



# ELECTRIFICATION AND CER INTEGRATION

## FLEXIBLE SERVICES

# Table of contents

<b>1. Overview</b>	<b>2</b>
<b>2. Stakeholder engagement</b>	<b>4</b>
2.1 Exploring customer principles and attitudes towards CER integration	4
2.2 Understanding what drives customer choice for solar products	5
2.3 Quantifying the customer value of enabling solar exports	6
2.4 Testing customer preferences for solar export performance metrics	6
2.5 Testing customer preferences for solar capacity allocation	7
<b>3. Identified need</b>	<b>8</b>
3.1 Our networks' capacity to host solar is diminishing	8
3.2 System security risk is growing with increasing solar uptake	9
3.3 Customer trust and confidence is key in managing long term peak demand growth	10
<b>4. Options analysis</b>	<b>11</b>
4.1 Approach to cost-benefit assessment	12
<b>5. Recommended option</b>	<b>16</b>
5.1 Key functionality and costs	16
5.2 Our flexible services program	20

# 1. Overview

Our role as a distribution network is evolving with the transformational change within the energy landscape. There is a significant shift from the historical one-way flow of energy sourced from a small number of very large generators and transported through our networks, to the two-way flow of electricity from thousands of smaller generators now being connected to the low voltage networks.

Distributed solar PV (or rooftop solar) uptake in Victoria has been increasing for over a decade, including both in the number of systems and their average size. The capacity of rooftop solar is forecast to triple by the end of 2031. This reflects the many benefits provided by rooftop solar, including savings for customers and a reduction in Victoria's carbon emissions.

The uptake in solar also brings new complexities to network management, including increasing minimum demand risk.

Further, we are seeing exponential increases in the electrification of transport. The Australian Energy Market Operator (AEMO) is forecasting rapid growth in electric vehicle (EV) uptake, with 28 per cent of our customers expected to have an EV by 2031. This is almost 10 times the number of EVs on the road today.

Governments are supporting customers to electrify and invest in CER by implementing emissions reduction targets and policies to support the achievement of these targets. The Victorian Government has committed to achieving net-zero by 2045 and has a legislated net-zero emissions target of 2050.

CER is and will continue to become, a key feature of our electricity network. With that, comes significant opportunity to manage our network more dynamically, to ensure customers, both with and without CER, are sharing in the benefits. Our extensive stakeholder engagement reflected this, highlighting the need to integrate CER efficiently and equitably to reduce bills and facilitate the journey to net zero emissions.

Historically, we have relied mostly on static tools to manage the integration of CER. Static tools are defined services that are set by networks to derive customer value within safe and reliable network operational boundaries. They are often set for a defined period and are not intended to change often. While static controls are useful to protect the integrity of the network, they are limited in their ability to react to changing network conditions. To date, our network has utilised static controls to manage solar on the network by offering all solar customers a standard static export limit offer of 5kW. However, our networks' existing capacity to host solar exports (or our 'intrinsic hosting capacity') is actually much lower than this level and hosting capacity is rapidly being utilised, or already being exceeded in some areas, as more solar connects.

To address the diminishing hosting capacity, our network can either retain our existing static controls leading to more customers being limited and having no access to export, augment the network to permanently increase the overall hosting capacity or introduce flexible tools to optimise the existing capacity already in place.

Flexible tools (or flexible products) can be on the load or export side. Flexible tools can vary based on local network conditions while maintaining safe and reliable network operation. This allows customers to consume or export up to the maximum limit (i.e. their system size which can be > 5kW) where it is safe to do so, and when there is network congestion, the limit is reduced to protect the safety and integrity of the network.

Our preferred option is to introduce flexible services. A summary of the costs associated with this option are set out in table 1. This business case is a key input into our overall CER integration strategy<sup>1</sup>.

**TABLE 1      SUMMARY OF PREFERRED OPTION (\$M, 2026)**

<b>OPTION THREE</b>	<b>FY27</b>	<b>FY28</b>	<b>FY29</b>	<b>FY30</b>	<b>FY31</b>	<b>TOTAL</b>
Flexible services (export and load)	3.7	3.2	3.3	4.4	3.5	18.0

---

<sup>1</sup> CitiPower Regulatory proposal (Part B), CER integration strategy, pg. 13

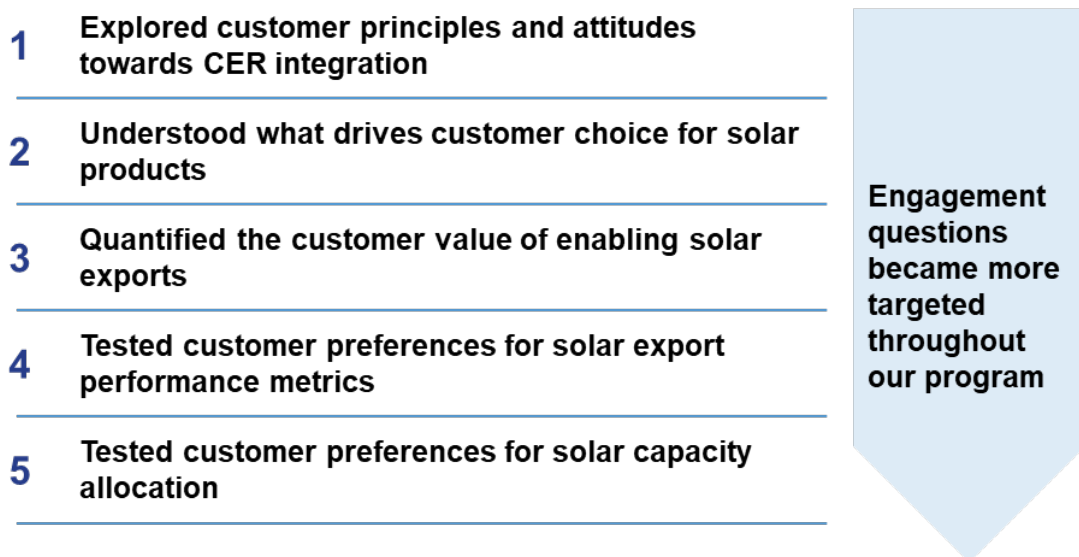
## 2. Stakeholder engagement

Our stakeholder engagement on CER integration and flexible services has been extensive. We identified key areas for customer engagement at the beginning of the journey which was iterated as we received customer insights and feedback from the Customer Advisory Panel (CAP).

The engagement included both qualitative and quantitative studies, conducted via a combination of in-person events, online forums, and surveys, with various customer groups. We started broad and became more specific throughout the engagement program.

Figure 1 provides a summary of our engagement for flexible services.

