Australian Government

AUSTRALIAN ENERGY REGULATOR

Consultation paper

2027 CECV methodology review

July 2026

Important notice

The information in this publication is for general guidance only. It does not constitute legal or other professional advice. You should seek legal advice or other professional advice in relation to your particular circumstances.

The AER has made every reasonable effort to provide current and accurate information, but it does not warrant or make any guarantees about the accuracy, currency or completeness of information in this publication.

Parties who wish to re-publish or otherwise use the information in this publication should check the information for currency and accuracy prior to publication.

At the AER, we use artificial intelligence (AI) to enhance our internal productivity and data analysis. Our AI tools do not make decisions or take action on our behalf. We maintain high standards of security measures to safeguard personal information. The AER remains fully responsible for all work and oversight, including checking the quality of any AI outputs. We ensure our AI use complies with all legal and regulatory requirements. To learn more, see the ACCC/AER AI transparency statement. If you have any questions about this statement or would like further information on our use of AI, please contact us.

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601
Email: aerinquiry@aer.gov.au
Tel: 1300 585 165

AER reference: 31,721,358

Amendment record

Version	Date	Pages
1.0	July 2026	15

Contents

1 Introduction

Australia's National Electricity Market (NEM) is decentralising, as consumers and other users of Distributed Energy Resources (DER), including Consumer Energy Resources (CER), increasingly generate, export or flexibly demand energy. There are now 3.1 million consumers exporting energy using CER across the NEM[1]. This transformation presents an opportunity to create greater value for consumers in Australia's energy system.

This consultation paper initiates our review of the Customer Export Curtailment Value (CECV) methodology. The review will consider whether CECVs should be expanded beyond their current focus on curtailed solar exports to estimate the benefits of both avoided curtailment and flexible demand. It will also examine DER value streams beyond avoided marginal generation costs, with the aim of making the metric more useful for a broader range of DER integration decisions.

We are seeking feedback on whether the potential updates explored in this paper are useful, feasible and within scope, without pre-empting the final design of the 2027 methodology. Feedback will help inform which matters may progress to the next stage of the draft decision, scheduled for release in early 2027, having regard to potential uses of CECVs, legal scope, practical value and workability. Stakeholders are encouraged to prioritise the issues they consider most important, noting that not all matters raised in this paper may be addressed in the reviewed methodology.

1.1 Background

On 12 August 2021, the Australian Energy Market Commission (AEMC) made a final determination on updates to the National Electricity Rules (NER) and National Energy Retail Rules (NERR) to integrate DER more efficiently into the electricity grid.[2] The final rules required the AER to develop initial CECVs and a methodology to be used to calculate CECVs each year.[3]

On 30 June 2022, we published the CECV methodology and initial CECV estimates.[4] In this methodology, CECVs were defined as the detriment to all customers from the curtailment of exports from DER, including CER such as rooftop PV systems, due to network limitations. The NER defines customer export curtailment as "reducing, tripping or otherwise limiting customer export". CECVs can be used by distribution network service providers (DNSPs) to quantify the economic value of the export curtailment that is expected to be alleviated by network investments, as a means to economically justify a DER integration expenditure proposal.

The CECV methodology details our approach to quantifying a subset of DER value streams, specifically the impact of incremental DER export on wholesale market production cost (avoided marginal generator short run marginal cost), accounting for transmission and

[1] AER, 2026 Electricity and gas networks Performance Report, 2 July 2026.

[2] AEMC, *Access, pricing and incentive arrangements for distributed energy resources*,12 August 2021.

[3] NER rule 8.13.

[4] AER, *Customer export curtailment value methodology: Final determination*, 30 June 2022.

distribution losses and approximating the impact of Frequency Control Ancillary Services (FCAS) requirements. The methodology also includes usage information on the DNSP model which is a tool that helps DNSPs to apply CECVs.

The NER requires the AER to review and amend the CECV methodology (or publish a notice stating that the CECV methodology was not amended) every 5 years. This means the next CECV methodology review, the subject of this consultation paper, is due by June 2027.

1.2 Methodology scope and application

The CECV methodology defines how the lost value caused by DER curtailment is measured to inform network investment decisions. It may also be used to support other use cases that we or our stakeholders may identify. We are interested in understanding how DNSPs and other energy market participants currently use, or may use, CECVs in the future. These use cases may, in turn, inform updates to the CECV methodology.

