



# Justification Document: Connections expenditure 2025-2030 Regulatory Proposal

Supporting document 5.5.1

January 2024

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## Glossary

<b>Acronym / term</b>	<b>Definition</b>
<b>ABS</b>	Australian Bureau of Statistics
<b>ACS</b>	Alternative Control Services
<b>AER</b>	Australian Energy Regulator
<b>Capex</b>	Capital expenditure
<b>CER</b>	Consumer Energy Resources
<b>DER</b>	Distributed Energy Resources
<b>DOE</b>	Dynamic Operating Envelope
<b>INAC</b>	Immediate Network Access Charge
<b>ICSN</b>	Incremental Cost Shared Network
<b>IRR</b>	Incremental Revenue Rebate
<b>LEG</b>	Large Embedded Generator
<b>LCTAS</b>	Least cost technically acceptable service
<b>MSO</b>	Model Standing Offer
<b>NECF</b>	National Electricity Customer Framework
<b>NEM</b>	National Electricity Market
<b>NER</b>	National Electricity Rules
<b>OEA</b>	Oxford Economics Australia
<b>RCP</b>	Regulatory control period
<b>RIN</b>	Regulatory Information Notice
<b>SCS</b>	Standard Control Service
<b>URD</b>	Underground Real Estate Developments
<b>WACC</b>	Weighted Average Cost of Capital

# 1 About this document

## 1.1 Purpose

This document outlines our forecast expenditure requirements associated with enabling connections to SA Power Networks' distribution network for the 2020-25 Regulatory Control Period (**RCP**), and our approach by which we have developed our connections expenditure forecasts.

The forecast connections expenditure proposed in this document is required to ensure we can meet our obligations to connect our customers to the network, to operate a safe and reliable network and to comply with the National Electricity Rules (**NER**).

## 1.2 Expenditure category

The expenditure comprises of our customer connections capital expenditure (**capex**). It includes gross capex, customer contributions capex forecasts, and the resultant net capex forecast.

## 1.3 Related documents

This document should be read in conjunction with the following documents that specifically relate to the customer connections programs, and together form a suite of supporting documents to our Regulatory Proposal:

- SAPN Attachment 17 SA Power Networks' Connections Policy (draft) for the 2025-30 RCP
- SAPN Doc 5.5.3 Oxford Economics Australia<sup>1</sup> Gross Customer Connections Expenditure Forecast to 2030/31
- SAPN Model 5.5.2 Connections expenditure and contributions model

Also refer to Appendix A of this document.

# 2 Executive summary

SA Power Networks forecasts \$220.1M<sup>2</sup> in net connections capex, on new customer connections, upgrades to existing customer connections, or alterations to customer connections resulting from the requirements of specific connection service arrangements.

For each of our previous Regulatory Proposals, four categories of connections (demand) have been forecast and are ongoing, these being:

- minor customer connections (projects less than \$30,000);
- medium customer connections (projects between \$30,000 and \$100,000);
- major customer connections (projects greater than \$100,000)<sup>3</sup>; and
- underground residential development projects.

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<sup>1</sup> Previously BIS Oxford Economics. Oxford Economics Australia provides local and macro expertise on more than 100 markets and industries in Australia and New Zealand.

<sup>2</sup> \$ June 2022 direct costs, excludes network and corporate overheads.

<sup>3</sup> The major customer connections category includes a small amount of expenditure associated with the connection of electric vehicle (EV) fast chargers, approx. \$2M pa.

For the 2025-30 Regulatory Proposal we are including export connection services as a fifth connection category being:

- Large Embedded Generation.

In recent years we have experienced increasing demand and complexity for Consumer Energy Resources (**CER**) connection services associated with both large embedded generation (**LEG**) and large demand (load) connections such as firm and flexible load or load/export combinations (battery energy storage systems and or combined with commercial loads, Solar farms, fast electric vehicle chargers etc). LEGs include National Electricity Market (**NEM**) scheduled generators (up to and greater than 30 MW), which traditionally have not connected to our distribution network.

The 2021 rule change on 'Access, pricing and incentive arrangements for distributed energy resources' explicitly recognised export services as a 'distribution service', with these services now able to be formally classified. Consistent with the Australian Energy Regulator's (**AER's**) recent Framework and Approach decision, we propose to classify export connection services as a Standard Control Service (**SCS**).

To recover our connection costs associated with these export services, we propose to mirror the export connection services charging framework with our demand connection services framework as much as possible. The full details of our connections charging framework are set out in our proposed Connection Policy 2025 to 2030 and is summarised in section 6 of this document.

Aligning the costing framework for load and export service connections will both improve customer experience by simplifying the charging framework and it will avoid over or under charging where common connection assets are involved.

## 3 Background

### 3.1 The scope of this justification document

This document responds to the requirement for SA Power Networks to provide customer connection services to the network and to provide access to distribution services. This document outlines our framework and methodology applied to develop our connections expenditure forecasts to accommodate these services and provides an overview of our forecast capex requirements for the connections distribution assets over the 2025-30 RCP.

Connection services can be summarised into three distinct types:

- Basic;
- Negotiated; and
- Enhanced.

Basic connection services and the network extension and augmentation components for both negotiated and enhanced connection services are classified as SCS and are included in the scope of this document. Premises connections for both negotiated and enhanced connection services and connection services above the Least Cost Technically Acceptable Service (**LCTAS**), are proposed to continue to be classified as an Alternative Control Services (**ACS**) and are outside the scope of this document.

For further details on the connections services that SA Power Networks provides, refer to Table 2. below and the proposed Connection Policy 2025-30 (Attachment 17 to the 2025-30 Regulatory Proposal).

This justification document explains:

- the relevant background including our recently approved changes to connection services classification and our Connection Policy;
- our service classifications and types of connections for connection services; and
- our forecasting methodologies for the 2025-30 gross connections expenditure, customer contributions and net connections expenditure.

