

Cover note

Breakout session discussion notes summary

On 20 September 2016, the AER hosted a workshop on how to design a scheme to encourage efficient demand management. There were 68 stakeholders present, representing:

1. Consumer groups
2. Electricity networks
3. Research and advisory institutes
4. Non-network demand management providers
5. Government and
6. Energy retailers.

In addition to eight presentations, our workshop also included two hour-long breakout sessions in which stakeholders formed six groups to discuss different topics (see below for more information). Each group also presented their discussion outcomes to all the participants.

This document is a summary of the scribed notes from each group. Most of the notes were written verbatim, however some additional text has been added for clarity. For pictures of the original handwritten notes, please contact DM@aer.gov.au.

Breakout session discussion topics

We circulated a pre-workshop survey that asked attendees to submit three issues or topics they would most like discussed at the workshop. We received a large number of responses covering a broad range of issues. We summarised the contributions into six broad themes. The topics for the breakout sessions listed below align with these themes. The table below also provides a few examples of the type of issues in each topic. Participants were free to join a topic of their choosing for each breakout session.

Table 2: Breakout session discussion topics

Discussion topic	Types of issues raised in the survey that are likely to be discussed under this topic
1. Interaction with the regulatory framework and demand management (DM) incentives	<p>Relationship with the service target performance incentive scheme (STPIS), tariff reform, regulatory investment tests (including their limitations) and the relationship between operating expenditure (opex) and capital expenditure (capex).</p> <p>Interlinkages with other incentive schemes and existing programs related to DM, including energy efficiency programs.</p>
2. Barriers to DM	<p>Regulatory barriers to technology (including to metering), market frameworks hindering entry, regulatory concerns, technical challenges for a smart grid, the business-as-usual preference for network solutions over DM.</p> <p>Why previous attempts to encourage DM or demand response have failed, including issues with the AER's current DM incentive scheme.</p>
3. Interaction with the contestable market in DM	<p>How the AER's new DM incentive scheme (Scheme) and innovation allowance mechanism (Allowance Mechanism) will interact with ring-fencing.</p> <p>Encouraging networks to work and coordinate with third party providers to promote DM.</p> <p>Opportunities to use the AER's Scheme and Allowance Mechanism to promote competitive markets for DM, such as involving these in trials and tendering.</p>
4. Elements of scheme design 1: Calculating costs and benefits/funding mechanism design	<p>Valuing total system savings of DM and valuing all services that customers can deliver.</p> <p>Fairly sharing system-wide benefits. Having a clear method to set an appropriate level of incentives so consumers benefit whilst maintaining returns to networks and allowing them to recover investment in DM.</p>
5. Elements of scheme design 2: Scope of projects and application	<p>Breadth/scope of the Scheme and Allowance Mechanism; including types, length or focus of applicable projects.</p> <p>How the AER can fairly and consistently exercise its discretion in applying the DM incentive scheme and innovation allowance mechanism. Scope for criteria-based application, such as application based on a project's value proposition, marketability, or outputs.</p> <p>Determining the size of Allowance Mechanism: capped or uncapped, subject to application/approval.</p>
6. Elements of scheme design 3: Data for DM and reporting to verify results	<p>Project reporting, monitoring, verifying and enforcing results.</p> <p>Knowledge sharing, research collaboration, reducing duplicative trials.</p> <p>Availability of meaningful data, transparency of DM projects.</p>