Subject to stakeholder feedback, the review will consider whether the CECV methodology can be expanded to measure the value of flexible demand and incorporate additional value streams, while noting that a separate value or methodology may be more suitable if these matters cannot be accommodated within the CECV framework. These expanded values could provide a general estimate of the marginal cost of electricity within distribution networks in the National Electricity Market. In this context, CECVs may be useful to parties seeking to understand the system-wide benefits and costs of additional supply or demand at a particular location and time.

1.3 Overview of this consultation paper

This paper discusses and seeks stakeholder views on potential updates to the CECV methodology. The methodology updates explored in this paper are:

1. **Measuring the benefit of flexible demand –** CECVs are currently designed to only measure the benefit of alleviated curtailment. Expanding the methodology to measure the benefit of flexible demand may increase the potential value provided by CECVs.
2. **Measuring additional value streams –** CECVs currently only measure benefits associated with avoided wholesale marginal generation costs. Expanding the methodology to include additional system costs may allow CECVs to be a better measure of the value of DER to the system.
3. **Application of CECVs –** There are currently 3 options to apply CECVs in expenditure assessments. A review of these options may improve accuracy and ease of use of CECVs. Understanding if there are additional applications of CECVs can help to guide the design of CECVs.
4. **Granularity of CECVs –** CECVs are currently estimated for every half hour over a 20-year time horizon. A review of whether this is an appropriate level of granular detail of CECVs may make CECVs easier to use.
5. **Update of CECVs –** The AER currently makes an annual assessment of whether CECVs need to be updated to account for changes in the electricity system. A review of the circumstances that CECVs must be updated will help to balance CECV accuracy with update costs.

2 Measuring benefits of flexible demand

Australia's energy system has evolved since the CECV methodology was last published in 2022. DER is no longer dominated by rooftop solar alone: flexible and controllable DER, including DER that consumes electricity such as electric vehicles and storage, has grown and is forecast to increase from 16 GWh today to 44 GWh by 2031-32 when the next CECV methodology review will be due[5].

DNSPs are also likely to play a greater role in coordinating DER. In December 2025, the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) recommended that DNSPs are assigned the role of Distribution System Operator (DSO)[6].

A DSO coordinates DER to manage local network constraints while supporting efficient operation of the wider electricity system. This reflects an evolution in the role of distribution networks, from primarily planning and operating network assets to supply electricity from the transmission network to end-use customers, to investing in capacity and operating assets that manage electricity flows in both directions across the distribution network. In this role, networks can act as a platform for DER exchange by coordinating flexible resources by determining when and where flexibility can provide greater value to the energy system. This requires a consistent way of assessing the value of flexibility so that flexible demand can be compared with traditional network investment and other sources of system value when making operational and investment decisions. In this context, a CECV methodology that is more capable of measuring the value of all flexible DER, including electricity demanded by DER, could better support efficient DER integration and the achievement of the National Electricity Objective.

Under the 2022 CECV methodology, CECVs represent the detriment to all customers from the curtailment of exports from DER. We are seeking to explore whether the 2027 CECV methodology could be expanded to measure the cost of meeting otherwise flexible demand in addition to measuring the cost of curtailment.

Flexible demand

Flexible demand refers to the ability and willingness of electricity customers to adjust or shift their consumption patterns in response to one or more signals such as electricity prices, network directions, or the availability of renewable generation. This means customers can use technologies like batteries, electric vehicles, or smart hot water systems to increase or decrease their electricity use at certain times.

[5] Australian Energy Market Operator, Final 2026 integrated system plan , 25 June 2026

[6] DCCEEW, Redefining roles for market and power systems operations, 16 December 2025

2.1 Benefits provided by flexible demand

Flexible demand and the alleviation of curtailment provide similar benefits to the energy system. These benefits include:

- **Reduction in generation costs** – Alleviation of curtailment provides additional energy supply, which means that the marginal generator will no longer need to incur short-run marginal costs (e.g. fuel costs). Similarly, reduction in demand using flexible demand means that the marginal generator will no longer need to incur short-run marginal costs.
- **Reduction in network congestion** – Alleviation of curtailment increases local electricity supply, which can reduce the need for electricity to be transferred through upstream network infrastructure. Reduction in demand similarly means that there is less need for electricity to be transferred through upstream network infrastructure.
- **Reduction in emissions** – Alleviation of curtailment from renewable CER means that the marginal generator can turn down, offsetting any emissions associated with that energy generation. Similarly, reduction in demand means that a marginal generator can turn down and produce lower emissions.

