

WHOLESALE DEMAND RESPONSE

PUBLIC WORKSHOP - MELBOURNE

5 MARCH 2019

AEMC

Agenda

1. Overview and context for rule changes
2. Overview of rule change request
3. Large and small customers
4. Stakeholder presentations – experiences facilitating demand response followed by table discussions
5. Break-out sessions
6. Lunch
7. Approaches to facilitating demand response
8. Stakeholder presentations – approaches to facilitating demand response
9. Panel Q and A
10. Close and next steps

OVERVIEW AND CONTEXT FOR RULE CHANGES

TOM WALKER, SENIOR ECONOMIST, AEMC

What is demand response?

Consumers of electricity changing their level of consumption in the **short-term** in response to **signals** to do so.

Types of demand response: these rule changes and so workshop is focused on **wholesale** demand response

Type	Description
Wholesale demand response	Change the quantity of electricity bought in the wholesale market
Ancillary service demand response	Employed for providing ancillary services (eg, frequency control)
Emergency demand response	Employed by the system operator during supply emergencies
Network demand response	Help a network business to provide network services to consumers.

What are the benefits of wholesale demand response?

- Provides consumers with **choice** about their level of consumption, and trade off the benefits of consumption with the benefits associated with signals to adjust consumption
- Promotes efficient consumption of electricity: when the value from consuming exceeds the cost of its production. Lowers costs and prices by:
 - Reducing fuel costs
 - Avoiding or deferring expenditure on new generation
- Reliability benefits
 - adjusting consumption during scarcity to maintain the supply-demand balance, often at a lower cost than doing so with expensive peaking generation
 - voluntary demand response (in response to a signal) likely to be lower cost and more controllable: preferable to involuntary load shedding during supply shortages

How does wholesale demand response occur under current arrangements?

Retailers pay the wholesale spot price for electricity but *typically* charge a pre-fixed price to consumers

When the wholesale spot price is high, a retailer may benefit from lower consumption on the part of its consumers – in order for the retailer to avoid the high price.

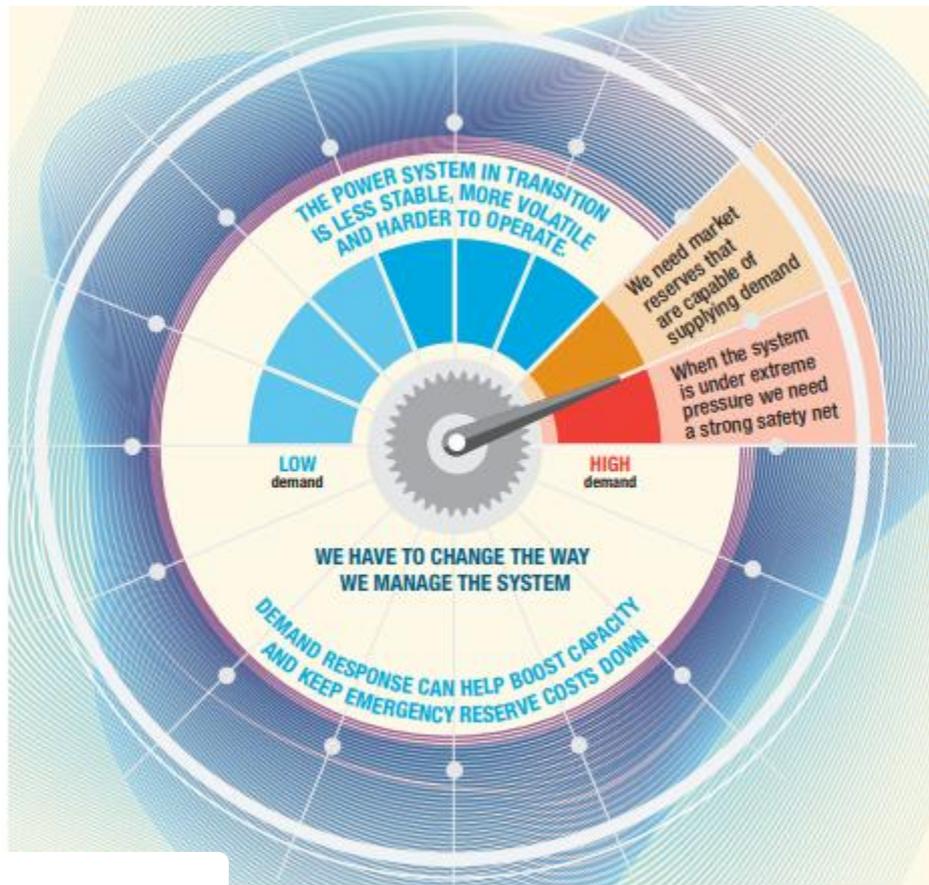
They may incentivise (*signal* to) consumers to reduce their consumption by (for example):

- Charging a tariff more reflective of the wholesale spot price
- Paying them on a case-by-case basis to reduce their consumption
- Agreeing a lower tariff in advance on the agreement that the consumer will reduce their consumption at certain times

Only the retailer is directly charged the wholesale spot price, so only it has a price incentive from the wholesale market to facilitate demand response for its customers

- Third parties may provide demand response related services to the retailer or consumer, but do not have direct access to the wholesale market price

We are conscious that there are interactions between these rule change requests and a number of other reforms – we are working closely with these other teams

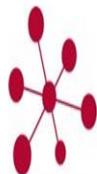


- AEMC's consideration of AEMO's *enhancement to the RERT* rule change request
- AEMC's consideration of AEMO's *short term forward market* rule change request
- ESB's development of the *retailer reliability obligation*

OVERVIEW OF RULE CHANGE REQUESTS

VICTORIA MOLLARD, DIRECTOR, AEMC

We have received three rule change requests raising a variety of solutions



public interest
ADVOCACY CENTRE



Total
Environment
Centre
for the future

The Australia
Institute
Research that matters.
> Climate & Energy.



AUSTRALIAN
ENERGY
COUNCIL



Government
of South Australia

Proposes a
mechanism for
wholesale
demand response

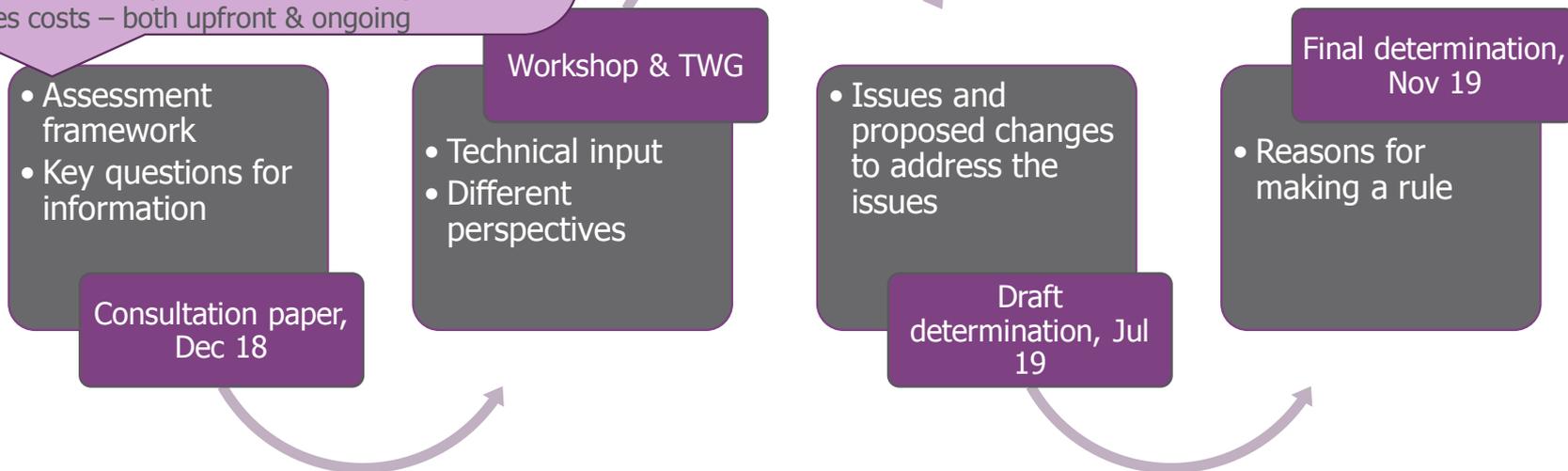
Proposes a
wholesale
demand response
register

Proposes a
mechanism for
wholesale
demand
response, and a
transitory market

How does the AEMC consider rule change requests?

Our assessment framework, which guides how we consider the various solutions raised, for this rule change was set out in our consultation paper. We will consider how the solution:

- Promotes competition & consumer choice
- Impacts the resilience of the framework
- Whether it distorts efficient market outcomes
- Promotes transparency
- Allocates risk and places incentives on parties
- Creates costs – both upfront & ongoing



At its core, the problem we are trying to address through these rule change requests is the following:

Facilitating wholesale demand response, at **least cost**, **without undermining** the market

There were six main solutions to the problem discussed in the consultation paper – and stakeholders have raised more

Mechanism

DR aggregator interfaces directly with wholesale market

Centrally determined baselines

DR provider earns the spot price, paid for by the FRMP

Register

Retailers would have to negotiate in good faith with DR aggregators

Bilaterally negotiated baselines

Bilateral arrangements between retailers & DR aggregators

Separate market

DR aggregator interfaces directly into a market co-optimised with the wholesale market

Centrally determined baselines

DR provider earns that market price, paid for by all retailers

Load shedding compensation mechanism

Standardised products – demand response or spot price pass through

Multiple trading relationships

CONSUMER TYPES PARTICIPATING IN WHOLESAL DEMAND RESPONSE



DECLAN KELLY, ADVISER, AEMC

How will consumers engage in wholesale demand response?

