Clean Energy Council submission to the NSW Empowering Homes Market Sounding Paper

The Clean Energy Council (CEC) welcomes the opportunity to provide feedback on the Market Sounding Paper for the NSW Empowering Homes Program.

The CEC is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in solar, wind, hydro, marine and geothermal energy, energy storage, hydrogen and energy efficiency along with more than 6,200 solar installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

The CEC urges the NSW Department of Planning to learn from the mistakes made in the design and implementation of earlier incentive schemes. For example, an important lesson from the Victorian Solar Homes program is that the Government must be willing to adjust program parameters if demand exceeds the available supply within the limited budget. While we acknowledge that there is a lower risk of runaway success for a no interest scheme for batteries (in comparison with a rebate scheme for solar) it is nevertheless crucially important that the Government consider the possibility of the scheme exceeding expectations and having in place a strategy to manage that risk. The best way to manage that risk would be to adopt a dynamic approach to adjusting scheme parameters based on the changing demand, so that demand can be periodically recalibrated to meet the available supply.

As a general observation, we note that there is potential for duplication of CEC processes regarding documentation and testing. It would be preferable for the NSW Department of Planning to work with CEC and share the results of audits for us to review.

We also put forward the following key recommendations:

- Consider whether a zero-interest loan will be an effective incentive for investment in batteries
- Design the program so that it that avoids the risk of creating a boom-bust cycle and can respond to over-subscription or under-subscription without the need for Ministerial or Cabinet decisions
- Coordinate the NSW government agencies involved in electrical safety, consumer protection and energy regulation to avoid unintended gaps or duplication in the regulatory framework
- Avoid mandating requirements that differ from other jurisdictions
- Avoid mandating standards that have not yet been approved or creating new quasi-standards through eligibility requirements
- Do not mandate participation in a virtual power plant (VPP)

We would be very happy to discuss these issues in further detail. We would also be happy to provide additional information on CEC's accreditation schemes for solar installers, solar equipment and solar retailers. We look forward to contributing further to this important area for policy development.

Responses to questions raised in the Market Sounding Paper

1. ***How might this model be improved to best achieve the program objectives, bearing in mind the program delivery requirements?***

The CEC urges the NSW Department of Planning to learn from the Victorian Solar Homes program and must be willing to adjust program parameters if demand for no interest loans exceeds the available supply within the limited budget. We acknowledge that there is a lower risk of runaway success for a no interest scheme for batteries in comparison with a rebate scheme for solar. Nevertheless, it is crucially important that the Government consider the possibility of the scheme exceeding expectations and having in place a strategy to manage that risk. The best approach to avoiding that risk would be to adopt a dynamic approach to adjusting scheme parameters based on the changing demand, so that demand can be periodically recalibrated to meet the available supply.

It is very important to consider the impact of program design on customer purchasing behaviour and psychology in order to avoid any unintended impacts on the market. For example, the Victorian battery rebate program is limited to certain postcodes. Industry has reported that battery sales have fallen by about 75% compared with the previous year. This is likely to be because customers are delaying their purchase in the hope that the next round of the battery rebate program will be extended to their postcode.

Other potential improvements could be to include in the program approved aggregators whose services can be sold through the Delivery Partner, much like suppliers selling a system.

2. ***Do you have any comments on how delivery partners might recover their costs for setting-up and delivering the program?***

In well-designed schemes, the cost of the scheme will often be shared between government, consumers and other parts of the supply chain. However, there are risks that the costs of the scheme will be passed on directly to customers in terms of the premium paid for the product. The risk of higher costs is most likely when the complexity of the scheme reduces competition for different parts of the service or crowds out participation in different parts of the supply chain.

3. ***How might the program be designed to address specific issues that arise in rural and regional areas (for example, higher costs or installer availability)?***

Government should consider the potential impact in regional areas to ensure there is equitable access to the scheme. Members have witnessed many occasions where customers have sought access to rebates in Victoria only to be told their connection is rated to zero-export because of concerns over the impact of additional DER in that area. Government should consider working with networks on ways to ensure that customers have good information on their ability to connect in rural and regional areas. Additional consideration should be given to the benefits of storage in rural areas as it has grid benefits when paired with solar.