Flexible demand is a distinct value stream from demand reduction and the alleviation of generation curtailment because it often involves shifting consumption from one time to another, rather than reducing total consumption or increasing the amount of generation exported. Value is created where demand is shifted from a higher-cost period to a lower-cost period, so that the reduction in system costs at one time is greater than any increase in system costs at another time. For instance, if an electric vehicle is controlled to charge during solar hours rather than in the afternoon peak, it is likely to incur lower overall generation costs, lower emissions and make a lower contribution to network congestion.

Our preliminary view is that flexible demand and alleviated curtailment can draw on the same underlying marginal cost framework. However, changes may be needed where the relevant intervention shifts energy across time, such as flexible demand or battery-enabled export, because the value depends on the difference between marginal costs across periods, as well as losses and network conditions.

Question 1: Should CECVs be used to measure the benefits of flexible demand?

Question 2: What changes or additions could be made to the CECV methodology to enable CECVs to measure the benefits of flexible demand?

3 Measuring additional value streams

The 2022 CECV methodology details an approach to quantifying a subset of DER value streams, specifically the impact of incremental DER export on wholesale market production cost (avoided marginal generator short run marginal cost), accounting for transmission and distribution losses and approximating the impact of FCAS requirements.

DER can provide value to users of the electricity system beyond what is measured by CECVs under the current methodology, as shown in figure 1. Accounting for additional value streams in CECVs should make these values a more accurate and useful measure of the value of DER. However, it is also possible that incorporating some of these additional value streams into CECVs will be found to be infeasible or unreasonably inaccurate. In this section we discuss a number of value streams that we consider may be achievable and of high value. We seek stakeholder views on which value streams should be measured by CECVs.

