



Future Networks Forum Report

Report prepared for CitiPower, Powercor & United Energy

April 2019

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Executive Summary

Background and Objectives

The Future Networks Forum hosted by CitiPower, Powercor and United Energy (CPPCUE) was held on Monday 1 April from 1.30-4.30pm at the InterContinental Rialto Hotel in Melbourne.

Forty five (45) stakeholders took part in the forum, which involved a mix of presentations, round table discussions and activities. The stakeholders came from State and Local Government departments and agencies, environmental organisations and community groups, the Australian Energy Regulator (AER) and its Customer Challenge Panel (CCP), the networks' Customer Consultative Committee (CCC) and its Energy Futures Advisory Panel (EFCAP).

The Future Networks Forum focussed on two topics – the networks' proposed options to enable solar exports and current and future demand response programs and incentives to encourage customers to shift their energy load to off-peak periods. . Key outcomes of facilitated table discussions on both topics are outlined and discussed in this summary report.

Key Findings

Solar Enablement

In Session 1 of the forum, CPPCUE outlined the background to the networks' decision making on solar enablement options and the benefits to be derived by all customers. Network personnel provided a brief overview of the range of solutions on offer (including network upgrades, network optimisation and non-network solutions e.g. voltage management and new inverter settings) and the impact of smart meters. The three options being assessed to optimise solar export for customers were then presented, along with their cost impacts.

1. Option 1: Customers can export up to 5kW 'at all times'
2. Option 2: Customer can export up to 5kW 'most of the time'
3. Option 3: Most customers can export up to 5kW 'most of the time'

The information presented on each option is included in Appendix 1.

Facilitated table discussions on CPPCU's presentation were followed by stakeholder evaluations of the potential impact of each option based on key criteria or considerations (i.e. customer choice/control, cost, benefits to all customers and the options' overall fit with stakeholders' future energy vision). All participants were then asked to vote on which option they preferred. The results of the group activity (options evaluation) and voting are included in Appendix 2.

The overarching feedback was that many participants did not feel they had enough information to evaluate the options fully i.e. either to understand whether the three options put forward were the right options or suitable in the wider context, or to evaluate which one of the three options they preferred. Stakeholders were not confident that they had all of the relevant information

needed to consider the options presented and arrive at the same or different options as CPPCUE. Most wanted more insights on the journey that CPPCUE had taken so far and some signposts to indicate the issues and impacts that the networks had reflected on to arrive at the three possible solutions).

In general, these stakeholders felt that the three options presented were not sufficiently different from each other, and that there must be other options to consider that were not presented (network upgrades, network optimisation and non-network solutions).

They were concerned that none of the options would be long term solutions to fulfil a network vision past 2025. For example, many questioned whether or not future EV uptake had been considered and whether further network upgrades would be required in the future to cope.

How the cost of the proposed options would be met was a topic of much discussion. Stakeholders reflected on whether the costs should be shared across all customers or whether solar customers only should be asked to pay? There was general interest in who will benefit from these (or other options) and how?

Overall, the feedback from the forum participants suggested that any solution adopted by CPPCUE needs to be equitable and benefit a diverse range of customers (solar and non-solar, low income, rural, renters). To be viable, the solar enablement options need to work for all parties involved – the distributor, retailers and customers. It was also acknowledged that solutions may be different for each of the three networks and should be discussed separately as each has its own unique characteristics and considerations.

Of the three options presented, Option 1 was preferred by most stakeholders – it was seen as the simplest and most equitable option developed so far. .

Solar Enablement Options

Around one third of participants (16 in total) concluded that they could not vote on a preferred option at the forum as they believed that they did not have enough information to make that decision. They were also reluctant to commit to an option in case there was no further consultation on the options. Most felt that there should be further engagement before the network makes a decision about which solar enablement option to take forward in their final submissions.

The information that stakeholders thought would assist them to make an informed decision included:

- A more comprehensive range of potential options for solar enablement.

- Reasons for the choice of the three options presented (and reasons for other potential options being dismissed e.g. costs not shared across all customers).
- More detail on the specific 'pros and cons' of the options presented, and what the consequences of each option would be for different customers (solar and non-solar, metro and rural and vulnerable customers)
- More detail on the 'pros and cons' of other options not presented that may have been dismissed and/or other options that have not been considered.
- More detail on the networks' modelling that has been conducted so far and what it has shown.
- Some specific questions asked by participants included:
 - If a solar customer is tripped (i.e. solar export is limited) how long would it be for?
 - Why was 5kW of solar export chosen? Most were puzzled by this level of solar export as it seemed unlikely that individual exports would reach that level?

Other options put forward

During the forum, participants were asked to briefly consider whether there were other options that were worthy of consideration. The following were raised as starting points:

- The option of a lower than 5kW solar export level that is cheaper for customers.
- Revised options that are paid for by solar customers only in return for fees or charges not paid by non-solar customers e.g. export fees/tariffs, connection charges for solar customers
- Incentives for customer take-up of batteries in rural and remote areas
- Third party installation of batteries at sub-stations with solar energy sold back to the grid at times when the feeder is congested.
- More consultation with other energy sector participants to share learnings e.g. SAPN and AEMO who some stakeholders noted were doing great work in this area.
- Voltage optimisation which has been pursued already with large customers but could be also applied in residential areas)

Demand Response

In Session 2 of the forum, CPPCUE provided an overview of demand response programs that had already been implemented or trialled across the three networks and it explained the CitySmart Research approach to optimise the marketing success of demand management programs.

There was strong support for the demand response programs outlined, particularly the Smart Meter Voltage Management (SMVM). Some thought the numbers involved in these programs were quite low and that they should be scaled up to include more customers and to increase their impact on the networks. The variety of programs was praised, in terms of having both customer and network focused programs, and programs that are customised to the needs of large and small customers.

The CitySmart Research was also applauded for its ability to engage and relate to customers' energy needs and lifestyles and its ability to educate people about their power usage and give them control over their costs.

Stakeholders also saw the potential for retailers to be more engaged in these programs and encourage better demand management. The need to involve more businesses in demand response programs was also noted alongside attracting a larger volume of residential customers.

Suggestions for Future Demand Response Programs

Each table was asked to develop an 'idea' for a future demand response program – either a completely new idea or an extension, or variation on one presented at the forum. The ideas put forward were varied and included:

- Targeting commercial and industrial customers to encourage them to shift their load rather than focussing on residential customers.
- Finding a way to use batteries behind the meter at the substation level.
- Making demand response fair and equitable by creating customised programs for those who have low literacy or are visually impaired e.g. with in-home displays that are vision or hearing impaired friendly.
- Introducing smart control devices to assist customers with their load shifting e.g. remote access or in-home controls to operate blinds for heating and cooling.
- Creating a 'purge' option to assist customers with load shifting (to send excess power immediately back to the grid with a simple button-push) as well as device integration to smart phones and tablets with real time costs displayed and integrated with smart meters.
- Having a Community Grants Program based on partnerships formed by CPPCUE with community energy groups and local organisations.
- Encouraging virtual power plants i.e. groups of customers with batteries collaborate at community level to form a virtual power plant.