## 3.2 Drivers of the program

The connections services program is driven by customer activity relating to the connection of new customers, the upgrade of existing customers, or alterations resulting from the requirements of specific customers supply arrangements.

The underlying factors contributing to this activity include:

- South Australia's Population and economic growth;
- Both state and federal government strategies<sup>4</sup> and incentives; and
- New and alteration connections, including major developments. Customer emerging technologies – CER, Fast EV charging, all electric homes and both residential and commercial energy storage.

## 4 The identified need

The expenditure forecast of the Connections programs is a priority component of our overall capex forecast for the next RCP.

This program forecast is required to achieve the capital expenditure objectives in Chapter 6 the NER,<sup>5</sup> specifically to “comply with all applicable regulatory obligations or requirements associated with the provision of standard control services” because under Chapter 5A of the NER we are obligated to provide an offer to connect customers to the distribution network.

It is also necessary to ensure that we can “meet or manage the expected demand for standard control services” where a major customers connection (load or export), may significantly impact on the existing network assets.

## 5 Approach to forecasting connections expenditure for 2025-30

The approach for developing the forecast for the 2025-30 Connection expenditure (for SCS) is set out in Table 1 below. The overarching framework includes:

- Framework and Approach defines our service classification; and
- Connections Policy that sets out our connections charging framework.

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<sup>4</sup> Strategies meaning potential Defence projects, employment industry support such as desalination plants to support mining growth on the Eyre peninsula, core resources support such as a graphite mine to make batteries in Australia.

<sup>5</sup> Clause 6.5.7(a) (1) and (2) NER

**Table 1. Connections forecasting approach**

Sub-category	Drivers	Key inputs	Forecasting approach
<b>Connections</b>	<ul style="list-style-type: none"> <li>▪ South Australia’s Population and economic growth both state and federal government strategies and incentives</li> <li>▪ New and alteration connection activity</li> </ul> <p>Customers emerging technologies – CER, Fast EV charging, all electric homes and both residential and commercial energy storage.</p>	<ul style="list-style-type: none"> <li>▪ Historic expenditure (from RINs)</li> <li>▪ Committed major projects</li> <li>▪ ABS data on building activity: approvals, engineering and construction</li> <li>▪ South Australian population growth</li> <li>▪ Major project developments (commercial and state or federal government entities)</li> <li>▪ Real estate developments</li> </ul>	<p>As per our previous three RCPs, we engaged consultants, Oxford Economics Australia (formerly BISOE), to prepare our SCS connections RCP forecast for gross customer connections.</p> <p>Oxford Economics Australia (OAE) develop customer connections gross expenditure forecasts using a combination of top-down and bottom-up methodologies for each of our five connection categories.</p> <p>Net expenditure forecasts is developed by applying our proposed Connection Policy 2025-30, historical contributions and forecasts of key elements, the Weighted Average Cost of Capital (<b>WACC</b>), distribution network Tariffs and operating and maintenance costs.</p>

## 5.1 Service classification and Connection services

SA Power Networks is required to prepare a new Connections Policy for each RCP. The Connection Policy sets out the circumstances in which connection charges are payable for establishing new connections or making connection alterations and the basis for determining charges in accordance with the NER<sup>6</sup>.

The connections services to which the Connection Policy applies, range from basic connections (requiring minimal or no augmentation of the distribution network) for residential customers, through to negotiated large commercial connections, real estate developments and embedded generation connections.



The connection charges payable by a connection applicant, and the contractual terms which govern SA Power Networks’ and a connection applicant’s rights and obligations in respect of a new connection or connection alteration, will depend on the type of connection and the connection assets and services involved.

Connections services can be summarised into three distinct types of connection services, basic, negotiated and enhanced. Table 2 below, sets out our proposed service classification for these connection services<sup>7</sup>.

<sup>6</sup> The policy has been prepared in accordance with the requirements in Chapters 5A and 6 of the NER and the AER’s Connection charge guidelines for electricity retail customers, under Chapter 5A of the National Electricity Rules, version 1.0 (AER connection charge guidelines for electricity retail customers).

<sup>7</sup> Proposed classification of services at the time of writing this document, as included in our request to the AER to replace our Framework and Approach for 2025-30. Refer [Initiation | Australian Energy Regulator \(aer.gov.au\)](https://www.aer.gov.au).

**Table 2. Basic, Negotiated and Enhanced Connection Services<sup>8</sup>**


Connection Services			
Connection type	Description	AER Service classification	Contract type
<b>Basic connection service</b> 	<p>Connection services we provide on a routine basis and generally at a fixed fee. This type of connection service includes both new connections or alterations to existing connections, which generally involve minimal or no augmentation/extension of our network. These services are generally provided to the following customers:</p> <ul style="list-style-type: none"> <li>residential customers (requiring minimal extension or no upgrade);</li> <li>small business customers up to a capacity of 100 amps per phase or less; and</li> <li>non-registered small embedded generators with a generating capacity of 10kW or less for a single-phase connection or 30kW or less for a three-phase connection</li> </ul>	<b>Standard Control Service</b>	<p><b>Model Standing Offer (MSO)</b></p> <p>A MSO contains a default set of terms and conditions that are approved by the AER.<sup>9</sup></p> <p>However, a customer may seek to negotiate their individual connection contract. This will be provided as a Negotiated Offer</p>
<b>Negotiated connection service</b> 	<p>More complex connections, generally requiring us to augment or extend our network. Where the estimated costs of a new or altered connection exceed the estimated revenue, the connection applicant may be required to contribute toward the costs of the premises connection assets and any required network extensions.</p> <p><b>Load services</b></p> <p>Firm Load - A shared network augmentation charge (ICSN) may also apply where the customer’s firm estimated load exceeds thresholds.</p> <p>Flexible Load - An immediate network access charge (INAC) may apply where the customer’s flexible estimated load exceeds thresholds.</p> <p>Load thresholds applying to both firm and flexible connections are:</p> <ul style="list-style-type: none"> <li>25kVA where a connection applicant’s premises are supplied from a non-three-phase network such as the 19kV SWER (Single Wire Earth Return) network; or</li> <li>0 kVA if connection applicant is a real estate developer, or</li> <li>70kVA</li> </ul> <p><b>Export services</b></p> <p>Firm export is not offered for export services.</p> <p>Flexible Export - An INAC may apply where the customer’s flexible estimated export capacity exceeds the threshold of:</p>	<p><b>Alternative Control Services</b></p> <p>– Premises connections</p> <p><b>Standard Control Services</b></p> <p>– Extension, network augmentation</p>	<p><b>Negotiated Offer</b></p> <p>A Negotiated Offer is where a connection applicant negotiates the terms and conditions on which the connection service is to be provided<sup>10</sup>. Typically, this is provided on a quoted (offer) basis.</p>