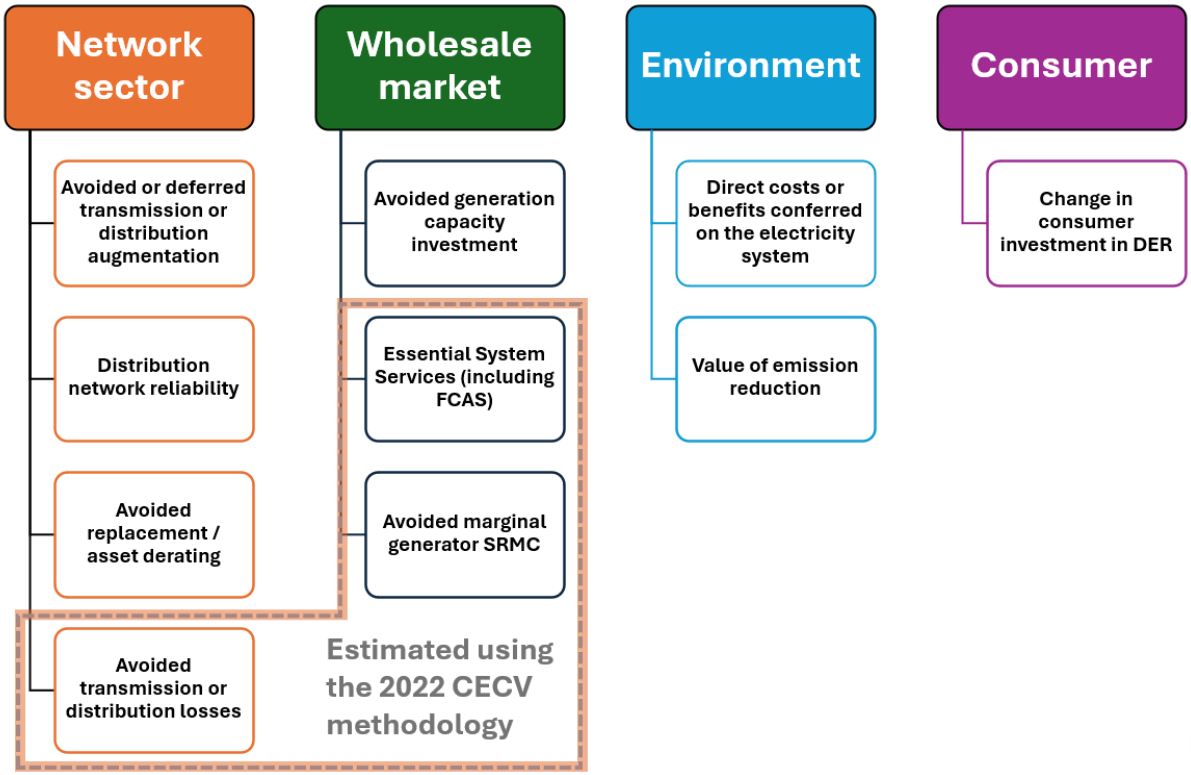

Figure 1: DER value streams

Valuing reduced network augmentation

Alleviating export curtailment can avoid or defer the augmentation of network assets, as energy can be generated and distributed within the local network without requiring additional upstream or local network augmentation. If CECVs can account for reduced network augmentation, in addition to reduced wholesale costs, this would make CECVs a more accurate representation of the value of alleviated curtailment.

We did not account for reduced network augmentation in the 2022 CECV Methodology, noting that network sector benefits may vary according to the proposed investment and DNSPs are best positioned to estimate these benefits. Given we are considering the

application of CECVs outside of DNSP expenditure assessments, and that we consider there to be significant benefits to consumers from reducing network costs, we consider revisiting this value stream is appropriate.

The value of alleviated curtailment in reducing network augmentation is dependent on location and timing. Some network locations have less spare capacity than others, and congestion at any given location is likely to occur over a relatively small window of time. We may need to consider the degree that network constraints vary between CECV updates, and whether this would cause CECVs to become inaccurate. CECVs that value reduced network augmentation are likely to also need to be highly locationally and temporally specific.

Valuing emissions reduction

In 2023, Energy Ministers agreed to amend the National Energy Laws to include an emissions reduction objective into the National Energy Objectives.[7] This change enables Australia's energy market bodies, including the AER, to explicitly consider emissions reduction in how they undertake their respective powers and functions.

To account for this change, in 2024 we commenced publishing emissions intensity profiles alongside the annual publication of CECVs. DNSPs can use emissions intensity profiles to estimate expected reduction in system-wide emissions for DER integration expenditure proposals. We will consider including reference to the emissions intensity profiles, to be published alongside CECVs, in the 2027 CECV methodology.

Valuing reduced generation capacity investments

Alleviating export curtailment can reduce the need to build new large-scale generation capacity. This value stream was consulted on as an option for the 2022 CECV methodology, however was not ultimately included due to the difficulty of attributing the offset of large discrete generation capacity with smaller quantities of energy exports (i.e. large generation investment historically occurred in a lumpy fashion whereas DER investment occurs incrementally over time in smaller capacities).

If the scope of the CECV methodology is expanded to apply to flexible demand (section 2), an application of this new value stream may be for enablement of flexible household batteries and electric vehicles to offset the need for community-scale or large-scale batteries. We consider that the continuing emergence of batteries as a source of generation capacity means this value stream is worth reconsidering for the 2027 CECV methodology.

Estimating short-run marginal generation costs of storage

Under the 2022 CECV methodology electricity market modelling is undertaken to determine the avoided short-run marginal cost of the marginal generator. The increased penetration of storage may change the way that CECVs need to be determined in some cases, as storage devices do not make decisions based on marginal costs of generation as other generators do, but rather make decisions based on opportunity costs of discharge. We will consider how the behaviour and costs of storage should be addressed in the 2027 CECV methodology.

[7] DCCEEW, *Incorporating an emissions reduction objective into the national energy objectives*, 6 June 2023.

Valuing negative marginal costs of alleviated curtailment

There are times that the electricity system has excess supply and the wholesale price of electricity falls below zero. At these times, additional electricity supply provided through the alleviation of curtailment can theoretically impose costs on other participants in the energy system. For example, the marginal generator may incur costs in order to reduce supply.

Under the 2022 methodology, CECVs do not fall below zero. If CECVs are allowed to fall below zero under the 2027 methodology, CECVs may be a more accurate representation of both the costs and benefits of alleviated curtailment.