Table 2: Summary of brainstorming sessions

Discussion topic	Session 1	Session 2
1. Interaction with the regulatory framework and DM incentives	<ul style="list-style-type: none"> • There are currently a wide range of incentives and nobody understands them all. There are also many 'schemes' in place. • The AEMC will soon make a decision on whether there will be a scheme to provide embedded generators with local generation network credit. This interaction it is unknown as this decision is not finalised. • The capex incentive dominates other incentives. • Distribution network service providers (distributors) need to balance price, cost and risk when pursuing projects. This makes them less incentivised to pursue DM projects (distributors generally consider DM solutions riskier than network solutions). That is, there is a bias to lower risk solutions. In particular, distributors consider that contracting DM work increases 'uncontrollable risks', for various reasons, including having to rely on a third party provider. • Transitional approach towards efficient DM. Transaction costs and uncertainty are important factors in preventing network DM. Distributors may require higher incentives to overcome the associated costs and risks. There are currently too many constraints. • A Californian DM incentive scheme was provided as a good example. Under this, there is a \$600k innovation allowance. This scheme provided the network businesses with higher returns for pursuing DM projects compared to network projects • Different customer preferences. Customers are not homogenous, which makes DM solutions difficult to implement (as different populations will react differently to DM incentives). • There is a \$5 million threshold for distributors to undertake a regulatory investment test for distribution (RIT-D). Is the RIT-D was the 'right approach' to incentivise efficient DM? • Objectives of the scheme are: equalisation of incentives (the Scheme) and promoting innovation (the Allowance Mechanism) • The shared asset guideline likely interacts with DM, but the exact nature of this interaction is unclear. • It was raised that merits review has a role in prompting positive changes to the AER's approach to regulation. This has the benefit of occurring outside the determination process. However, it was also raised that this costs a lot of money and time. 	<ul style="list-style-type: none"> • There is an interaction with state-based energy efficiency programs. There has been lots of learning in this area already. These schemes have shown that if you provide the right incentives, industry will respond. • Energy efficiency can be used for DM by providing signals in constrained areas. A peak demand scheme overlaid on an energy efficiency scheme could increase benefits. • There is an important interaction with network DM and the STPIS. The STPIS could penalise distributors from pursuing DM if they see it as a riskier option in terms of network reliability. There is no clear solution to this, but there are possible solutions to explore. It might be good to exempt DM projects from STPIS penalties; but this could be detrimental to consumers if it reduces reliability (particularly for more vulnerable consumers). Rather than exemptions, DM projects might be subject to a different reliability threshold and risk management strategies need to be in place. • It is important to ensure that the Scheme does not create a disincentive for other efficient network investment. • The rewards under the Scheme should avoid double dipping, as distributors might also be rewarded for DM under other incentive schemes. • Transitional issues: There is a lack of knowledge and experience regarding network DM. The AER might create a minimised downside scenario for new DM investment to reduce the risk of participation. • The RIT-D has a relevant interaction. For example, United Energy's Mornington Peninsula project and the move towards more of an open tender process between network and non-network providers. However, the RIT-D could result in distorted incentives to cut projects up so they fall under the \$5 million threshold. • Capex and opex incentives, such as the efficiency benefit sharing scheme (EBSS) and capital expenditure incentive scheme (CESS) may have interactions, including net benefit sharing mechanisms. • Tariff reform has an interaction. There is a need to possibly balance incentives between tariff reform and DM. Also, tariff reform can hit a road block at the retail level, as the retailers set user prices at the end of the day. However, since retailers pass on network costs, retailers would be choosing to manage DM risks themselves and bear the associated costs. If this is their

customers' preference, this is not bad from a consumer choice perspective. However, this might be problematic for inducing DM.

- There is a need to make things easier for consumers by simplifying and harmonising DM and DM incentives.
- There is a need to and an issue of working out how to package up wholesale and network benefits.

Barriers to DM include:

- Limited information availability from networks, including limitations in terms of information format (consistency and detail).
- Barriers depend on the size of the constraint:
 - Type of constraint
 - Customer engagement is challenging
 - Capability that would develop over time.
- Agility of solutions available. For some networks small scale DM may not be feasible due to cost, time and complexity.
- Difficulty in aggregating demand.
- Less than efficient investments in DM as there are no signals to solution providers (unaware of opportunities).
- At the residential level, there is a need for tariffs to be more cost-reflective /locational based (or rebate).
- RIT-D threshold of \$5 million discourages consideration of DM.
- Networks are not sufficiently incentivised to seek non-network options - easier to just build.
- Security of returns under current DM scheme is less than what distributors get for capex.
- Changing forecasts. Demand should be 'set' for duration of regulatory investment tests.
- No transparency: pricing and value are viable to the market for that area of constraint to provide confidence.
- Sharing of the value stack between customers, wholesale and networks is difficult. There is a lack of access to pricing to the grid and a lack of access to Frequency Control Ancillary Services (FCAS) market and wholesale/networks.
- Third party access to customer energy data. The authorisation process to get this information is restrictive.
- Declining peak demand.