**FIGURE 1 FLEXIBLE SERVICES KEY ENGAGEMENT TOPICS**

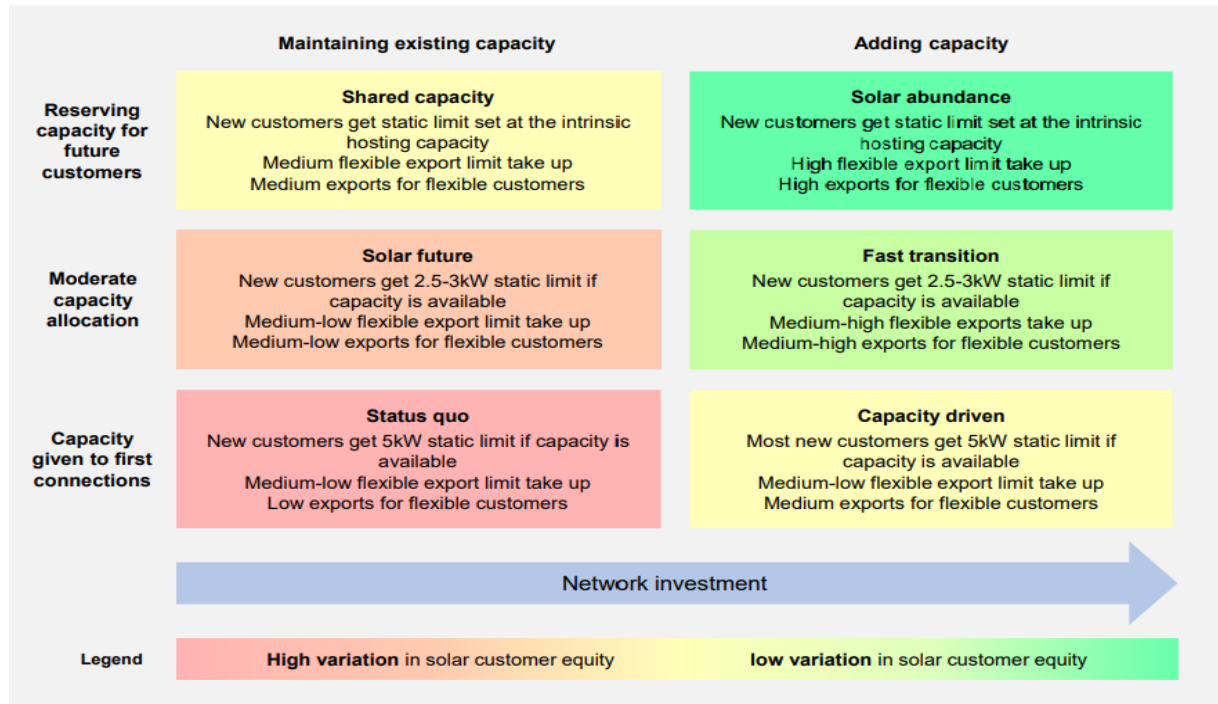


### 2.1 Exploring customer principles and attitudes towards CER integration

Our energy transition summit engagement findings informed the principles applied to our overall CER integration strategy, including how we share solar capacity across current and future customers, and whether we maintain or add export capacity.

We engaged with customers on the numerous ways we could design solar offerings for customers over the 2026–31 regulatory period. Figure 2 illustrates the six potential solar export futures we discussed with our customers, where key design features varied. Detailed discussions in small groups were held, seeking feedback on reserving solar capacity for future customers verse solar being used as a ‘first come first served’ basis, and maintaining or adding solar capacity.

**FIGURE 2 SUMMARY OF SOLAR EXPORT FUTURES**



The ‘solar abundance’ scenario was the first preference for customers. Our customers placed a significant emphasis on fairness and equity for solar exports and called for a holistic approach that reaches beyond the immediate five-year regulatory period. Sentiment towards solar exports was positive with a focus on maximising solar energy output with smarter solutions. Customers saw this approach as ‘no regrets’.

Stakeholders expressed a collective belief in the benefits of flexible solar exports. Preferences for supporting solar-driven capacity improvements to avoid ‘wastage’ of renewable energy emerged, however latent concerns about non-solar customers bearing the cost of solar upgrades also emerged.

## 2.2 Understanding what drives customer choice for solar products

Our flexible export customer research informed our product design by conducting choice modelling on various design elements of export products to understand the most effective design to incentivise customer uptake. The research also informed the communications plan for our flexible export trial roll out.

Over 1,000 customers were given numerous choices of static and flexible export products, with different export limits, providers, time constraints, flexible incentives, and costs to stay on fixed products. Through choice modelling, we then identified key factors that would influence flexible product take-up.

Our research showed that customers have a strong preference for a flexible product across most cohorts, including solar, non-solar and customers from all socio-economic index rankings. These preferences reflected broad pre-existing positive associations with the attributes of flexibility and choice.

The results showed that customers were highly motivated to switch to a flexible export limit when there was an increase in their maximum export levels, or if there was a financial deterrent applied to the static export limit. Customer preferences for flexible exports also increased when the responsible



manager was an entity the customer felt like they could trust. The research found that the most likely combination to drive uptake of a flexible product was distributors and the Victorian Government taking responsibility for managing flexible export products.

The quantitative research was also complemented with qualitative questions, including customer sentiment towards flexible products. We explored with customers what their perceived benefits and concerns were when considering a flexible export product. The top benefits of flexible products were seen to be more renewable energy on the network, receiving a greater income from solar exports, and protecting the integrity of the network. The top concerns from customers were the potential impact of environmental factors, the unpredictability of the product, ongoing work and maintenance, and the retailers and installers involved with the new product. This assisted in developing our key messaging to target their key concerns.

## 2.3 Quantifying the customer value of enabling solar exports

Our willingness to pay research quantified the value customers place on solar exports, which was used in our quantitative cost-benefit model to incorporate the customer voice into the analysis.

We conducted customer values analysis research to quantify the customer value of solar exports, amongst other service improvements. While we have the AER's customer export curtailment (CECV) value, it is only based on selected network and wholesale market benefits. This quantitative value seeks to measure value from a customer's perspective and was derived using a willingness to pay methodology, in line with the AER's value of customer reliability (VCR).

Our research found that customers were willing to pay to enable solar exports. This was paired with key customer sentiment of the importance of removing restrictions on solar exports as this was viewed as a waste of renewable energy.

## 2.4 Testing customer preferences for solar export performance metrics

Our trade off forums informed our target solar export performance metrics by testing customer preferences for additional solar export capacity verses willingness to pay.

Our engagement program included testing customer preferences for varying solar export performance metrics. This preference for enabling solar was traded-off with indicative bill increases. Table 2 summarises the options that were provided to customers. As shown, customers were asked to consider three options which were discussed in detail in small groups.

72 per cent of residential customers and 63 per cent of small-medium business (SMB) customers were willing to pay for additional solar to be enabled on the network. Overall, there was an equal preference for both option two and option three. Option two's solar export performance metrics became the target performance metrics for our network for the 2026–31 regulatory period.

**TABLE 2 SOLAR PERFORMANCE METRICS VERSE WILLINGNESS TO PAY (\$M, 2026)**

<b>OPTION</b>	<b>DESCRIPTION</b>	<b>RESIDENTIAL BILL IMPACT</b>	<b>BUSINESS BILL IMPACT</b>
1	If no investment is made, 95% of customers can freely export solar and 5% of customers cannot export at all	\$0.00	\$0.00
2	All customers can export solar, and 95% of customers can freely export at least 99% of the time	\$1.30	\$14.88
3	All customers can export solar, and 98% of customers can freely export at least 99% of the time	\$1.61	\$18.44

## 2.5 Testing customer preferences for solar capacity allocation

Our test and validate forums informed our approach to allocating solar export capacity across our customer base by testing preferences with both the CAP and grassroots customers.