Question 3: What value streams could be incorporated into CECVs, and which should be prioritised? How can those value streams be estimated?

Question 4: What are the benefits and challenges of incorporating the value of reduced network augmentation in CECVs?

Question 5: How could the CECV methodology reflect the behaviour and generation costs of storage?

Question 6: Should CECVs reflect negative marginal generation costs?

4 Application of CECVs

4.1 DNSP expenditure proposals

DNSPs use CECVs to quantify the economic value of the export curtailment that is expected to be alleviated by an expenditure proposal. By comparing the value of additional electricity supply to the cost of alleviating curtailment, DNSPs can justify making an investment to alleviate curtailment. Under the 2022 CECV methodology this is done using one of the three approaches:

1. **Self-selection of half-hourly values** - Under this approach the DNSP takes the set of half-hourly CECVs for each year in the analysis timeframe (for its region) and enters, for each half hour, the quantum of additional export enabled by the proposed investment (based on its own alleviation profile). That quantum of additional export is then multiplied by the CECV for that half hour to estimate the total benefit attributable to the CECV.
2. **Set of characteristic days** - Under this approach the model averages and aggregates CECVs across a set of 'characteristic day' types (and hours within those days) that constitute when curtailment is likely to occur absent any investment to increase hosting capacity (for example, during spring when there is low electricity demand, high solar PV output). DNSPs input quantities of alleviated curtailment for each characteristic day. This approach allows DNSPs to input into the model an alleviation profile that is more highly aggregated than would be required in the self-selection of half-hourly values approach.
3. **Ranked characteristic days** - Building on the previous approach, characteristic days are ranked in terms of likelihood of curtailment occurring (absent the proposed investment). A DNSP has the ability to override these rankings and re-rank the characteristic days. Under this approach the DNSP inputs the number of days (per annum) when DER export is likely to be relieved by the proposed investment, as well as the additional volume of electricity (kWh) provided by the proposed investment (per annum). The benefit of alleviating curtailment is calculated by applying the CECVs of the most likely (highest ranked) days first.

We are interested in stakeholder views on whether the current options for applying CECVs in expenditure assessments remain appropriate or otherwise need to be revised to improve transparency and accuracy. We consider that the application of CECVs should result in accurately measured outcomes, that CECVs should be encouraged for use in appropriate circumstances and that any guidance we provide on the application of CECVs should be useful.

Alignment of CECVs and alleviation profiles

Option 1 (self-selection of half-hourly values) requires a DNSP to develop a curtailment alleviation profile by estimating the additional DER export enabled by a proposed investment for each half-hour interval over a 20-year period and apply that profile to the half-hourly CECVs published by the AER.

Assumptions underpinning a DNSP's alleviation profile need to align closely with the assumptions underpinning the published CECVs, including assumptions about weather and DER output. Where these assumptions are not aligned, the resulting estimate of alleviation benefits may be inaccurate. Both curtailment and CECVs are sensitive to the timing and conditions under which DER output is highest. For example, periods of high rooftop solar generation may be associated with both higher curtailment and lower marginal wholesale

value. If the DNSP's assumed alleviation profile is not based on the same underlying conditions as the CECV profile, the model may attribute high volumes of alleviation to periods when the value of that export would in practice be lower.

We are considering whether option 1 should be altered, for instance by requiring DNSPs to use the same weather assumptions as were used to generate CECVs. Option 1 could also be removed as an option for applying CECVs.

DNSP model

We make an excel model available to support DNSPs to apply CECVs, referred to as the DNSP model. We note that DNSPs do not tend to use the DNSP model in expenditure proposals submitted to the AER and we are interested in views from stakeholders, particularly DNSPs, as to whether the DNSP model should continue to be produced.

Question 7: How can misalignment between the assumed underlying conditions of CECVs and alleviation profiles be addressed?

Question 8: How should CECVs be applied by DNSPs in expenditure proposals?

Question 9: Should the DNSP model continue to be produced?

Question 10: What applications could CECVs be useful for, and how would these applications impact how CECVs are designed?

4.2 Granularity

Under the 2022 methodology CECVs are calculated for every half hour over a 20-year time horizon. This results in 350,000 values for each of the 5 states in the NEM. This level of detail provides a granular understanding of the value of alleviated curtailment at different times, however may add complexity for users applying the values.