<sup>8</sup> For further details refer to Attachment 12 – Connection Policy, Section 2.1.

<sup>9</sup> NER 5A part B

<sup>10</sup> NER 5A part C



	<ul style="list-style-type: none"> <li>▪ 10kW per phase*; or</li> <li>▪ 0 kW if connection applicant is a real estate developer, or</li> <li>▪ otherwise 30kW</li> </ul> <p>*Different export rules may apply to customers connected to the SWER network</p> <p>The connection related works may include:</p> <ul style="list-style-type: none"> <li>▪ premises connections – includes any additions or upgrades to the connection assets located on the customer’s premises such as transformer, communication, remote monitoring and control of most embedded generators (excludes metering services);</li> <li>▪ extensions – includes any new additions required to connect a powerline from our network to the Customer’s connection assets; and/or</li> <li>▪ network augmentation– includes any enlargement/enhancement of our existing network for firm load, which is not an extension.</li> <li>▪ INAC includes any enlargement/enhancement of our existing network to accommodate flexible load and or export which is not an extension.</li> </ul> <p><b>Load and export combinations</b></p> <p>The firm and flexible immediate or staged connection take into consideration the cost recovery mechanism in each direction (load and export) to avoid duplication for capacity augmentation that is common to both directions.</p>		
<p><b>Enhanced connection service</b></p> 	<p>These connection services are provided at a standard that is above (or below, where permissible) the least cost technically acceptable service (LCTAS), at the request of customers and charged at the full cost of the works. This category also includes connections for both load and export.</p> <p>Examples of enhanced connection services are:</p> <ul style="list-style-type: none"> <li>▪ increased (or decreased, where permissible) reliability, standards and/or regulatory requirements (eg duplicate supply, dedicated assets, upgrade from overhead to an underground service etc)</li> <li>▪ excess levels of capacity or service (eg upgrade of single phase to three-phase, excess asset capacity, specialised/non-standard technical services etc.</li> </ul>	<p><b>Alternative Control Service</b></p> <p><b>ACS</b> – Premise connections and component in excess of LCTAS</p> <p><b>SCS</b> – extension and augmentation up to LCTAS.</p>	<p><b>MSO and/or Negotiated Offer</b></p> <p>A Negotiated Offer is where a connection applicant negotiates the terms and conditions on which the connection service is to be provided<sup>11</sup></p>

Notes:

1. For enhanced connection services, customers are typically required to make a customer payment that is additional to any other requested services, including a request for a negotiated connection service.

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<sup>11</sup> NER 5A part C

2. For the pioneer scheme, a customer payment may be applicable where a connection service involves the use of extension assets where a previous customer (being the customer who originally paid SA Power Networks to build the assets), has made a payment towards those extension assets, the subsequent (new) customer may be required to contribute towards the cost of the extension assets, (conditions apply refer section 6.3 Pioneer Schemes).
3. For descriptions of firm and flexible capacity, refer to section 2.3.
4. SA Power Networks no longer provides metering services for new connections or connection alteration requests. Connection applicants will be required to obtain metering services through their energy retailer.

For the 2025-30 RCP we propose to retain the current service classifications for basic, negotiated and enhanced connection services, with some changes associated with how export services are classified.

For the components of connection services that are SCS, customers will continue to pay a contribution towards the cost of their new or upgraded premise connection and any associated augmentation that may be required. The customer contribution component is calculated in accordance with our Connection Policy including the cost of non-contestable connection works, connection assets, the connection applicant's contribution towards pioneer scheme(s), augmentation for load, immediate network access for export and extension assets, where applicable.

In South Australia, an extension to the existing network may only be defined as contestable where the asset can be constructed in isolation of the existing distribution network. Any work required to physically connect to the existing network, augmentation of the network for new or additional load, or to gain immediate network access for export to the distribution network, is not contestable and can only be performed by SA Power Networks, to ensure the ongoing safety and reliability of the existing network and customers.

### 5.1.1 Export Connection Services

As detailed in the AER's Framework and Approach for 2025-30, there will be a change in service classification of export connections to align with the classification for consumption/load-based connection services<sup>12</sup>. This will provide greater consistency in the cost treatment of load, generation and battery<sup>13</sup> connections including the application of a \$/kVA charge for any upstream augmentation required in accordance with our approved Connection Policy. Aligning the classification of load and export service connections will ensure customers pay for connection and network costs that reflect the services they receive.