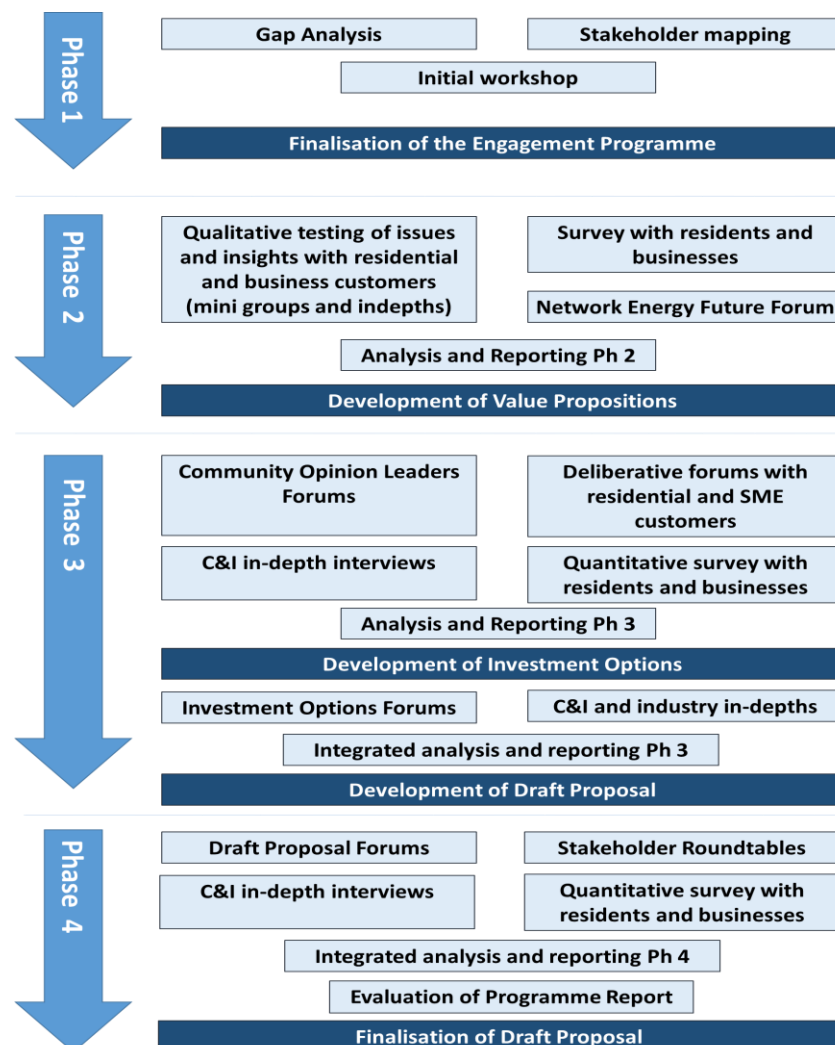
- Investment in SMVM programs that do not inconvenience or incur any costs for customers and are easy to implement.
- Partnering with groups or communities to test out new demand response techniques (using targeted, incentivised schemes to attract participants).
- Implementing mandatory requirements and minimum standards in order to enforce network upgrades at a faster pace and increase take up.
- Leveraging the community's interest in climate change to motivate them to jointly deliver an energy efficiency goal i.e. using a quantified environmental impact to encourage participation, rather than always incentivising with a monetary value. There may be an opportunity to 'sell' incentives which are a positive response to climate change, going beyond the goal of helping to optimise the efficiency of their network.
- Partnering with energy foundations or other groups to help regulate demand management, rather than solely relying on the residential or business consumer.

1.0 Introduction

CitiPower, Powercor and United Energy are required to provide Regulatory Proposals to the Australian Energy Regulator (AER) every five years, detailing their predicted expenditure and revenue requirements over the regulatory period. The businesses are currently developing their Proposals for the 2021-2025 regulatory period.

Woolcott Research and Engagement is contracted to conduct customer and stakeholder research to support the preparation of the Regulatory Proposals as part of the Energised 2021-2025 program. This program involves four key Phases for engagement from January 2017 to 2019. Figure 2 presents the overview of the research program that supports engagement as part of Energised 2021-2025. We are currently in Phase 4 of the program. This report outlines the findings from one of the Topic Roundtables – the Future Networks Forum regarding solar enablement and demand response.

Figure 1: Components of the research program for the regulatory reset



2.0 Methodology

The Future Networks Forum hosted by CitiPower, Powercor and United Energy was held on Monday 1st April 1.00-4.30pm.

This report summarises the design, implementation and outcomes of the forum, the aim of which was to give industry, government and community leaders an opportunity to hear about, evaluate and provide feedback on the networks' current activities and plans for: Solar Enablement and Demand Response programs and initiatives.

A total of 45 stakeholders attended the Future Networks Forum with all participating organisations listed below:

- 1Circle Pty Ltd
- Australian Energy Council
- Australian Energy Regulator
- Barwon Heads Sustainability Group
- BRACE | Birregurra Community Group Inc
- Central Victorian Greenhouse Alliance
- City of Greater Bendigo
- City of Kingston
- Clean Energy Council
- Community Power Hub and Bendigo Sustainability Group
- Deakin University
- Department of Environment Land Water and Planning
- Department of Health and Human Services
- Eastern Alliance for Greenhouse Action
- Energy Consumers Australia
- Energy and Water Ombudsman of Victoria
- Energy Networks Australia
- Energy Safe (VIC GOV)
- Ethnic Communities Council Victoria
- F2 Design and Geelong Sustainability Group
- Geelong Sustainability group
- GreenSync
- Health Purchasing Victoria
- Keemin Energy Solutions
- Manningham City Council
- Melton City Council
- Moreland Energy Foundation
- Mornington Peninsular Council
- Organisation

- Regional Development Victoria (RDV)
- Renew
- South East Councils Climate Change Alliance
- St Vincent de Paul
- Surf Coast Shire
- Sustainability Victoria
- University of Melbourne
- Yarra Energy Foundation

The forum included distributor presentations, a Q&A session, an open discussion on key issues and topics, facilitated table deliberations on CPPCUE's proposed options for 2021-2025 and, brief stakeholder presentations on table-level discussion outcomes. . Woolcott Research provided a Lead Facilitator, who chaired the forum, while six experienced facilitators from Woolcott guided the table discussions and recorded the issues and viewpoints raised.

Participants were encouraged to ask questions during the presentations and all major queries and responses were recorded for inclusion in this report.

The agenda and materials are included in the appendix.