We are interested in stakeholder views on whether the granularity of CECVs could be simplified while maintaining their accuracy. For example, CECVs may be revised to include a single representative day for each month over the same 20-year horizon, and this would decrease the number of values from 350,000 to about 12,000 per state. It may also be the case that CECVs should be published at different levels of granularity for different use cases.

However, we also note that if the CECV methodology were extended to include the alternative value streams discussed in section 2, such as the value of avoided or deferred network augmentation, a greater degree of granularity may be required. This is because network augmentation needs may be highly time- and location-specific, such as at the level of individual substations or feeders.

Question 11: What level of granularity should be reflected in CECVs?

5 Updates of CECVs

The 2022 CECV methodology requires the AER to update CECVs annually before 1 July of each year. It provides for two approaches to updating the values, depending on whether the input assumptions in the Integrated System Plan's (ISP) Step Change scenario – which are used to calculate CECVs – have changed materially since the previous year:

- If there are material changes, we re-estimate CECVs using the new input assumptions and make subsequent changes to the DNSP model.
- If there are no material changes, we only update the CECVs to account for changes in inflation to ensure, in economic terms, real values of CECVs are maintained between CECV reviews. Instead of estimating new values for the 20th year of the analysis period, we calculate new values for each half-hourly interval based on the average of the final three years of values.

We are considering whether the methodology should provide a more prescriptive description of materiality, such as whether quantitative thresholds should be introduced to guide when CECVs are re-calculated. Conversely, allowing discretion in the decision to re-estimate CECVs may have the benefit of allowing more flexibility in CECV updates.

In order to reduce whole-of-life costs of CECV development, we are also considering the possibility of procuring an in-house model to allow the AER to undertake updates to CECVs without engaging an external consultant.

Question 12: Under what circumstances should CECVs be updated? What materiality thresholds, if any, could be considered to necessitate an update?

6 Summary of questions

Question 1: Should CECVs be used to measure the benefits of flexible demand?

Question 2: What changes or additions could be made to the CECV methodology to enable CECVs to measure the benefits of flexible demand?

Question 3: What value streams could be incorporated into CECVs, and which should be prioritised? How could those value streams be estimated?

Question 4: What are the benefits and challenges of incorporating the value of reduced network augmentation in CECVs?

Question 5: How could the CECV methodology reflect the behaviour and generation costs of storage?

Question 6: Should CECVs reflect negative marginal generation costs?

Question 7: How can misalignment between the assumed underlying conditions of CECVs and alleviation profiles be addressed?

Question 8: How should CECVs be applied by DNSPs in expenditure proposals?

Question 9: Should the DNSP model continue to be produced?

Question 10: What applications could CECVs be useful for, and how would these applications impact how CECVs are designed?

Question 11: What level of granularity should be reflected in CECVs?

Question 12: Under what circumstances should CECVs be updated? What materiality thresholds, if any, could be considered to necessitate an update?

Glossary

Term	Definition
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
Alleviation profile	The amount and timing of curtailment that will be alleviated by the DNSPs proposed investment.
Augmentation	As defined under the National Electricity Laws (NEL) as works to enlarge a network or to increase the capability of a network to transmit or distribute active energy.
CECV	Customer Export Curtailment Value
CER	Consumer Energy Resources
Curtailment	Any reduction on the capacity of an inverter to generate power. This could be caused by the inverter tripping in response to voltage disturbances or formally imposed through network static or dynamic voltage limits.
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DER	Distributed Energy Resources (which includes CER)
DNSP	Distribution Network Service Provider
DSO	Distribution System Operator
Export	Electrical Energy that flows from a customer's premises to a distribution network via the connection point.
FCAS	Frequency Control Ancillary Services
Flexible demand	The ability and willingness of electricity customers to adjust or shift their electricity consumption in response to signals such as prices, network directions or renewable generation availability.
Hosting capacity	The ability of a power system to accept energy generated by consumer energy resources without adversely impacting power quality such that the network continues to operate within defined operational limits
ISP	Integrated System Plan
NEM	National Electricity Market
NER/NERR	National Electricity Rules (NER) and National Energy Retail Rules (NERR)
PV	Photovoltaic