications (which are greater than the minimum standard) that have the functionality of flexible trading through the separation of load types within the device. These metering providers are doing this for competitive advantage, to enable value-added services, and to effectively future proof the meters. This industry practice of rolling out the 'above spec' controlled load functionality captures some of the capabilities that are proposed to be unlocked by FTA.
- Fundamentally, metering reform will allow customers wider access to VPP participation and V2G products and services. New products will be more visible as superior data will be available through cloud technology. As a result, customers can leverage the benefits of CER solely through their smart meter, without having to engage in flexible trading arrangements.
- The implementation timing of both reforms will also have an impact for customers. If the introduction of FTA is concurrent with smart meter installation by 2030 then this is likely to result in a relatively smooth installation and customer relationship process. Some customers are likely to already have two smart meters as part of the rollout. As FTA is proposing to ignore the second meter to install a submeter, it is likely to lead to inefficient outcomes due to the underutilisation of existing infrastructure. If the timing of FTA is staggered then this will be conflicting for the customer due to physical disruptions if separate sub-meter installations are required.

AEMC Metering review with/without FTA analysis

| Criteria | Expected impact of policy | Implication with introduction of FTA | |
|---------------------------|---|---|---|
| Affordability | Customers will likely be able to unlock economic benefits from smart metering as they can better utilise their controllable load | No change in affordability as metering reform is assumed to give customers visibility of their controllable load | ● |
| Choice | Increased penetration of smart meters enables retailers and DNSPs to deliver a wider range of products and services for purchasing value-added services from metering providers | Choice is likely to improve as customers can elect to have multiple retailers for their smart meter configuration thereby enabling separate control and settlement of CER | ● |
| Control | Smart meters provide visibility of controllable load for customers to utilise at their discretion | No change as autonomy of controllable load is already an existing option with smart meters | ● |
| Optimisation | An aligned standard for power quality data could also make it easier for retailers and DNSPs to work with smart meter data | Likely to decrease as FTA only impacts against wholesale and FCAS, but reduces optimisation of total load against network tariffs | ● |
| Complexity and Effort | There will be an adjustment for customers to become more engaged with their smart meters | Likely to add to complexity if multiple customer visits are required for physical installs which can cause disruption to customers and increase complexity of metering set up on site | ● |
| Cost for key stakeholders | Reform will require development of an access framework for data exchange | Likely to increase costs for all stakeholders due to the additional capability and compatibility requirements | ● |

Regulatory Context | Dynamic Operating Envelopes (DOEs) for exports

FTA are likely to result in conflicting outcomes with DOEs and flexible export limits, as they each target different sectors (retail and distribution) of the electricity system and thereby create different incentives.

Overview of regulation

DOEs are an emerging and effective approach to managing network capacity by allowing DNSPs to vary customer export limits dynamically (by time and location) which optimises existing network utilisation. As the flow of energy becomes more two sided, customers can both export and import energy and this creates challenges as well as opportunities for networks to manage via DOEs.

Further understanding on the regulations for DOEs and market participants on key issues such as data protection, privacy, and contractual mechanisms are currently under review by the AER through their *Review of regulatory framework for flexible export limit implementation* which is expected to be complete by Q2 2023. This review is supported by the ESB, the AEMC and AEMO to ensure it meets the long-term interests of customers.

Benefits, conflicts and constraints

- DOEs have measurable benefits for optimising the energy system, particularly on the network side. This means customers can export more rooftop solar PV for most of the year, and their ability to export would only be restricted when the network is under stress. This would allow benefits to, and greater optimisation of, the energy system. Despite this, concerns around communication and the degree of transparency in the managing of flexible exports is critical for building trust between industry and customers to ensure active participation. Similarly, FTA are also assumed to provide more opportunity for customers to participate in CER.
- AEMO contends that the proposed FTA models would not add complexity or contribute to incompatibility with ongoing DOE design and implementation. However, it is not made clear how more complex connection point arrangements are likely to benefit under FTA and DOEs. Conflicting network relationship challenges need to be considered against the backdrop of DOEs, as FTA will mean that consumers are encouraged to monetise their CER exports (particularly rooftop solar) when it is most financially beneficial to do so. This will conflict with the application of DOEs by DNSPs who may apply export limits during times of managing network capacity.
- Accommodating the FTA rule change may add unnecessary complexity for the ability to balance between overall system efficiency and individual customer benefit.