Detailed findings

3.0 Energy market transformation and impacts on the network

To introduce the first session in the forum, Brent Cleeve and Neil Watt provided an overview of the networks' Energised 2021-2025 research and engagement strategy and the key findings to date. Reference was made to the networks' first forum with stakeholders in 2017 that focused on the networks future vision and three potential future scenarios – Steady State (a future where electricity is managed and supplied in much the same way as it is today), Consumer Power (where customers are proactive in adopting new technologies e.g. new appliances and home energy systems and have a strong impact on energy supply and demand) and Green Power (a 'greener' energy future with multi-party participation and investment in renewable energy sources). At the earlier forum, most stakeholders felt that a 'Steady State' scenario was more likely by 2025, but most preferred a future scenario that was a mix of Consumer Power and Green Power.

CPPCUE explained that the main purpose of this Network Futures Forum in 2019 was to share and obtain feedback on the networks' proposals to support energy customers making the transition to solar energy and batteries. CPPCUE personnel underlined the networks' belief that network-wide energy transformation through to 2025 will largely be driven by rooftop solar, with Australia having the highest uptake of rooftop solar panels in the world. The expected fast uptake of residential solar generation is linked to the increased affordability of solar panels and the Victorian Government's provision of subsidies to encourage solar uptake.

The Government's new 'Solar Homes' program will subsidise approximately 650,000 new solar installations across the state, more than doubling the current rooftop solar capacity in Victoria. While the program is available over a 10 year period, it is expected that there will be a surge in installations in the first 5 years, with around 40% of new solar expected to be in the Powercor network area – increasing capacity to nearly triple.

Throughout CPPCUE's Energised 2021-2025 engagement process, customers have made it clear that they expect to be able to connect and export their rooftop solar power in order to lower their power bills, achieve more independence and help sustain the natural environment. CPPCUE customers also expect network upgrades to be made more quickly to facilitate customers' renewable energy uptake and their ability to export spare electricity back to the grid in an unconstrained manner.

However, CPPCUE personnel also explained that increased solar exports do present new challenges for the network, in particular, increases in network voltage that can cause rooftop solar systems to 'trip' (if the voltage is increased above 255 volts. Because the electricity networks were not initially designed to manage significant two-way power flows, many electricity assets still in use today do not enable the distributor to manage reverse flow voltage levels at the granular

household level. This has resulted in an increase of more than 600% in customer complaints about electricity outages and quality since 2014.

In order to manage voltage issues, CPPCUE is continually working to monitor and adjust the overall capacity of the network and where needed, to constrain the customer's ability or capacity to export solar energy. In addition, the networks are working to identify tariff structures that customers understand and support and that reflect the overall cost of running the network. While time of use tariffs have been the customers' preferred option, CPPCUE explained that these tariffs may only be effective where rooftop solar systems are paired with batteries (a rarity in Australia). This is because the peak charge for time of use tariffs occurs typically after the time when rooftop solar systems are exporting energy, and therefore customers are not motivated or incentivised to limit their energy exports during times of peak network stress.

3.1 Table Discussion – Impacts on the network

Future vision

Table discussions at the forum began with an exploration of stakeholders' umbrella views on CCPCUE's vision for the future. The networks' expected transition to renewable energy and the networks' pathway to accommodate change was viewed positively with most stakeholders acknowledging their preference for the Consumer Power and/or Green Power scenarios. However, many wanted to see an accelerated transition to renewables. Stakeholders questioned CPPCUE's predicted delay in electric vehicle (EV) uptake and implementation of battery systems until after 2025. Some also questioned the notion that virtual power plants will not occur until after 2030.

"I think overall the pathway makes sense, but I'd like to see it accelerated a bit more, particularly electric vehicles."

"The vision is way too conservative. Customers want solar – greater access and less inhibitions."

"It is an opportunity lost – if we are brave we wouldn't take the steady state approach."

There was an overall concern that none of the options presented by CPPCUE represented long term solutions that would deliver change beyond 2025. Forum participants questioned whether future EV uptake had been comprehensively considered and believed that further network upgrades will be required somewhat earlier than the networks envisage. In general, stakeholders felt that the networks needed to adopt a more proactive stance, to avoid a catch-up phase later (i.e. reactive measures to deal with change after it has occurred).

Unconstrained exporting

During the forum, stakeholders were advised that community engagement so far has revealed a strong preference for customers storing solar energy to be able to export their excess energy onto the network unconstrained. While this is not currently achievable for all customers due to voltage issues, stakeholders felt that CPPCUE should be working hard to make this feasible for all customers on the network. Stakeholders want CPPCUE to upgrade the network technology to enable solar exports while also taking steps to reduce the likelihood of interruptions on the network. Most felt it was the distributor's role to accommodate all customers equally. They recognised that the planning and installation of network technologies to enable all customers was a large task and a 'sensible' level of management needed to be imposed, but there was some consensus that the associated costs need to be spread fairly across customers.

Some stakeholders pointed out that the current 'first come first served' model was unfair and needed to be better managed. Currently some customers are able to export large amounts of stored energy while others with no capability to export at all.

In line with this sentiment, a number of stakeholders were also interested in the plight of vulnerable households. The potential for these customers (i.e. low income householders, the elderly, to be left out of the dialogue stakeholders sensitive to the fact that these demographics (including low income and the elderly, as well as rural customers and renters) were often left out of considerations and being involved in opportunities such as solar enablement.

"Often it's the most vulnerable people who don't have access to solar – they need protecting."

Key issues and challenges that stakeholders wanted to see managed during the transition to solar were based around network security and safety, as well as education. It was felt that the average solar customer did not have enough information available, or the correct information, to know how their solar exports were working.

There was mention that there was a lot of 'pre 2015' technology still being used that could cause problems with upgrades and new technology. Knowledge of this problem led some stakeholders to call for better regulation regarding compliance of energy assets. Some noted that there will need to be strong regulations and safety measures in place if CPPCUE were to look into shared infrastructure to ensure that these assets are managed safely and effectively.

"You need a policy safety framework behind this – the network needs to stay under the rules."

With some communities implementing their own solar projects, stakeholders believed that CPPCUE will need to fulfil an education role helping communities to implement robust solutions and more of a standardised approach.

Lowering exports through tariff structures

While stakeholders saw some challenges in implementing a time of use tariff structure, there was some opposition to the idea of limiting solar exports back to the grid.

“It seems like they’re indicating that the problem is with the customer – but it’s with the grid.”

Instead, stakeholders felt that CPPCUE should be moving faster to upgrade technology and allow for more exports onto the network. Some also felt that they already had the information (from smart meters) and technology in place to limit any problems that may arise in the current market, while they continue to implement upgrades.