This also makes provision for SA Power Networks to charge for export energy<sup>14</sup> (as we propose in our Tariff Structure Statement), where costs allocated to load and export services should not overlap. Aligning load-based and export connection services will result in the following:

- No change in the classification for small-embedded generation connections, with these continuing to be treated as basic connections.
- LEGs will generally be classified as a negotiated connection. This is a change from our current classification, where LEGs are all classified as enhanced connections under ACS. As a negotiated connection, these customers will fully fund the premises connection (as an ACS), with any extension or augmentation classified as a SCS. Consistent with negotiated consumption-based connections, LEG connections will pay full cost towards augmentation (less the relevant incremental revenue rebates - IRR), with these charges determined in accordance with the Connection Policy.
- LEG connections requested above the LCTAS, would be treated as an enhanced connection. In this case the customer will fully fund the premises connection (as an ACS), with any extension or augmentation up to LCTAS treated as SCS. Capital contributions for augmentation costs will continue

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<sup>12</sup> AER's Framework and Approach, SA Power Networks Regulatory control period commencing 1 July 2025, July 2023, page 6.

<sup>13</sup> Batteries which can both charge from the distribution network and discharge back into the distribution network, are treated as consumption when charging (importing from the grid) and an embedded generator when discharging (exporting to the grid).

<sup>14</sup> For small embedded generation.

to apply for the firm load component of the connection service. The customer will also fully fund all work required to increase network capacity for the flexible load or export, where the network capacity is not immediately available at the time of connection (ie INAC), and above LCTAS and is treated as ACS.

Recovering network augmentation (for a firm load) and immediate network access costs via SCS (to enable flexible load and export), is more consistent with the 'open access' nature of the regulatory framework. As more customers connect CER over time, the network hosting capacity is intended to be equally shared across all CER customers, regardless of when they have connected to the network.

### 5.1.2 Firm and flexible connections

To accommodate as many CER and Distributed Energy Resources (**DER**) on the network as efficiently as possible, SA Power Networks offer the option of flexible load and export capacity. Flexible connections recognise there is under utilised network capacity available for large periods of time throughout the year, with constraints only arising under certain network conditions. The flexible component may reduce upfront connection charges and ongoing tariffs in exchange for ongoing flexibility.

#### Basic connections

For export, basic connections have the option of selecting either a permanent fixed export 11 option of 1.5kW per phase or a flexible exports option, where their export limit will vary up to 10kW per phase – based on SA Power Networks' assessment of network capacity in the area in which the customer is located and the specific network conditions that exist at a point in time.

Flexible connections for load on basic connections are not provided in this policy.

#### Negotiated connections

For negotiated service connections the following firm and flexible criteria will apply:

- Firm capacity is offered only on load connections.
- The agreed firm connection load capacity is reserved for the customer at the time of the connection and maintained on continual payment of demand charges (based on the agreed firm capacity) in the customers' network tariff. Firm load capacity is not guaranteed during abnormal network conditions or periods of system security risk.

Flexible capacity is offered for load and export connections where:

- Maximum flexible capacity will be defined in an engineering assessment.
- For distribution connected generation units, such as large-scale generation or large-scale storage connections, any export limits that may apply will be part of a negotiated offer.

Flexible capacity is available at times when there is adequate network capacity but may be reduced or unavailable at times of network constraint, network abnormality or heightened risk of system security.

Flexibility is activated through the communication of Dynamic Operating Envelopes (**DOE**). DOEs set the maximum import and/or or export at a point in time allowable for a site based on the network capacity available at the customers' connection point and will be reduced at times of network constraint. Available capacity is fairly shared between customers connected to common network assets. Any import or export from the site, including wholesale market and ancillary services operation, must remain within the DOE.

For further information on connection services definitions and the associated charging formulae, refer to our Connections Policy 2025-30 (Attachment 17 to our 2025-30 Regulatory Proposal).

## 5.2 Customer connections forecast methodology

Our connections forecast methodology is based on an independent expert forecaster's best estimate of the volume and type of new, upgraded and altered customer connections seeking access to our distribution network over the 2025-30 RCP. This methodology considers known future projects and uses historical expenditure as a foundation.

The connections forecast consists of the following components:

- Gross expenditure forecast;
- Contributions forecast; and
- Net expenditure forecast.

The net forecast is included in our total capex forecast for the 2025-30 RCP.

SCS customer connection expenditure is divided into five categories, being:

- **Minor Customer Connections** (less than \$30,000) — connection services generally associated with residential houses or small businesses, where little or no augmentation of the network is required;
- **Medium Customer Connections** (between \$30,000 and \$100,000) — connection services which are typically associated with non-residential developments, where augmentation of the network may be required;
- **Major Customer Connections** (more than \$100,000) — connection services which are typically more complex and large, such as large business investment, mining, major non-residential buildings, services, shopping centres and intensive agriculture, and government and private infrastructure investment such as defence facilities, schools, railways, water supply and also includes connections of Electric Vehicle Fast charger loads which didn't exist in previous RCPs as a connection service;
- **Real Estate Developments** — the establishment of new real estate development (RD) connections to the existing distribution network for new housing developments including suburban infill where one dwelling is replaced by more than three dwellings; and
- **Large Embedded Generators** - connection services relating to the connection of LEGs such as, Large Batteries and solar PV both greater than 30kW or combinations of these with various load or export requirements.

For each of the five categories of connections, we calculated the proportion of the customer contribution to the connection costs on the basis of our proposed Connection Policy pricing methodology, having regard to recent historical contribution levels, independently forecast connection services activity across each category and the impact of the proposed pre-tax WACC used for calculating contributions (ie Incremental Revenue) and resultant net expenditure.

### 5.2.1 Gross connections forecast methodology

As per our previous three RCPs, we engaged consultants Oxford Economics Australia (**OEA**), to prepare our 2025-30 RCP forecast for gross customer connections. OEA's connections forecasts relies on source data from the Australian Bureau of Statistics (**ABS**), in particular ABS catalogue numbers 8752.0 (building activity), 8731.3 (building approvals), 8762 (engineering and construction), and our historical and forecast data.

