Electricity

Issues paper

Electricity Distribution Code review

April 2022

Request for submissions

The Essential Services Commission (**Commission**) invites written submissions from members of the community on this paper. Written comments should be provided by **3 June 2022.**

It is the Commission's policy to make all submissions publicly available via its website (www.escosa.sa.gov.au), except where a submission either wholly or partly contains confidential or commercially sensitive information provided on a confidential basis and appropriate prior notice has been given.

The Commission may also exercise its discretion not to publish any submission based on length or content (for example containing material that is defamatory, offensive or in breach of any law).

Responses to this paper should be directed to: **Electricity Distribution Code review**

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Introduction

The purpose of this paper is to seek feedback on the effectiveness of the current Electricity Distribution Code (EDC/13) (**Code**) and raise other relevant issues for consideration and response.

The Code sets out consumer protections (standards and requirements) that apply to the distribution of electricity to customers in South Australia. In practice, the Code applies only to the distribution network operated by SA Power Networks. It includes customer service standards, network reliability standards and a Guaranteed Service Level (**GSL**) scheme (see Box 1). The Code complements the consumer protections established in the National Energy Customer Framework (**NECF**).

SA Power Networks operates South Australia's major electricity distribution network, which connects over 915,000 customers to the National Electricity Market (**NEM**). SA Power Networks' distribution network links the transmission network, which supplies electricity from larger generators, with customers.

The distribution network also supports a large and growing amount of distributed energy resources (**DER**), including rooftop photovoltaic (**PV**) solar panels, connected directly to the distribution network. Energy exports from DER are now recognised as one of the core services distributors provide to customers.[1]

The review will assess the effectiveness of the Code and make changes if needed. Inputs to the review will include SA Power Networks' operational performance reporting to the Commission, which is available on the Commission's website.[2] The last review of the Code was conducted between 2018 and 2020.[3]

There is no mandated timeframe for this review. However, it is timed to align with the SA Power Networks revenue determination process. The Australian Energy Regulator (**AER**) makes a revenue determination for SA Power Networks every five years, and the next period is from 1 July 2025 – 30 June 2030. The Commission is seeking responses to this issues paper until June 2022 and plans to publish a draft decision on any proposed changes to the Code in January 2023 and a final decision in June 2023.

Box 1: What is the Electricity Distribution Code?

The Code sets out consumer protections (standards and requirements) that apply to the distribution of electricity to customers in South Australia. These include:

- Customer service standards, relating to responsiveness to telephone and written enquiries.
- Network service standards, including reliability standards for the average duration and frequency of unplanned interruptions, and restoration standards for the proportion of customers that experience very long interruptions.
- A Guaranteed Service Level scheme, which provides for payments to customers when service levels for the duration and frequency of supply interruptions, promptness of new connections and timeliness of street light repairs are not met.
- Monitoring, evaluation, and performance reporting provisions, which include requirements for reporting to the Commission and to the public.
- Embedded generation provisions that relate to the process, charges and technical standards for connection to the distribution network.

[1] Australian Energy Market Commission, 2021, 'Access, pricing and incentive arrangements for DER', available at: Final determination - Access, pricing and incentive arrangements for DER (aemc.gov.au). This change introduces some consumer protections for export services to the national framework.

[2] Information about SA Power Networks' regulatory performance is on the Commission's website at: ESCOSA - SA Power Networks' regulatory performance

[3] SA Power Networks 2020 reliability standards review: https://www.escosa.sa.gov.au/projects-and-publications/projects/electricity/sa-power-networks-2020-reliability-standards-review

What will the review address?

The Code sets out jurisdictional requirements for electricity distribution services. Since the Code was first made, there have been progressive changes in the wider legislative and regulatory framework for electricity distribution services (see Box 2). There have also been market and technology changes and shifts in consumer behaviour and sentiment. These factors mean changes to the Code are necessary. At the same time, other issues have emerged, some unique to South Australia, which may be best addressed through the Code.

The review will ensure the Code is focused on matters for which the Commission has primary responsibility, and on which there is a clear need for regulation.

Matters for which the Commission has primary responsibility include:

- those which are clearly defined in legislation, and
- matters which are important to the long-term interests of South Australian consumers with respect to price, quality and reliability of essential services, which are not dealt with elsewhere in the State or national regulatory frameworks.