4.0 Building the network of the future – Solar Enablement options

Led by Neil Watt, a senior engineer, presented specific options for enabling solar export on the network. CitiPower, Powercor and United Energy can use a range of network and non-network solutions to ensure customer choice and greater export of solar energy including; network upgrades and augmentation, voltage management and new inverter settings, and transformer tapping and phase rebalancing. The widespread implementation of smart meters across Victoria also gives insights that allow for innovative solutions to solve voltage issues. Three potential options were put forward under the following assumptions:

- residential customers can export up to 5kW of solar in line with the Victorian Government policy to subsidise solar up to 4kW (exports higher than this capacity may be constrained due to the high costs);
- from 2020, it will be mandatory that all new solar connections will have smart ‘volt-var’ setting applied to their inverter;
- CitiPower, Powercor and United Energy will address constraints in the lowest cost way, utilising non-network solutions and optimisation where possible before augmenting the network; and,
- while the United Energy network already benefits from Dynamic Voltage Management, it is assumed that the CitiPower and Powercor networks will have a DWM equivalent rolled out by 2025.

The three options presented were:

Option 1: Customers can export up to 5kW 'at all times'

This option would allow customers to export up to 5kW at all times in most situations, although there may be short interruptions to those exports due to unforeseeable network outages.

The impacts of Option 1 are displayed in the table below.

Table 1: Option 1 - Customers can export up to 5kW 'at all times'

Option 1	Powercor	CitiPower	United Energy	Total
Constraints	Not expected	Not expected	Not expected	Not expected
MW solar enabled	507	182	134	823
Total cost estimate 2021-2025	\$150 million	\$48 million	\$34 million	\$232 million
Cost per MW	\$296,000	\$263,000	\$254,000	\$271,000 (average)
Avg. bill impact per annum	\$8.00	\$6.40	\$2.60	

In order to deliver this option, the distributor would require investment in the network that ensures that voltages do not rise to a point where inverters trip.

Option 2: Customers can export up to 5kW 'most of the time'

This option would allow customers to export up to 5kW of power to the network most of the time, meaning that customers will be tripped off from exporting in some circumstances, estimated to be no more than 10% of the time.

The impacts of Option 2 are displayed in the table overleaf.

Table 2: Option 2 - Customers can export up to 5kW 'most of the time'

Option 2	Powercor	CitiPower	United Energy	Total
Constraints	10% time	10% time	10% time	10% time
MW solar enabled	507	182	134	823
Total cost estimate 2021-2025	\$115 million	\$37 million	\$27 million	\$179 million
Cost per MW	\$227,000	\$203,000	\$201,000	\$210,000 (average)
Avg. bill impact per annum	\$6.10	\$4.90	\$2.10	

In order to implement this option the distributor would require investment to ensure voltage issues do not trip inverters but allow for some rise in the voltages to manage costs imposed on all consumers. Compared to Option 1, unlocking solar for most, but not all of, the time significantly reduces the total cost from \$232 million to \$129 million.

Option 3: Most customers can export up to 5kW 'most of the time'

This option would allow for most customers (approximately 95% in Powercor and United Energy networks and 100% in the CitiPower network) to export up to 5kW most of the time, meaning that customers will be tripped off from exporting in some circumstances, estimated to be no more than 10% of the time.

The impacts of Option 3 are displayed in the table overleaf.

Table 3: Option 3 - Most customers can export up to 5kW 'most of the time'

Option 3	Powercor	CitiPower	United Energy	Total
Constraint	10% time, up to 5% of customers	10% time	10% time, up to 5% of customers	Varied
MW solar enabled	488	182	127	797
Total cost estimate 2021-2025	\$73 million	\$37 million	\$24 million	\$134 million
Cost per MW	\$150,000	\$203,000	\$189,000	\$180,000 (average)
Avg. bill impact per annum	\$3.90	\$4.90	\$1.90	

This option would require investment to ensure voltage issues do not trip inverters but it does allow some rise in the voltages, except for customers on small transformers (estimated to be up to 5% in Powercor and United Energy networks). This is the least cost option for customers and the only one where the benefits are higher than the expected costs.

4.1 Table Discussion – Solar enablement options

Overarching feedback was that many participants did not feel that they had been presented with enough information to evaluate the options fully - either whether the three options put forward were the right options in the wider context, or to evaluate which one of the three they preferred. Stakeholders wanted to feel that they had been given all of the relevant information to determine if they would indeed arrive at the same set of options as those posed by CPPCUE (i.e. they wanted more insights to the journey taken, what had been considered and some signposts to explain the issues that CPPCUE had reflected on to arrive at the three possible solutions). They wanted to be sure that these three options were the only solutions worth considering before choosing which one of the three they preferred.

They also believed that the three options presented were not sufficiently different from each other, and that there must be other variations on these options that were not presented.

"There must be a lot of solutions to consider outside of these options."

"You're arguing over a couple of dollars annually – why wouldn't you build the best system... its only for a 5 year period anyway – why would you not build the best?"

There was concern that none of the options presented would deliver long term solutions for the network past 2025. For example, many questioned whether or not future electric vehicle uptake had been considered and whether further network upgrades would be required in the future to deliver the required capacity for this and other expected changes. .

“The challenge is that as soon as EVs and batteries come in it will completely change.”

“That’s my first impression it seems a bit short sighted.”

“The grid is going to look so different in the future so maybe we are wasting our time and money now if this is going to be obsolete in the future.”

Alternative approaches to cover the cost of implementing the options was the subject of much discussion – should the costs be shared by all customers or should only those customers using solar be required to pay. Many thought that customers who will directly benefit (solar customers) should be paying more than those who are unable to benefit because they cannot afford or have no access to solar panels (e.g. vulnerable customers).

“I wonder if these costs could be less smeared, so behaviour/usage of solar customers could be taken into account.”

“It is very difficult when we just see the average cost impact. I am worried about low income customers.”

“All customers are paying but not getting the benefits.”













Overall, participants’ feedback was that any solution adopted needs to be equitable and benefit the diverse range of customers (solar and non-solar, low income, rural, renters). Most felt that the chosen option needs to work for all parties involved – the distributor, retailers and customers.

Some felt that solutions may be different for each of the three distribution areas and hence, choice making on solar enablement options suited to each network should be discussed separately. Stakeholders noted the different characteristics and considerations in different geographies that may not be addressed with a standardised approach.

To weigh-up some key considerations or influences on the solar enablement option, each table was given an Activity Sheet and asked to evaluate the options based on: customer choice and control, cost, benefits to all customers, and their fit with stakeholders’ future network vision. Participants were asked to determine whether each of these influences were positive, negative or neutral. The outcomes of this activity are displayed in the figure below.

- Customer choice and control: most stakeholders found this to be difficult to assess because choice for customers was linked to their ability to access and benefit from solar. If a customer was unable to do so, it was likely they would have no further control, but an added cost.
- Cost: there were varying views on the cost impact of each option. Some felt that the cost was so small (even for the most expensive Option 1) that it could be interpreted as positive or almost neutral, while others felt that some customers would see any bill increase to be negative. There were also other factors to consider including whether the benefits of solar exports and positive impacts for the environment might outweigh that cost altogether.
- Benefits to all customers: many felt that the benefits to all customers were not equal within any of the options. This perceived inequity exists either because customers would be restricted in some manner (e.g. by the distributor) or they may not have access to solar anyway to directly enjoy the benefits.
- Fits with future vision: there was discussion about what the future network would look like and whether this new infrastructure would support it or become obsolete in 5 years' time. Many stakeholders felt a lot more will need to be done in order to future proof the network. While any step towards solar uptake was considered to be positive, there was an overall agreement that more needed to be done to make the transition to renewables including solar happen sooner.