To determine the gross connections forecast, OEA applied a combination of econometric and statistical modelling methods. A top-down method using economic drivers was used to predict movements in connection volumes, along with a bottom-up assessment of known probable projects. The bottom-up method is only used for a portion of major customer connections categories.

This OEA forecast was prepared using SA Power Networks' unit costs, and project datasets (historic project volumes, known future projects). Our historical and forecast data utilises a combination of historical expenditure (as reported in our annual RINs), known proposed customer activity such as committed major projects, along with the factors that influence such activity, including Government schemes to create economic stimulus, government supporting commercial developments to create employment opportunities and strategic Federal Government initiatives in defence and infrastructure.

OEA's models and analysis is prepared directly on an AER RIN basis and is therefore fully reconcilable to the RINs (ie the OEA forecast of gross connections capex is a direct input to the RIN).

The historical costs (as reported in the annual RIN) for each category are applied by OEA in their forecast. These costs can be considered efficient as most connection works are contestable (work that can be performed by appropriately accredited design and construction resources). Competitive pressures can therefore be relied upon to drive efficient costs.

For the 2025-30 RCP, LEG connections have been reclassified from ACS to SCS. The forecast for LEGs has been determined using historical activity (connection volumes).

Refer to supporting document 5.5.3 Oxford Economics Australia Gross Customer Connections Expenditure Forecast to 2030/31 and associated model, supporting document 5.5.2 connections expenditure and contributions model.

### ***Minor (<\$30,000)***

The minor connections expenditure model uses top-down economic and statistical techniques. This model uses various economic drivers and historical data from ABS and our historical minor connections capex data as follows:

- total residential connection expenditure is assumed to be driven primarily by forecasts of new residential building commencements (specifically, detached houses) and residential alterations and additions activity for South Australia.
- small commercial connection activity is assumed to be driven by the real value of non-residential commencements for buildings with an individual value below \$1 million; and
- RD connections expenditure is assumed to be driven by total house commencements.

Underpinning the forecasts of residential building and non-residential building activity is OEA's forecasts of South Australian population growth. This category includes standard connections for EV charging.

### ***Medium Customer Connections (Projects \$30,000 to \$100,000)***

Like minor connections, the medium connections expenditure model uses top-down economic and statistical techniques. This model is based on our historical data for this category, historical data from the ABS and BISOE forecasts of the following drivers:

- the real value of non-residential building commencements for projects below \$20 million; and
- the real value of 'other' (or attached) dwelling commencements (ABS Building Activity Catalogue No. 8752.0).

### ***Major Customer Connections (Projects >\$100,000)***

The forecasts for major connections expenditure are developed using a bottom-up / top-down process, as follows:

- SA Power Networks' forecasts of major project developments were reconciled with OEA's list of major projects in the infrastructure (engineering construction) and non-residential building sectors.

This was used to produce a list of plausible major connection projects, covering their starting dates, load (ie kVA), estimated connection cost, and likelihood of proceeding. Electric Vehicle fast charger load connection activity will be included in this category;

- any projects with a lower than 50 percent probability<sup>15</sup> of occurring or with a cost below \$100,000 are fully excluded, but the timing, probability and value of these removed projects were noted to show they were considered but excluded; and
- the estimate connection cost of each included major project was summed to arrive at a grand total.

A residual for unknown and possible customer driven projects has been included in the forecasts. This residual was derived from the forecasts for non-dwelling building commencements (projects above \$20 million) and engineering construction activity (excluding sectors not deemed relevant) and review of historical actual expenditure for this category.

The 'bottom-up' forecast accounts for approximately 99% of the major customer connections expenditure forecast for years 1 and 2 from the current March 2023 forecast iteration (eg 2023/24 and 2024/25). The bottom-up forecast relies on the summation of detailed estimates for each nominated project in the 'Major Projects List'. Thereafter, OEA rely on the top-down model for the years 3 to 7, (eg 2025/26 and 2029/30) although this is supplemented with information from the Major Projects List.

This use of the two models (known historical or planned and unknown residual) is reasonable as SA Power Networks and OEA have a good understanding of the specific projects and their cost and likelihood in the early years, but there is far less certainty on likely developments in the later years. Furthermore, OEA has determined that top-down model very closely matches the bottom-up model in the early years, which validates of the reasonableness of both approaches.

### **Underground Real Estate Developments (URDs)**

The URD expenditure model uses a top-down economic and statistical model. The model is based on the residential forecast as per the minor connections model, as URD's lead new housing commencements, using the following drivers:

- lot production in Adelaide, obtained from the Department of Planning, Transport and Infrastructure South Australia and OEA forecasts; and
- housing commencements in South Australia obtained from the ABS and OEA forecasts.

### **Large Embedded Generators**

With the growth in LEG connections, the LEG forecast has recently been separated into a new category. The forecast for LEGs has applied the same forecasting methodology as the Major Customer Connections category.

#### **5.2.2 Contributions connections forecast methodology**

SA Power Networks developed the contribution forecast. For the connections expenditure categories, we calculated the contribution forecasts as a percentage of each category's respective gross connections expenditure. The percentage amount is derived from the average historical contributions per category over a five-year period and then adjusted for known changes in the WACC. WACC fluctuations can have a material impact on customer contributions because it directly impacts the Incremental Revenue Rebate (IRR) calculation that determines a customer's contribution.

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<sup>15</sup> Based on SA Power Networks' expert knowledge.

The contribution rates for a large portion of our forecast (covering medium and major connections and asset rebates), are a direct function of the regulatory WACC, as required by the National Energy Customer Framework (**NECF**) and our Connection Policy.

### **WACC – pre-tax real**

Customer Contributions will increase with WACC increasing (because the IRR decreases). The October 2023 forecast suggests the average Pre-tax Real WACC 5 year average will increase from 2.39% for the 2020-25 period to 4.05% for the 2025-30 period, this is 70% increase in the average Pre-tax Real WACC value, actuals and forecast are shown in the table below.