This paper sets out areas that are likely to result in changes to the Code. It seeks input on these and on any other matters considered important.

These areas are:

- Application of the Code. The Code may be amended to apply only to SA Power Networks, to clarify that the Code operates alongside the national framework, as it already does in practice.
- Distributed energy resources. Duplication or inconsistency between existing Code provisions for the connection of embedded generation units and national and State instruments will be addressed. The Commission's analysis has shown that other risks to consumers arising from DER in the distribution network are dealt with elsewhere in the State and national frameworks.
- Minimum network reliability standards. The review will focus on considering customer's expectations for reliability in Adelaide's CBD, and how standards will apply to Stand-Alone Power Systems (SAPS).
- Obligations for the timely repair of street lights. The review will consider whether there continues to be a role for the Code to set street light repair obligations, which include an obligation for SA Power Networks to make a GSL payment for delayed repairs.

The Commission welcomes feedback on other key elements of the current regulatory framework, and whether those are likely to remain appropriate.

Box 2: The Code's Legal Framework

The Commission's powers to make, vary and amend industry codes or rules are provided by Part 4 of the *Essential Services Commission Act 2002* (ESC Act). The Commission is required to keep industry codes under review, though the frequency and timing of those reviews are not prescribed by legislation.

The Code exists within the broader national energy market framework that is established by the provisions of the Australian Energy Market Agreement. That framework incorporates the National Electricity Law, National Electricity Rules and the National Energy Customer Framework.

The Australian Energy Market Agreement defines the activities which form part of the national framework, and the activities which are retained by States and territories. Until 1 July 2010, economic regulation of distribution services was a State responsibility, administered by the Commission. Economic regulation of distribution services is now a national responsibility. The AER makes a revenue determination for SA Power Networks every five years. Over time, Code provisions have been removed or updated to reflect development of the national energy framework.

Many consumer protections for distribution customers are now contained within the National Energy Customer Framework. However, the Australian Energy Market Agreement provides for states to retain the function of setting service reliability standards. The Electricity Act provides for that function to be administered by the Commission. Specifically, the Electricity Act establishes the requirement and power for the Commission to licence electricity distributors and requires that licence conditions must include compliance with industry code provisions that impose minimum standards of service (see section 23(n)(v)).

Other content in the Code exists either because of a specific legislative requirement (for example, the requirements for reconnection after disconnection at clause 2.4 satisfy a requirement of the National Energy Retail Rules, Schedule 2, 13.2), or because of a gap in the national or State energy regulatory framework.

The Electricity Act requires that the Commission must avoid duplication of, or inconsistency with, the national energy framework (section 6A(4)), and not impose licence conditions that duplicate or are inconsistent with either the Electricity Act or the national energy framework (section 24B).

In turn, the national framework stipulates that the AER must make revenue allowances that provide for jurisdictional requirements to be met. In relation to capital and operational expenditure to meet service standards, the relevant provisions are National Electricity Rules 6.5.6 (a)(2) and 6.5.7 (a)(2).

Application of the Code

The Code currently applies to electricity distributors, defined as entities licenced to operate a distribution network under Part 3 of the Electricity Act. SA Power Networks has the only distribution licence which specifies compliance with the Code, and most sections of the Code would not be practical or reasonable to apply to other distribution licensees.

The remaining distribution licences are held by small-scale operators, with licence conditions tailored to the nature of each operation. The customer protections that apply in off-grid networks licenced by the Commission are currently being considered through the Off-Grid Energy Consumer Protection Framework review.[4]

[4] More information about the Commission's Off-Grid Energy Consumer Protection Framework review is available at: ESCOSA - Off-grid energy consumer protection framework review

Therefore, through this review, the Commission proposes to amend the Code so it explicitly applies only to SA Power Networks.[5] The Commission proposes to rename the Code to reflect that change. This will ensure the scope of the Code is aligned with its current purpose within the broader regulatory framework for distribution services. It also reflects how the Code is currently applied.

The Commission is seeking to understand if any issues will arise from limiting the application of the Code to SA Power Networks, and separately addressing the requirements of other small-scale distribution network service providers.