Figure 2: Activity sheet results

	Tally of votes (29 voted)	CONSIDERATIONS			
		Customer choice and control	Cost	Benefits to all customers	Fits with future vision
Option 1: Customers can export up to 5kW 'at all times'	13.8				
Option 2: Customers can export up to 5kW 'most of the time'	5.3				
Option 3: Most customers can export up to 5kW most of the time	9.3				

At the end of this session, participants were asked to vote on their preferred option (if any). Of the three options presented Option 1 was preferred – it was seen as the simplest and most equitable of the three (see Figure 2 above).

Around one third of the forum participants (16) did not feel that they could vote on which of the three options they preferred as they believed that they did not have enough information to be able to make that decision.

The additional information sought by stakeholders to make a more informed decision included:

- A more comprehensive range of potential options for solar enablement.
- Reasons for the choice of the three options presented (and reasons for other potential options being dismissed e.g. costs not shared across all customers).
- More detail on the ‘pros and cons’ of the options presented, and what the consequences of each option would be for different customers (solar and non-solar, metro and rural, vulnerable)
- More detail on the ‘pros and cons’ of other options not presented that may have been dismissed and/or other options that have not been considered.
- More detail on the networks’ modelling that has been conducted so far and what it has shown.
- Some specific questions asked by participants included:
 - If a solar customer is tripped (i.e. solar export is limited) how long would it be for?
 - Why was 5kW of solar export chosen? Most were puzzled by this level of solar export as it seemed unlikely that individual exports would reach that level?

Customers were also reluctant to commit to an option in case there was no further consultation on the options – they believed that there should be further engagement by the networks before a decision is made on which solar enablement option to include in the regulatory submission.

Other options

Participants were asked briefly if there were other options to consider. The following were raised as starting points:

- The option of a lower than 5kW solar export level that is cheaper for customers.

- Revised options that are paid for by solar customers only in return for fees or charges not paid by non-solar customers e.g. export fees/tariffs, connection charges for solar customers
- Incentives for customer take-up of batteries in rural and remote areas
- Third party installation of batteries at sub-stations with solar energy sold back to the grid at times when the feeder is congested.
- More consultation with other energy sector participants to share learnings e.g. SAPN and AEMO who have done some great work in this area to.
- Voltage optimisation (pursued already with large customers but this approach could be applied in residential areas as well)

4.2 Stakeholder Q&A with CPPCUE personnel – Solar enablement options

CPPCUE's three options for solar enablement generated a range of questions which were answered by network personnel before and after their table level discussions.

Typically, the questions raised by stakeholders related to: the choice of a 5kw export level for the options, the networks cost analysis and distribution across customers and, whether there were other non-network options (given that all options presented were seen as variations on the same solution).

Some stakeholders queried the 5kw export level and noted that "it seemed unrealistic that it [exports] would reach that level". In response, CPPCUE managers explained that this is a national guideline that is standard; it is resident focused (with some potentially exporting just 1 to 2kw) and the networks can accommodate this level at zero cost. Related comments from network managers were: "A typical 5kw system will rarely export that much" and "when you get to 10kw, it will require an upgrade to the system and they [customers] will have to pay".

In relation to CPPCUE's costings of the options, questions were raised about the underlying assumptions (whether direct export without batteries was assumed) and the extent to which overall costs and benefits had been evaluated. Network personnel explained to stakeholders that the costings were based on direct export to the grid (with independent forecasts guiding the networks' assessment of the level and timing of battery take-up).

South Australian Power Network (SAPN) was cited by one stakeholder for its "good work on costs and benefits to the customer" and their projection of "modest costs to the network and more dynamic management in the future". In this context of forward planning, CPPCUE was asked about

its “long term flight path on your overall cost base?” The networks’ response was that “it is additional to augmentation costs and built into the long term”.

Reflecting on South Australia’s “revisions of inverter standards that are coming up”, CPPCUE was asked whether it was considering any revisions of inverter standards were being considered. Here, it was explained that “behind the meter is not something that we [the networks] are looking at right now. In the next 5 to 10 years, we will have far more of a role to play”. It was reiterated that the chosen solution for the next regulatory period would apply to all network locations including new suburbs (with costs smeared across all customers), but the networks are not “controlling inverters”.

A further cost-related question related to connection charging. One stakeholder wanted to know, “Why isn’t there an annual charge rather than smearing the cost?” and whether it would be a “falling cost for everyone?” It was explained that prices would reduce in the long run for everyone but it was also possible that “someone who has a solar PV unit may be clever enough to consumer nothing from the network”. It was acknowledged by CPPCUE that some could get a benefit from the network without paying anything and “in future, there could be quite a few of those people”.

Some queried the actual cost calculations e.g. “If Option 2 is a \$4.90 impact for a CitiPower customer for example, then you times that by the number of customers...it would take 20 years to pay back so how do the figures match up?” Here it was explained that the “the costs are a per year cost” and that “even though it is a five year price determination, customers will be paying for this for 20 years”. The point was made that the proposed solution is “to deal with solar, but it has broader benefits too”.

Interest was also expressed in the impact of electric vehicles on the costs – “When EVs come in, the costs will go up again...does this upgrade allow us to deal with other impacts such as EVs?” CPPCUE explained that the networks are building a sophisticated model that includes the impact of EVs. In response to stakeholder concerns about differences between the networks and variations across the state, CPPCUE acknowledged that this was the case - “We are trying to be as sophisticated as we can. We can do more than SAPN for example as a result of our smart meters in Victoria. We have been working very hard to get it [our proposed options] to this stage. Our smart meter data is helping”. Network personnel were also asked whether ‘distribution loss factors’ were significant and advice was given that these were expected to be lower i.e. “the benefit of enabling solar is to reduce loss factors”.

Stakeholders also sought to better understand the differences between the options during the Q&A. A related question was: “What is it you are doing that is constraining 10% of the time?” In reply, a network manager explained that “we have assumed the ‘volt-var’. Option 2 doesn’t give us

much headroom. Under Option 2, we are assuming ‘tripping’. Then we have taken out smaller substations for Option 3”.

Some interest was expressed in the 5% of customers on the small transformers and it was explained that the network “can limit their exports to almost zero”. The need to explain these details to customers was noted and CPPCUE was asked if there would be an education process and agreed that “it [the options] will need explaining”.