- Understanding how consumers will undertake demand response, and the characteristics of consumers looking to undertake demand response, is key to developing fit-for-purpose frameworks
- There is unlikely to be a silver bullet solution for wholesale demand response. Demand response, and wholesale demand response, has and will be undertaken in a myriad of different ways accommodating factors including the size and sophistication of the consumer and the risk appetite of the parties involved
- The nature of wholesale demand response is also changing over time – that is, the demand response of yesteryear will differ from demand response today which will differ from demand response in the future
- Small and large consumers are going to participate in demand response in a myriad of ways. The general differences should be accounted for when considering how to facilitate more wholesale demand response

Large consumers have led the way

- To date, almost all wholesale demand response has been by large, relatively sophisticated consumers
- These consumers can utilise:
 - Advanced metering and energy monitoring
 - Flexible sources of load
 - Sources of embedded generators.
- These consumers are also typically much more engaged with their energy usage. Energy forms a significant portion of costs, and so, these companies have resources to seek to minimise these costs, including looking to wholesale demand response
- The participation of large consumers in the market is evolving e.g. we're now seeing parties enter directly into renewable PPAs and developing new financial products to improve price certainty for large consumers

Smaller consumers have had limited opportunities to date

- In contrast, small consumers have had a markedly different experience. Almost no wholesale demand response has historically been undertaken by small consumers
- These parties have had limited opportunities to date, driven in part by:
 - Lack of access to advanced metering and so meter data. This inhibits access to dynamic price signals and makes it more difficult to understand the value proposition of wholesale demand response
 - With the exception of air conditioners, hot water and pool pumps, small consumers have had limited dynamic resources to utilise for wholesale demand response
- The landscape for small consumer demand response is changing – these consumers are looking to take charge and want opportunities to demand respond
- In addition, the rollout of new technologies will increase capacity and capability for small consumers

Different consumer types lead to different forms of wholesale demand response

Type of wholesale demand response	Risk allocation	Example
Non – firm, discretionary demand response.	Typically not be firm in terms of quantity or when it actually occurs	Sending customers an SMS offering a reward for reducing consumption on an opt in basis.
Contracted demand reduction that is not directly controlled	Depends on the arrangement between buyer and selling.	Under specified conditions (e.g. five days per year), an aggregator is able to call on the large customer to reduce consumption.
Remotely controlled demand response	The firmness of the response is generally higher. The retailer can usually both observe in real time how much capacity is available and control it in response to signals.	Aggregator has direct control over certain load processes or DER and control usage in response to wholesale price.
Voluntary demand reduction in response to direct price signals from the wholesale market	Consumer bears the price and volume risk	More accessible to large consumers

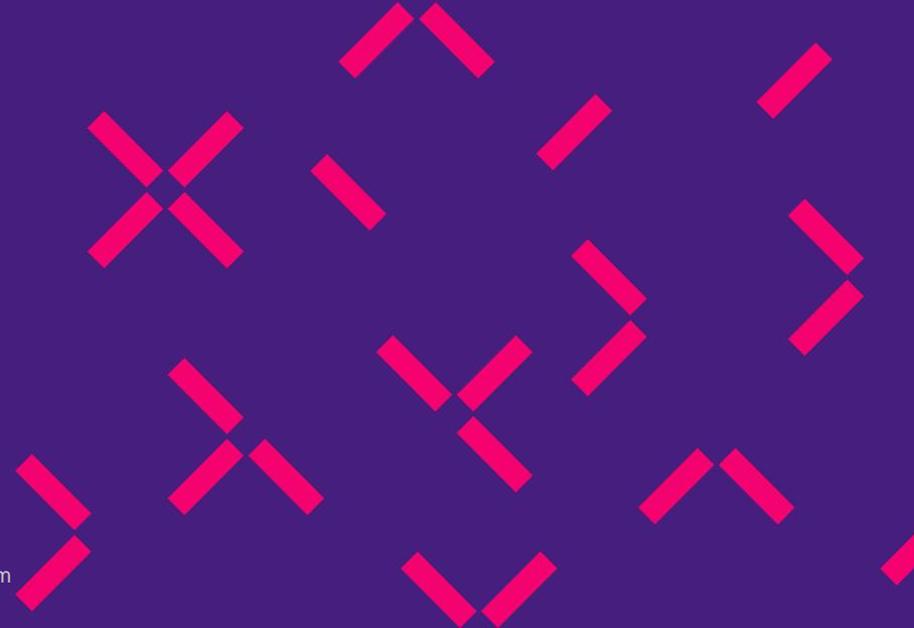
STAKEHOLDER PRESENTATIONS

EXPERIENCES FACILITATING DEMAND
RESPONSE

Experiences facilitating demand response in the NEM

Claire Richards

Manager, Industry Engagement and
Regulatory Affairs



Who are we and what do we do?



>6 GW of dispatchable demand response



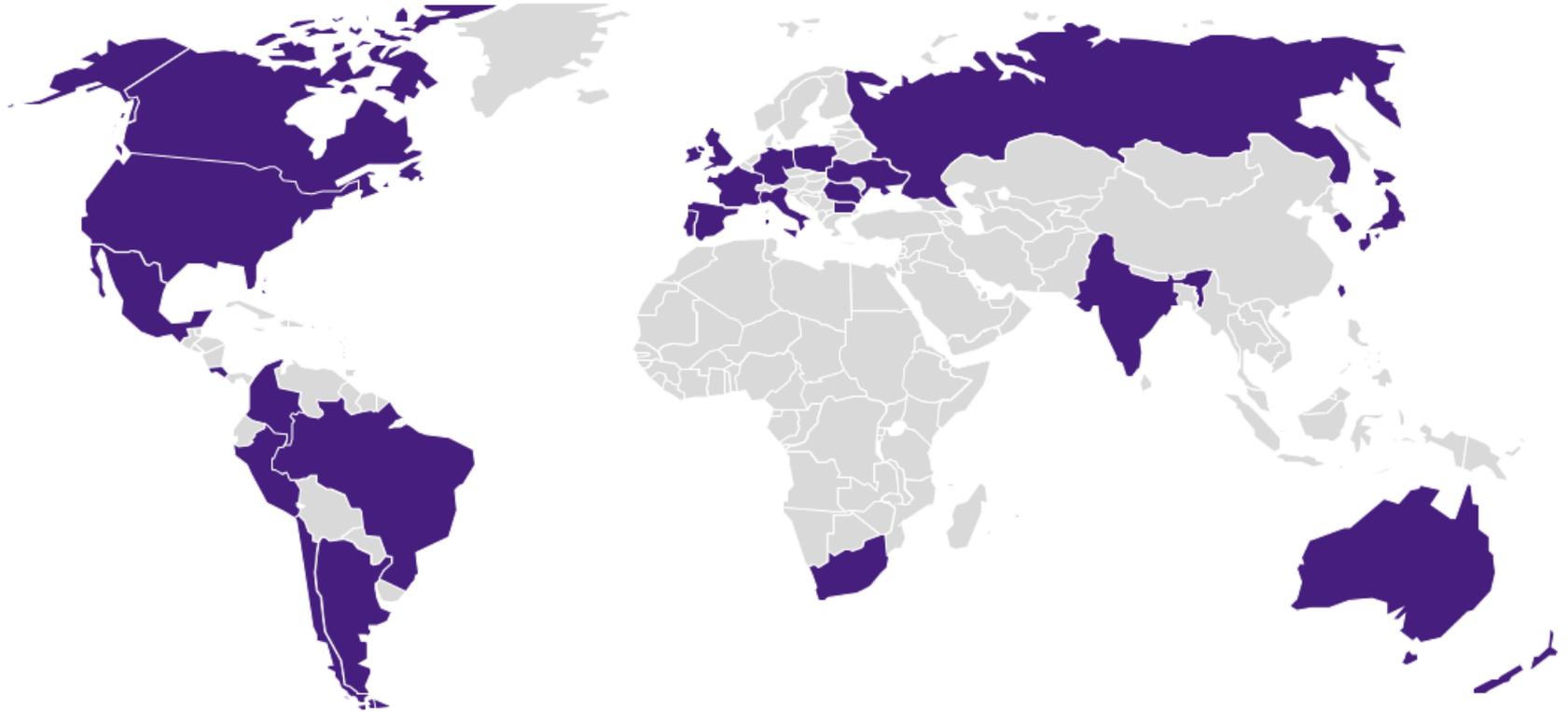
Behind the meter battery storage and optimisation