Schemes which do not allow equitable access for rural and regional customer because of export limits are likely to be unfavourable.

Distributed energy resources (DER) are particularly valuable in some rural and regional area where the reliability benefits are more highly valued (because of the lower unreliably of electricity supplied through single wire earth return (SWER) systems) or where there might be material safety benefits (e.g. in bushfire-prone areas). As it develops calculators for return on investment (ROI) the government should consider a means of attributing value to non-financial benefits, such as safety and reliability.

4. ***In what ways can the administrator be incentivised to minimise and rapidly resolve any customer complaints?***

We recommend seeking feedback from prospective Delivery Partners on this question.

5. ***Do you have any other feedback regarding the proposed administration arrangements that the Department should consider?***

There is an inherent complexity in the model that needs to be considered from the perspective of all participants. NSW Government should consider how potential competition issues between delivery partners, financial administrators, approved installers and suppliers will be managed.

This scheme creates a level of complexity through the interactions between the various participants in the no-interest financing arrangement. With record low financing arrangements currently in existence and financing arrangements being developed for incorporating solar into the overall investment decision, NSW Government should convince itself that a zero-interest loan provides the greatest incentive for customers to invest in batteries versus other incentive arrangements.

We would like to bring to your attention the Solar Panel Validation (SPV) initiative for consideration as a component of the program and, potentially, as an eligibility requirement for financing. SPV offers numerous streamlining and compliance benefits to government which would bolster the integrity of the Empowering Homes program by ensuring that only legitimate products are funded.

SPV is a system that allows the solar supply chain to be confident that the panels they've paid for:

- are genuine products from the manufacturer (not second hand, counterfeit, or with recycled serial numbers)
- have a responsible Australian entity that backs the modules' warranties
- are on the Clean Energy Council's approved modules list and meet Australian Standards
- are eligible for STCs.

SPV is a voluntary scheme, with 19 manufacturers (representing approximately 70% of the Australian market) currently submitting serial numbers to facilitate validation.

6. ***Is a three-year contract and re-tendering approach for delivery partners suitable?***

The delivery partners will play a central role in the program and the implications of retendering and the disruption this might cause should be carefully considered. Responsibility for management of customers should be carefully considered. Consideration of key performance indicators (KPIs) and regular reviews of Delivery Partners could assist in addressing the issues arising re-tendering and changes in Delivery Partners.

7. ***Are there tendering or contract issues that arise from this approach, or are there different approaches that the Department should consider?***

We recommend seeking feedback from prospective Delivery Partners on this question.

8. ***Are the annual caps outlined above suitable to support the market and meet the program objectives?***

There must be a mechanism to respond – dynamically – to market appetite. For example, if needed, the government should have a mechanism by which it can increase caps in early years if the program is over-subscribed with applications.

If the mechanism is not enough, consider reducing the loan amount or bringing forward amounts. Alternatively, if the program is under-subscribed the government could consider front-loading the loans to be bigger.

Above all, the program must avoid stop-start funding cycles, which can have a devastating impact on affected solar businesses. The Victorian Solar Homes program is an example of the problems that arise when a rebate program is over-subscribed and relies on start-stop funding cycles when demand for rebates exceeds the available supply.

9. Do you have any comments on how best to avoid the cyclical nature of programs that can result from annual caps?

It is crucial to design the loan scheme with a mechanism that addresses the risk that the program could be over-subscribed or under-subscribed.

The design of the rebates, loans and other incentive schemes requires policy makers to guess at demand for rebates in an attempt to match demand and supply within a fixed budget. Inevitably, policy makers will misjudge demand. They do not have a crystal ball. Prices of equipment and currencies fluctuate. Policy makers need to adopt a dynamic mechanism to setting project parameters so that demand does not exceed supply, with the attendant disastrous consequences for industry.

In the case of the Victorian rebate scheme, the first recommendation CEC made to constrain demand for rebates was to reduce the value of the rebates. This approach is less applicable for a no-interest loan scheme. A similar approach might be to increase the cost of the money lent above zero percent if demand for loans outstrips the available supply.

The CEC's second proposal to the Victorian Government was to reduce demand for the limited supply of rebates by reducing the income eligibility threshold. This is an approach that could be considered by the NSW Government in the event of excess demand for no interest loans. However, the threshold will continue to be a balancing act over time.