We engaged on four high level approaches to allocating solar capacity, as aligned with the AER's flexible export guidance note, including:

- equal allocation: all customers receive the same capacity
- proportional allocation: customers are constrained by a proportion of their system size (i.e. larger systems receive greater allocation)
- value-based allocation: customers receive capacity based off the value of their exports
- pay for more allocation: customers can purchase rights for additional shares of the hosting capacity.

The CAP had general support for equal allocation. They agreed that a 'pay for more' or proportional allocation approach was not preferred given it benefits people who can afford to pay. There was interest in further exploring a 'value-based allocation' approach, however, it was acknowledged that the complexity may outweigh the benefits. Lastly, the CAP recommended that capacity allocation preferences must be explored with grassroots customers to test their preferences and compare and validate against the CAPs.

During grass-root engagement, the strongest support was for equal allocation. The core sentiment revolved around finding an approach that balanced fairness, network constraints, and clear communication to set realistic expectations for customers.



### 3. Identified need

Our customers' uptake of CER has redefined the role of electricity distribution. As more households and businesses install rooftop solar and other types of CER each year, new opportunities and complexities arise. While providing safe, reliable, and affordable electricity supply remains our priority, our approach in doing so must evolve. Through our engagement program, customers have continuously advocated for the efficient and equitable integration of CER as well as maintaining reliability outcomes.

The identified need, therefore, is to integrate CER efficiently and equitably while managing reliability outcomes and maintaining customer acceptance and trust.

#### 3.1 Our networks' capacity to host solar is diminishing

Our networks' existing capacity to host solar exports (or our 'intrinsic hosting capacity') is being increasingly utilised as more solar connects. For example, 2 per cent of new solar customers in 2024 have been offered static zero export limits of less than 5kW because the available local intrinsic hosting capacity has been used by existing solar customers (who under existing connection agreements are guaranteed 5kW export limits if capacity is available). This proportion is expected to increase over time.

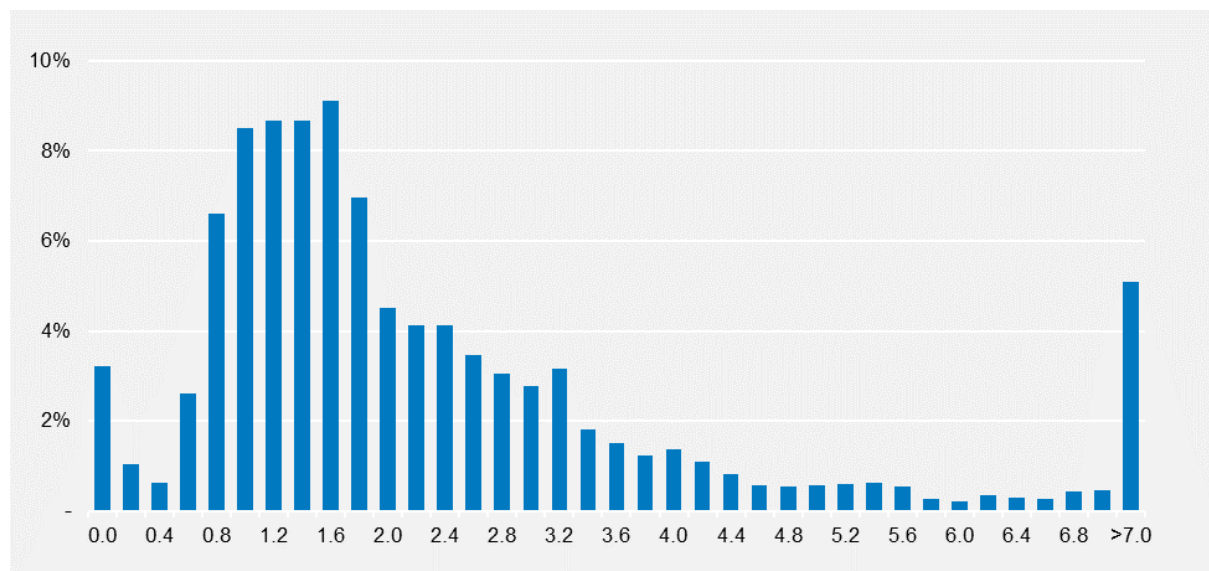
##### Intrinsic hosting capacity assessment

We used our LV forecast tool to assess the intrinsic hosting capacity at each customer connection point across our network.

Overall, and as shown in figure 3, we found that the median intrinsic hosting capacity to support exports is 1.6 kW per customer. This means that half of our network can support solar exports of 1.6 kW per customer and the other half would be constrained.

Our network's total intrinsic hosting capacity to support small-scale solar is 460MW, which we expect to become more utilised over 2026–31, particularly in urban areas with high solar penetration.

FIGURE 3 PERCENTAGE OF CUSTOMERS WITH INTRINSIC HOSTING CAPACITY (KW)



During our stakeholder engagement, customers indicated their preference for less costly network management tools, while not compromising decarbonisation efforts or equity outcomes. Our customers placed a significant emphasis on fairness for solar exports and called for a holistic approach that reaches beyond the immediate five-year regulatory period. Sentiment towards solar exports is positive with a focus on maximising solar energy output with smarter solutions.

Stakeholders expressed a collective belief in the benefits of flexible solar exports. Preferences for supporting solar-driven capacity improvements to avoid 'wastage' of renewable energy emerged, however latent concerns about non-solar customers bearing the cost of solar upgrades also emerged.

### **3.2 System security risk is growing with increasing solar uptake**

Growing solar will also lead to system security challenges such as minimum system load. Minimum system load refers to the period when the lowest amount of electricity is being used by consumers and typically occurs during holiday periods and when solar export is at its highest. During December 2023, Victoria set a record low for minimum operational demand, increasing the likelihood of an emergency from 2024. In response to this, the Victorian Government introduced the Victorian Emergency Backstop Mechanism (VEBM) to manage minimum system load emergencies.

The VEBM mandates distribution networks to have the capability to remotely curtail exports or interrupt generation of all new, upgrading and replacement solar systems. This capability enables a 'last resort' mechanism to manage minimum system load emergencies to ensure system security while enabling a safe and continued uptake of solar.