Barriers to DM include:

- Interaction with STPIS creates a disincentive if DM is less reliable than network options.
- There are transaction costs of network consultation. This makes small scale DM less feasible.
- Reacting to consumer demand and project timing can be difficult.
- Demand aggregation can be difficult as there is limited transparency of DM opportunities. Suitability also varies depending on the specifics of the network constraint. In some cases, DM may not be a suitable solution for technical reasons.
- There needs to be smart meters to facilitate DM.
- It can be difficult to manage consumer behaviour as there is a need to understand different consumers' incentives and to understand the utility of DM versus the cost of consumer action. It can also be difficult to maintain the incentive to manage demand and to best communicate DM solutions to consumers.
- Capture 'option' value. Barrier is failure to capture option value of deferral.
- Availability of DM (only after specific event). Is DM purely reactionary?
- Potential conflicts on network to manage demand.
- Culture versus planning standards and technical constraints.
- Political will to fund DM.
- Ex-post approval process? Is this too strong or does it create approval uncertainty?
- Resistance to regulatory change.
- DM is not homogenous.
- Some jurisdictions capture DM data management. Regulations in Queensland allow for this already. Experiential learnings that inform key performance indicators.

2. Barriers to DM

3. Interaction with the contestable market in DM

- How should the AER interpret this interaction? It should take a neutral view. This should sit outside the scheme.
- The Scheme should apply equally to distributors and other DM providers — it should be technology-neutral).
- If networks are allowed to participate in DM, should they get a benefit not available to others DM providers?
- What if networks have to do this through a separate entity (due to ring fencing)? In this case, non-network options could only be opex.
- If networks are incentivised to invest in capex over opex, how do you incentivise them to spend more on opex? That is, is the Scheme just an opex versus capex incentive scheme?
- Issues of contestability: Is it cheaper for networks to insource or outsource DM?
- What is DM? How do solutions meet the demand that exists or change its shape?
- How to combine long-run (tariff reform) and short-run (the Scheme)?
- Networks use the contestable market and they go to market to 'procure a solution'. What if no one bids when this occurs?
- An option: ring-fenced entities can only sell in other geographic areas to eliminate risks.
- Contestable markets (retail and wholesale) can lead to critical peak pricing to activate third party DM providers.

Data access:

- Important for informing long term decision-making (networks).
- Information asymmetry currently exists.
- Privacy/commercial-in-confidence concerns should go both ways as there are end-user privacy concerns. This entails legal barriers. De-identification could be a potential solution.
- A lot of stakeholders have an interest in this.
- The onus should be switched towards publishing data unless there is a good reason not to.
- Resourcing: legacy data/data quality issues.
- For network constraints, third party access is essential.
- Develop understanding of what we want (from a data perspective).

Retailer and network collaboration:

- Could provide more certainty on third party delivery of DM.
- No incentive for retailers to reduce revenue base? There is an incentive at the wholesale level, but there isn't one to address network constraints.
- Could the Scheme incentivise collaboration between networks and retailers?
- New technology (batteries) adds to the complexity.
- Competing barriers restrict activities.
- Tariff arbitrage is the biggest retail driver for DM.
- Potential to access shared benefits that are lost at the moment.
- Desire for biggest return for the lowest risk. There is a perceived risk of DM/risk of the unknown. Any economic entity desires this, but who bears the risk? The Scheme could help DM solutions achieve this desire.

Network interaction with third parties:

- Precedent for procuring third parties (going out to market).
- Data issues as above.
- Ideal timeframe depends on the network constraint at hand.
- Networks have registers, but all of these are business-specific.
- Pan-network register of DM providers as a solution? But who would operate this platform (AER)?

Better asset utilisation (for underutilised networks):

- Network payments for off-peak consumption. Should this be for individual businesses?
- Exploring flattened demand, rather than just shifting the peak.
- Opportunity for electric vehicles (and other technology providers that we do not know yet). It is important to know the unknowns.
- Other tools, for example, tariffs.
- Issue of ramp-up rates. What solutions are there (for example, storage)?
- Registry would help again here.
- AER focus on long-term interest of consumers.