Put simply, if a subsidy scheme does not dynamically respond to the levels of uptake, then it will either be ineffective, or it will cap installation levels. This is the number one lesson learned from every solar subsidy program worldwide and in Australia.

Germany's solar subsidy scheme uses a dynamic approach and there is much that the Victorian and NSW Governments could learn from the German approach. When the market is over-stimulated (i.e. demand for the subsidy outstrips the budget), the subsidy is reduced along with a commensurate increase in the number of subsidies available at the new level (and vice versa). This is designed as a self-correcting mechanism that prevents the boom-bust stop-start solar coaster from occurring. This approach should also be considered for the no interest loan scheme as it also faces the same risk of unanticipated demand being unable to be met within a constrained budget.

10. What issues around auditing and compliance checks should the Department be aware of in designing this program to ensure its objectives can be achieved, and any material risks are appropriately managed?

The Victorian experience of the Solar Homes program has demonstrated the benefits of coordinating across multiple agencies. In Victoria, this includes Solar Victoria, Energy Safe Victoria, WorkSafe, Consumer Affairs Victoria, the Plumbing Commission, the Energy and Water Ombudsman and the Clean Energy Council. NSW could adopt a similar approach.

Auditing might also need to consider issues not currently the responsibility of existing agencies. For example, if the program requires capability in relation to communication, control and suitability for virtual

power plants (VPPs) then consideration will need to be given as to how this is verified in auditing and compliance checks.

As noted above, the Solar Panel Validation initiative could be considered as an eligibility requirement and, if that were the case, it could also be part of an auditing and compliance regime.

11. ***Are there better ways to ensure the performance of installers, including a high quality of customer engagement and installation, is maintained, beyond traditional auditing regimes?***

All installers carrying out either the full installation or final terminations and inspection of the project are currently mandated to hold a NSW electrical license as well as CEC accreditation for the installation of solar and gird-connect batteries. The auditing of the installation is carried out on a relatively random basis by electrical inspectors, if any solar is being installed and STCs claimed for then often the broker will seek documentation to support the validity of the installation. Some product vendors will also require a commissioning report and or photographic evidence of appropriate and compliant installation.

A registry of supporting evidence could be proposed to be held by all retail companies' including photographic evidence of compliant installation to ensure accountability for the work being undertaken. The records could be called up by the department or others to ensure compliance or challenge any complaints.

Additionally, homeowners could upon installation completion / system commissioning be asked to partake in a brief online survey to rank their overall experience. Certain key metrics could be captured which if scored poorly could lead to remedial works by the installer / retail company or other penalties / actions be applied.

The Solar Panel Validation initiative could also be used to ensure that installations only use validated products that:

- are genuine products from the manufacturer
- have a responsible Australian entity that backs the modules' warranties
- are on the CEC's approved modules list and meet Australian Standards
- are eligible for STCs.

12. ***How can the NSW Government best ensure applicants are making an informed choice, and to manage customer expectations about their potential return on investment?***

Applicants should be given information on the mandatory cooling off period that applies if they have been approached by unsolicited salespeople (door knocking or cold calling) as well as the mandatory period of the non-supply of goods/services after signing the agreement (10 days under Australian Consumer Law) and the permitted hours for any unsolicited sales. This mandatory period affords consumers the time to consider the decision to purchase and in doing so, by making an informed choice to proceed or not.

It is also recommended that the NSW Government issues strict guidelines around the wording on advertisements and promotions of the program (for example not using unauthorised images such as government logos or wording such as "Hurry! Rebate will end soon!"). This reduces the 'bait style' type of advertising commonly seen with the commencement of government-linked schemes.

Any system calculator being used will need to have appropriate caveats and to ensure that customers understand that it is an estimate rather than a guarantee to appropriately manage customer's expectations.

13. ***What information should prospective applicants be provided with to enable them to make an informed choice, and what are the main issues with providing this information?***

A clear and easy to read guideline that sets out minimum information requirements of the system could be circulated to suppliers (particularly on the costs and benefits associated with each system option as referred to in the market sounding paper) as part of the quote to customers.