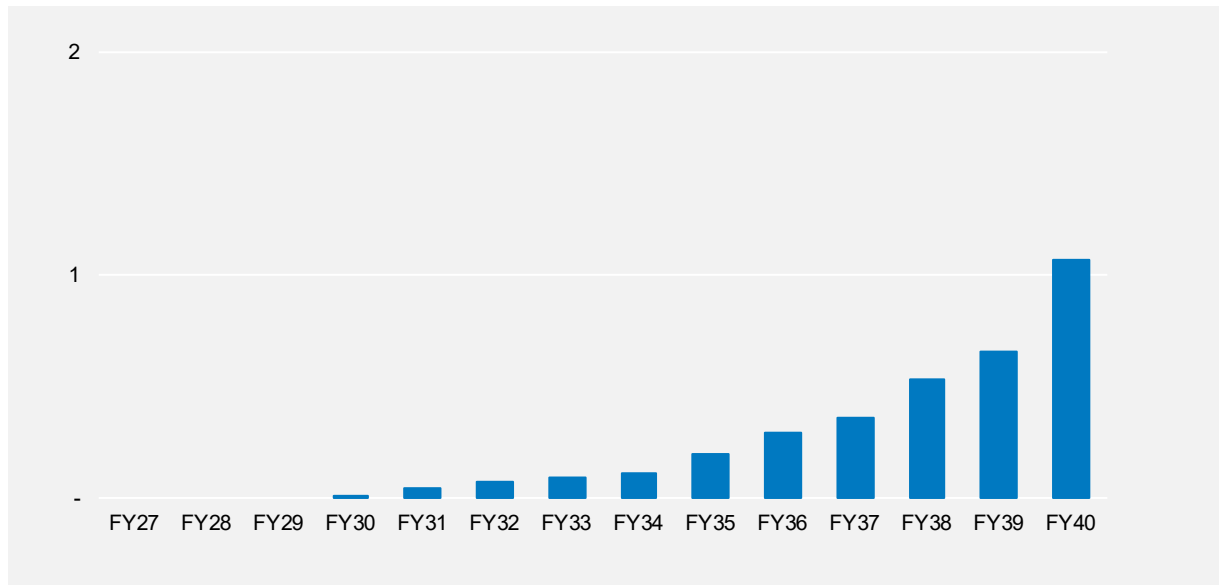
If solar cannot be curtailed at minimum demand times, customers' supply will need to be disconnected to maintain system security. This has significant reliability impacts to our customers. Through our customer engagement to date, customers have repeatedly told us about their preference for reliability outcomes to be maintained. This is increasingly important given customers increasing dependence on electricity given forecast electrification.

Our current system which is used to manage emergency backstop requirements is not sufficient for scale volumes and capacity and will need to be enhanced to connect and dynamically manage customers and system security going forward. The current limit is expected to be reached before mid-2028. Once this limit is reached, the system will no longer be suitable for the connection of further solar leading to:

- non-compliance with VEBM and AEMO requirements
- load shedding of customers to meet the shortfall to maintain system security

Figure 4 presents the forecast system security risk. This has been modelled using AEMO's forecast to determine Victoria's forecast shortfall below the minimum system load threshold, and our networks share of it. To quantify the system security risk, we consider the already in place HV and LV generation we expect to have in service. As such, the remaining security risk is the likely generation shortfall if no further investment is made to scale our current CER management system.

**FIGURE 4** SYSTEM SECURITY FORECAST RISK (\$M, 2026)



### 3.3 Customer trust and confidence is key in managing long term peak demand growth

Peak demand growth is expected to increase in the next regulatory period and beyond. EV adoption will be a key driver of this growth. As with solar exports, we have traditionally used static tools to manage peak demand and have augmented the network where economic to alleviate constraints.

EVs can be seen as a more ‘flexible’ load in comparison to general power and light. As such, there is an opportunity to shift to a more flexible management of EV load in the future, to allow customers’ (both with and without EVs) to derive value, by more efficiently integrating EVs into our network.

This, however, is a significant change to our customers, and one that requires high customer trust and confidence. Our research with Monash University indicates that over 50 per cent of customers may be amenable to automating some of their EV charging if they can override automated signals. Customers and stakeholders at our energy transition summit, however, shared mixed views about the necessity and customer appetite for flexible load products. Introducing flexible load products requires careful consideration given the current customer hesitancy. This is critical given flexible load products have a high impact to our customers’ experience with us, and as such, social licence and trust in the products is key for success.

Given the significant opportunity for these products to play a role in managing the increasing peak demand more efficiently in the long term, there is a need to begin trialling and conducting further engagement with customers to build our social licence before any widespread rollout.

## 4. Options analysis

To address the identified need to integrate CER efficiently and equitably while managing reliability outcomes and maintaining customer acceptance and trust, we considered two broad options relative to the base case. These options included building more network to increase overall capacity or introducing flexible services to optimise the existing capacity already in place.

Augmentation is the traditional solution for solar export constraints. Historically, we have offered solar customers a 5kW static limit and alleviated export constraints via augmentation expenditure where it was economic to do so. Where there is limited hosting capacity, customers are given a zero-export static limit, meaning they are unable to export any solar. While the number of customers we currently have on zero export static limits is currently low, this number is expected to grow under this approach.

Introducing flexible products for customers does not increase network hosting capacity but changes the way we utilise it to maximise solar exports. Instead of a 5kW static limit for new and upgrading solar customers, customers are given a choice between a static export product (1.5kW), or a flexible export product (up to 10kW).

These two broad options have been considered in our options analysis relative to our base case. For flexible services, we have assessed an export only option and an export plus load alternative.

Table 3 provides a summary of the options and as shown, option three is our preferred option with the highest NPV. Our attached model provides the complete analysis.<sup>2</sup>

**TABLE 3 SUMMARY OF OPTIONS (\$M, 2026)**

OPTION	PV COSTS	PV BENEFITS	NPV
Option 1: base case (do nothing different)	-	-	-
Option 2: flexible service (export only)	15.2	36.5	21.3
Option 3: flexible services (export and load)	16.2	41.1	24.8
Option 4: full augmentation	72.6	33.9	(38.7)

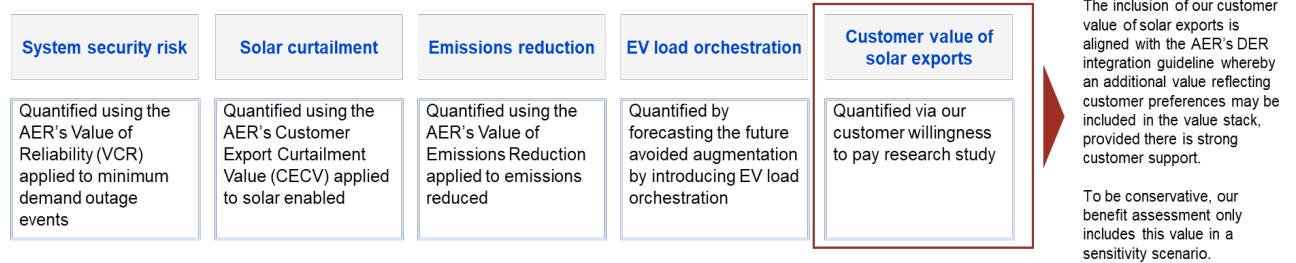
---

<sup>2</sup> CP MOD 2.01 – Flexible services – Jan2025 – Public

## 4.1 Approach to cost-benefit assessment

We undertook a net economic benefits assessment to determine the economic viability of each option. The benefit streams that we have assessed are described in figure 5.