DOEs with/without FTA analysis

| Criteria | Expected impact of policy | Implication with introduction of FTA | |
|---------------------------|--|---|---|
| Affordability | Solar customers will benefit from greater affordability due to DOEs | Uncertain impact due to different incentives for customers and networks | ● |
| Choice | DOEs are unlikely to have a material impact on customer choice in the retail market | FTA is likely to create additional choice for customers even with widescale DOE implementation | ● |
| Control | Solar customers will not have full control of when they may wish to export, however those with batteries may be able to offset this and optimise their individual energy needs and use | Will likely decrease as customers will want to control their flexible energy to maximise personal revenue | ● |
| Optimisation | DOEs will drive better optimization of the energy system, ensuring network security and reliability | Optimisation challenges are likely to be present due to different incentives | ● |
| Complexity and Effort | It is likely that DOEs will add complexity for customers and retailers | A likely greater complexity due to conflicting motivations between network optimisation and individual customer benefit | ● |
| Cost for key stakeholders | Cost increases are likely to be borne by networks as new technology will be required to enable full value of DOEs | There is likely to be non-financial constraints to DNSPs to interpret information based on FTA customer behaviour | ● |

Regulatory Context | Tariff reform

FTA conflict with ongoing tariff reform and could lead to lower customer choice due to fewer retailers, fewer service offerings or potentially a combination of both.

Overview of regulation

CER integration is a major focus of tariff reform, as it seeks to enable greater choice, control, affordability, system optimisation and other important factors for customers. All DNSPs are currently implementing the second round of their Tariff Structure Statement (TSS) under the regulatory framework (some DNSPs are on their third round). Under second round TSS, many jurisdictions face the outcome of all small customers having smart metering, resulting in the retailer facing either cost reflective demand or time-of-use (TOU) network tariffs. Under the third round, many DNSPs have proposed two-way pricing involving credits and charges depending on time of day in order to promote better utilisation of the grid and integrate CER more efficiently.

Controlled load: all DNSPs offer controlled load and some are reforming these to be able to send more dynamic price signals.

Benefits, conflicts and constraints

- Without FTA, customers load profile (and therefore the network tariffs) are driven by the combined activity under their first and second meter. Conversely, under FTA, the primary retailer would continue to face 100% of the network charges for the site, despite no longer retaining predictability or the ability to influence the second meter's load. This is subsequently likely to result in primary retailers having reduced ability to optimise against their tariffs, contributing to higher business risks.
- There is also a likelihood for adverse impacts on customer choice with the proposed introduction of FTA in the context of tariff reform. Progress is currently being made for primary retailers being charged cost reflective tariffs for 100% of their customer base with smart metering. Retailers face commercial decisions in how to reflect these into their retail bills. Some retailers may elect to pass through the network tariff structure to retail bills, while others may continue to offer a simple flat rate. While there is also potential for other retailers to provide more innovative offerings. This will generate risks in the market as two horizons are likely to emerge:
 - Retailers stop offering competitive choice and simply pass through all network tariffs; and/or
 - A reduction in secondary tier 2 retailers on the market who are unable to capture customers due to less frequent retail energy market switching.

Tariff reform with/without FTA analysis

| Criteria | Expected impact of policy | Implication with introduction of FTA | |
|---------------------------|---|--|---|
| Affordability | Customers will have better energy affordability as a result of export credits under tariff reforms | Creates risk for affordability by potentially reducing competition at the primary meter as retailers look to mitigate increased risk – tariff reform may not be fully passed on to consumers | ● |
| Choice | Tariffs may lead to more choice and innovative offerings | Creates risk for lower choice amongst retailers (and/or services) | ● |
| Control | Customers may need to adjust their behaviour slightly to fully utilise the different tariff elements | Unlikely to have direct impact due to existing option of controlled load tariffs | ● |
| Optimisation | Will reduce need to upgrade the network, as customers can store and export their excess solar during peak periods | May increase optimisation of the sub-metered load but only against wholesale and FCAS but reducing optimisation of total load against network tariffs | ● |
| Complexity and Effort | Export pricing is specific to CER customers and will apply to all customers who consume and export electricity regardless of the technology | Likely to contribute to more complexity as customers will have to manage the separated metering points and different pricing | ● |
| Cost for key stakeholders | All energy participants will need to adjust their operating behaviour to accommodate tariff reform | Likely to increase costs for all stakeholders primarily due to flow-on impact of network charges | ● |

Regulatory Context | Interoperability

FTA may provide incremental customer benefits in the context of the development of interoperability policy and technical standards, provided that FTA and the operation of technical devices are well understood.