As a minimum, the quote should show the total price of goods and services, any discounts, specifications of the system, delivery time frame, disclosure of any financial savings and return on investment (ROI). The Code of Conduct mandates this information but only at the point of contract.

The Department also needs to be aware of the difficulty involved in calculating the expected savings and ROI on batteries. It will be difficult to be precise and the NSW Government's calculator will need to be transparent regarding its limitations.

It is also important to note that many prospective customers will be reasonably unfamiliar with the benefits offered by a home battery system. The NSW Government should play a role in educating customers regarding the benefits of battery storage. This should also include information on the non-financial benefits, such as back-up power.

14. ***Should the program mandate basic system requirements, and return on investment thresholds, to ensure that customers install appropriately sized systems (for example, a set of upper and lower bounds on the relative sizes of different system components)?***

We support better information for customers. The NSW Department of Planning should encourage customers to seek three or more quotes and ensure that customers have access to information to enable them to make an informed choice. Clear guidance on basic system requirements and ROI thresholds utilising a range would allow control over the types of systems being sold to customers and better management of customer expectations around ROI.

However, mandating size thresholds does create its own complications as many different circumstances need to be considered for individual connections. Any range captured should appropriately reflect the needs and use in an average NSW household. ROI should factor warranty and total system performance as opposed to minimum thresholds. We would also suggest that consideration be given to a lower bound for system sizes (e.g. 2 kWh).

15. ***We have identified a list of data fields for capture in Appendix B – list of key data capture fields. Are there any additional fields that should be captured by delivery partners to improve the program?***

We recommend seeking feedback from prospective Delivery Partners on this question.

16. ***What should the Department consider when designing the business systems for the program in terms of data, data structures, and integration with delivery partner platforms and systems?***

It is important that the NSW Department of Planning provide flexibility to arrangements and support standardisation of reporting and data frameworks through connection arrangements and common statutory requirements. The Department should avoid potential rail gauge effects through mandating NSW-specific requirements that differ over time with other jurisdictions.

As noted above, there is potential for the Solar Panel Validation initiative to streamline coordination of data structures and data collection.

17. ***Are these business rules adequate to support delivery of quality systems, protect consumers, minimise risks and ensure the program objectives are achieved?***

The NSW Department of Planning should not rely on its business rules as the primary means of ensuring delivery of quality systems, protecting consumers and minimising risks.

As noted above, the Victorian experience of the Solar Homes program has demonstrated the benefits of coordinating across multiple agencies. In Victoria, this includes Solar Victoria, Energy Safe Victoria, WorkSafe, Consumer Affairs Victoria, the Plumbing Commission, the Energy and Water Ombudsman and the Clean Energy Council. NSW could adopt a similar approach.

18. ***Should the Department require anything additional from system suppliers or installers for them to be approved and for them to maintain their approved status under the program?***

The Victorian Solar Homes program has drawn on the expertise and information available to the state's electrical safety regulator (Energy Safe Victoria) to improve safety and performance of systems installed with government support. The NSW Department of Planning should consider drawing on the expertise of NSW electrical safety regulators and enforcement agencies.

19. ***How can the Department ensure installations are fully compliant with specified standards, codes and best practice guides, in the most efficient and effective way?***

Compliance with standards is most effective when the standard against which the installation is made at any point in time is clear. We are concerned that adding to standards or locking in standard changes before they are finalised creates confusion and compliance issues. For products use the CEC program lists. This will avoid duplication of auditing and ensure consistency with data used by DNSPs and the Clean Energy Regulator (CER). Random systems inspection should be undertaken to ensure that installation best practice and applicable standards are being upheld as these processes and requirements fall outside of the scope of CEC product listings.

20. ***Are these business rules appropriate to achieve the program objectives while appropriately managing risk, bearing in mind the delivery requirements outlined in Part one?***

As noted above, the NSW Department of Planning should not rely on its business rules as the primary means of ensuring delivery of quality systems, protecting consumers and minimising risks. NSW already has a system of electrical safety regulation and enforcement. It should be utilised.

21. ***How might the program improve benefits and uptake by enabling delivery partners to provide attractive options to prospective customers which meet the customers differing needs?***

We recommend seeking feedback from prospective Delivery Partners on this question.