**FIGURE 5 BENEFIT STREAMS FOR OPTION ANALYSIS**



We have developed a bottom-up build of costs to deliver the four options. We have tested costs against industry peers, and coordinated with software vendors (including Itron, Gridcube, GE, Salesforce) to ensure activities represent value for money for customers. Costs have also been benchmarked internally against similar IT and operational technology (OT) projects using actual costs from historic projects to maintain a consistent approach with the most accurate information available.

In addition, forecast labour hours reflect the time to build, upgrade, test, and deliver the relevant systems and processes. The corresponding labour rate is aligned with market tested rates accepted by the AER in our previous regulatory determination.

### 4.1.1 Option one: do nothing different

The base case involves no expenditure. This means new and upgrading solar customers will be offered the 5kW static export limit if there is capacity and will be partially or fully constrained (i.e. zero export limit) if there is not. Given the already diminishing hosting capacity, a significant amount of new/upgrading solar customers would be constrained in the future. This option will also limit our ability to safely comply with our VEBM given no investment in scaling our systems to accommodate for future solar connection growth.

Further, this option is misaligned with customer preferences whereby customers have repeatedly informed us of their preference for efficient integration of CER to enable solar exports and net zero targets.

### 4.1.2 Option two: flexible services (export only)

Option two includes expenditure required across people, processes, and systems to expand compliance with our VEBM mandate and introduce flexible exports for all new and upgrading solar customers. Option two is an IT and operating expenditure solution.

Under option two, new and upgrading solar customers will be offered a choice between a static export product which is largely aligned to the networks intrinsic hosting capacity (1.5kW), or a flexible export product (up to 10kW). If customers choose the latter, they will be on a product that varies over time. Solar exports will be maximised when it is safe to do so, and they will be ramped down in times of capacity constraint.

We expect this option to enable an additional 86GWh of solar exports over 2026–31, directly benefiting customers through increased feed-in-tariff revenue and indirectly benefiting customers through reduced wholesale prices, more renewable generation, and lower carbon emissions.

No export-driven augmentation is being proposed in the 2026–31 regulatory period under this option. This is because after accounting for the benefits of flexible exports, no efficient augmentation sites were identified.

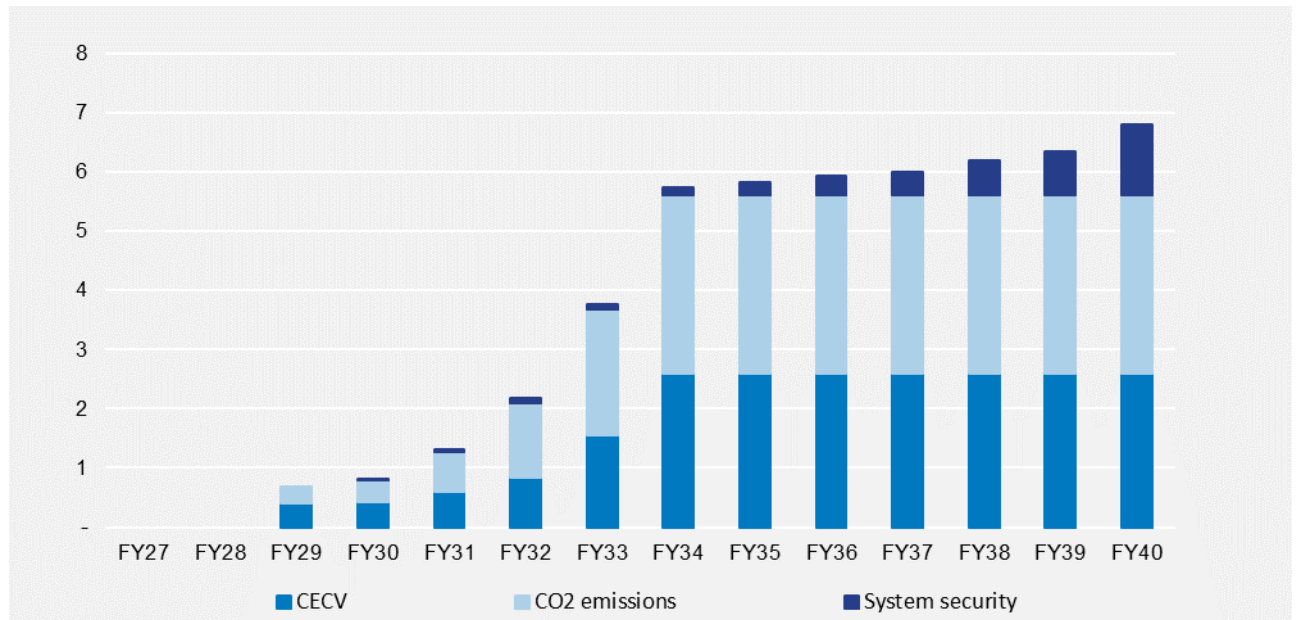
A summary of the net benefits of option two are described below in table 4.

**TABLE 4 ECONOMIC ASSESSMENT OF OPTION TWO (\$M, 2026)**

OPTION	PV COSTS	PV BENEFITS	NPV
Flexible services (export only)	15.2	36.5	21.3

We undertook an economic assessment of the net benefits of option two using our Energy Workbench tool. Figure 6 presents the total benefits for option two, including system security, solar enablement, and emissions reduction.<sup>3</sup> The benefits of additional solar enablement under this option have been valued under existing AER frameworks such as the customer export curtailment value (CECV) and value of emissions reduction (VER).

**FIGURE 6 OPTION TWO BENEFITS (\$M, 2026)**



### 4.1.3 Option three: flexible services (export and load)

Option three includes everything in option two, as well as incremental capital expenditure required to build the capability for flexible load products such as EV charging. Load products need additional functionality to allow customers the option to select differing products and have the operational performance available to them. Given both export and load products utilise the same key foundational investment, the incremental amount of capital expenditure is small.

<sup>3</sup> Benefits have been estimated to start in FY29 to align with go-live of our system. However, this is likely conservative given we are exploring offering flexible connections earlier