In line with the table discussions, some stakeholders also voiced concerns that all solutions were variations on the same one. In this context, one stakeholder asked: “are there other non-network options?” CPPCUE explained that it is “not allowed to own assets that are behind the meter”, but that it is interested in hearing other solutions i.e. “If there is a fourth option, we would like to hear from you about it. Battery is not an option because it is too expensive and inverters are in all the solutions”.

Stakeholders made one or two additional suggestions for non-network solutions. The first of these was to have a “third party renting space in a sub-station and putting a battery there and selling it [stored energy] back at times when the feeder is less congested”. CPPCUE personnel acknowledged there may be some benefits in this idea, although the networks were “not talking about capacity constraint” but rather they are “talking about voltage...the technology to infinitely control it at an affordable price would be great”.

A second suggestion (made by another stakeholder) related to voltage optimisation and this was to “have a customer gadget to make the voltage lower and pay less”. The stakeholder noted that this has been already been done in the commercial context but could also be used by residents. Related comments were that “China is getting a lot of investment in this category” and a “previous CEO of a retailer is driving this heavily”, and CPPCUE was asked, “To what extent could this be a useful contributor?” In response, network managers noted that this could be a good idea.

Towards the end of the Q&A with network personnel, the conversation returned to the issue of equity, with one stakeholder noting that this was an issue for forum participants: “You were asking why people didn’t vote. My discomfort was that we discounted 5% of the population with zero benefit. Some people will pay a lot more than the average and some zero. I struggle with that and feel that we should be more equitable in our decision making.” In response, CPPCUE personnel agreed that this was an issue and this would have to be considered more fully in the long term.

Forum participants also reiterated their concerns about differences between the networks that may need to be considering in refining the solar enablement options. Related comments made by a stakeholder were: “We are coming up with one solution for three very different networks. Most

solar falls in one network...it would be interesting to see the cost per KW to put solar on the roof. Should we be driving for more solar in PC or CP or UE? Probably not CP. We might have to come up with three different sets of traffic lights and options for the three different distributors. I think what we have come up with could be misleading depending on the network.” Here the stakeholder’s views were acknowledged, but it was also noted that CPPCUE had to be “mindful of customers not feeling like they are getting treated differently”.

One of the closing observations in the Q&A on solar enablement was that: “there are 14 networks grappling with this – there should be shared learnings between the.” Here, CPPCUE explained that it had jointly contributed last year to “frameworks and standards that we were all able to share”.

5.0 Demand Response

In Session 2 of the Forum, Ruchika Deora, Manager, Marketing and Community Partnerships from CPPCUE provided an overview of demand response programs that had already been implemented and trialled across the three networks as well as the CitySmart Research approach designed to optimise the marketing success of demand management programs.

Demand response was described as an integral part of a well-diversified electricity grid, offering a non-network solution to help increase asset utilisation and reduce customer costs while enabling a future with lower carbon emissions. Different types of Demand Response programs were deemed suitable for addressing grid constraint issues and asset management opportunities. Regardless of the demand response type (i.e. programs focused on a behavioural response or a controlled load), understanding customers and increasing and improving engagement were seen as pathways to more effective and cost efficient outcomes.

The table below outlines the various demand response programs across the three networks that were presented to participants.

Table 4: Demand response portfolio

Network	Program name	Capacity	Technology/solution	Target audience
CitiPower and Powercor	Smart Meter Voltage Management (SMVM)	60MW	Voltage Management at a substation level to reduce demand on the grid during peak periods. Vulnerable load and life support customers are closely monitored or excluded through events	AEMO, no customer impact. Partnered with large electricity users with sophisticated energy management strategies
Powercor	Energy Saver (RACV Demand Response Trial)	2MW	Behavioural Demand Response. Partners: RACV & Local Councils. Sensibo thermostat device provides control load. Customers are compensated \$20 per event. Reduce energy at risk on the Surf Coast and	Surf Coast Shire Bellarine Peninsula Residential Customers

			Bellarine Peninsula	
United Energy	Dynamic Voltage Management System (DVMS)	12MW – 20MW	Voltage Management at a substation level to reduce demand on the grid during peak periods and achieve close to regulatory compliance for steady state voltage <i>Sponsor: ARENA</i>	AEMO, no customer impact. Partnered with large electricity users with sophisticated energy management strategies
United Energy	Summer Saver (DR Mobile App)	1MW	Behavioural Demand Response for residential customers on specific distribution substations and low voltage circuits in the UE service area <i>Partners: Bidgely</i>	Mornington Peninsula Residential Customers on specific feeders
United Energy	Solar-Storage Project	0.5MW	Contracted Residential customers with solar/storage systems to provide demand reduction to avoid periods of load shedding due to a lack of network capacity <i>Sponsor: ARENA</i>	42 Residential Customers on specific feeders
United Energy	Commercial/Industrial Load Control	2MW	Contracted Commercial and Industrial customers to provide demand reduction to avoid periods of load shedding due to a lack of network capacity	C&I Participants: SE Water

5.1 Table Discussion – Demand response

In the table discussion on demand response, participants were asked for their thoughts on the programs presented, their strengths and weaknesses and any perceived barriers to adoption. They were also asked to provide feedback on the CitySmart Research that was presented.

Overall, these stakeholders were very supportive of the demand response programs outlined, although some saw the numbers involved as quite small. As a result, suggestions were made to scale up the programs to include more customers and achieve a larger impact on the networks. The variety of programs was praised, in terms of having customer and network focused programs and programs that are customised for large and small customers. Stakeholders saw the Smart Meter Voltage Management (SMVM) as especially appealing because it was seen to offer some significant cost benefits to the Energy Distributor with no downsides or cost impacts to customers.

“I agree with having both active and passive programmes and in particular the passive programmes are about getting the best value for money in terms of investment.”

“The SMVM is a no brainer, it doesn’t cost the customer and it’s easy to implement”

Some questions were raised as to why incentives are required when using less electricity should provide cost savings anyway. However, there were also stakeholders who believed that incentives are needed to encourage behavioural change, particularly among customers who feel they have little flexibility and/or cannot make many changes to their electricity usage. In general, stakeholders felt people do not currently understand how much opportunity there is to save money by changing their energy usage pattern.

“Understanding how much opportunity there is with saving is important. It’s making the invisible, visible.”

The overarching view was that while there is a negative perception of controlled load among customers right now, this should be investigated further. The CitySmart Research was applauded for its customer engagement, its ability to educate people about their power usage and to give them greater control over their costs.

“I’m not a marketer – but the theory of it sounds ok. I agree that it should be about benefits to you – it’s all about the customer. Make it snappy and snazzy.”

Stakeholders also wanted to see retailers engaged in these programs to encourage better demand management and more businesses taking part in the programs alongside residential customers.

“They should pick C&I rather than residential customers. They would involve half the work and produce twice the impact, e.g. wineries.”

Finally, some stakeholders suggested that CPPCUE should challenge the existing regulatory environment and try to advocate for change, rather than saying that they can't implement changes because it is against the rules.