22. ***Are there any other matters in relation to establishing an efficient and effective financing framework that the department should consider?***

We recommend seeking feedback from prospective Delivery Partners on this question.

23. ***Are there any other matters relating to the customer's loan application process that the Department should consider?***

We recommend seeking feedback from prospective Delivery Partners on this question.

24. ***Are there any other matters relating to loan repayments and improving the return on investment for customers that the Department should consider?***

The NSW Department of Planning should elaborate on how it will quantify return on investment. Will this capture financial returns only? Will it attempt to place a value on non-financial benefits, such as reliability and potential safety benefits in bushfire-prone areas?

25. ***What material issues regarding defaults on loans, or the potential insolvency of key program stakeholders, will need to be addressed by the Department?***

We recommend seeking feedback from prospective Delivery Partners on this question.

26. ***What are some of the common issues that arise when retrofitting batteries to an existing solar system, and how can the program best address these issues?***

Key issues include solar size, inverter compatibility, switchboard compatibility, space in the switchboard and the appropriate location of the battery.

Retrofits should consider a pre-inspection to ensure system eligibility.

Under-sizing or over-sizing the battery is a common issue. Generally, most domestic (on grid) houses would need a 5kWh battery or 10kWh if they are engaging in a virtual power plant (VPP) arrangement. For most houses with standard equipment 20kWh would be a reasonable upper limit.

Over selling equipment at point or sale can also be a common problem. Claims such as, "This will back up your whole house" or "you won't need the grid". Oversizing a battery system could lead to performance issues as there may not be enough excess solar production to adequately charge and maintain the battery.

AC-coupled solutions will add to total connection kilovolt-ampere (kVA) which may not be allowed by the Distribution Network Service Provider (DNSP).

System may be designed incorrectly. The NSW Department of Planning should require that systems be designed by accredited designers.

Integrating with existing photovoltaic (PV) to maximise the capabilities of both systems can be problematic.

Incorrect equipment selection or incorrectly located or installed equipment is also a common source of problems.

27. ***What evidence needs to be collected from installers to ensure the installation is safe, compliant and meets the program requirements?***

Evidence should include:

- Site specific Safe Work Method Statements (SWMS) suitable for electricians
- Certificate Compliance Electrical Work (CCEW)
- Detailed Commissioning sheet with checklist
- Product Manufacturer's documentation
- Recommended preventative maintenance
- Service and breakdown instructions
- Warranty documents

- Images of equipment installed in their final locations including serial numbers
- Energy and PV Battery sizing calculations to verify design details.
- Copy of installers, electrical, CEC and product manufacturers accreditation and endorsements, where applicable.
- Verification that there is a secure and reliable internet connection.

28. Are there any other issues and situations the Department should consider in determining what is an eligible installation under the program?

Issues to be considered include:

- Is the system fit for purpose for the customer?
- Workplace health and safety (WHS) requirements are met
- What happens to the system and documentation if the property changes hands?
- Systems designed by salespeople with little or no technical knowledge or qualifications. System designers should be required to have a CEC design battery endorsement and sign off a compliant design prior to the contract being signed.
- Systems sold as a package deal which do not suit a customer's load profile or situation
- Is the solar array sufficiently large to supply a normal household's consumption plus some excess for the energy storage system? There is no point installing a battery if it is never charged.
- Are the warranty conditions easy to uphold and explain to the customer?
- How will the proposed systems be serviced and supported by the installer / manufacturer.
- What are the options regarding system end of life and recycling?
- Situations where inverters will need to be replaced and whether inverter replacement and other system augmentation costs will be eligible under the program.

29. What other aspects should be considered when establishing technical specifications for the solar-battery systems supported by the program?

Connectivity and VPP-capability of assets should be a key consideration.

The CEC's product assurance program only covers lithium-based battery technology, at this stage.

It is unclear what is being referred to by the term approved "combinations"? If this is referring to battery-inverter pairing, that can be accommodated. The battery manufacturer should provide a declaration that the battery is compatible (where it is not a Battery energy storage system (BESS)/different companies).

If the reference to approved combinations refers to matching with the whole PV system, this will be much more burdensome.