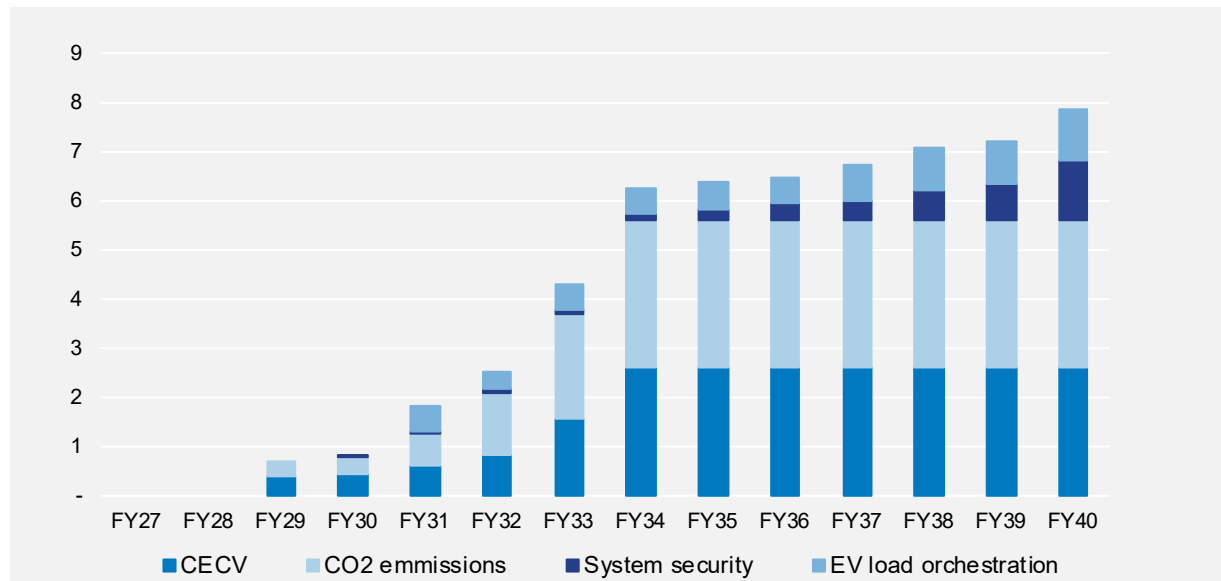
Under option three, systems will be prepared during the 2026–31 regulatory period ahead of a scale roll out of flexible EV products by July 2031. In the 2026–31 period, there will also be a comprehensive trial to inform product design which is being proposed through our innovation fund.<sup>4</sup>

**TABLE 5 ECONOMIC ASSESSMENT OF OPTION THREE (\$M, 2026)**

OPTION	PV COSTS	PV BENEFITS	NPV
Flexible services (export and load)	16.2	41.1	24.8

Figure 7 presents the total benefits for option three, including system security, solar enabled, emissions reduction as well as the additional benefits of introducing EV products in the long term.

**FIGURE 7 OPTION THREE BENEFITS**



#### 4.1.4 Option four: full augmentation

Option four is the full augmentation option. This option includes the augmentation expenditure required to enable the equivalent solar outcomes as option two and three.

**TABLE 6 ECONOMIC ASSESSMENT OF OPTION FOUR (\$M, 2026)**

OPTION	PV COSTS	PV BENEFITS	NPV
Full augmentation	72.6	33.9	(38.7)

Figure 8 presents the benefits of option four. The augmentation option will produce the equivalent solar and emission benefits for customers; however, it will not have the security system benefits. This

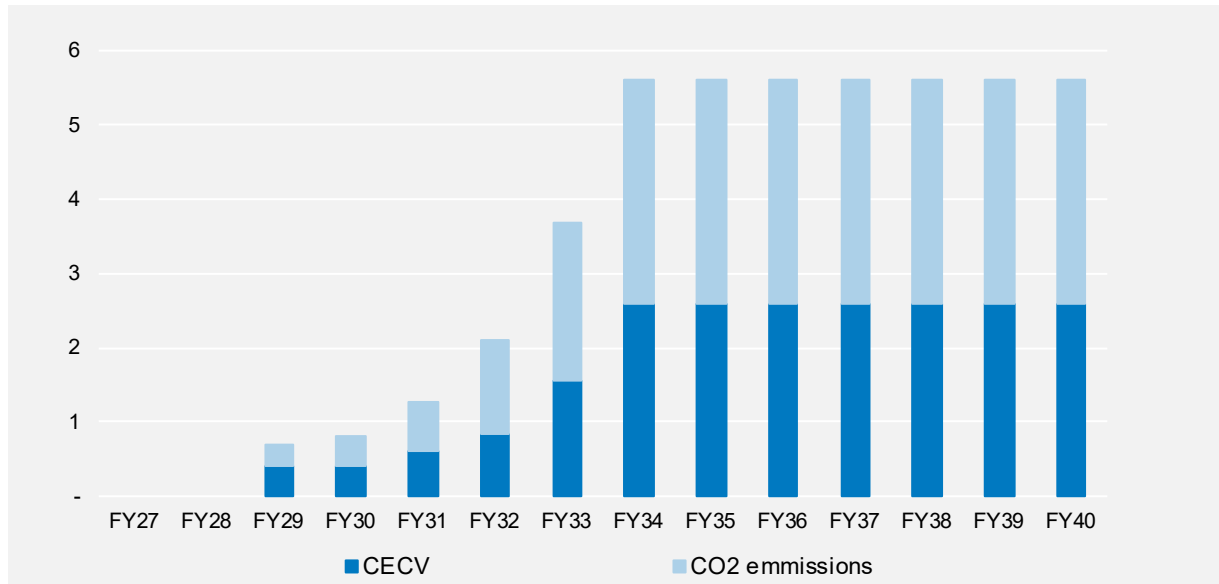
<sup>4</sup> CP BUS 10.01 – Innovation allowance – Jan2025 – Public



is because augmentation does not introduce the ability for solar to be managed to alleviate system security issues in times of minimum system load events as declared by AEMO.

This option is not aligned with customer expectations as throughout our engagement program there was limited support for network augmentation to enable more solar exports (in contrast to using smarter solutions such as flexible products).

**FIGURE 8    OPTION FOUR BENEFITS**



## 5. Recommended option

The recommended option is option three—the introduction of flexible export and load services. Option three has the highest NPV and is well aligned with our customers values and preferences, by enabling solar exports efficiency and equitably, as well as doing preparatory investment for flexible load products to build social licence prior to a wide-scale roll-out.

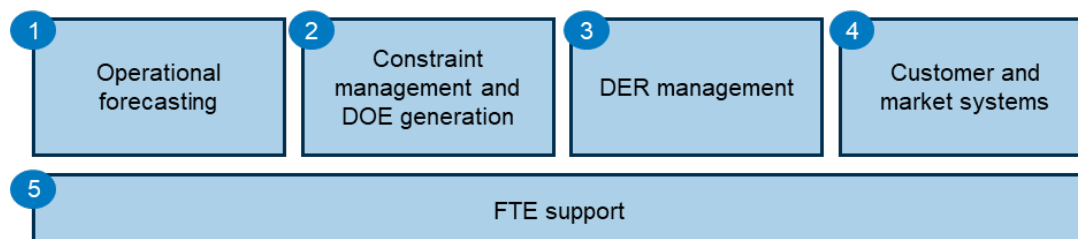
**TABLE 7 SUMMARY OF PREFERRED OPTION (\$M, 2026)**

OPTION TWO	FY27	FY28	FY29	FY30	FY31	TOTAL
Capital expenditure	3.1	1.3	1.4	2.2	1.1	9.1
Operating expenditure	0.6	1.9	1.9	2.2	2.3	8.9
<b>Total</b>	<b>3.7</b>	<b>3.2</b>	<b>3.3</b>	<b>4.4</b>	<b>3.5</b>	<b>18.0</b>

### 5.1 Key functionality and costs

The key functionality and cost components associated with option three are summarised in figure 9, and explained in detail below including our current and future state.