Questions for stakeholders

- The Commission is proposing to amend the Code so it applies only to SA Power Networks. Do you support this approach? If not, why not?

Distributed energy resources

Proposed focus for the review

The Commission's analysis has shown that the risks to consumers posed by the interaction of DER with the distribution network are addressed, or are being addressed, in the broader regulatory framework.

Therefore, the review will:

- focus on the Code's existing provisions for the connection of embedded generators
- remove duplication with, and resolve any inconsistencies between, the Code and other national and State instruments, and
- assess whether any remaining clauses need to be retained on a transitional basis, until such time as they are provided for in the broader national or State framework.

The review has considered, by reviewing State and national frameworks, whether there is a gap in the regulation of DER that needs to be addressed through the Commission's regulatory framework.

DER are energy units or systems that are located on the consumer side of the meter, commonly located on houses or businesses, including rooftop PV panels, batteries, electric vehicles, energy management systems and larger stand-alone generators. DER may be operated by individual customers, or coordinated as part of a Virtual Power Plant.[6]

Use of DER continues to grow in South Australia. The extent and rapid uptake of DER is fundamentally changing the operating environment for SA Power Networks' distribution system. Challenges include managing:

- consumer expectations and values around use of the network for exporting energy
- localised network congestion
- system security issues related to when peak and low demand occur, and
- network coordination of DER generation.

[5] This could be implemented using a clause that limits application of the Code to Distribution Network Service Providers regulated by the Australian Energy Regulator in South Australia, see: Service providers & Assets | Australian Energy Regulator (aer.gov.au)

[6] Virtual Power Plants operate within the SA Power Networks distribution network and coordinate DER to deliver electricity and other power system services. Their operations require registration with the Australian Energy Market Operator and a retail licence issued by the Australian Energy Regulator. They are not currently required to have a generation licence issued by the Commission, however that licensing framework is being reviewed by the Department for Energy and Mining.

Interaction of DER with the distribution network - risks to consumers

National and State regulatory frameworks are evolving quickly in response to the risks posed by the interaction of DER with the distribution network.

To avoid duplication and inconsistency, the Commission has consulted with the Australian Energy Market Commission (**AEMC**), Australian Energy Market Operator (**AEMO**), AER, Department for Energy and Mining (**DEM**), Energy and Water Ombudsman South Australia (**EWOSA**), the Office of the Technical Regulator and SA Power Networks.

Consultation included discussion on identified risks including how customers with DER pay for exports, how localised network congestion or voltage issues may limit export capacity, power quality issues resulting from voltage variations, and the provision of timely and accessible information for customers about export services. Most of the risks are being, or will be, addressed elsewhere in the State or national regulatory frameworks. More detail on these issues is included as Appendix 1.

Questions for stakeholders

- From the consumer's perspective, are there risks posed by the interaction of DER with the distribution network that the Commission has not considered? If so, are these risks best addressed by the Commission?

Review of existing provisions for the connection of embedded generators

This review will focus on assessing whether any of the Code's existing provisions for the connection of embedded generation units need to be updated and retained, on a transitional basis.

The Code's existing provisions for the connection of embedded generation to the distribution network cover the connection process and associated financial charges, as well as technical requirements for connection. They were last reviewed in 2010.

The review will seek to remove duplication with and resolve any inconsistencies between the Code and other national and State instruments.

The connection process and associated financial charges for embedded generators are now entirely covered in the national framework, and the Commission proposes to remove that content (clauses 3.2 – 3.8).

Some technical requirements for connection made in the Code (clauses 3.9 – 3.17) are now also addressed elsewhere: in the NER, under the *Electricity (General) Regulations 2012* (including as Technical Installation Rules) and in industry standards.

While, in the past, it was appropriate for the Code to address technical matters, responsibilities in this area have now changed. Responsibility for the technical regulation of the distribution network sits with the Technical Regulator and the AER; SA Power Networks and the AEMO have operational responsibilities.