VPPs, Distributed Energy Resources (DERs) and demand response are part of the transition to a Smart Grid. Programs in Australia are taking varied approaches, which could leave multiple pockets of technology with little or no interoperability. This would be a poor result for customers who might be unable to switch VPP provider as a result.

It would be highly risky for the NSW Department of Planning to seek to drive innovation in technical standards through the eligibility requirements of the Empowering Homes program. Technical requirements should be aligned with national approaches (where they exist) or with the eligibility requirements of other state programs. NSW Department of Planning should draw on advice from organisations such as AEMO.

The ‘Installation safety and specification’ section lists many standards, not all of which will be relevant in all situations. It would be helpful to specify which are mandatory and in which circumstances.

The CEC product listing system is based on standards for which there is a test protocol. Wherever possible we avoid reliance on manufacturers’ declarations. Please be aware that there is not yet a test protocol for IEEE 1547:2018. Products cannot be certified to this standard until the test protocol has been agreed and published.

Specifying the model used to maximise value of a battery for customers will be problematic because this will vary according to how the customer chooses to engage with the market. Standardising ROI calculations will be problematic.

Requirements of NSW DNSPs in relation to Volt-Watt and Volt-var settings are in a state of flux. The NSW Department of Planning should not attempt to mandate enablement of settings in advance of NSW DNSPs deciding upon what those settings should be. At this stage the safest approach would be to mandate the capability without attempting to mandate enablement of settings that have not yet been agreed upon by DNSPs.

IEEE 2030.5 is not a product standard. It is a communications operating protocol. We strongly advise against mandating IEEE 2030.5 for NSW with a 2020 timeline. This would run the risk of conflicting and interfering with other work being undertaken by AEMO and others. At the very least, we would recommend awaiting the publication of the guidelines on the use of IEEE 2030.5, which are currently under development.

30. ***Are there additional specifications beyond current CEC requirements that should be considered?***

The CEC would urge the NSW Department of Planning to work with us on product listing requirements and standards. If there is a deficiency in the product information available to the NSW Department of Planning, it would be more helpful to propose improvements to the CEC system rather than establishing a parallel verification scheme. In some cases, this could involve working together on standards and test protocols. The CEC product listing system is based on standards for which there is a test protocol. Wherever possible we avoid reliance on manufacturers’ declarations.

There is a major concern amongst inverter and battery manufacturers that system requirements are fragmenting across states and jurisdictions. Additional state-based compliance work adds cost to the product and ultimately to the consumer. We would encourage you to work closely with the South Australian and Victorian battery programs to ensure that all requirements are aligned.

Where regional specific inverter settings are required by the networks then the NSW Department of Planning will need to liaise directly with the networks to ensure that they have an adequate verification process and inspection process to ensure that installers have correctly set the parameters as required.

All DNSPs in NSW have unique requirements in relation to inverter settings and power quality modes. This is a source of confusion within the sector. It would be useful if the Empowering Homes program could assist with removing some of the fragmentation in DNSP requirements for power quality modes.

31. ***How can the program best support the battery and PV industry development in NSW, and the transition to the future grid?***

Technical standards should be developed in conjunction with AEMO and the NSW Department of Planning could raise the issue of governance and coordination of technical standards with COAG Energy Council. A standardised approach is the best way to lead the technical standards. The CEC supports the general direction being taken through the Open Energy Networks process.

Complex or rigid policy settings have the potential to close markets. We recommend simple and flexible arrangements that allow more competition.

32. How should the Department determine that supported systems will meet program requirements? What testing and documentation should be required?

There is no agreed standard for performance testing or accelerated lifecycle testing of battery products. Details of the proposed testing regimes should be shared with the industry for review. There are also limited options for testing in Australia, so test methods would need to be made available for international certifiers.

The program should utilise the CEC product programs to avoid duplication. CEC has a team of technical staff reviewing certification and test reports for compliance with Australian and International standards. It would be best to avoid duplication of this process.

We would also suggest obtaining copies of the Certificate of Electrical Safety (CoES), potentially the commissioning checklist, declaration of compatibility of the battery system with its nominated inverter.

We urge you not to enforce system testing from the outset. This would limit uptake, increase cost and could severely restrict customer choice. Rather than 'gold plating' the system, we urge the NSW Department of Planning to develop an adaptive approach that can take account of emerging standards and test protocols that are scheduled for development and implementation over coming years.