"Demand management needs to be looked at in a new light. Freeing the customer and the service provider to come up with new ideas that haven't been done before. The customer needs to be the prosumer."

5.2 Table Discussion – Table pitches

Drawing on their critique of different approaches to demand management, each table was asked to develop an 'idea' for a future demand response program. Stakeholders were advised that this could be a completely new idea or it could be a variation or extension to an existing approach already presented at the forum. Each table was asked to present their idea(s) to the room following the discussion.

One table put forward several ideas. The first of these programs targeted commercial and industrial (C&I) customers, incentivising them to shift their load rather than relying on residential customers alone. There was a feeling that C & I participation would result in much bigger impacts for the network than focussing on residential customers.

This table also highlighted the need to find a way to use batteries behind the meter at the substation level. The rationale for this comment was that in a few years' time, there is likely to be a lot of free energy available from wind farms and solar and the cost will be impacted by what is installed to store energy around those generators. Investing in batteries to store the excess energy was viewed as a sensible way to help solve the demand management issue.

Stakeholders also saw an active role for the distributor in advocating for change in the regulatory environment. The stated logic was that some solutions were not able to be considered because of current regulations. Many felt that demand management needed to be looked at in a new light and that customers and service providers need to come up with ideas that haven't been considered before.

One person mentioned the Sensibo product and suggested looking at other demand schemes that are similar to that approach.

One table presented an idea that focused on making demand response programs more fair and equitable, with specific consideration given to those who have low literacy or are visually impaired. It involved customers having an in-home display that showed colour codes and simple graphics – like a simple traffic light system for power that would enable the network to communicate or signal to customers the level of demand on the network. Green would communicate "go for it" to

customers for their power usage i.e. they can use whatever they want. There would be audio options for the vision impaired that beeped to signify peak periods. The power system would control the customers' appliances either remotely or in-house.

Alongside the in-home display, a smart control device was suggested to achieve load shifting with blinds in the home either opened or closed for heating and cooling, using either remote access or an in-home device. A 'purge' option was also suggested to send excess power back to the network with a simple button-push. Most ideas involved the smart control device being linked to smart phones and tablets with real time costs displayed and integrated to the meter.

Another table put forward the idea of a Community Grants Program with the network taking steps to establish and actively leverage partnerships with the growing number of active community energy groups and organisations at the grassroots. These groups could share both the cost of the program and its benefits.

Virtual power plants were also put forward as potential opportunities to stimulate demand response i.e. groups of customers with batteries would cooperate to form a virtual power plant. Battery subsidisation could accompany this type of initiative in areas where solar exporting is an issue.

Another table of participants suggested that the networks continue to invest in SMVM programs with key advantages being that: the customer is not inconvenienced in any way, it doesn't cost the customer anything and it is easy to implement. Stakeholders at this table also commented that education and awareness building was important, in particular to build awareness of the amount of energy a customer uses, their peak usage times and, how their behaviour and usage could strain the capacity of the network. Education of this nature could include for example, a marketing tool that focuses on the benefits to 'me' and what customers lose and what they gain by certain behaviours. This initiative could simultaneously offer customers financial rewards for certain behaviours such as decreasing their usage during peak times.

Further ideas mentioned by forum participants included the following:

- Partnering with groups or communities to test out new demand response techniques (using targeted, incentivised schemes to attract participants).
- Implementing mandatory requirements and minimum standards in order to enforce network upgrades at a faster pace and increase take up.
- Leveraging the community's interest in climate change to motivate them to jointly deliver an energy efficiency goal i.e. using a quantified environmental impact to encourage participation, rather than always incentivising with a monetary value.

There may be an opportunity to 'sell' incentives which are a positive response to climate change, going beyond the goal of helping to optimise the efficiency of their network.

- Partnering with energy foundations or other groups to help regulate demand management, rather than solely relying on the residential or business consumer.

6.0 Participant Evaluation Results

At the end of the forum, participants were given an evaluation sheet which enabled them to give feedback on the engagement session. Overall, the forum was positively received (see Table 5) with the majority of stakeholders rating the forum as 'good'.

Table 5 Overall rating of the Future Networks forum

Overall Rating	N=30 #
Excellent	4
Good	22
Fair	3
Poor	1

Overall, how would you rate the forum?
Base: Solar Enablement Stakeholders (n=30)

Most stakeholders expected to discuss and share their opinions through participation in the forum while many hoped to gain insight into a variety of topics within the energy sector. The results show that most had their expectations met 'quite a bit' (n=14) or 'a fair amount' (n=8).

"I expected to gain a deeper insight into how the future of electricity will be used" (Solar enablement stakeholder)

Table 6: Expectations of the forum

Expectations	N=30 #
Fully	4
Quite a bit	14
A fair amount	8
A little	2
N/A	2

How much did the forum live up to your expectations?
Base: Solar Enablement Stakeholders (n=30)

Participants were also asked to show whether they agreed with a number of statements regarding the forum outcomes, the running of the forum and their overall participation.

Table 3 shows that the majority of stakeholders (n=27) 'felt heard' and 'had a voice in the discussion', with most (n=23) agreeing that 'the forum was well organised and content presented was relevant to the discussion'. The majority of the stakeholders (n=17) agreed that the outcomes from the forum would be considered by the distributor.

Table 7: Agreement with Statements regarding the forum

I felt like I was heard and I had a voice in the discussion	N=30 #
Strongly Agree	12
Agree	15
Neutral	2
Disagree	1
Strongly Disagree	-
The forum was well organised and content presented was relevant to the discussion	N=30 #
Strongly Agree	9
Agree	14
Neutral	6
Disagree	1
Strongly Disagree	-
The venue and catering were satisfactory	N=30 #
Strongly Agree	15
Agree	13
Neutral	-
Disagree	1
Strongly Disagree	1
There was enough time to discuss the topic at hand	N=30 #
Strongly Agree	14
Agree	-
Neutral	11
Disagree	4

Strongly Disagree	1
I have confidence that the outcomes of the forum will be considered	N=30
	#
Strongly Agree	5
Agree	12
Neutral	12
Disagree	1
Strongly Disagree	-

Please read the statements below about the forum and select the response with which you most agree, from 1 = strongly disagree to 5 = strongly agree

Base: Solar Enablement Stakeholders (n=30)

Stakeholders expressed a positive opinion of the forum with many commenting that the discussions felt valuable and that they were satisfied with the information provided. Several also commented that they were pleased with the diversity of speakers and opinions discussed.

“Very interesting & diverse range of stakeholders.”

In terms of improvement, most stakeholders wanted to be provided with more background information to guide their decision making, and also to understand why CPPCUE had come to certain decisions. A number suggested that the forum should have a longer duration time and a few wished to discuss their opinions further in future forums.

“Questions were somewhat ambiguous - more background information is needed.”

“It felt like some of the outcomes were already pre-determined.”