Ensuring the most efficient procurement:

- How does open market access have equal access opportunities?
- Platform/registry to access data/identify solutions.

4. Elements of scheme design 1:

Calculating costs and benefits / funding mechanism design

- Different types of technologies.
- Benefit to networks includes investment deferral.
- Non-network solution benefits include reduced consumption.
- Costs include:
 - Potential reliability if DM is not firm, need to ensure sufficient standards for DM options
 - Opex (consumer)
 - Investment of DM provider
 - Return on capital/foregone revenue
 - Distributor options analysis
 - Uncertainty risk for distributors.
- Benefits include:
 - Unserved energy (consumer)
 - Investment deferral
 - Option value, particularly in light of changing demand forecasts
 - Reduced consumption
 - Upstream savings, such as those at the transmission level
 - Ability to provide ancillary services
 - Reduced prices and improved competition for services (including ancillary services)
 - Environmental benefits
 - Reliability, including upstream

Other services:

- Voltage control, ancillary services
- Feeder by feeder basis
- Pricing mechanism
- Value streams in small projects
- System wide long run marginal cost/or local marginal cost
- Voltage is a specific problem
- Cost and benefit approach
- Returns on avoided capex: does this lead to a return for customers?
- Networks to be indifferent.

System benefits (i.e. other than network benefits):

- Upstream reliability, environmental
- How do you distinguish between explicit network deferral benefits and other benefits?
- Quantify these other benefits for sharing so that they are not lost but are not included in the direct benefit calculation as they are less precise
- Risks of different options
- Reliability
- Communicate (share information on) the benefits. This requires consumer engagement.

Scheme design:

- Has it been done up until now?
- As nothing has happened for so long in this space we need to keep this process going to

constraints.

Calculation:

- Potential complexity of calculating the net present value exceeds benefits.
- The Scheme should contain calculation examples/rules of thumb to reduction costs of benefits calculation.
- Sharing - how is the benefit split between consumers and networks?
- Distributors need to receive benefit so that it is sufficient for them to adopt a non-network solution.
- Breakdown of the value of the action for both parties - supply and demand.

deliver now or risk inertia.

- How will savings/net present value and deferrals interact with other schemes (e.g. CESS dilutes capex deferral benefits)?
- The Scheme versus the RIT-D:
 - Overhead transaction costs (to calculate benefits).
- The Scheme can include same classes of benefits as prescribed in the RIT-D.
- \$5m threshold.
- Case by case basis?
- How do you determine benefits for smaller projects - in particular, to reduce transaction costs associated with quantifying these benefits?
- All costs to be recovered.
- Calculation methods.
- Life of assets - regarding the option value of DM. That is, do you use a 'stranded risk' in the network option comparison?
- More deferral than expected.
- More flexible.
- Option value.

Elements:

- Targeted DM (easier to quantify/suitable for the Scheme and Allowance Mechanism) versus broad-based DM (harder to quantify, suitable for the Scheme).
- Under broad-based DM, there are tariff versus non-tariff types (for example, power factor, load control) DM projects. What is an appropriate breadth for broad-based DM? Possible to start small/local where problems are foreseen initially before rolling out across wider network
- Timing: there should be a 10 year timeframe for projects, and there should be certainty of payments (including the timing of payments).
- Should payments occur upfront, at the end or throughout the project?
- Ex-ante (up front approval) versus ex-post approval where there are set criteria to provide sufficient certainty.
- How should upstream benefits be captured and shared?

Allowance Mechanism:

- Research and development (R&D).
- Level of cap (should there be a cap?)
 - Proviso that unspent money goes

Allowance Mechanism:

- Why should only the customers of the participating network pay for R&D? Will the shared knowledge benefit others?
- Is the Allowance Mechanism meant to be for R&D or for early stage funding of projects?
- When must a project be determined to be eligible for the Allowance Mechanism?
 - At start of regulatory period or 3 years in?
 - Evolving - if need is uncovered the opportunity shouldn't be lost.
- When do we transition from R&D to practical/marketable projects?
- Where R&D could be provided by another means, the Allowance Mechanism must require a network to minimise a real barrier.
- What sort of tariff solutions could be eligible for the Allowance Mechanism?
 - R&D to understand impacts?
 - Defined trials, not ongoing development.
- Should the Allowance Mechanism only be used for R&D for future projects under the Scheme? Should there be a link to future projects under the Scheme?