33. What elements of current and international standards, or other technology developments, should the Department consider in the development of a technology roadmap intended to help develop the market and improve public and private outcomes?

The NSW Department of Planning should avoid mandating compliance to standards that have not been approved. We note the proposal for systems to be compliant with the forthcoming update to AS4777.2. In order to keep prices low for customers we try to ensure compliance with the standards once approved. This is to avoid any additional cost should the standard be modified.

It is our preference therefore that compliance be limited to current standards.

Mandating inverters which have volt-watt and volt-var capabilities is reasonable and will bring them in line with what several other jurisdictions are requiring. It would also be worth considering mandating IEC 62116. It will be important to allow enough time for manufacturers to update and verify product capabilities.

34. What are the key challenges and risks that the Department should be aware of in encouraging VPP participation and operation, and how might these be mitigated?

AS 4777.2 is in the process of being reviewed. There are plans to incorporate elements of IEEE 1547 into the revised version of AS 4777.2. Standards processes can be laborious and slow. Nevertheless, the NSW Department of Planning should not mandate technical requirements that are not captured in a standard, that are inconsistent or conflict with existing regulatory requirements or for which no agreed test protocol has yet been published.

The Department should avoid mandating protocols and features that are not interoperable with future requirements.

There is also a need to avoid overselling features that may not eventuate. VPP is still in beta stage. To begin with, stick with one or two achievable features such as energy trading or demand response.

Forcing customers into VPPs will not deliver the outcomes the NSW Government is looking for. Instead, the Empowering Homes program should encourage the development of VPP markets by ensuring that

the scheme favours VPP-ready devices. This is a different and preferable approach to mandating VPP participation. Customers will enter into VPP arrangements where they see the economic benefit.

35. ***In mandating a technical specification for the program, is the definition of 'VPP capable' outlined above suitable? How might it be improved?***

There is currently no agreed standard for VPP or monitoring and, more importantly, there are no test protocols.

It would potentially be problematic if the NSW Department of Planning were to mandate its own standard for VPP-capable devices. The program should aim for consistency with existing programs, drawing on advice from AEMO and companies with experience in VPPs. The Department of Planning should not set out to be innovative in its definition of 'VPP capable'. Mistakes in this area can have major ramifications for years to come.

36. ***Noting the transition to a five-minute AEMO market settlement, what should the frequency of reporting (both polling and by exception) data to a VPP be, and why?***

VPP arrangements should be market driven. The NSW Department of Planning should ensure that incentives promote VPP capability and leave the rest to the market and market bodies to dictate.

The frequency of reporting should be guided by AEMO requirements, which are currently 30 minutes. This would transition to 5 minutes, when that requirement is implemented across the electricity market. However, this would depend on the VPP service being provided.

Data requirements have nothing to do with the NSW Government and we would encourage you to refrain from setting state-based rules regarding data.

37. ***Would it be beneficial for VPP operators to tender for specified groups of program participants to source the best VPP arrangements? Are there alternative commercial models that would provide economies of scale for VPP aggregators?***

Yes. This would allow technologies and features to compete and succeed on their merits. However, it should not form part of the criteria of requirements for the scheme. Market rules and incentives should dictate this.

38. ***Are there suggested approaches or technologies that could support the backwards compatibility of systems for VPP arrangements as the technology develops and matures, to avoid technology lock in?***

There is currently no national agency providing a governance and coordination role in the technical standards for DER. It is important to maintain consistency in standards. State-based rail gauges in technical standards would be highly counter-productive.

In order to be accepted as VPP-capable, the manufacturer should be able to provide evidence of VPP-capability. More specific requirements can be considered in parallel with standards development. In the absence of consistent and accepted standards, mandated requirements would be premature at this stage. Incentive schemes should not bypass well established policy development processes.

If the technology installed has capability to be remotely controlled and is remotely upgradeable, it has considerable flexibility for future VPP capability. If there are adequate incentives to become part of a VPP, customers will do so. Incentives should be created through market forces, not through technical specifications for a zero-interest loan.