EV charging with vehicle-to-grid capability

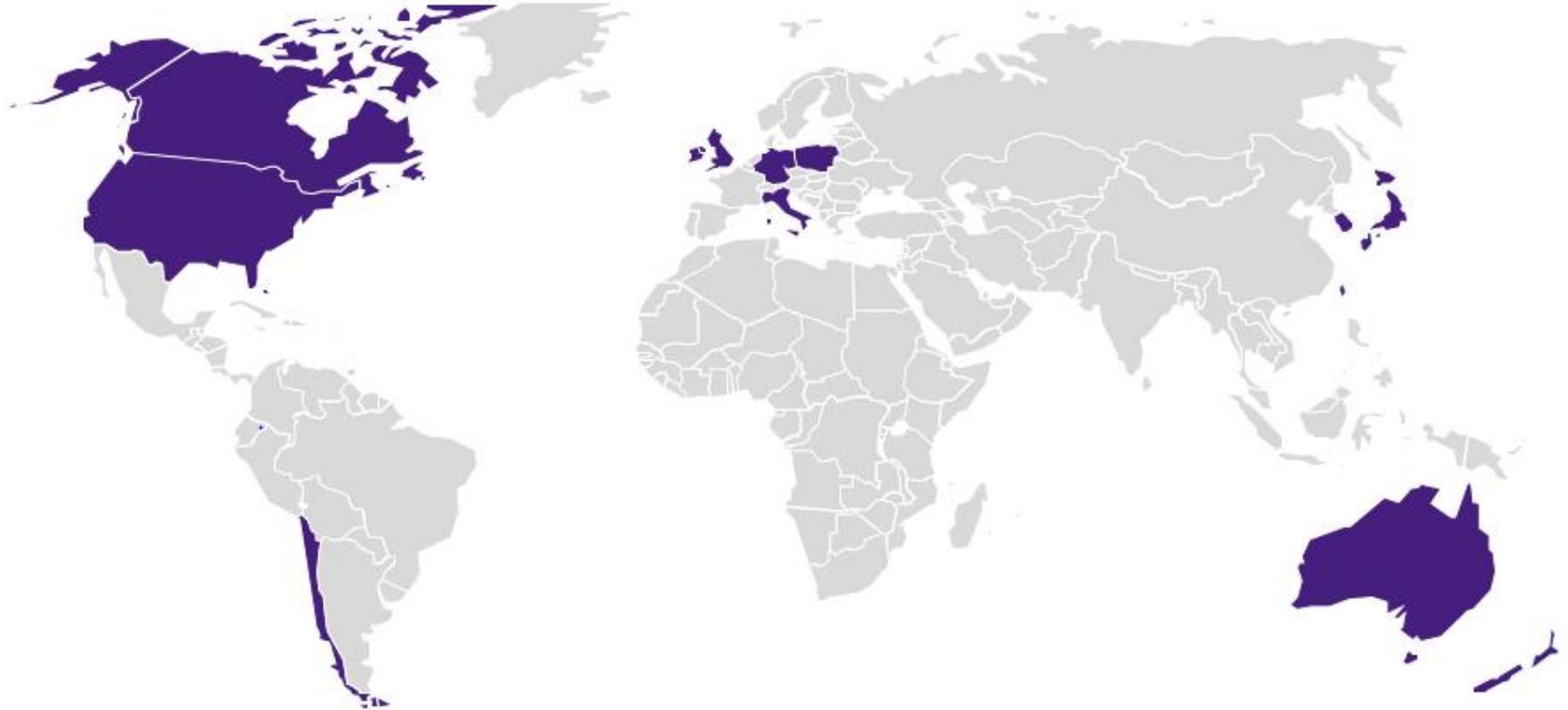
Enel X's global presence

We have operations all over the world



Enel X's demand response activities

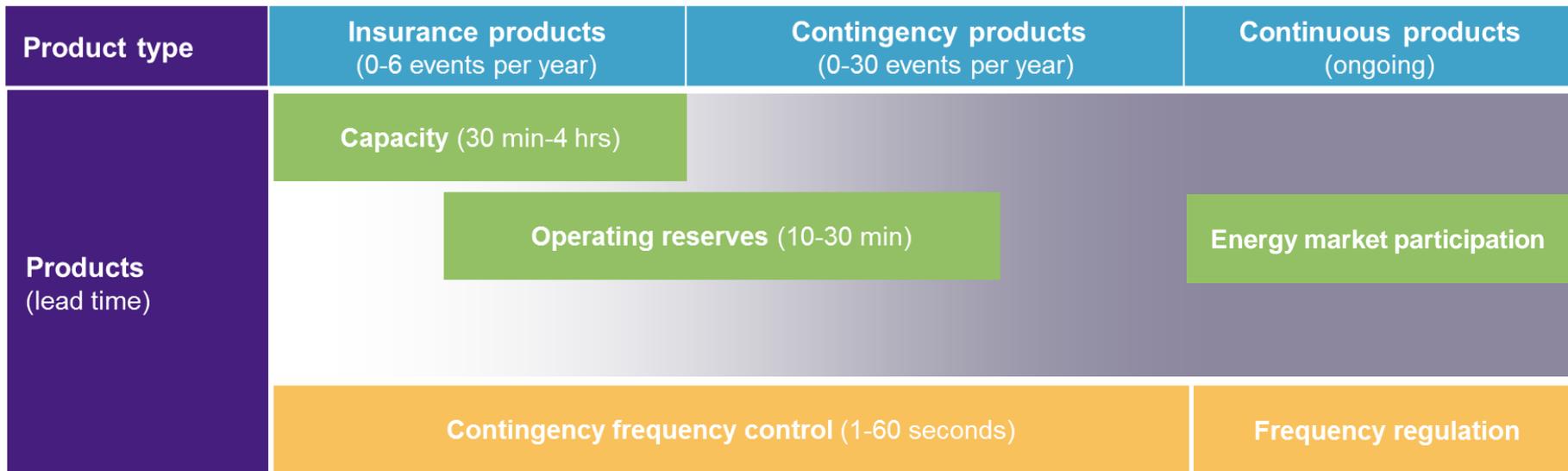
Over 50 programs in 12 countries



The value proposition of demand response

Demand response: Value to the system

Our global experience



Demand response: Value to the system

Here in the NEM



Product type	Insurance products (0-6 events per year)	Contingency products (0-30 events per year)	Continuous products (ongoing)
Products (lead time)	Emergency DR (RERT) (10-60 mins)	Energy market participation	
	Contingency frequency control (6 seconds – 5 mins)		

1. Improved business competitiveness

- Flexibility enables access to new revenue streams
- New technologies, consumption patterns and purchase decisions can lower costs
- Improved business competitiveness = economy-wide benefits

2. Greater engagement with energy management

- Data and knowledge change thinking about energy
- Real-time metering leads to unexpected efficiencies
- Earnings re-invested in other energy management measures

3. Improved resiliency and sustainability

- Economic and sustainability maximised
- Sense of satisfaction in “helping the grid out”

How customers of different sizes engage with demand response

All customers are different

The nature of demand response differs between customers



Size matters, but customers' ability and incentive to respond primarily depends on:

- operational needs
- trade-off between costs and benefits of response.

Customer attributes



- Programs that accommodate these attributes see strong customer participation. Those that don't do not.
- Beyond that, the recruitment of customers and the delivery of response is not an issue for regulation – **this is an opportunity and a risk that aggregators manage.**

Challenges facilitating demand response

Challenges facilitating demand response



	Challenge	Solution
Worldwide		
1	Program parameters that restrict participation	Establish appropriate program parameters that support broad participation
2	Programs that prohibit aggregator participation	Allow aggregators to participate
3	Creating enough value for customers through a single program	Allow value stacking
NEM		
4	Inability for independent providers to access wholesale demand response on behalf of their customers	Allow independent providers, without retailer involvement



Electricity at true wholesale prices

1) Who we are?

2) Experiences of Demand Response

3) Building a new electricity company

The Amber electricity product provides
direct wholesale electricity prices
to everyday Australians.

Wholesale prices



Your usage



\$10
a month



Live in Sydney and Adelaide
since July 2018

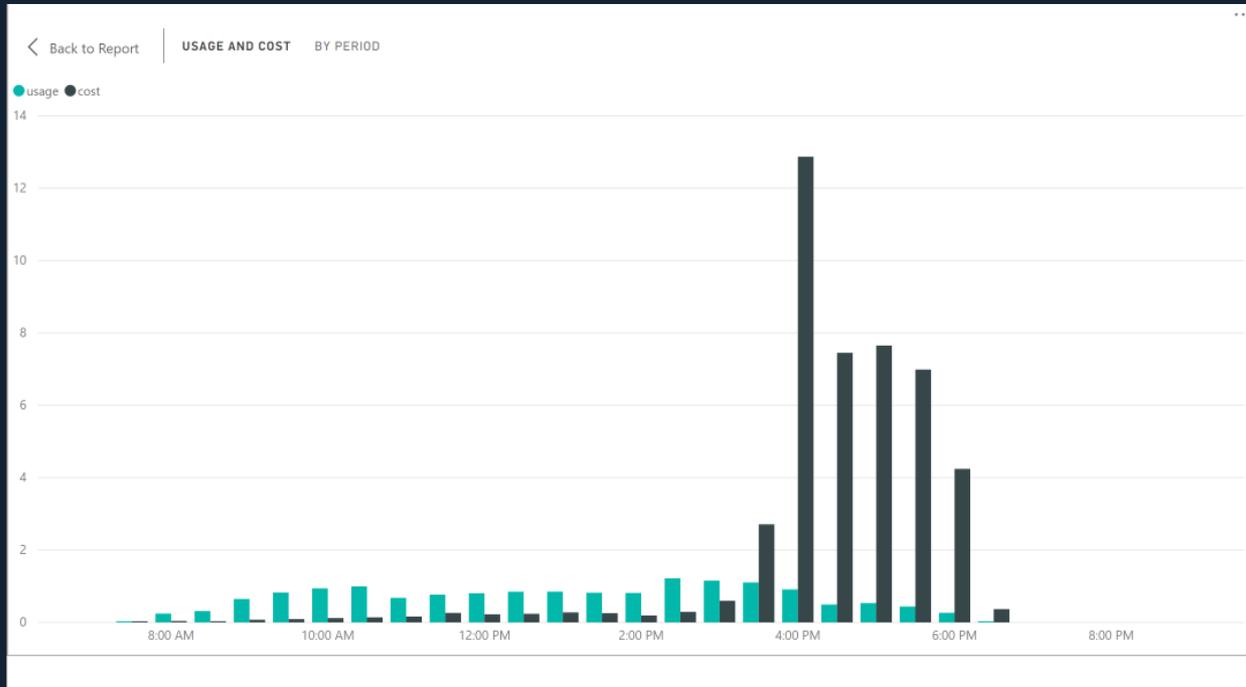
1) Who we are?