Appendix 1: Agenda

Project:	CPPCUE – Regulatory Reset Phase 4		
Event:	Future Networks Round-table discussion (Solar Enablement and Demand Response)		
Details:			
Dates/ locations/ times:	01/04/2019	CPPCUE	Venue: InterContinental The Rialto, 495 Collins St, Melbourne VIC 3000 Time 1.00-4.30pm
Forum objectives:	<ul style="list-style-type: none">• To obtain specific feedback regarding:<ul style="list-style-type: none">○ on CPPCUE’s proposal to enable more solar exports on the network and to increase demand response		

Time	Session details	Responsibility	Materials
1.00pm	LUNCH <ul style="list-style-type: none"> Participants to register and collect badge on arrival, then help themselves to lunch. Sit at tables to eat 		
1.30-1.35pm	Housekeeping <ul style="list-style-type: none"> Welcome and thank for coming Introduce self and WR Introduce CPPCUE representatives in the room Purpose of today’s round-table discussion: <ul style="list-style-type: none"> Obtain feedback on CPPCUE’s proposal to enable more solar exports on the network and to increase demand response Brief outline of the session agenda Guidelines recap Housekeeping (mobiles off, toilets, fire evacuation) Introduce Brent, Head of Regulation at CitiPower, Powercor and United Energy, responsible for the development of the Regulatory Proposal for 2021-2025 	Ian Woolcott	PP Slides
1.35-1.50pm	Presentation: Energy market transformation and impacts on the network <ul style="list-style-type: none"> Brent to welcome and thank for coming The journey so far – <ul style="list-style-type: none"> Held an Energy Network Futures Forum (EFCAP/CCC) in 2017 - we looked at scenarios for the future and what we thought the levels of certain ‘assumptions’ might be during 2021-2025 Outline what the future will look like, linking it back to the scenarios Discuss the strongest impacts of the Victorian Government’s recent solar subsidy Describe in detail what that means for our network and 	Brent Cleeve and Neil Watt	PP Slides

	what the key issues are (i.e. problem definition)		
1.50-2.05pm	<p>Table Discussion</p> <p><i>Participants to introduce themselves and give their role in relation to energy.</i></p> <ul style="list-style-type: none"> • What are your thoughts on our vision for the future? • Our customer have told us they want to export solar onto the network unconstrained – should all customers be able to export given the voltage issues? • Do you foresee any other challenges for the network with increased solar penetration? Can you think of tariff structures that would encourage fewer exports? 	WR Facilitators	
2.05-2.20pm	<p>Presentation 2: Building the network of the future - Solar Enablement Options</p> <ul style="list-style-type: none"> • Present the benefits of Solar Enablement • Present the options for the network in how to manage Solar Enablement • Present the options for investment 	Neil Watt	PP Slides
2.20-2.45pm	<p>Discussion on Topic 2 – Solar Enablement Options</p> <p>GIVE OUT SLIDES OR HANDOUT ON OPTIONS TO EACH PARTICIPANT</p> <ul style="list-style-type: none"> • What are your initial thoughts on the options put forward? • What key considerations should CPPCUE take into account when deciding on the option to take forward? • What would the impacts be of each option? <p>GIVE OUT GROUP A3 ACTIVITY SHEET – CHOOSE A SPOKESPERSON TO FILL IN FOR THE GROUP</p> <ul style="list-style-type: none"> • As a group go through each option and rate (Positive, Neutral, Negative – could use happy, neutral and sad faces) what the impact of this option would be on: <ul style="list-style-type: none"> ○ Customer choice and control ○ Cost ○ Benefits to all customers ○ Future vision (i.e. future proofing the network) • So, do the proposed options deliver customer choice and align with CPPCUE’s vision for the future? • Which option is preferable? <p>GIVE A STICKER TO EACH PARTICIPANT AND ASK THEM TO STICK ON WHICH OF THE THREE OPTIONS THEY PREFER ON</p>	WR Table Facilitators	<p>Print outs of slides</p> <p>Group activity sheet</p> <p>Room wall posters - 2 copies of each option</p>

























	THE WALL. <ul style="list-style-type: none"> Are there any other options that CPPCUE should consider to deal with the issue of solar enablement? 		
2.45-3.10pm	AFTERNOON TEA BREAK <ul style="list-style-type: none"> WR to collate the tables' activity sheets ratings and show results on screen 		
3.10-3.25pm	Feedback on activity sheets <ul style="list-style-type: none"> Lead facilitator to present favoured option and results from activity sheets on screen Open it up to response from the floor 	WR LEAD FACILITATOR	PP slide
3.25-3.35pm	Presentation 3: Demand Response <ul style="list-style-type: none"> Demand response programs <ul style="list-style-type: none"> Smart Meter Voltage Management (SMVM) Energy Saver (RACV Demand Response Trial) Dynamic Voltage Management System (DVMS) Summer Saver (DR Mobile App) Solar-Storage Project Commercial/Industrial Load Control Briefly discuss future plans 	Ruchika Deora	PP Slides
3.35-4.10pm	Discussion 3a: Demand Response <ul style="list-style-type: none"> What are your thoughts on the demand response programs presented? What are the strengths of the programs? What are the weaknesses of the programs? What do you think of the CitySmart Research approach to improve marketing for demand management programs? What are the main barriers to customers adopting these kinds of programs? How can these barriers be overcome? <p>For the last 20 mins of this session – <i>Explain that we would like them, as a group, to come up with an idea(s) for a future demand response program/project. This could be a completely new idea or could be an extension, or variation on one presented today. Each table will be presenting their idea(s) to CPPCUE in the next session. They can use the flipchart to draw, write, etc. to outline their idea. They can be as creative as they like. They will need to choose a spokesperson to present their idea.</i></p>		Print out of slides or information sheets on programs Flipcharts and pens
4.10-4.25pm	Table Feedback <ul style="list-style-type: none"> Each table to present their ideas for other projects CPPCUE to choose one idea that they like the most to potentially consider taking forward or advocating for 	Ian Woolcott CPPCUE	

4.25-4.30pm	Summing up, thank you Brent to thank attendees and acknowledge the value of discussions and feedback provided. Outline what next steps will be.	Brent Cleeve	
4.30pm	CLOSE Lead facilitator to remind table facilitators to give out end of session questionnaires and permission for CPPCUE to contact forms.		End of session questionnaires and permission to contact forms

Appendix 2: Activity Sheet

GROUP ACTIVITY SHEET – Table number: Solar options

Please circle the face (positive, neutral or negative) that represents your table's view on how each option will impact the considerations:

	CONSIDERATIONS			
	Customer choice and control	Cost	Benefits to all customers	Fits with future vision
Option 1: Customers can export up to 5kW 'at all times'	  	  	  	  
Option 2: Customers can export up to 5kW 'most of the time'	  	  	  	  
Option 3: Most customers can export up to 5kW most of the time	