39. ***What else should the Department be aware of in its consideration of VPP operation to ensure that customers benefit, and systems installed under the program support the program objectives?***

As a general piece of advice, we would suggest “Don’t over-reach” and “Don’t oversell features that may not eventuate”. VPPs are still in their early stages of development. It would be preferable to successfully deliver one or two achievable features (such as energy trading or demand response) rather than pursuing all potential bells and whistles at the outset. It’s a 10-year program.

40. ***Please outline any anticipated issues or concerns with establishing warranty and guarantee requirements for the program as outlined here.***

It is important to understand that the Manufacturer’s Warranty and the Performance Warranty have separate requirements and obligations. For example, a VPP participant may have their battery cycled many times a day, depending on many factors. The effective battery life might be reduced to five to seven years. This is not a defect of the battery. This issue must be captured, understood and thoroughly explained to the end user.

Customers would benefit from further clarification on the options available to them under warranty provisions, such as whether the delivery partners/suppliers will repair, replace, resupply or provide compensation to the consumer? This will reduce the uncertainty for consumers should they be required to claim under warranty.

It would also be beneficial to provide further details with regard to the warranty period, how to claim, any reasonable exclusions and the appropriate body to whom an unsuccessful claim should be escalated. These will need to be specified as many retailers will claim to offer a warranty of 10 years but with many exclusions.

The proposed requirement that “Installers provide a warranty for the workmanship, fittings and fixtures etc for a minimum of 10 years” is likely to cause some concerns with the installers. Ten years is a long period of time for a workmanship warranty and appropriate insurance coverage will likely cause an increase to operating costs, which may be particularly difficult for individual installers to manage.

41. ***What other minimum warranty or guarantee requirements should the Department consider establishing the program?***

The idea of a warranty against total energy throughput has merit. i.e. this battery will deliver xx MWh under standard conditions. The nature of the cycling would affect this and would need to be considered.

Any damage that may result from the battery systems, solar systems, inverters, workmanship and fittings installed should be considered by the Department. For example, damage to the consumer’s roof when installing a solar system.

Further consideration should also be given to any ‘end of life’ requirements for batteries, as well any requirements for maintenance of solar systems, inverters and batteries.

42. ***How can the Department ensure the program supports appropriate product stewardship and sustainability outcomes?***

The need for product stewardship is rapidly becoming more urgent. E-waste is one of the fastest growing waste streams in Australia and due to the limited lifespan of Solar PV and BESS, DERs are set to be an ever-growing part of this.

It has been heartening to see government taking action to help tackle the problem with the state of Victoria announcing a ban on e-waste in landfills from 1 July 2019, and Solar PV panels and system

accessories were listed by the Federal Government under the Product Stewardship Act in the June 2016-17 Product List. This was a signal from the government that they see recycling of these products as a priority. Listing products is a prerequisite for regulation.

We advocate the NSW Department:

- collaboration with industry to set up a network of drop-off points for batteries and Solar PV panels. The glass from PV panels contains Antinomy (Sb) which is hazardous to human health and the environment. 100% of this glass can be reused if kept out of landfill
- support the expansion of local recycling operations
- advocate for adequate enforcement on industry to ensure not only the Aluminium is recycled. Glass and main panel must go to an approved recycler
- provide clear communication from industry on the importance of recycling products. The ABRI/CEC responsible recycling of battery storage is a good resource
- incentives must be looked at for recycling not just cash for scrap. This is an old incentive and is blamed for so much crime in the vehicle industry so why should NSW follow this model.
- carbon credits for recycling or tax discounts as incentives should be looked at for future recycling incentives

The opportunities for reclaiming and recycling renewable technology products at their end-of-life is significant but remain largely untapped. A fully operational model for management of these products in NSW would be a welcome step forward. Notwithstanding the potential for attracting renewable technology manufacturing to NSW with a knock-on benefit for job creation and investment. This will help to prepare NSW for a future with increased renewable technology waste.

By increasing skills and expertise and driving product stewardship in renewable technology, producers and manufacturers will better manage their end-of-life products to maximise utilization of resources embodied within the waste. This will result in the return of benefits with a circular economy for NSW.

The CEC would be happy to work with the NSW Department of Planning to promote product stewardship in a leading communications, information dissemination and industry coordination role.