Overview of regulation

Interoperability refers to the multiple relationships customers can have with a range of energy providers and services to utilise their CER and enable effective communication and operation of these devices. The ESB is leading the development of the overall policy with its *Interoperability – Directions Paper* which will use the following assessment criteria to evaluate the key features of CER integration:

- System stability
- System and network costs
- Consumer impact – functionality, equity and acceptability
- Market facilitation
- Data privacy and cyber security
- Flexibility, adaptability, and innovation
- Compliance and monitoring burden

Benefits, conflicts and constraints

- Future interoperability policy is important for facilitating the trading of flexible CER in the market for customer benefit. With FTA proposed to enable some CER to be separately metered and settled in energy or other markets, traders will need to establish arrangements for CER behaviour monitoring and, in the case of more actively engaged customers, device management.
- Multiple retailers per household are likely to be supported under clearer interoperability standards. The regulation is likely to support the implementation of FTA by automatically mapping the relationship between NMIs, retailers (or aggregator) and device settings. This creates linkages between market systems and CER registration information could support an FTA structure and more competition in the retail market. AEMO also has a strong interest in market innovations facilitated by CER-market interoperability and links to traders as formal market participants.
- Conversely, FTA is likely to require a high degree of interoperability to enable orchestration of multiple CER devices at the premises.

Interoperability with/without FTA analysis

| Criteria | Expected impact of policy | Implication with introduction of FTA | |
|---------------------------|---|--|---|
| Affordability | Likely to increase affordability and value proposition of CER over time | Interoperability standards and FTA may improve customer affordability as CER devices will better interact and extract greater economic value for customers | ● |
| Choice | Customers will be able to share data with service providers and thereby receive clear information about compatibility of their CER assets | Greater market facilitation can be supported under FTA implementation as more energy service providers are likely to enter the market | ● |
| Control | CER assets may have portability between providers which may give customers a degree of control | Uncertain impact but may be reductive, as interoperability standards will need to orchestrate multiple CER devices seamlessly under FTA | ● |
| Optimisation | Likely to optimise operations and improve system quality over the long-term | May be additive, as interoperability standards will need to orchestrate multiple CER devices seamlessly under FTA in the interests of system stability | ● |
| Complexity and Effort | Uncertain impact as there may be resistance from customers of introductions of certain standards | Likely to increase complexity and effort due to interactions with a second provider | ● |
| Cost for key stakeholders | System and network costs may increase as a result of evaluating the impact of technical standards | FTA likely to also add to increased risks and costs to stakeholders when considering interoperability technical standards | ● |

Regulatory Context | EV Smart charging standards

FTA does not interfere with EV charging reforms – there may be some advantages such as the potential increased choice and ability to access pricing but this is likely to come with increased servicing costs, complexity and risks.

Overview of regulation

Standards to support integration of EV charging devices are a key activity under the ESB’s CER Implementation Plan. Customers are likely to consider EVs to meet their transportation requirements and to decarbonise their own emissions. The ESB is assessing the policy framework through its *Electric Vehicle Smart Charging – Issues Paper* to define the technical foundations on which EV smart charging will be integrated into the NEM.

The standards have considered domestic and public charging as separate settings. Minimum smart charging equipment standards to ensure coordination, as well as arrangements to enable active coordination of the infrastructure are key domestic policy areas. For public charging, issues such as grid connections, measurement, pricing, payments and charge data records, and roaming are being explored.

Benefits, conflicts and constraints

- Vehicle charging is a nascent technology within the NEM, however there are clear benefits to standardising domestic and public charging settings to have communication capability as a future-proofing approach. Forecast widespread uptake of EVs will likely mean greater opportunities to unlock value with flexible CER.
- FTA may encourage new participants to enter the market with the option of a bundled home offering (e.g. EV, home charger, public charger, home energy management system) that current retailers may not be able to provide.
- Existing EV capabilities for home energy management are likely to continue to provide customers with control and autonomy to maximise their solar and smart charging devices. Enabling this interoperability may support customer choice, ensuring customers have access to secure, reliable, and affordable options of EV smart charging.
- Conversely, while FTA may increase choice and tailored forms of customer pricing, an additional energy provider may remove an element of control from the customer in order to make decisions around network charging and flows. This may take the form of EV domestic charging (or discharging) at suboptimal times for individual economic benefit rather than in the interests of system optimization. Ultimately, this contributes to additional complexity, risks and effort to manage the multiple stakeholders and their different motivations.

EV smart charging standards with/without FTA analysis

| Criteria | Expected impact of policy | Implication with introduction of FTA | |
|---------------------------|--|---|---|
| Affordability | Customers are likely to benefit from enhanced price and service competition | Uncertain impact on affordability as pricing access may be offset by servicing charges | ● |
| Choice | The policy will help customers be able to charge EVs at different locations and via different charging stations | Customers may benefit from enhanced competition on price and services with FTA | ● |
| Control | Uncertain impact on control as technical standards develop over the longer term | Potential loss of control due to decisions around charging from the network infrastructure | ● |
| Optimisation | Will better support integration of V2G and V2H technologies | FTA likely to complicate optimisation due to multiple providers | ● |
| Complexity and Effort | Uncertain impact on complexity as the policy needs to introduce standardisation across the entire nation and incorporate state-based EV approaches | 2 bills, 2 service providers, 2 meters, and 2 different pricing structures and approaches creates complexity | ● |
| Cost for key stakeholders | Various requirements for residential EV charge points will require coordination as well as commercial challenges with high power low utilisation EV charging sites | FTA likely to contribute additional stakeholder risks and costs presented by standardisation of EV smart charging | ● |

Regulatory Context | Scheduled Lite

FTA is likely to add costs and risks to Scheduled Lite implementation, and the benefits may not be sufficient to encourage customer participation.