5. Elements of scheme design 2:
Scope of projects and application

back to customers.

- Should not apply to business-as-usual projects. Distributors should not get the Scheme benefits for Allowance Mechanism projects.
- Consider incentives/bonus for successful innovations/R&D.

Application of the Scheme by AER:

- Once the Scheme finalised, it should be mandatory to apply to all distributors (through the Framework and Approach).
- Performance reporting.
- Criteria for approval should be set and transparent.

- e.g. long term benefit in cost reduction from deferred investment
- Gate zero business case.
- What am I trying to prove in regard to a non-network solution?
- Should the cost of the Allowance Mechanism be included/deducted from benefits under the subsequent Scheme?
- Should the Allowance Mechanism be standardised across all distributors? Should there be network benchmarking or forced R&D? How does this work with different network characteristics?
- Should there be Allowance Mechanism / Scheme consultations as part of the consumer engagement process?
 - Customers have said they want benefits to benefit all, while some projects only benefitted a few
 - Inherent scepticism from customers.
- Interaction with tariff structure statement process, including linkages in tariff trials.

Scheme scope and design:

- Must be consistent and long term (at least 5 years)
 - Need long term commitment of funding to incentivise customers to commit to action. For example, pools, heating, ventilation and air conditioning.
- Is everything in scope as long as it reduces cost with same reliability?
- Broad base of controls to achieve flexibility required.
- Network benefits ultimately benefit others - should only capture network benefit?
- Overcome barriers by offering over the weighted average cost of capital (WACC)/adjusted WACC?
- Application for various types of drivers?
 - i.e. demand security, other
 - Any need which results in lower prices?

Ex-post or ex-ante:

- There is a fundamental difficulty with determining what a project would have cost absent the Scheme.
- Since forecasts are ex-ante, the benefit must also be ex-ante.

6. Elements of scheme design

Two key data needs:

- Changing demand forecasts:

- 3: Data for DM and reporting to verify results
- 7. Measurement, reporting and verification (MRV):
 - Ensuring the service has been delivered, paying customers.
 - 8. Assessing deferred value (AER):
 - Access to data/who owns?
 - Data may need to be personalised to understand behavioural trends
 - The National Measuring Institute is uninformative.
 - Ensuring data integrity across the electricity supply chain leads to data requirements driven by objectives of the scheme:
 - If purely focussed on avoided capex, key data relates to opportunity costs
 - MRV.
 - Assessing the counterfactual:
 - What would demand have been without the project?
 - Smart meter data for localised events.
 - DM providers need data re-emerging constraints.
 - Where is data coming from, who manages it, who has access?
 - Ability to make meaningful comparisons (control group)
 - Confidentiality concerns.
 - Network data:
 - Loading levels at zone substations.
 - Emerging constraints.
 - Transparent and consistent information required.
 - Network cost data:
 - Rigorous assessment of avoided costs
 - Consistency is key.
- How it affects a RIT-D process (which lasts more than 12 months)
 - How it changes scenarios.
 - Forecast accuracy:
 - Perceptions of manipulation.
 - Need to accept uncertainty but it creates an opportunity.
 - Need clear project scope and benchmark to allow comparison.
 - Need to be clear on why you are proceeding so you can measure outcomes and performance.
 - Applicable to reducing peak, consumption augmentation and replacement but info may not be different.
 - Is 'not enough data' a perception or reality and consistency?
 - Questions about how the information is presented (e.g. maps).
 - Network business do not know the full range of DM solutions
 - How is it addressed?
 - How do you measure performance from different entities?
 - Design and consistency of the Scheme will help the business release the 'right' data.
 - Too much reporting and compliance could act as a barrier to engaging DM:
 - Could look at streaming (e.g. Board report).
 - Is there a need for more metrology?