2) Experiences of Demand Response

3) Building a new electricity company

Lesson 1: Wholesale prices enable customers to save (most of the time)

Lesson 2: Solar is a surprisingly effective hedge



Lesson 3: Manual demand response requires significant engagement

Lesson 4: Obsessing over spikes
leaves massive value on the table

1) Who we are?

2) Experiences of Demand Response

3) Building a new electricity company

The Good News: It's possible to get a new electricity company off the ground

The Bad News: It's still really hard!



Demand Response

AGL's Experience

Jenessa Rabone
Wholesale Markets Regulatory Manager

5 March 2019

ARENA / NSW Government Demand Response Project

Nov 2017 to Nov 2020

- ARENA (Australian Renewable Energy Agency) and the Australian Energy Market Operator (AEMO) have selected ten pilot projects under the Demand Response Initiative.
- AGL's contribution is a three year project in NSW, to provide 20MW of demand response by 2020.
- The project is co-funded 50% by AGL, 25% by ARENA and 25% by the NSW Government. In exchange for funding, AGL is required to publicly share knowledge learned through this program. Reports are published at:
<https://arena.gov.au/projects/agl-demand-response/>

\$13 M
Total funding over 3 years

20 MW
Demand Response by
2020

Project Scope



Summer 2017/8

Summer 2018/9

Summer 2019/20

Peak Energy Rewards Managed By You

(Residential Customers - Behavioural
Demand Response)

700 customers

3,500 customers

10,000 customers
(~ 3 MW)

Peak Energy Rewards Managed For You

(Residential Customers – Load Control)

Small scale technology trials

Small scale technology trials

Small scale technology trials

C&I Demand Response

17 MW

17 MW

17 MW

Outcomes and lessons: Peak Energy Rewards (behavioural residential)



Residential loads are highly temperature sensitive

- The result on a 39°C day was almost double the results on the other days (6-7°C cooler)
- Predicting baseline consumption on extreme temperature days using statistical baseline methodologies is problematic
- Influenced by changing customer behaviour (e.g. weekly routines, holidays) and impact of solar.

Inaccurate baselines can lead to customer disengagement

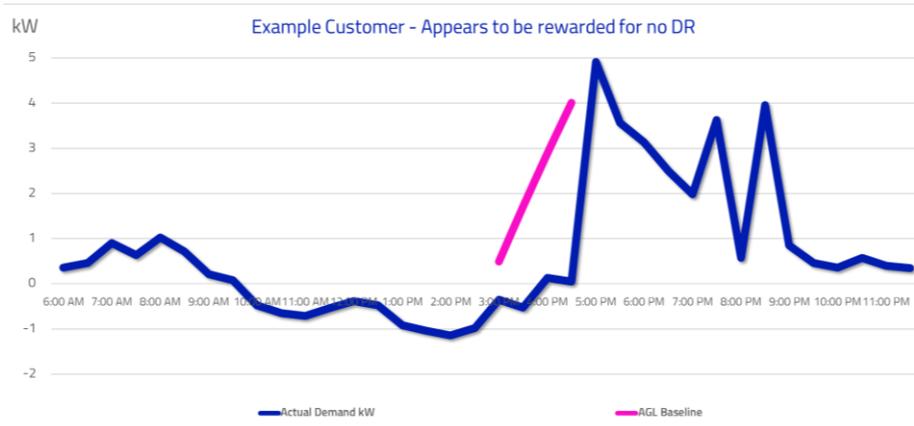
- While 62% of participants self reported as 'participating' in the events, only 40% had a measured energy reduction according to the baseline
- Customer could over-estimate the impact of their actions, like switching off lights
- The customer's genuine energy reduction efforts in some cases were not detected by the baseline methodology.

Outcomes and lessons: Peak Energy Rewards (behavioural residential)



Baselines for residential customers

AGL's baseline methodology was accurate across all customers (the portfolio). But there were some significant inaccuracies for individual customers



Outcomes and lessons: C&I demand response



C&I loads are largely reliable. However, unexpected results may occur where there are:

1. Changes in the demand response capability (temperature, seasonal or production/maintenance driven)
2. Baseline inaccuracies

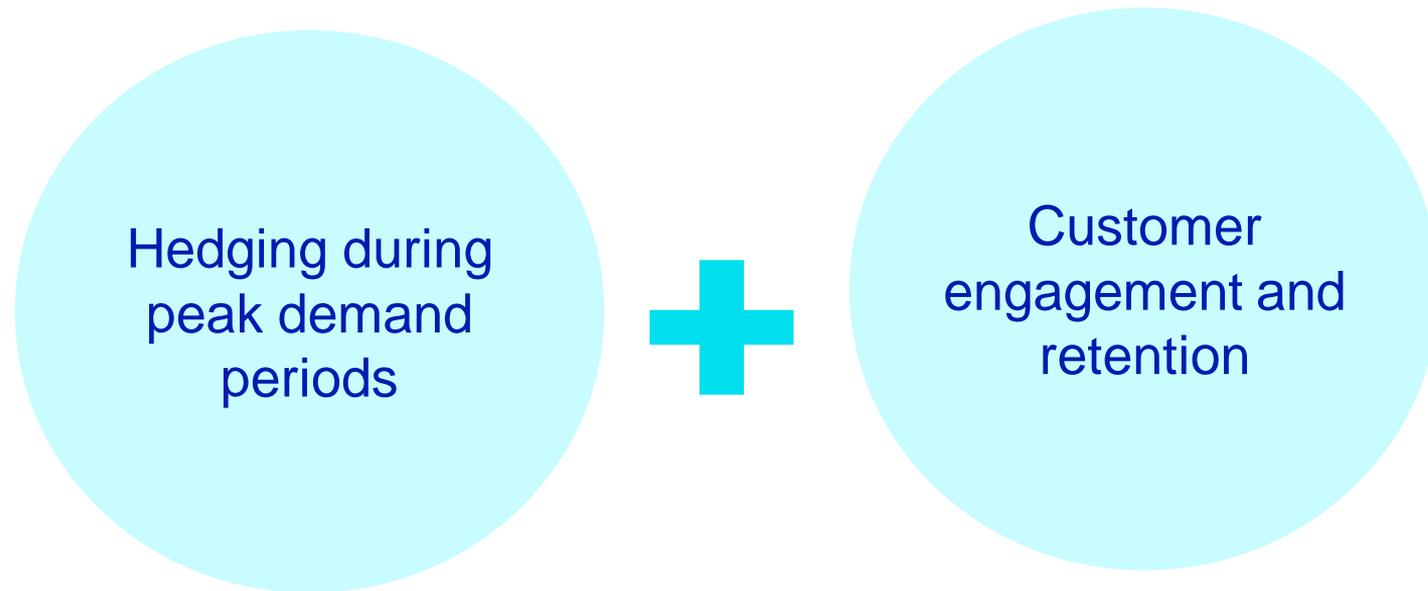
Participation

- Maintaining control is typically important for C&I customers – being able to opt out should commercial considerations be more important
- Implementation at each site is bespoke and often more complex than anticipated - both due to technical factors as well as organisational and human factors

Baselines

- Most effective for flat loads
- Temperature sensitive or fluctuating loads provide less predictable response under the RERT methodology so these loads are valued less
- Hours of operation, holidays and maintenance schedules can also impact baseline accuracy and fairness

Value proposition for wholesale DR





Thank you

Jenessa Rabone
Wholesale Markets Regulatory Manager
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APPROACHES TO ACHIEVING DEMAND RESPONSE OBJECTIVES

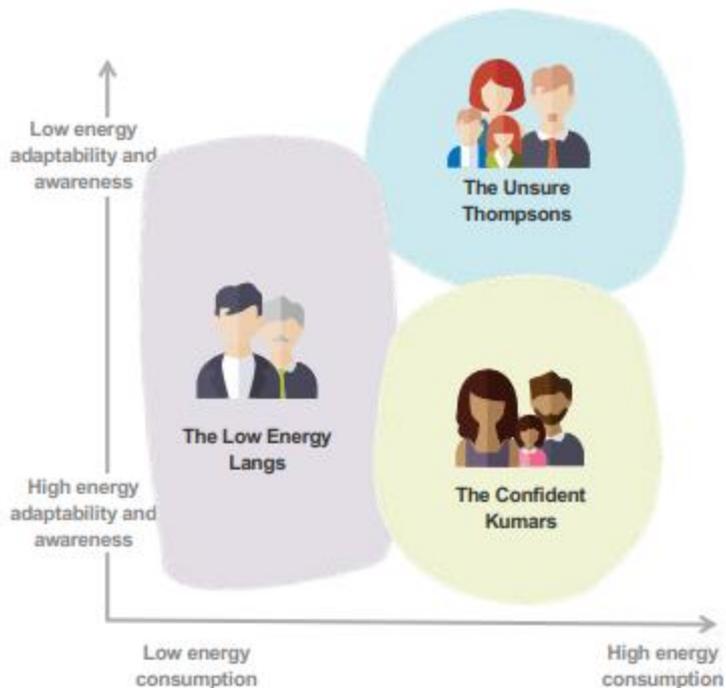


VICTORIA MOLLARD, DIRECTOR, AEMC

Recap: What is the problem we are trying to address?