This change in the Commission's role was recognised by changes made to the Electricity Act in 2017 that moved oversight of SA Power Networks' Safety, Reliability, Maintenance and Technical Management Plan from the Commission to the Technical Regulator.[7] The Commission no longer approves connection agreements for embedded generators, and the licensing framework through which the Commission can impose technical conditions on some generators is under review.[8]

[7] See ESCOSA - Changes to safety, reliability, maintenance and technical management plan and switching manual requirements

[8] Department for Energy and Mining, 2022, 'Review of the South Australian Electricity Licensing Framework', available at: Review of SA Electricity Licensing Framework | YourSAy

Accordingly, the Commission will consider whether any remaining clauses need to be retained on a transitional basis, until such time as they are provided for in the broader national or State framework.

Questions for stakeholders

- Are there any areas where the Commission needs to maintain technical requirements for the connection of embedded generators? Why or why not?

Minimum service reliability standards

Proposed focus for the review

The basis on which minimum network reliability standards and associated performance targets are set was reviewed thoroughly in 2018-2020. This review will consider:

- customer expectations for reliability in Adelaide's CBD
- how the standards will apply to Stand-Alone Power Systems (SAPS).

The Code establishes minimum service reliability standards that apply to SA Power Networks for the distribution of electricity to customers in South Australia. These are:

- reliability standards for the average duration and frequency of unplanned interruptions
- restoration standards to limit the proportion of customers who experience very long interruptions.

The standards require that SA Power Networks must use its best endeavours to achieve a series of performance targets. If a performance target is not met, but SA Power Networks has applied its best endeavours in pursuing the target, the reliability standard is satisfied. The standards apply to each of four feeder categories: CBD feeders, urban feeders, short rural feeders and long rural feeders.

The basis on which minimum network reliability standards and associated performance targets are set was thoroughly reviewed with customers and other stakeholders in 2018-2020. That review resulted in:

- setting performance targets to maintain (rather than improve) performance and limit the need for additional expenditure, reflecting customer preferences
- establishing performance targets using average performance over ten years (rather than five) to more accurately reflect long-term historical performance and smooth the impact of one-off events, and
- introducing network restoration standards, to limit the number of customers experiencing very long outages.

This review will focus on customer expectations for reliability in Adelaide's CBD, and how the standards apply to SAPS.

Customer expectations for reliability in Adelaide's CBD

Performance targets are set to maintain reliability at historical levels. Targets are set based on average (mean) performance. This means that performance will vary slightly from the targets in any individual year.

Variation will be more pronounced for CBD feeders, as the reliability outcomes established by the Commission's standards for CBD feeders are high, and there are fewer customers than in other feeder categories. These factors mean a single interruption can substantially impact performance.

However, performance outcomes that consistently do not meet performance targets may indicate that historical reliability is not being maintained.

SA Power Networks did not meet its CBD feeder performance targets for the duration and frequency of interruptions in 2017-18, 2019-20, and 2020-21, and did not meet its performance targets for network restoration in 2020-21. While the Commission found SA Power Networks had applied its best endeavours in meeting the network reliability standard for 2017-18 and 2018-19, the Commission is monitoring SA Power Networks' quarterly performance for potential longer-term trends or systemic issues. SA Power Networks' performance against this service standard is a focus area for the Commission and it expects SA Power Networks to be using its best endeavours to meet the service standard.

Recent performance in the CBD has been affected by issues including faults on different types of underground cables and construction damage.[9] Although the individual incidents have not had the same specific cause, the underground cable network in the CBD is aging, with some assets approaching the end of their expected lifespan.

SA Power Networks anticipates that, over time, additional expenditure will be needed to replace cables and other assets to maintain reliability at historical levels.

This review will seek to understand SA Power Networks' long-term plans for maintaining CBD reliability, and the associated costs. It will also seek to understand customers' expectations of reliability in the CBD. While the Commission will undertake its own consultation, it also expects SA Power Networks to engage directly with its customers on this matter as it develops its 2025 – 2030 revenue proposal.

Questions for stakeholders

- What are customers' expectations of reliability in the CBD? How are they different to expectations about other parts of the network?

Consumer protections for Stand-Alone Power Systems

SAPS are systems that are not physically connected to the national grid. Under recent changes to the NER, which now apply state-wide in South Australia, SA Power Networks may consider using a SAPS as an option to upgrade part of its network. Customers on SAPS are to be given the same consumer protections as those on the interconnected network.[10,11] Consumer protections include the minimum network reliability standards and the GSL scheme set out in the Code.