**Table 3. Weighted average cost in capital, actual and forecast rates (Oct 2023)**

	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Pre-tax Real WACC	4.35%	4.36%	4.35%	4.31%	4.27%	2.58%	2.40%	2.33%
	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast
	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	
Pre-tax Real WACC	2.39%	2.44%	3.60%	3.64%	3.71%	3.82%	3.92%	

Customer contribution amounts for a large portion of our connections forecast are a direct function of the regulatory WACC as required by the NECF and our Connection Policy. If the WACC increases, then the contribution amount as a proportion of the gross connection expenditure, will increase.

That is, for a **higher** WACC parameter, compared to our current period WACC, it is expected that:

- the Incremental Revenue Rebate (**IRR**) component will decrease;
- which will result in an increase in Customer Contributions (for non-residential connections – specifically, Medium and Major categories); and
- thus, the Net Connection expenditure will decrease.

Key Points regarding the impact of the increase in WACC from 2020-25 to 2025-30:

- Expected to decrease IRR for Medium and Major Customers by approximately 10%, which results in a 10% increase in Customer Contributions for the Medium and Major Customer categories.
- Expected to decrease IRR for Developers (URDs) by approximately 16%, which results in both a 16% increase in Customer Contributions and 16% decrease in Asset Rebates.

### **5.2.3 Net connections forecast methodology**

The net connections forecast is the resultant from contributions forecast deducted from the gross forecast.

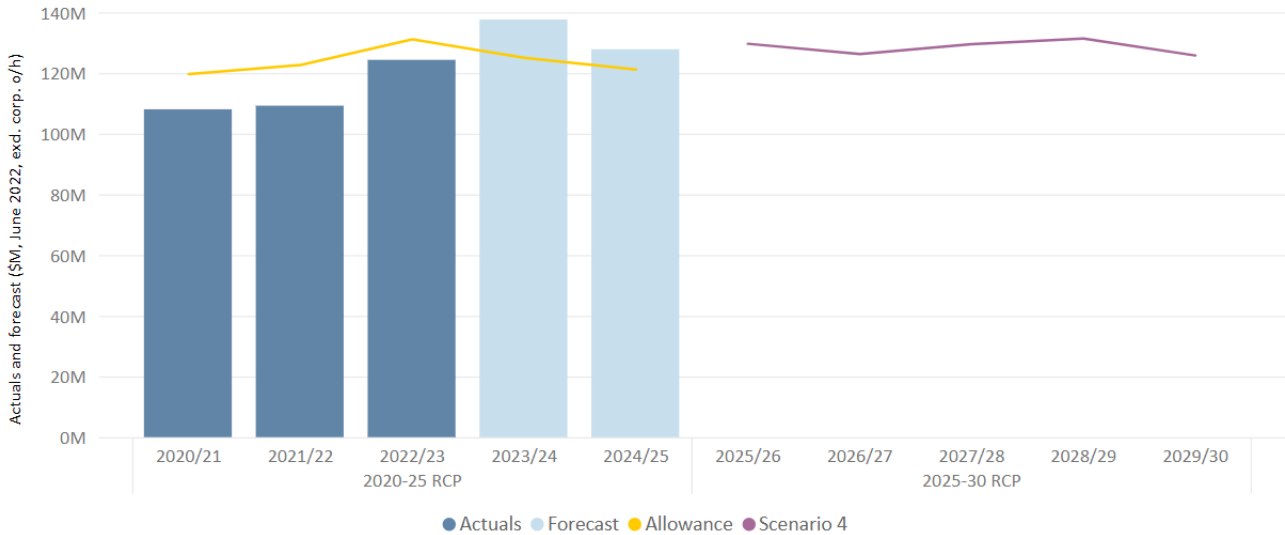
## **6 Customer connection forecast**

SA Power Networks forecast \$247.6M in net customer connections capex.

The actual and forecast customer connections capex compared to the AER forecast included in its total capex allowance is shown in Figures 1 to 3 below, on a gross, contributions and net expenditure basis.

For the current RCP our gross connections actuals/estimate is \$607.1 million compared to the AER allowance of \$619.6 million. Our forecast gross connections capex for the 2025-30 RCP is \$642.7 million. Refer to Figure 1.

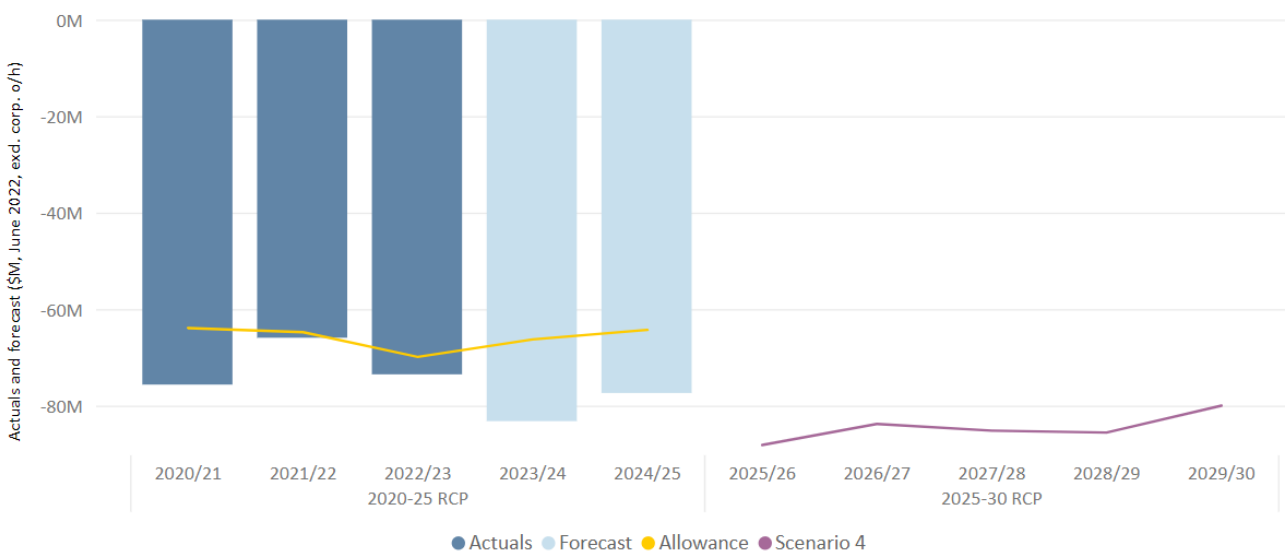
**Figure 1. Gross connections forecast for 2025-30 RCP compared to the AER allowance and actual expenditure (Real \$ June 2022, excluding all overheads)**