Overview of regulation

Scheduled Lite is an opt-in mechanism that incorporates a mix of lower barriers and incentives for CER aggregators to provide greater visibility to AEMO about their market intentions and an ability to participate directly in scheduling dispatch processes. Participation in scheduled lite will contribute to the accuracy and effectiveness of AEMO's short-term operations particularly in the provision of security and reliability services.

Consultation is currently being held on the proposed mechanism via AEMO's *Consultation Paper - Draft High Level Design for Scheduled Lite*, to identify any challenges associated with participation within the mechanism and to inform a rule change request. This process is being overseen by AEMO and is expected to progress throughout 2023.

Benefits, conflicts and constraints

- The FTA rule change is proposed as an enabling tool for scheduled lite via FTM2. Under a single 'standard' connection point, traders wishing to participate in scheduled lite would be responsible for both the passive and price-responsive components of a customer's load. AEMO has positioned that flexible trading is contingent on additional metering points as this would allow a scheduled lite trader to separate the price responsive and passive components of a customer's load and facilitate more participation.
- Notwithstanding the similarities between scheduled lite and FTA in encouraging new aggregators to manage CER portfolios, the implementation of each will carry significant costs and risks to both customers and industry.
- The establishment of a secondary connection point purely for the separation of passive and controllable load may not be the most economic solution to enable scheduled lite participation and AEMO should consider optionality via the single standard connection point. Operation of the customer's CER would be in accordance with the trader's agreement and interactions with AEMO, creating potential risks for customers and contributing to the complexity of the process.
- Future reforms may enable customers to opt into frameworks to allow greater visibility and management of their devices in the energy market. In this case, the FRMP will need greater visibility and management of relevant consumer energy resources to forecast likely generation and demand across their 'scheduled lite' portfolio of customers, and to meet dispatch targets.

Scheduled Lite with/without FTA analysis

| Criteria | Expected impact of policy | Implication with introduction of FTA | |
|---------------------------|--|--|---|
| Affordability | May improve affordability due to potential incentives for participants | Advantages of FTA with Scheduled Lite are unclear for affordability due to the lack of clarity with incentive structures | ● |
| Choice | Customers can opt-in to scheduled lite if they wish | FTA likely to provide greater choice of products on top of scheduled lite participation | ● |
| Control | Participants may have greater visibility under scheduled lite so can act accordingly with controllable load | Operation of the CER under scheduled lite agreement may conflict with FTA | ● |
| Optimisation | Short-term operations can be optimised if there is adequate customer participation and systems are in place | The additional metering point under FTA is likely to create synergies with scheduled lite participation | ● |
| Complexity and Effort | Will require further development to implement successfully at scale as incentives are yet to be fully defined | FTA and scheduled lite participation likely to create costly and complex interactions with traders, AEMO and other market participants | ● |
| Cost for key stakeholders | Scheduled Lite development may create yet-to-be-known risks as well as costs for customers, traders and other participants | FTA and scheduled lite participation likely to create costly and complex interactions with traders, AEMO and other market participants | ● |

Regulatory Context | AER review of consumer protections – NECF reform

NECF reform is critical to the successful achievement of CER Implementation Plan objectives but will require further development to support FTA models.

Overview of regulation

The AER is undertaking a review of the retailer authorisation and exemption frameworks set out in the National Energy Customer Framework (NECF) to assess whether the current energy consumer protection framework remains fit for purpose with the emergence of new business models offering technologies and services to households and small businesses.

The AER has released an options paper on the *Review of consumer protections for future energy services* which will consider how current issues with the authorisation and exemption frameworks are likely to be exacerbated in the energy market transition, how new energy services and products interact with the NECF and the essentiality of energy services to consumers, and what regulatory reforms may be required to ensure energy consumers continue to be adequately protected.