Facilitating wholesale demand response, at **least cost**, **without undermining** the market

Different consumers want different things from demand response – are there different solutions? The learnings from the ARENA & AEMO trial on RERT have been informative



Ssee: <https://arena.gov.au/assets/2018/08/demand-response-consumer-insights-report.pdf>

Providing consumers with more choice and lowering barriers to entry for third parties could manifest in a number of ways:



What areas are we exploring ?

What are the differences between small & large consumers?

How could standardised demand response products be created?

How could we reduce regulatory barriers for demand response aggregators to become retailers?

Should demand response be treated equally to generation?

What are the cost recovery and settlement options?

What are the options for implementation of baselines?

While there are a number of different approaches we are exploring, there are a number of questions that are common to, and underlie, each of these approaches.

We already have discussed the differences between small & large consumers; but the remaining slides step through of the other questions that we are currently considering.

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What are the options for implementation of baselines?

- There are a number of key obligations on retailers under the national energy framework, which could present barriers for DR aggregators include:
 - Consumer protection related obligations
 - Entry criteria for authorisation as a retailer
 - Prudential requirements
- Can / should these modified to accommodate DR aggregator business models, while ensuring that the important core functions of the relevant obligations are not compromised?

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What are the options for implementation of baselines?

- There are several ways in which demand response can be compensated:
 - Reduced wholesale spot price exposure
 - Being paid for “negawatts”
 - Bilaterally negotiated payments between retailer & DR aggregator
 - Payment from retailer to DR aggregator facilitated by AEMO settlements
 - Regulated price, with costs smeared across the entire customer base
- Each has pros & cons, as well as impacts on the implementation costs of the mechanisms, and risks placed on consumers

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Should demand response be treated equally to generation?

What are the options for implementation of baselines?

- How could a standardised demand response product be created?
 - Should retailers be required to offer spot price pass through contracts?
 - What about a demand response contract?
- How will this interact with the rest of the retailer market and its competitiveness?

What areas are we exploring ?

What are the differences between small & large consumers?

How could we reduce regulatory barriers for demand response aggregators to become retailers?

What are the cost recovery and settlement options?

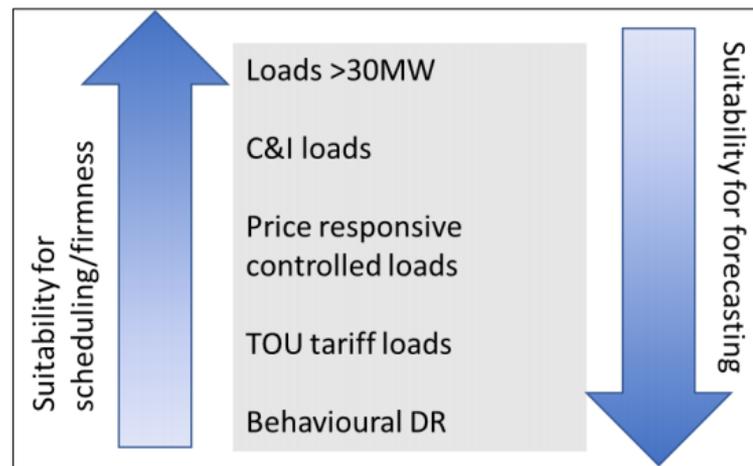
How could standardised demand response products be created?

Should demand response be treated equally to generation?

What are the options for implementation of baselines?

- Should demand response be scheduled?
- Technically, can demand response be scheduled and so participate in NEMDE as generation does?

Inverse relationship between firmness (and suitability for scheduling) and forecast-ability



Source: EA submission to DRM consultation paper

What areas are we exploring ?

What are the differences between small & large consumers?

How could we reduce regulatory barriers for demand response aggregators to become retailers?

What are the cost recovery and settlement options?

How could standardised demand response products be created?

Should demand response be treated equally to generation?

What are the options for implementation of baselines?

Demand response by definition is un-measurable, and so must have a baseline – the question is what incentives does the method of setting a baseline create, and who does it place risks on?

- Centrally determined – set by a central party
- Centrally administered – set by the DR aggregator, but settled through a central system
- Bilaterally negotiated – negotiated between the retailer & DR aggregator