**FIGURE 9 KEY COST COMPONENTS**



#### 5.1.1 Operational forecasting

Improved operational forecasting capability will enable us to forecast the demand profile for the network down to the LV network and customer level. This forecast will likely look ahead in five-minute increments for up to six months and potentially up to one year and will be used as a major input into flexible exports, and in the future flexible load products. Currently, our forecasting is based on longer-term forecasts (one year, five years, 10 years). This capability will also be utilised to inform forecast flexible export operating envelopes and reliably and more optimally manage DER in order to continue to manage system security.

The expenditure is aligned with the AER’s flexible export guideline whereby there is an expectation for networks to maximise exports and provide greater opportunities for customers. Improving our operational forecasting capability will allow us to do this. Further, the AER’s network visibility guideline has indicated that network data quality is currently a barrier for third-party opportunities. This new functionality will build the foundation for improved data quality which is a key input into our other two CER integration programs, including our network data visibility portal and our non-network procurement platform.

### **5.1.2 Constraint management and DOE generation**

An operational forecast for an area must be overlaid with the physical network limits in that location to determine the constraint or spare capacity. Once this spare capacity is known it then must be allocated to all the consumers on the network segment. This process is what generates the individual customer flexible export limit.

We are currently conducting a small trial for flexible export products. Due to the small size, a simplified in-house constraint management system utilising smart meter data was developed to test the concepts. However, it has limitations on scalability, accuracy (leading to conservative limits), and reliability and does not have the forecast capability required for business-as-usual roll out or to deliver AER expectation for flexible products, for example, forecast export constraints being available prior to limits being sent to customers.

This improved functionality will enable us to accurately calculate the amount of 'spare' capacity available in the network as a standard business capability. To determine the spare capacity, there will be several inputs considered in the DOE engine calculations including the physical network model (i.e. technical asset limits), the operational forecasts (as above), and any live operational data from systems such as SCADA and smart metering. The spare capacity (or constraint) will then be allocated to individual customers by a set of methods (e.g. everyone is equal) that may vary as customer preferences and regulatory obligations evolve.

### **5.1.3 DER management system**

A DER management system is required to manage the expanding DER fleet including more sophisticated management for system security and creating, storing and communicating the flexible export (or load) limit schedules at each customer site. This system enables the management of DOEs and customer connections at scale using the industry standard CSIP-AUS (IEEE 2030.5) protocol as well as a more direct management capability for larger (greater than 200kW) customers. It will also provide more sophisticated and optimised control to minimise customer impacts while maintaining system security and managing network impacts across low voltage and high voltage networks. This investment will build on our current DER management system which was internally built during the current regulatory period to ensure compliance with the VEBM. We will utilise the existing connection infrastructure (utility server) which is already in place, however, additional investment is required to enable fleet management at the scale of solar connections forecast for 2026–31.

### **5.1.4 Customer and market systems**

During the current period following the VEBM, improvements were made to provide notifications to customers during a minimum demand event. However, the introduction of flexible products again changes the way we interact and need to communicate with our customers. This includes the following:

- enable the storage of customer data which includes recording which customers are on flexible versus static product, what flexible limits customers have been sent, solar system size, flexible limit compliance via smart meter check, and flexible limit performance metrics
- amendments to the connection portal to allow solar installers to select varying export or load products
- customer portal enhancements allowing flexible product performance insights to be formatted and displayed for end-use customers, in line with the AER's flexible export guideline

### **5.1.5 Additional FTE required to support ongoing VEBM compliance and new functionality**

The introduction of flexible services marks a significant change in how we manage our network. It introduces significant complexity to the customer connection process and technical operation both initially and going. Further, it impacts and changes our customers' experiences with us.

Our network receives over 20,000 new or upgraded solar connection request per year. To enable both the introduction of flexible exports and our ongoing compliance with VEBM, additional full time equivalents (FTE) are required. Table 7 provides a summary of the key functionalities and associated activities required.

**TABLE 8 FTE REQUIREMENTS: KEY ACTIVITIES**

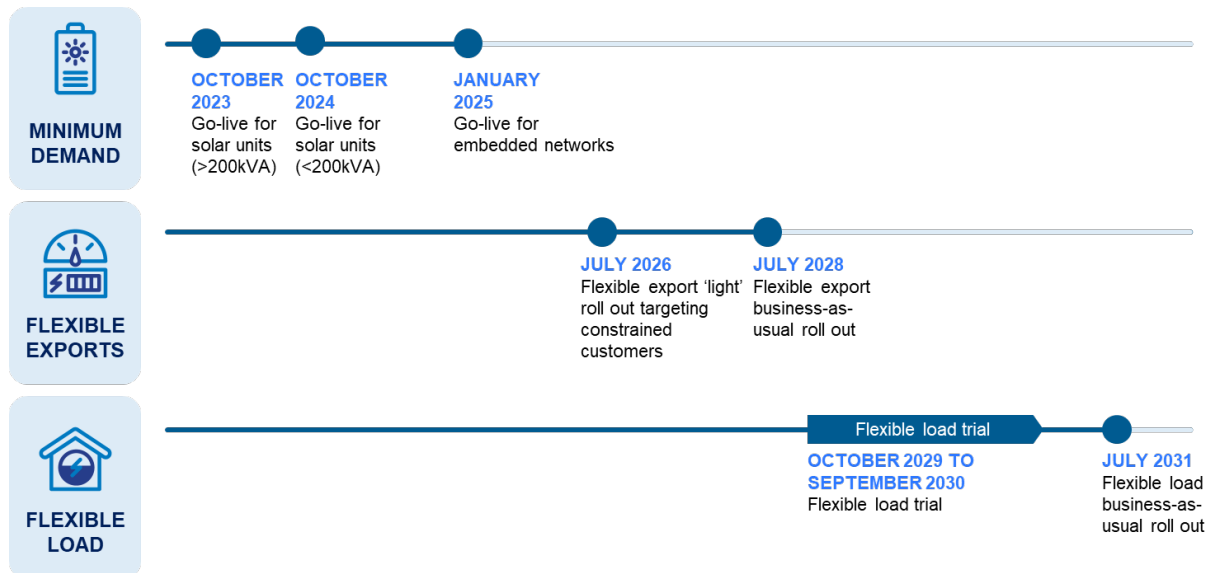
FUNCTIONALITY	KEY FTE ACTIVITIES
Customer management	<ul style="list-style-type: none"> <li>• Responding to customer initiated enquires associated with CER</li> <li>• Provide direct support to CER systems installers and larger (commercial and industrial) customers</li> <li>• Responsible for customer portal data such as historical and current DOE, CER performance, and local network performance information</li> <li>• Manage non-compliant installers</li> </ul>
Connections support	<ul style="list-style-type: none"> <li>• Assist with issues associated with physical connection and post-connection requirements for flexible connections and minimum demand</li> <li>• Provide support to installers as part of DER commissioning</li> <li>• Monitor the end-to-end commissioning process and maintaining back-end system reliability</li> <li>• Develop and report on a range of compliance obligations including AS4777, connectivity (CSIP-AUS), DOE compliance, network voltage</li> </ul>
Operational forecasting	<ul style="list-style-type: none"> <li>• Utilise and manage the operational forecasting tool to generate up to near real time operational forecasts</li> <li>• Interact with constraint management function on issues/exceptions associated with the forecast including any manual corrections</li> <li>• Interact with network operations on issues/exceptions associated with the forecast being used for day-to-day operations including contingency planning and switching operations</li> <li>• Liaise with AEMO’s market forecasting function periodically to align forecasts and update methodologies</li> </ul>
Constraint management and DOE generation	<ul style="list-style-type: none"> <li>• Management of the DOE engine outputs including refining and evolving DOE allocation methodologies</li> <li>• Scenario planning associated with minimum demand and weather events</li> <li>• Monitoring how DOEs are performing and the impact on the need to augment or other requirements</li> </ul>
DER management	<ul style="list-style-type: none"> <li>• Liaise with network operations on CER performance and impacts on the network including DOE adjustments for planned work</li> <li>• Manage alerts associated with failed on-boarding, off-line customers, and CER impacting network safety</li> </ul>