Benefits, conflicts and constraints

- The review is a critical component of the ESB’s CER Implementation Plan and has clear interlinkages with aforementioned regulatory reforms such as DOEs, Interoperability, Scheduled Lite, and FTA. It is important that the FTA rule change proposal considers consumer protection obligations that will be applied to the additional/new/other energy providers.
- While FTA proposes to allow customers to unlock more value from their CER, the AER review will identify risks arising from these new energy technologies and arrangements so that all customers (including those without CER) will benefit. Under FTA, the identified risks are:
 - Ensuring customers are aware of additional access to energy,
 - Maintaining the ability to switch providers so that customers are not locked into a service,
 - Promoting efficient exchange and customer access to clear and understandable information,
 - Consideration and access for consumers experiencing vulnerability, and
 - Clear and transparent dispute resolution arrangements for the secondary connection point.

NECF reforms with/without FTA analysis

| Criteria | Expected impact of policy | Implication with introduction of FTA | |
|----------------------------------|--|--|---|
| Affordability | Affordability for customers is important and will be a priority under the AER’s review when considering the essentiality of a product or service | Dependent on whether FTA products or services are considered essential under the framework | ● |
| Choice | Framework seeks to facilitate appropriate market entry and to balance the objectives of increased choice for consumers | Customer protections will need to be in place to address potential differences in contract arrangements and to test ability to switch providers at both primary and secondary meters | ● |
| Control | The review is assessing implications for customers where their CER assets are remotely controlled | With two providers in an FTA scenario the complexity and risk around control increases – consumers need to understand how each of their providers are remotely controlling their load and under what rules to ensure they are not adversely impacted | ● |
| Optimisation | The framework will prioritise customer interests but not at the expense of system optimisation | May promote optimisation if customers are rewarded for exports and protected | ● |
| Complexity and Effort | Likely to reduce complexity and effort for customers as the review will ensure these areas are minimised | FTA likely to create complications for setting parameters on secondary connection points | ● |
| Cost for key stakeholders | Regulating new energy products and services will require extension of energy specific consumer protections | FTA likely to create risks, subject to what products or services are NECF-protected | ● |

International examples and applicability to FTA

Overview of international jurisdictions and considerations for the AEMC

International examples | Overview

Understanding what other jurisdictions globally are doing in enabling CER can be used as a consideration for alternatives to FTA – looking at UK in particular, the changes they have made to enable data solutions could be an alternative in particular to enable settlement

- Our assessment of FTA has shown that the FTA rule change is unlikely to provide a net benefit to consumers due to the complexity and potential disbenefits that could come with a split of the services at a consumers site. The question then is in regards to whether there are other alternative solutions that may provide benefits and help enable CER.
- UK and California have recently approved regulations/ legislation to improve accessibility to CERs. Review of these changes has highlighted that the solution taken in these jurisdictions is different to that proposed by the FTA specifically in terms of 1) the solutions are narrower in scope and 2) neither requires a second physical meter on site taking instead advantage of existing technology embedded in smart appliances and EVs/ Batteries.
- The review of a withdrawn rule change in UK also provides additional support for some of the arguments already discussed in this paper suggesting FTA is unlikely to provide a net benefit for consumers.
- Overall an outcome from the review of the UK and California is that there may be an alternative to the FTA rule change that could be considered in Australia. Considering the existing DRSP mechanism in market and wholesale demand response rules, a data architecture solution like in the UK combined with a rule to enable access to sub-meters already embedded within smart appliances/ assets, could enable improvements to DSR settlement and offerings and provide greater opportunity for participation – this is something that could be explored in the future.

Overview of three applicable rule changes in UK and California *(further detail provided on following pages)*

California EV sub-metering

- Enables access to the EV/ EV charger’s existing embedded sub-meter enabling a different participant to take responsibility for the EV sub-meter. The EV charging and discharging to market can then be billed using an EV specific tariff while the rest of the house can stay on a standard tariff via the main meter.
- This rule change is only focussed on EV charging and V2G and does not require any additional electrical or metering equipment on site.

Proposal for sub-metering option in UK (P379) – withdrawn

- This proposal was raised in UK requesting legislation to support a second meter to be installed at site providing it meets certain technical requirements. This was to enable multiple providers and subsequently increased innovation – this proposal is similar to FTA.
- The rule was assessed quantitatively and qualitatively and ultimately withdrawn due to high costs, uncertain benefits, and based on effectively “unknown innovation”. It was considered that few consumers would access the capability such that the costs would outweigh the benefits.

UK rule P375 and Smart appliance architecture

- One of the reasons P379 was rejected was because it was not seen to provide any additional benefits beyond other rule changes that were being or had been implemented in the UK. For example, the UK had already approved P375, supporting a new asset meter type usually embedded within a smart asset/ appliance, that would enable the data from that specific device to be measured and enable accurate settlement of the “balancing” load as compared to the “imbalanced load” (equivalent to flexible and inflexible load)⁴.
- The P375 rule change was further enabled in late 2022 with the introduction of a smart appliance architecture that supports DRSPs (Demand Response Service Providers) in gaining direct control of an appliance¹.
- The difference between what the UK is proposing and the FTA in Australia is that in the UK they have recognised that dynamic tariffs are already enabled and retailers are already innovating, it is the settlement and accessibility for demand side response (DSR) that was recognised as a gap. In Australia for DSR (both retail and wholesale demand response) curtailment is measured via baselining methodologies measuring a relative change. Potentially a solution such as UK has implemented could improve accuracy of data and thus open up the DRSP mechanism in Australia.