STAKEHOLDER PRESENTATIONS

APPROACHES TO FACILITATING DEMAND RESPONSE



Demand Response Mechanism

Approaches

Rebecca Knights

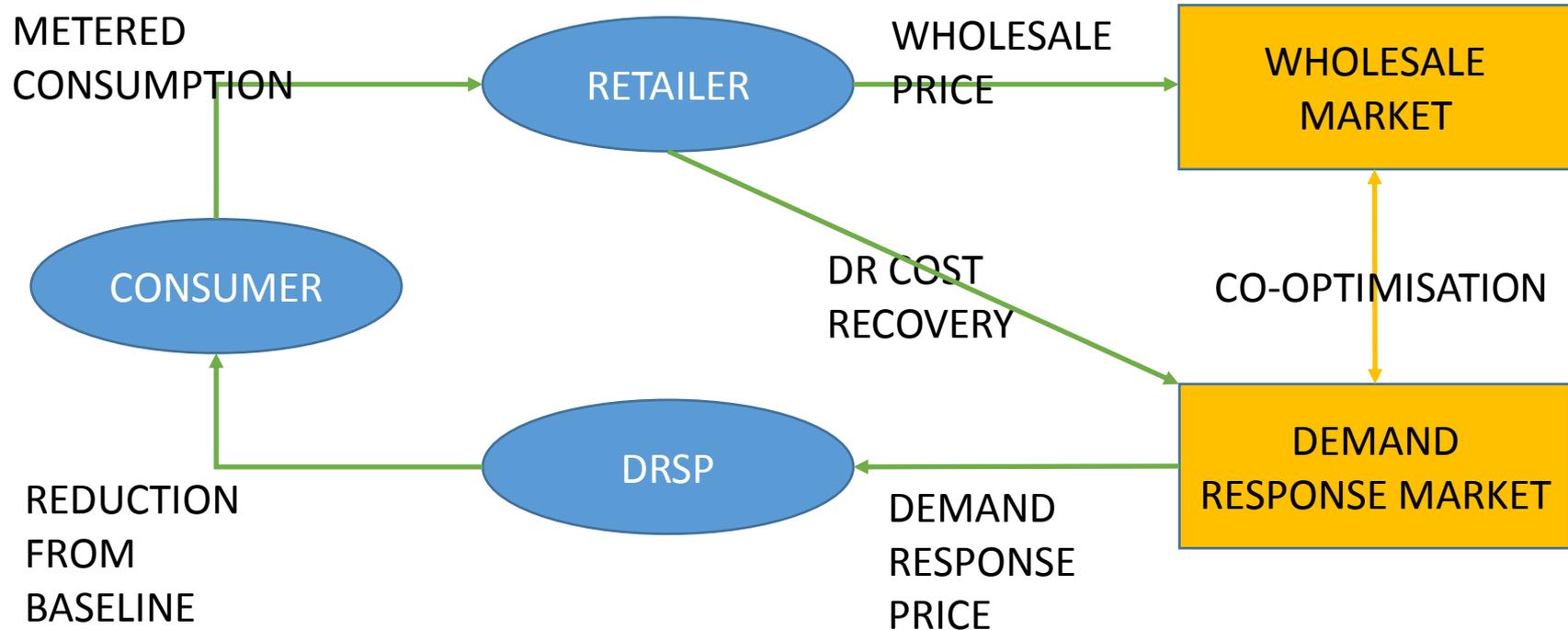
Melbourne

5 March



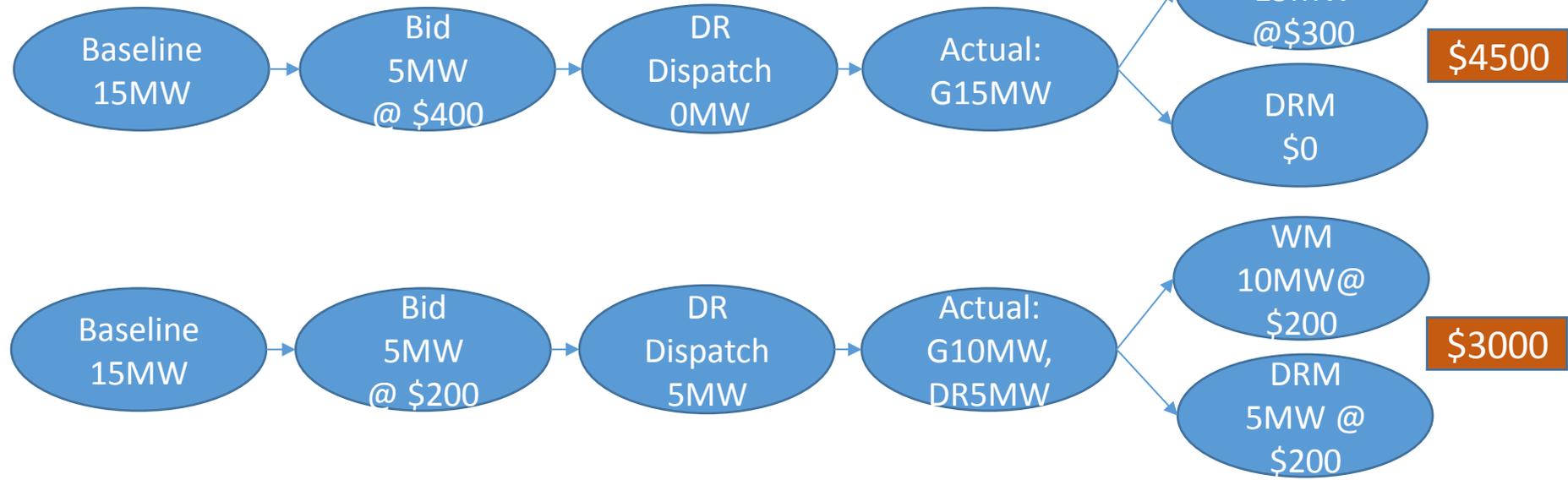
Co-optimised Model

OBJECTIVE: DISPATCH MOST EFFICIENT COMBINATION OF SUPPLY AND LOAD REDUCTION



Potential Benefit

Bid Stack	
G1	5MW @ \$100
G2	5MW @ \$200
G3	5MW @ \$300



Key Principles

- Demand Response -
 - Scheduled
 - Measured: Actual \leq Baseline – dispatched DR
- Dispatch - Bids more efficient than marginal generator
- Price (Spot equivalent or As bid)
- Allocation Costs -Proportional recovery across market
- Soft Start (jurisdiction / MW / DRSP limitations)?

Why

- Generation mix is changing
- Demand should be met by most efficient option
- Technology is increasing opportunity
- Customers need greater options
 - Retailers may not always have an incentive to offer

Contacts

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Approaches to facilitating more DR

Ralph Griffiths

Head of Grid Transformation, EnergyAustralia

Defining the objective

*"To facilitate **more demand response**, at **least cost**, without **distorting** the wholesale & retail markets."*

The role for DR is growing:

- Generation mix is changing – becoming cleaner and more variable
- The grid is decentralising – becoming more bi-directional
- The demand profile is changing – with more onsite DER/DR/DSP

Barriers to DR are low and falling

- NEM exposes real time marginal wholesale prices at (most) sites
- Technology is overcoming traditional barriers.
- Business models are evolving

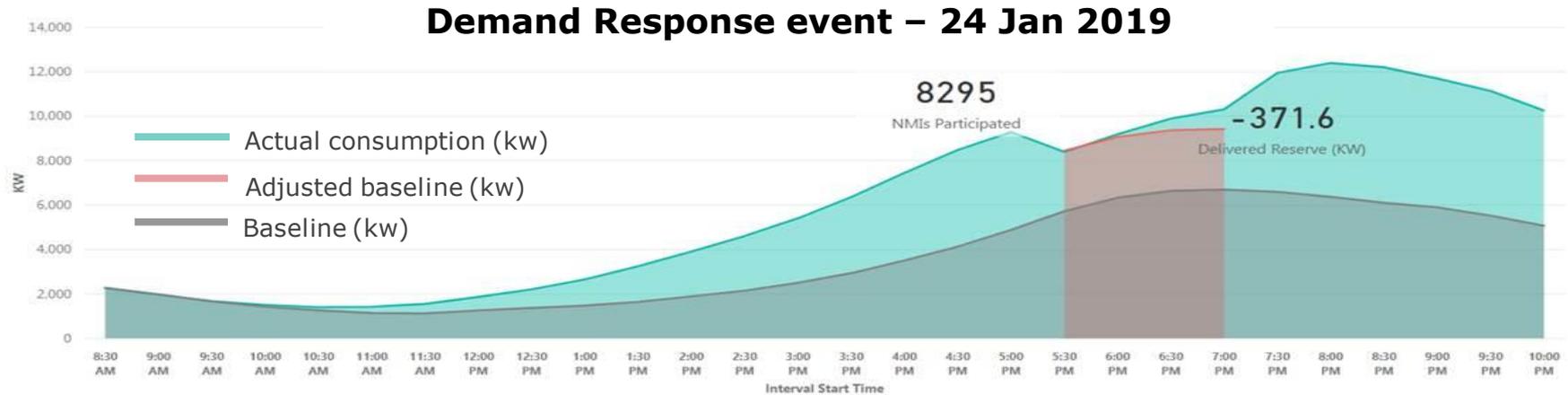
Options to facilitate more demand response

Objective	Options	Increases access?	Low cost?	No market distortion?	Comment
Availability of DR products	Standing DR offers	✓	?	✓	DMO / VDO
	Wholesale price pass through	✓	✓	✓	RRO
	Time of Use Pricing	✓	?	✓	Customer / Political concern
	Peak demand service – reduce fees for load that agrees to be curtailed	✓	✓	✓	Baseline & interval metering
Visibility	DR Register	?	?	✓	Depends on design
Reduce DRA barriers	Multiple Trading Relationships	?	✗	?	Confusion / Split incentive
	'Retailer lite'	✓	✓	?	Consumer Protections
	Retailer-DRA agreements	?	✓	?	Customer sovereignty
	Remove (inefficient) barriers for scheduled loads	✓	✓	✓	Depends on design
DRA direct access to spot prices	Demand Response Mechanism	?	✗	✗	No market failure
	DRM with socialised cost recovery	?	?	✗	Less bad - Reduces baseline and cost issues
	DR Market	?	?	?	Depends on design

Observations

- **Design rules for customers:** not business models or technologies.
- **Retail authorisation/licence/registrations are onerous** – for a purpose. Simplify, remove, streamline for all as appropriate. Don't distort/create loopholes.
- **Scheduled load provides benefits:** rational design would make being scheduled load more attractive than unscheduled. How can we make it so?
- **The Retailer Reliability Obligation (RRO) is important.** It creates an exciting new opportunity for DR to follow load, not price. But restricts spot pass through contracts.
- **DR is awesome but is not all cheap or green.** Demand Management is even better. Do provide cost reflective and environmental price signals. Don't bias the response.
- **The FRMP (retailer) or customer is exposed to spot.** There is no DR market failure in the NEM design. There is a market failure in capacity markets that justified the complexity of separate DR treatment and baselines.
- **Research and information for Australian conditions.** Load profiles are different here (solar, weather, housing). Inform the market.

A role for research & information?



"There may be an unintended consequence where participants ramp up usage prior the event or cease their own initiatives in reducing prior to an event signalled"

"I would like to know what baseline usage my power consumption is being compared against"

"My efforts to curtail all power use during the events were not recognised as reduced solar production during the same timeframe made it appear to that I had taken no action to cut power usage"



Thank you

Ralph Griffiths

Head of Grid Transformation

Wholesale Demand Response - Scheduling and Dispatch

Chris Cormack AEMO

Context for DR integration into Wholesale Markets

Finkel:

“The future grid will be more distributed, but its security and affordability will be strengthened through smarter grids...and new ways of trading”

“AEMC to recommend a mechanism to facilitate demand response in the wholesale energy market”

AEMC RFR:

“DR aggregators (DRAs) should be recognised on equal footing with generators in the wholesale market”

“Recommends changes to enable consumers to access multiple service providers at a single connection point”

ACCC:

“A mechanism should be developed for third parties to offer demand response directly into the wholesale market. The mechanism should:

- Allow **widest range** of businesses to offer DR, promoting competition
- **Not allow retailers to limit** ability of customers to engage DRAs
- Ensure load and generation **responses are valued based on the benefit** they provide to the wholesale market
- **Limit technical requirements that could inhibit uptake**, e.g. multiple meters at the customer site.”

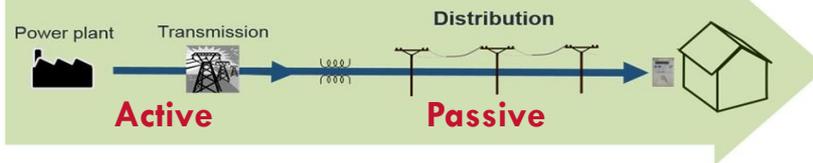
Joint ARENA-AEMO
DR RERT Trial

RERT 2.0 for summer 2018-19

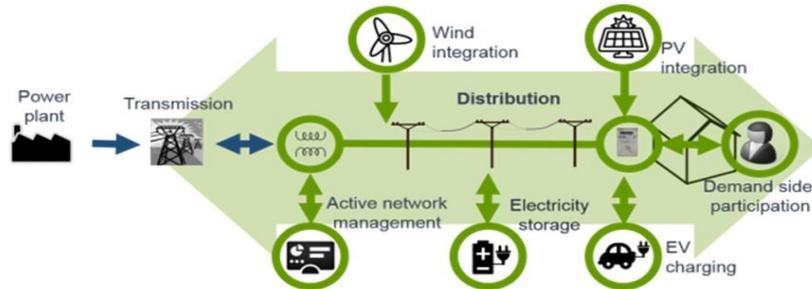
Technical Data Collection to support AEMC
Draft WDR rule change