For the current RCP our customer contributions actuals/estimate is \$375.6 million compared to the AER allowance of \$329.1 million. The higher than forecast contributions are due to the lower IRR per annum (Increase in WACC reduces IRR).

Our forecast contributions capex for the 2025-30 RCP is \$422.6 million. Refer to Figure 2.

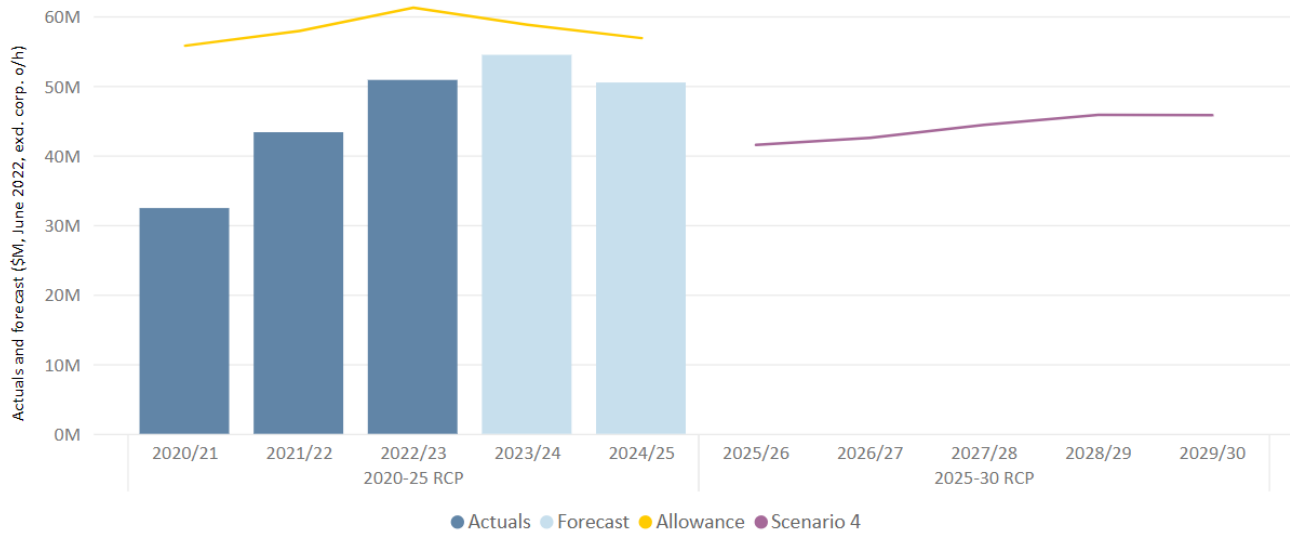
**Figure 2. Contributions connections forecast for 2025-30 RCP compared to the AER allowance and actual expenditure (Real \$ June 2022, excluding all overheads)**



For the current RCP our net connections actuals/estimate is \$231.6 million compared to the AER allowance of \$290.5 million. Higher customer contributions resulted in lower net connections. Our forecast net connections capex for the 2025-30 RCP is \$220.1 million. Refer to Figure 3.



**Figure 3. Net connections forecast for 2025-30 RCP compared to the AER allowance and actual expenditure (Real \$ June 2022, excluding all overheads)**



The forecast for each connections expenditure category is set out in Table 4.