## 5.2 Our flexible services program

Our flexible services program introduces new products for customers which will enable additional benefits of CER to be realised and shared with customers both with and without CER.

Figure 10 illustrates our high-level timeline for the flexibility initiatives. During the 2026–31 regulatory period, we will be introducing flexible export products, initially targeting otherwise constrained customers with a business-as-usual roll out later in the period. In addition, we will also be trialling flexible load products with our customers as well as building the foundational capacity required for a scaled roll out. These trials will ensure we design end products that customers want and trust.

**FIGURE 10 FLEXIBLE SERVICES – INDICATIVE TIMELINE**



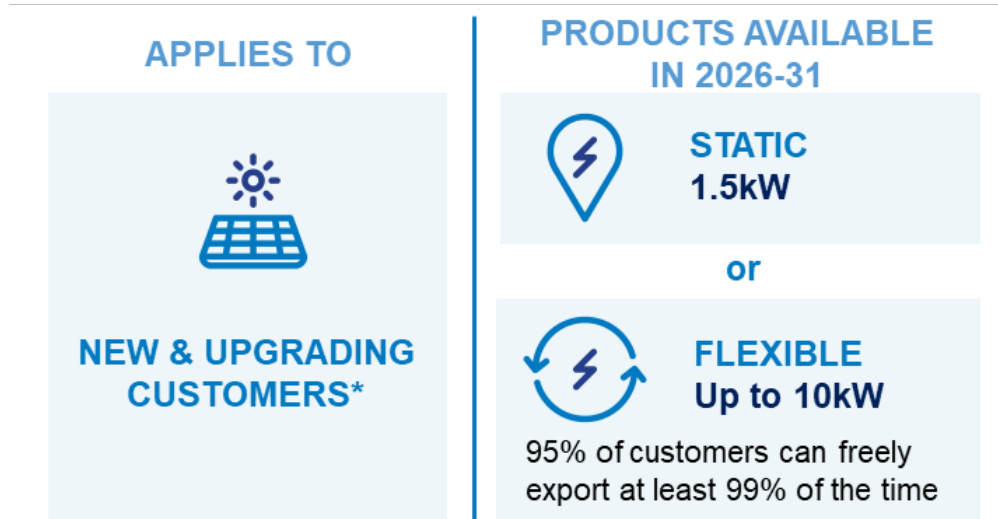
### 5.2.1 Our proposed products

#### Residential customers (less than or equal to 200kW)

During the 2026–31 regulatory period, new and upgrading solar customers will be given a choice between a static and a flexible export product. Flexible export products will vary customers' export limit through the day based on the available network capacity over time.

Figure 11 summarises the customer's choice they will need to make reflecting the opt-in nature of our product. As aligned with the AER's flexible exports guidance note, we are proposing to largely align our static export product to our hosting capacity analysis.








**FIGURE 11 RESIDENTIAL FLEXIBLE PRODUCTS<sup>5</sup>**



\*Existing solar customers are eligible but may need inverter upgrades to support flexible products depending on the age of their system.

We have analysed potential savings for participating solar customers with compatible inverters who choose flexible exports. Figure 12 considers annual sunlight data, system size and retailers feed-in tariffs.<sup>6</sup> On average, customers will be better off on a flexible export product relative in terms of additional export unlocked and anticipated annual savings.

**FIGURE 12 CUSTOMER SAVINGS FROM FLEXIBLE EXPORTS**

Consumption	Low 2,900 kWh p.a.	Medium 4,200 kWh p.a.	High 6,300 kWh p.a.
 <b>Solar capacity</b>	<b>4 kW</b>	<b>6.5 kW</b>	<b>10 kW</b>
 <b>Customer profiles</b>	 <b>Retiree/single/couple</b> (1–2 people)	 <b>Young family</b> with 1–2 children (3–4 people)	 <b>Family/large households</b> intergenerational family or share house (>4 people)
 <b>Additional export unlocked (p.a.)</b>	<b>900 kWh</b>	<b>3,200 kWh</b>	<b>6,600 kWh</b>
 <b>Anticipated annual savings</b>	<b>\$30</b>	<b>\$106</b>	<b>\$216</b>

<sup>5</sup> Performance metrics exclude minimum demand emergency events, minimum demand response test events and loss of connectivity with customer's CER unit

<sup>6</sup> This analysis is based on current (FY25) feed-in tariffs. On 10 January 2025, the ESC published their minimum feed-in tariff review 2025–26 draft decision paper, due to take effect 1 July 2025. More information is available [here](#).



### **Large customers (solar connections between 200kW–1MW)**

During the 2026–31 regulatory period, we will build the capability to offer flexible connections to our large customers, starting with exports. We currently do not have the ability to flexibly manage connections from 200kW–1MW. With this new capability, we can offer lower cost solutions by avoiding significant augmentation costs, but with operational limitations.

This flexible connection will be a bespoke connection agreement on a case-by-case basis as it must consider the customer size, location, and energy needs.

### **Flexible load products**

During the 2026–31 regulatory period, we are proposing to conduct a trial for flexible load products. Trials are an important first step to test technical capability as well as customer appetite to different products. Given our customers' feedback outlining concerns with flexible load products, a trial is critical to learn and build our social licence. The trial will build on our research to date to inform product design and our customer communication strategy.

Our trial will explore:

- the monetary incentives customers require to uptake our EV load products
- customer perspective of the benefits and drawback of flexible load products
- evaluation of technology solutions, technical standards, and connection requirements to enable flexible load products
- evaluation of capacity allocation methods that optimises performance outcomes for customers
- acceptable charging behaviour during periods of network congestion

While we are focusing on flexible load trials initially, we will also invest in the required capabilities so that we are ready for business-as-usual roll out of flexible load products in 2031. The proposed timeline has considered deliverability given our initial focus on flexible export in the next regulatory period.



For further information visit:

 [CitiPower.com.au](http://CitiPower.com.au)

 CitiPower and Powercor Australia

 CitiPower and Powercor Australia

 CitiPower and Powercor Australia