Traditional

Vision of the future power system



Devolved



All resources optimised in real time within technical limits

Scheduling and Dispatching Load currently

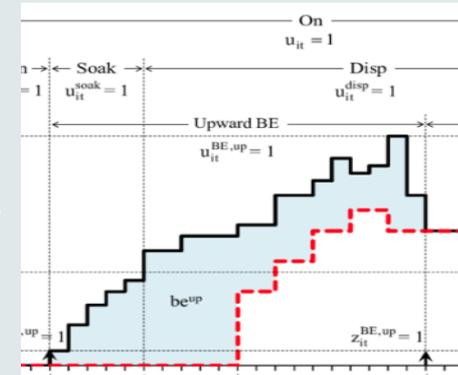
- AEMO already has the ability to accept bids from “Always On” and “Always Off” loads

C	NEMP	WC	YESTBID	AEMO	PUBLIC	#####	4-05-19	2,79E+08	2,79E+08	DAILYENI	REBIDEXPI	PRICEBAN	PRICEBAN	PRICEBAN	PRICEBAN	PRICEBAN	PRICEBAN	PRICEBAN	PRICEBAN	PRICEBAN	PRICEBAN	MINIMUM	T1	T2	T3	T4	NORMALS
I	YESTBID	BIDDAYOF	5	SETTLEME	DUID	BIDTYPE	BIDSETTLE	BIDOFFER	FIRSTDISP	FIRSTPRE	0	0920**OC	-983.76	0	39.81	49.64	59.47	88.95	99.76	315.99	11564.82	13772.59	16	15	2	40	2
D	YESTBID	BIDDAYOF	5	#####	AGLSOM	ENERGY	#####	#####	#####	#####	241	INITIAL OF	-1029.91	-80	2	4	8	16	32	64	128	14418.6	0	0	0	0	0
D	YESTBID	BIDDAYOF	5	#####	ARWF1	ENERGY	#####	#####	#####	#####	0	1158A INI	-999.74	-74.59	-0.65	8.86	33.17	50.58	87.97	115.75	349.35	12116.01	20	9	3	1	1
D	YESTBID	BIDDAYOF	5	#####	BTHREE3	ENERGY	#####	#####	#####	#####	0	1150**P*D	-954.9	29.21	47.17	71.37	92.29	143.26	190.99	253.73	404.04	11878	110	6	14	10	14
D	YESTBID	BIDDAYOF	5	#####	BRAEMAR	ENERGY	#####	#####	#####	#####	0	Initial Off	0	1	2	4	8	16	32	64	128	256	0	0	0	0	0
D	YESTBID	BIDDAYOF	5	#####	BRAEMAR	LOWER6S	#####	#####	#####	#####	0	1150**P*D	-954.9	29.21	47.17	71.37	92.29	143.27	191	253.74	404.05	11878	110	6	14	10	14
D	YESTBID	BIDDAYOF	5	#####	BRAEMAR	ENERGY	#####	#####	#####	#####	0	Initial Off	0	1	2	4	8	16	32	64	128	256	0	0	0	0	0
D	YESTBID	BIDDAYOF	5	#####	BRAEMAR	RAISE6SC	#####	#####	#####	#####	0	Initial Off	0	1	2	4	8	16	32	64	128	256	0	0	0	0	0
D	YESTBID	BIDDAYOF	5	#####	BRAEMAR	RAISE6SC	#####	#####	#####	#####	0	Initial Off	0	1	2	4	8	16	32	64	128	256	0	0	0	0	0
D	YESTBID	BIDDAYOF	5	#####	BW02	ENERGY	#####	#####	#####	#####	0	1120**OC	-959	0	33.53	43.18	53.67	67.09	92.98	237.79	336.57	13425.96	0	0	0	0	0
D	YESTBID	BIDDAYOF	5	#####	BW02	ENERGY	#####	#####	#####	#####	0	1120**OC	-959	0	33.53	43.18	53.67	67.09	92.98	237.79	336.57	13425.96	0	0	0	0	0

- The bid requires the Market Customer to identify the Available MW (Decrease or Increase) and;
- a ROCUp and ROCDown – rate of change or linear increase or decrease of the load
- However, AEMO last accepted a bid from an “Always On” load in 1999 and receives infrequent bids from “Always Off” loads
- As a Market Customer can gain the benefit of load adjustment at high price periods – there seems to be little incentive for them to bid into the market and risk penalties associated with missing dispatch target.
- This can lead to a loss of “operational visibility” for AEMO affected forecasting and pre-dispatch processes

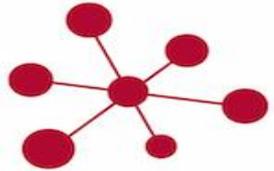
Demand Response and linear dispatch targets

- Should a Wholesale Demand Response mechanism require DR to be dispatched a DR aggregator will need to meet a linear dispatch target
- Already Aggregated Demand Response is being dispatched for FCAS
- Aggregators of flexible load currently operating in the NEM report to AEMO that specific and aggregated loads can be dispatched to meet linear dispatch targets
 - These must be highly controllable industrial, commercial and residential devices
- Some Demand Response loads do not lend themselves to predictable or precise linear changes (Unscheduled Demand Response?)
- In general, a portfolio approach can be adopted – larger portfolios delivering better outcomes; small portfolios holding the most risk for aggregators



Next Steps – collecting more data

- WDR Desktop Trial - AEMO will test in our pre-production system the ability of aggregators to provide a bidding file and meet a dispatch target
- VPP demonstrations – consultation responses have suggested a technology neutral approach ie include flexible load
- We are currently defining the enrolment process for VPPs including defining technical and system requirements with the aim to go live by June 2019
- The AEMO ESS project will later this month offer a rule change to the AEMC define ESS, and create a new registration category for bi-directional assets, allowing for a single dispatch offer



public interest
ADVOCACY CENTRE

PIAC/TEC/TAI WDRM proposal

Wholesale Demand Response
Mechanism: What it ain't.

Craig Memery

March 2019

Optimising demand response

Stage in supply chain	Wholesale and system operation	Transmission	Distribution	Retail	Customer (behind the meter)
Role of DR	<ul style="list-style-type: none"> Alternative to expensive generation to meet peak demand Provide system security Provide ancillary services 	<ul style="list-style-type: none"> Avoid or defer capital investment Cost effective alternative to expensive interconnection investment 	<ul style="list-style-type: none"> Avoid or defer capital investment Provide power quality support 	<ul style="list-style-type: none"> Manage wholesale market exposure Manage retail market exposure 	<ul style="list-style-type: none"> Reduce consumers' electricity costs Provide backup supply during outage
Necessary reforms or outcomes	<ul style="list-style-type: none"> Demand Response Mechanism that is independent of retailers) 5 minute settlement 	<ul style="list-style-type: none"> Offering DR to consumers Provide products to allow consumers to self-select their cost-reliability level Ringfencing arrangements and network incentives to support DR 	<ul style="list-style-type: none"> Offering DR to consumers Network tariffs for DR Provide products to allow consumers to self-select their cost-reliability level Ringfencing arrangements and network incentives to support DR 	<ul style="list-style-type: none"> Pass on network tariffs and products for DR Provide products to allow consumers to self-select their cost-reliability level Offer retail DR products for wholesale price arbitrage 	<ul style="list-style-type: none"> Consumers are able to self-select cost-reliability trade-off Allow aggregation of individual consumers to provide DR portfolio
Essential	<p>Coordination of services and products to overcome split-incentives and barriers to efficient use of DR</p>				



1. Competitive neutrality

WDRM ain't

- Preferential treatment
- Distortionary

WDRM is

- Levelling playing field with generation
- Removing barriers, correcting distortion



2. Consumer products and services

WDRM ain't

- Just about demand response
- Only automated, or only hands-on

WDRM is

- Optimising value of products and services
- Giving consumers control and choice



3. Disadvantaged consumers

WDRM ain't

- Harmful to vulnerable consumers (with new protections)
- Exclusive to anyone

WDRM is

- New opportunities to save energy costs
- Better value from existing behaviour



4. Cost impacts

WDRM ain't

- Going to increase consumer costs or bills
- Full stop. It's just not. Move on.

WDRM is

- Lower wholesale costs for all consumers
- New income for participating consumers



5. Why do it?

WDRM ain't

- Simple in the short term
- Optional

WDRM is

- Simpler in the long term
- Necessary for energy market and system



LITTLE CUPS!...
LITTLE CUPS!...



DRAG DRAG

an'elden.