1 PAS 1878:2021Energy smart appliances –System functionality and architecture – Specification, department for business energy and industrial strategy

2 CEPA (Cambridge Economic Policy Associates) P379 Impact Assessment

3 Decision adopting plug-in electric vehicle submetering protocol and electric vehicle supply equipment communication protocols, State of California Legislation, 2022

4 P375 'Settlement of Secondary BM Units using metering behind the site Boundary Point' - Elexon BSC, ELEXON BSC

International example | Multiple suppliers through meter splitting – United Kingdom

In the UK a similar rule to the FTA was considered but was ultimately withdrawn after an independent assessment identified the change would likely present significant cost to stakeholders and consumers and the consumer benefit was uncertain

United Kingdom overview of rule change (P379)

- A third party provider (GridBeyond) in the UK raised a rule change (P379) request to enable multiple suppliers to operate at a consumer site by meter splitting (similar to sub-metering) and enabling a second settlement point. The proposed objective of the rule being to overcome perceived barriers to dynamic competition for behind-the-meter energy volumes and stimulate innovation beyond that currently observed.
- Multiple suppliers are not able to easily compete for energy behind a consumer's meter. Generally, to compete, a 3rd party provider will need to form a partnership, a contractual agreement, with the main supplier/ retailer in order to compete at site. This is a similar situation to what we see in Australia today.
- A rule change – P379 – was proposed to allow multiple suppliers to supply energy volumes at a single customer meter point without needing to establish an agreement between them. The intention of such a rule change was to enhance competition thereby pushing prices down, whilst also removing perceived barriers to community energy schemes and peer to peer trading.

Assessment by CEPA¹

- CEPA completed a review of the proposed rule change, including interviews of key retailers, consumers and 3rd party providers and others. They concluded that the rule would impact the following:
 - Demand – No strong evidence to suggest consumers want multiple suppliers and noting that consumers can access dynamic pricing via other means
 - Supply and product innovation – Risk that secondary suppliers will pick and choose customers, distorting competition and creating a two-tier market. An increased risk that competition will decline at primary meter and primary retailers may even exit the market. A risk that the one-stop-shop bundling offer is eliminated or complicated. Interestingly, third party suppliers involved in the study also suggested that they saw partnerships as their strongest route to market irrespective of whether the rule came into market or not.
 - Alternate solutions – Other European countries (e.g. Denmark and Germany) have successful community energy landscapes without the need for a multiple supplier model. There are existing routes to market for the majority of benefit that meter splitting was proposed to deliver.
 - Financial Cost – the rule change was assessed as potentially increasing costs to consumers. High costs of implementation and increased operational costs due to two providers (eg cost to serve, billing systems, settlement systems, compliance cost etc) likely to be passed on to customers through bills
 - Other unintended consequences – introduction of new complexities into the customer experience, creation of new challenges regarding supplier disputes, and a shift of large amounts of industry resource away from other areas of development.

Sources: 1 CEPA (Cambridge Economic Policy Associates) P379 Impact Assessment

Outcome and Applicability to FTA

Outcome

- Upon evaluation it was concluded that the proposed rule change would incur a range of direct financial costs, risks and unintended consequences, and opportunity costs.
- Pairing the costs with the high degree of uncertainty and immateriality of potential benefits the rule change may deliver, the regulators and their consultants were not provided with sufficient confidence that the benefits would outweigh the costs.
- The primary benefit of the rule change was identified as enabling what is “unknown” innovation. An important observation was that a positive cost-benefit outcome would require a significant confidence in the emergence of this “unknown innovation”, which is by nature uncertain and hypothetical.
- One of the other key conclusions was that there are existing routes to market for the majority of benefit that meter splitting was proposed to deliver.
- A final observation was that the market was relatively immature. It was considered that as the market evolves, consumer appetite for market innovation may increase and will at that time help to identify whether gaps exist in competition. At the time the rule was considered there was limited certainty around whether the degree of take up of the option for multiple suppliers would be sufficient to provide benefit to the system as a whole and to counter the inherent up-front complexity and cost. The suggestion was that some time in the future the rule could be re-visited providing more certainty in benefits.
- Ultimately the rule change was rejected as it was seen to be a costly, uncertain and effectively somewhat a premature market intervention. The UK subsequently considered and implemented two other changes, outlined on the following page, that target a narrower set of benefits.