The review will consider how reliability standards and other customer protections may apply with respect to SAPS. It will consider whether there are practical issues in applying the minimum network reliability standards and the GSL scheme in SAPS.

Questions for stakeholders

- Are there practical issues that exist in applying existing minimum network reliability standards and the Guaranteed Service Level (GSL) payments in SAPS?

9 Information about SA Power Networks' historical performance outcomes for each regulatory year is available at: ESCOSA - SA Power Networks' historical performance outcomes. SA Power Networks' 2021 fact sheet 'Maintaining reliable and cost-effective electricity supply for Adelaide's CBD' is available at: Maintaining reliable and cost-effective electricity supply for Adelaide's CBD (sapowernetworks.com.au)

10 Australian Energy Market Commission, 2019, 'Review of the regulatory frameworks for stand-alone power systems', available at: Review of the regulatory frameworks for stand-alone power systems | AEMC

11 Department for Energy and Mining, 2021, 'Consultation on South Australian implementation of stand-alone power systems', available at: Department for Energy and Mining | Consultation on South Australian implementation of stand-alone power systems (energymining.sa.gov.au)

Street light repair obligations

Proposed focus for the review

The review will consider whether there continues to be a role for the Code to set street light repair obligations, which currently include an obligation for SA Power Networks to make a GSL payment if repairs are not timely. The review will not focus on other elements of the GSL scheme, given their thorough examination in the 2018 – 2020 review.

The Code requires that SA Power Networks must use its best endeavours to repair street light faults affecting lights for which it is responsible within five business days in metropolitan Adelaide, and within ten business days elsewhere.[12] SA Power Networks is responsible for managing most street lighting in South Australia; a small number are operated and maintained directly by local or State governments.

In the ten years to 2019-20, on average 94 percent of street light faults were repaired within this timeframe in metropolitan Adelaide, and 99 percent were repaired within this timeframe elsewhere.

The Code also requires that SA Power Networks must make a GSL payment to the first person to report the street light fault if it does not repair street light faults within these timeframes. The GSL payment of $25 applies for each subsequent five or 10 day period in which the fault is not repaired.[13]

The role of the Code in regulating the timely repair of street light faults may have changed, given the change in the AER's public lighting role ahead of the SA Power Networks 2020 – 2025 period. The AER now determines price caps for public lighting services. This requires service levels to be clearly defined.

Service levels are set out in the Public Lighting Service Framework (the framework), which is the result of consultation between SA Power Networks and its public lighting customers (local and State governments).[14] The service levels are also incorporated into contracts between SA Power Networks and individual public lighting customers. The framework is not a formal regulatory instrument, so neither the Commission nor the AER has a monitoring or compliance role.

The framework's suite of service levels include the timely repair of street light faults (and also, for example, timeframes for the bulk changeover of conventional street lights, roll out of LED lighting, and street light cleaning).

With regard to timely repair of street light faults, the framework includes a target that SA Power Networks repairs 98 percent of lights for which it is responsible within five and ten days for metropolitan and regional areas. The five and ten day timeframes are the same as those currently required in the Code, and 98 percent is an improvement on the current service level.

The framework does not include a GSL scheme to provide payments to customers if service levels are not met, nor an alternative financial penalty/incentive scheme.

The Commission is seeking views on whether the framework provides an appropriate control for SA Power Networks to manage its public lighting obligations.

Questions for stakeholders

- Does there continue to be a role for the Code in setting street light repair obligations?
- Are the service levels in the Public Lighting Service Framework sufficient to ensure outcomes for public lighting customers, and consumers (residents, businesses and road users)?

[12] Clause 2.3.1(b)(i)
[13] Clause 2.3.1(b)(ii)
[14] SA Power Networks, February 2020, 'Public Lighting Service Framework', available at: Public Lighting Service Framework | Public Lighting | Talking Power

Other elements of the GSL scheme

The Code's broader GSL scheme also provides for payments to customers when service levels for the duration and frequency of supply interruptions, or the promptness of new connections, are not met.