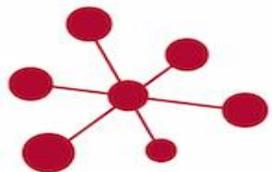
6. Competition

WDRM ain't

- Making retailers do DR
- Stopping retailers doing DR

WDRM is

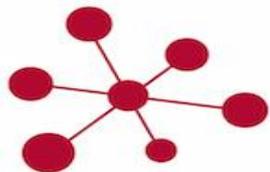
- Giving choice and control back to consumers
- Removing barriers to competition in wholesale and innovative services



public interest
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State of energy retail innovation, NSW 2018

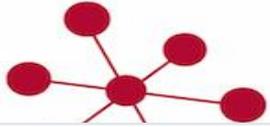
	Demand Response Services	Green Schemes	Pre-payment options / Bill Smoothing	Online Consumption Tool	App	Solar / Batteries Installation	Smart Meter Installation	Solar Feed-in Tariff $\geq 7c/kWh$	GridCredits	Non-Price Incentives
2	○	●	○	●	○	●	●	●		
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public interest
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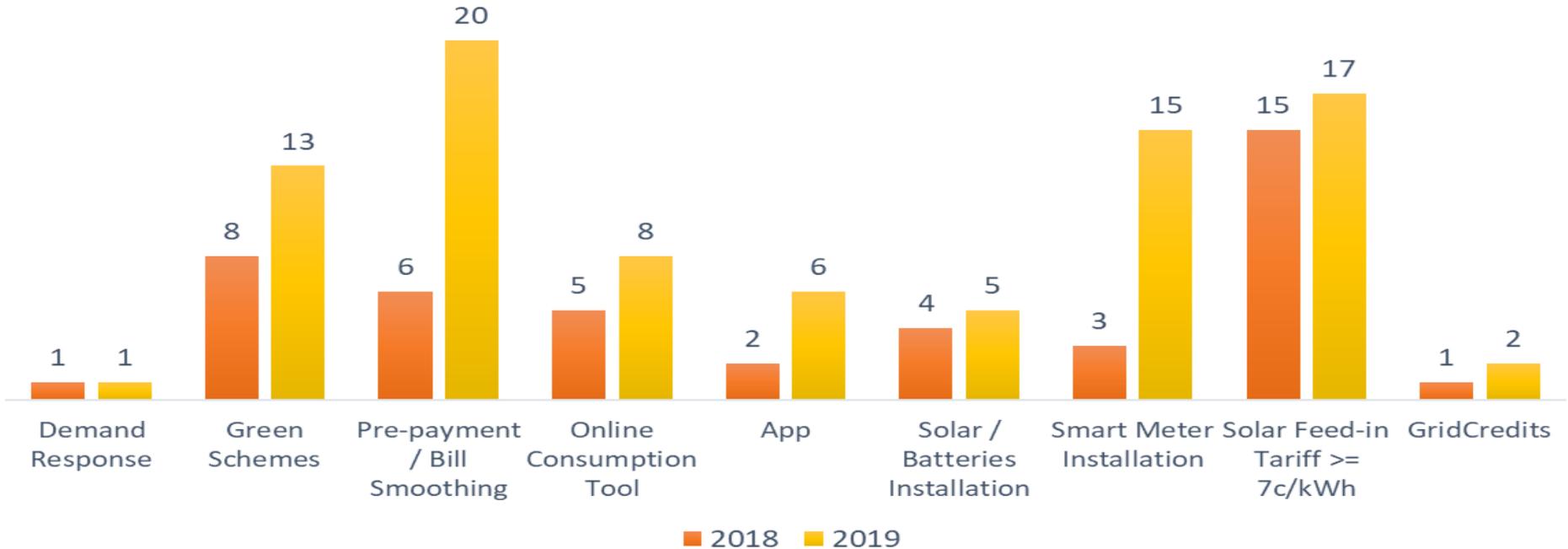
State of energy retail innovation, NSW 2019

Demand Response Services	Green Schemes	Pre-payment options / Bill Smoothing	Online Consumption Tool	App	Solar / Batteries Installation	Smart Meter Installation	Solar Feed-in Tariff \geq 7c/kWh	GridCredits	Non-Price Incentives
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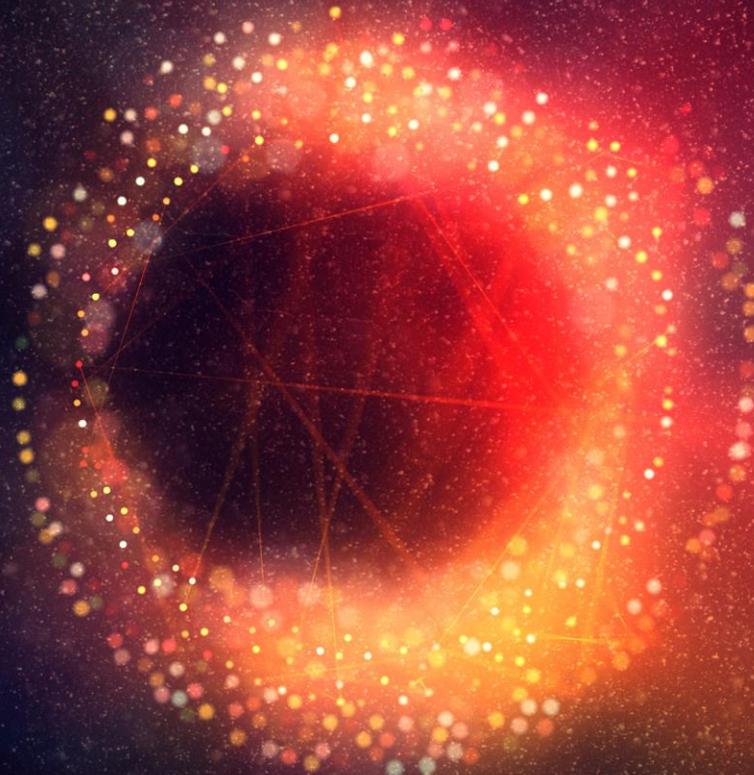


Energy retail innovation, NSW 2018 v 2019

Changes in Innovation



PANEL Q AND A

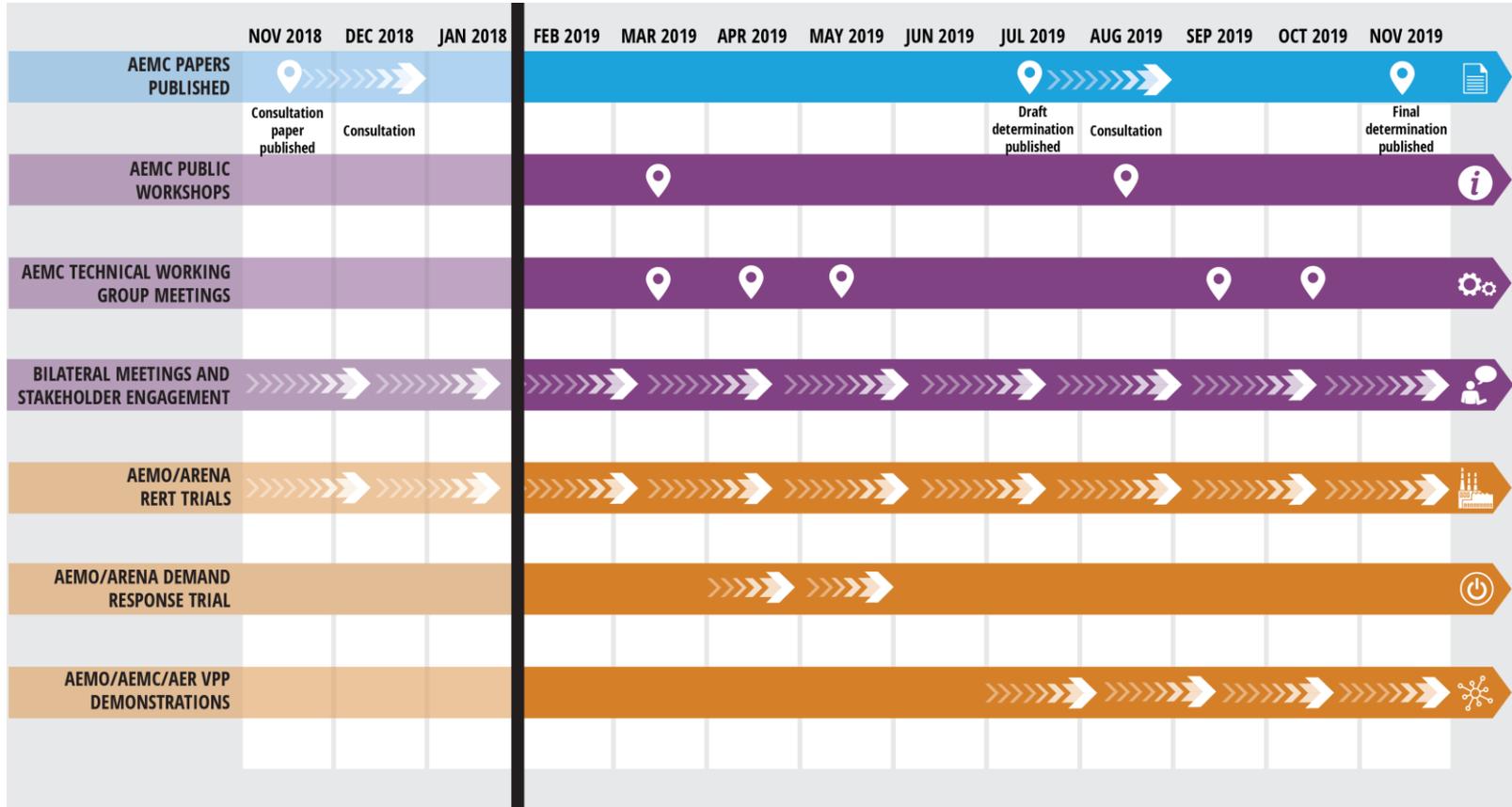


NEXT STEPS



MITCHELL SHANNON, ADVISER, AEMC

More information and timing about the next steps for this project is available on [our website:](#)

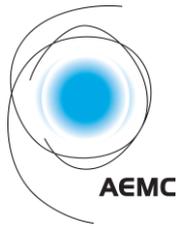


Stakeholder feedback and consultation

- We welcome ongoing stakeholder feedback – if you have additional comments or would like to discuss the rule changes further, please get in touch with anyone of the team:
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CLOSING REMARKS

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