Lessons for FTA in Australian market

- The proposed change P379 had a similar intent to the FTA rule change in Australia and can be as such used as a comparison to gain some lessons learned.
- The Baringa assessment of the Australian FTA rule change has identified similar concerns to what CEPA identified in their quantitative assessment of rule P379 in the UK. Shared concerns include the increased underlying costs for consumers due to what is effectively a duplication of operational services (billing, customer service, metering, data management), the potential degradation of competition at the primary retailer point, and concerns around complexity in the consumer experience and risk to consumer protections.
- The suggestion that the market is immature and not ready for this change is also potentially applicable to Australia. With all the regulation in train in Australia to enable flexible capacity and help the market develop, it may be beneficial to wait for some of those reforms to be delivered and “settled” and look to a FTA type rule change once consumers have greater understanding and desire the innovation, and once we can observe if the existing regulation generates a sufficiently robust market.

International examples | UK P375 and Energy smart appliances system architecture rules

The UK has approved two alternate rule changes targeting improved accessibility to smart assets in market – the solution is largely data focussed and enables direct control of smart assets and improved settlement for DRSPs

UK – overview of rule changes enabling CER

P375 rule change in UK has enabled a new asset meter type, mainly situated within the appliance itself, that can be used for settlement of demand side response^{1,2}.

- In July 2022 a new rule was implemented in the UK allowing metering equipment situated behind the meter and linked to a particular smart asset to be used for settlement purposes in place of the smart meter.
- Effectively the rule change enables a new asset meter type in market which will be behind the meter within the appliance itself (eg in the physical casing of an EV charger), or, in the case of larger assets (at C&I sites), could also be sub-meter attached to that specific asset. These meters can then be used to measure data at the asset used for balancing services in market (eg demand response) and be used for enable accurate settlement for the retailer and the aggregator/ DRSP.
- This rule change could enable peer to peer sharing of renewable energy and community batteries in particular, as well as demand side response to measure curtailment or dispatch volumes.

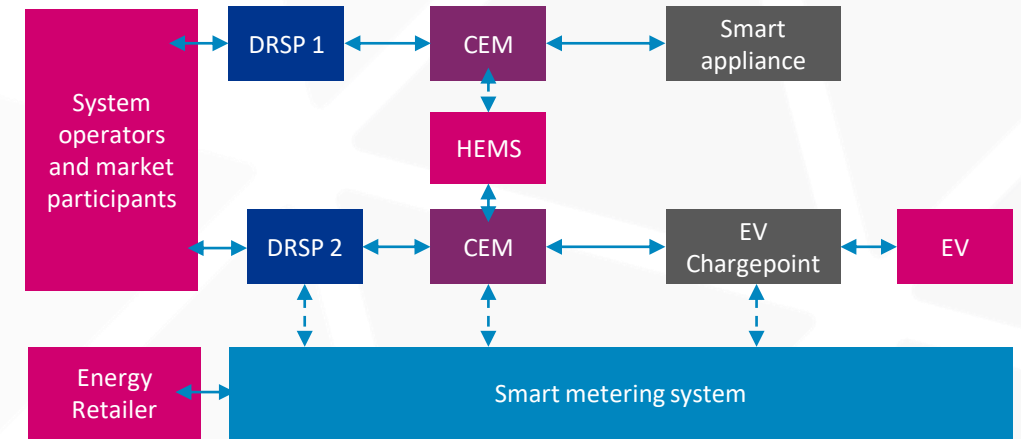
Further enabling P375 is an approved data architecture (PAS1878³) that will enable the direct control of the assets behind the meter – the UK Government is now looking to implement rules requiring this standard be applied to all smart appliances/ assets

- The UK has formulated an architecture enables the direct control of a smart appliance and subsequent settlement. The architecture prescribes a minimum set of interoperable functionality between a DRSP and an appliance, via an intermediary consumer energy manager. It also supports communications via a central home energy management system in the premises. This allows different providers to manage and optimise flexible assets, by controlling the devices directly. High level architecture shown opposite.
- The UK Government has also recently consulted on requiring EV charge points, heat pumps, batteries, to use this standard (PAS 1878) to enable demand side response and associated settlement³. It will require all assets with flexible potential to be aligned to this standard enabling them to be interoperable and enabling CER for the consumers and market. It should be noted that this hasn't been implemented in practice yet, so consumer/market outcomes are uncertain.