**Table 4. Customer connections forecast for 2025-30 RCP (Real \$ June 2022, excluding all overheads)**

Overall Period Stream	2025-30 RCP					Total
	2025/26	2026/27	2027/28	2028/29	2029/30	
<b>Connections Net</b>	<b>41.52M</b>	<b>42.54M</b>	<b>44.38M</b>	<b>45.84M</b>	<b>45.79M</b>	<b>220.06M</b>
<b>Cust. Connect (gross)</b>	<b>129.65M</b>	<b>126.30M</b>	<b>129.55M</b>	<b>131.40M</b>	<b>125.78M</b>	<b>642.68M</b>
<b>Cust. Connect &lt; \$30k</b>	<b>18.36M</b>	<b>19.91M</b>	<b>20.63M</b>	<b>20.93M</b>	<b>20.98M</b>	<b>100.82M</b>
CON001 - Cust. Connect < \$30k	18.36M	19.91M	20.63M	20.93M	20.98M	100.82M
<b>Cust. Connect &gt; \$30k&lt;\$100k</b>	<b>18.55M</b>	<b>20.81M</b>	<b>22.50M</b>	<b>23.11M</b>	<b>24.04M</b>	<b>109.01M</b>
CON002 - Cust. Connect > \$30k<\$100k	18.55M	20.81M	22.50M	23.11M	24.04M	109.01M
<b>Cust. Connect &gt; \$100k</b>	<b>51.09M</b>	<b>43.33M</b>	<b>43.64M</b>	<b>45.80M</b>	<b>41.43M</b>	<b>225.29M</b>
CON003 - Cust. Connect > \$100k	51.09M	43.33M	43.64M	45.80M	41.43M	225.29M
<b>Gifting</b>	<b>23.13M</b>	<b>23.13M</b>	<b>23.13M</b>	<b>23.13M</b>	<b>23.13M</b>	<b>115.67M</b>
CON004 - Gifting Gross Type 1	11.57M	11.57M	11.57M	11.57M	11.57M	57.83M
CON015 - Asset Rebates Gross	11.57M	11.57M	11.57M	11.57M	11.57M	57.83M
<b>URDs</b>	<b>8.93M</b>	<b>9.18M</b>	<b>8.44M</b>	<b>7.35M</b>	<b>7.32M</b>	<b>41.22M</b>
CON005 - URDs	8.93M	9.18M	8.44M	7.35M	7.32M	41.22M
<b>Embedded Generation</b>	<b>9.59M</b>	<b>9.93M</b>	<b>11.21M</b>	<b>11.07M</b>	<b>8.88M</b>	<b>50.68M</b>
CON016 - Embedded Generation Gross	9.59M	9.93M	11.21M	11.07M	8.88M	50.68M
<b>Cust. Contributions - Connections</b>	<b>-88.13M</b>	<b>-83.76M</b>	<b>-85.17M</b>	<b>-85.56M</b>	<b>-80.00M</b>	<b>-422.62M</b>
<b>cCust. Connect &lt; \$30k</b>	<b>-4.41M</b>	<b>-4.78M</b>	<b>-4.95M</b>	<b>-5.02M</b>	<b>-5.04M</b>	<b>-24.20M</b>
CON006 - cCust. Connect <\$30k	-4.41M	-4.78M	-4.95M	-5.02M	-5.04M	-24.20M
<b>cCust. Connect &gt; \$30k&lt;\$100k</b>	<b>-7.42M</b>	<b>-8.32M</b>	<b>-9.00M</b>	<b>-9.24M</b>	<b>-9.62M</b>	<b>-43.60M</b>
CON007 - cCust. Connect >\$30k<\$100k	-7.42M	-8.32M	-9.00M	-9.24M	-9.62M	-43.60M
<b>cCust. Connect &gt; \$100k</b>	<b>-41.89M</b>	<b>-35.53M</b>	<b>-35.79M</b>	<b>-37.56M</b>	<b>-33.97M</b>	<b>-184.74M</b>
CON008 - cCust. Connect >\$100k	-41.89M	-35.53M	-35.79M	-37.56M	-33.97M	-184.74M
<b>cGifting</b>	<b>-11.57M</b>	<b>-11.57M</b>	<b>-11.57M</b>	<b>-11.57M</b>	<b>-11.57M</b>	<b>-57.83M</b>
CON011 - cGifting	-11.57M	-11.57M	-11.57M	-11.57M	-11.57M	-57.83M
<b>cURDs</b>	<b>-12.69M</b>	<b>-13.03M</b>	<b>-11.98M</b>	<b>-10.43M</b>	<b>-10.40M</b>	<b>-58.53M</b>
CON009 - cURDs	-12.69M	-13.03M	-11.98M	-10.43M	-10.40M	-58.53M
<b>cEG Contribution</b>	<b>-10.16M</b>	<b>-10.53M</b>	<b>-11.89M</b>	<b>-11.74M</b>	<b>-9.41M</b>	<b>-53.72M</b>
CON013 - cEG Contribution	-10.16M	-10.53M	-11.89M	-11.74M	-9.41M	-53.72M
<b>Total</b>	<b>41.52M</b>	<b>42.54M</b>	<b>44.38M</b>	<b>45.84M</b>	<b>45.79M</b>	<b>220.06M</b>

## **7 Deliverability of recommended option**

SA Power Networks has developed a plan to ensure that it can deliver this Connections Program together among all the increased volume of work reflected in the programs that comprise our total network expenditure forecast in our Regulatory Proposal. This plan considers the detailed implications of our proposed overall uplift in total network expenditure for our required workforce and supporting internal services of information technology, fleet, property and human resources.

We consider that our plan is realistic and achievable over the 2025-30 RCP. The details of our approach are set out in our accompanying document, 'Resourcing Plan for Delivering the Network Program'.

## A. Appendix – Connections modelling pathway

Connections modelling pathway:

- **5.5.3 Oxford Economics Australia: Gross customer connections expenditure forecast to 2030/31 Report**

Dollar terms: \$ June 2021 direct costs (excluding all overheads).

Sets out OEA's customer connections forecast for SA Power Networks. This report explains the inputs and assumptions used to develop the connections forecast.

- **5.5.2 SAPN Connections expenditure and contributions model**

Dollar terms: \$ June 2021 direct costs (excluding all overheads).

This model has been developed by SA Power Networks primarily to derive customer contributions. It also includes the OEA connections forecast. It uses inputs from the OEA Report (Supporting Document 5.5.3), with actual dollars derived from SA Power Networks annual RIN's.

- **SAPN Capex input sheet for Connections (not provided)**

Dollar terms: \$ June 2021 direct costs (excluding all overheads).

Forecast provided by the business to the Regulation Team. The business' forecast is set out in worksheet '**Input|Scenario 1**'. This is an internal document.

- **5.1.1 SAPN AER standardised capex model**

Dollar terms: Various

Worksheet '**ProgramMasterData**' takes data directly from the Capex input sheets '**Input|Scenario 1**', then sets out the required conversion parameters to convert the inputs to \$ June 2022. For connections, an escalation factor of 1.034982935 has been applied to the input forecast.

Worksheet '**Input|Projects**' sets out SA Power Networks' capex forecast in \$ June 2022 direct costs. These program costs align with the business case/justification document (Supporting Document 5.5.1).

Worksheet '**Calc|ProjectCosts**' escalates the forecast, applies overheads and labour escalation rates to achieve \$ June 2025. These program costs align with Attachment 5 – Capital Expenditure