Sources:

- 1 [P375 'Settlement of Secondary BM Units using metering behind the site Boundary Point' - Elexon BSC](#), ELEXON BSC
- 2 Ofgem "Balancing and settlement code (BSC) P375: Settlement of secondary BM units using metering behind the site boundary point"

High level architecture to enable energy smart appliances in UK¹



Summary and applicability to FTA

- The rule changes in the UK were implemented after consideration that dynamic tariffs and variable pricing are already being enabled via other means (as illustrated by innovative offerings from OVO energy and Octopus) and that a separate sub-meter, as suggested via P379, would generate additional cost and complexity with uncertain impact on innovation. The changes approved subsequently target specifically DSR and enabling access to smart appliances.
- The detail of the UK rules and the smart architecture is complex and would need a technical assessment to understand applicability to the Australian market. Conceptually however, it illustrates that alternate technology solutions may be possible to enable providers to access the data associated with a flexible asset and ultimately control and settle the load used/ dispatched by that asset.
- This improved settlement approach would better enable DSR settlements that are often done via load and shape baselining methods today and could also enable some use cases such as peer to peer and community batteries where accurate measurement of load at the asset is of benefit.

- 3 PAS 1878:2021 Energy smart appliances – System functionality and architecture – Specification, department for business energy and industrial strategy
- 4 Delivering a smart and secure electricity system, Consultation, Department for Business, Energy & Industrial Strategy, UK, Sept 22

International examples | EV sub-metering rule – California

In 2022, California approved an EV sub-metering rule to enable a second provider to manage EV CER separately to the main meter – although the scope of this change is different to FTA it provides a potential alternate solution focussed only on the EV use case

California EV sub metering rule change overview

- The State of California found their existing utility metering system to be acting as a barrier to the adoption of EV's. Specifically, the existing metering system did not allow for EV specific tariffs to be provided at scale; the existing system required users to install an additional costly utility-grade meter to access such tariffs.
- To accelerate the market's adoption of EV's, the State of California proposed an electric vehicle submetering rule change that would enable a separate provider to take financial responsibility for EV flexible assets.
- The change aimed to incentivise the adoption of EV sub-metering arrangements behind the main utility meter such that EV charging and V2G services can be billed separately to the main meter. This would ultimately provide access to a different tariff for a consumers EVs whilst maintaining the standard tariff on the main utility meter.
- One of the key advantages of the rule is that it does not require any additional infrastructure to be installed on site. The change seeks to leverage the existing sub-meter embedded in the EVSE (EV supply equipment) such that that meter is recognised and settled in market, and a separate provider can subsequently take responsibility for the EVSE managing and optimising charging and participating in demand response programmes using V2G capability.
- Other components of the rule change address concerns around ownership, applicability, data accuracy, communication and disputes between the primary retailer and the 3rd party supplier making the rule simple. For example, the ownership of the meter will remain as the owner of the EVSE (either the consumer or the 3rd party provider), communication protocols for EVSE will need to be developed for consistency, disputed data would be billed at the primary meter. Further, utilities would be required to implement the protocol for all EV customers where the EVSE has an embedded sub-meter providing easy access to EV tariffs for consumers and potentially enabling the primary meter provider to also split the load to better serve the EV consumer.
- This rule change would allow more EV users to take advantage of EV specific tariffs enabling more affordable and optimal EV charging, thereby placing upward pressure on EV adoption more broadly.

Sources: 1 Decision adopting plug-in electric vehicle submetering protocol and electric vehicle supply equipment communication protocols, State of California Legislation, 2022

Outcome and Applicability to FTA

- The California rule change is different in its scope and intent as compared to the FTA rule change. Specifically:
 - The California rule change is an EV specific sub-metering rule focussed only on providing consumers greater access to EV tariffs and V2G opportunities. The FTA, although applicable to EVs as a key use case, is a broader change looking to enable consumers to access all BtM flexible capacity including BESS and other smart appliances as well
 - The California rule change is not proposing the installation of a second metering point, it is proposing that the sub-meter within the EVSE (EV supply equipment e.g. an EV charger) can have a different financially responsible provider and a different tariff assigned as compared to the main meter enabling access to EV tariffs for the EV. It is leveraging existing technology within the EVSE. FTA on the other hand is proposing installation of a second sub-meter on site that can bring together multiple CER and does not seek to access the embedded meter in the EVSE.
- Considering these key differences the California rule change cannot be used as a direct comparison for whether the FTA rule change will provide consumer benefits or to illustrate the “this has been done elsewhere” argument.
- What it does illustrate is that there may be other options that the AEMC and Australian policy makers can consider that may enable greater choice for consumers and encourage innovation for 3rd party service providers. A California like rule change is effectively opening up EVSE to a 3rd party enabling them to offer TOU tariffs to consumers for EVs and to participate in V2G opportunities. This would address the use case of a Tesla type EV provider who wants to offer an EV package across the assets, energy, public charging and home charging. One of the key advantages of such a solution is that it can be offered without any additional electrical equipment or metering beyond what is already embedded within EVs and EV chargers making it simpler to understand and install.

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