The 2018 – 2020 review focused on payments for the duration and frequency of supply interruptions, and several changes were introduced from 1 July 2020.[15] Early evidence suggests these changes are achieving the desired outcomes; there have been minimal complaints from customers.[16] There is no evidence that suggests further review is needed at this time.

Further feedback

The Commission welcomes feedback on other key elements of the current regulatory framework, and whether those are likely to remain appropriate.

Timetable for this review

The Commission will release its draft decision for public consultation in January 2023.

Stage	Timing
Issues Paper - Public consultation	Until 3 June 2022
Draft released	January 2023
Public consultation	January to March 2023
Final released (with draft Code)	June 2023
Performance targets published	April 2025
Applies from	1 July 2025

[15] The Commission's fact sheet 'Changes to SA Power Networks' Guaranteed Service Level scheme from 1 July 2020' is available at: 20200701-Electricity-SAPNSSF20-ChangesToGSLScheme-FactSheet.pdf.aspx (escosa.sa.gov.au).

[16] Expenditure on GSL payments was stable in the first year of the regulatory period, and there have been minimal cases related to GSLs handled by the Energy and Water Ombudsman of South Australia.

Appendix 1: Interaction of DER with the distribution network – risks to consumers

This table presents issues discussed with stakeholders to identify if there are risks to consumers posed by interaction of DER with the distribution network. It identifies the responsible State or national regulators.

	Theme	Issue	Risk to consumers	Responsible regulator(s)
1	Price	Whether and how customers with DER pay for power exports. Currently, network costs are recovered solely from tariffs for electricity consumption.	Network costs are borne disproportionately by customers that do not have DER.	AEMC/AER
2	Reliability	Localised network congestion The amount of DER within the network creates network capacity and voltage constraints, limiting the capacity for exports.	Increasingly limited opportunity to sell excess electricity, either all the time or occasionally.	AEMC/AER/Technical Regulator (**TR**)
3	Reliability	Low minimum operational demand The extent of DER in the network at times reduces demand (as DER is 'behind the meter') to the point where, if the South Australian network is operating as an island, it may not have sufficient system security.	Potential long and widespread interruption to electricity supply (including system black).	AEMO/TR
4	Reliability	Mass disconnection of distributed PV Mass disconnection could occur because many PV inverters disconnect in response to voltage disturbance (for example, following a severe fault). With sudden and large loss of capacity, frequency could not be maintained in the South Australian network if it were operating as an island.	Potential long and widespread interruption to electricity supply (including system black).	AEMO/TR
5	Quality	Growth in DER imports and exports has a direct impact on consumer over-voltages. Impacts on voltage will compound as DER volumes grow. Some impacts on power quality may not be understood yet (for example, on power quality and harmonics).	Voltage variation ('power surges') may affect appliances or other equipment.	TR
6	Quality	Impact of voltage variation (within industry standard) as a tool to remotely control DER connected via inverters. SA Power Networks is able to remotely curtail DER installations by varying voltage levels (using 'enhanced voltage management), and may do so in emergencies, if required to maintain system security.	There are minimal impacts on consumers other than lost opportunities to export in the event of an emergency curtailment.	TR

	Theme	Issue	Risk to consumers	Responsible regulator(s)
7	Quality	Supply of power with voltage towards the higher end of the acceptable range to some customers (to manage risk of it dipping below the acceptable range for others) having the unintended effect of limiting the ability of DER to export.	Occasional limited opportunity to sell excess electricity.	TR
8	Price, quality, reliability	Insufficient visibility of DER in the network (for distributors and AEMO) to allow management of reliability security and power quality.	Possible reliability, security and quality impacts.	AEMC/AEMO/TR
9	Price, quality, reliability	Information for consumers about export services (availability, quality, or cost) may be unavailable, difficult to obtain, or too complex to understand.	Decisions about using DER are not properly informed, and so costs and benefits differ from what consumers expect.	AEMC/AER
10	Price, quality, reliability	Technical requirements for the installation and operation of DER are: not all up-to-date or fit-for-purpose; sometimes inconsistent (for example, differ across jurisdictions or across various documents); not always well understood or followed by the people that need to use them.	Possible price, quality and reliability impacts if, as a result, the network impacts of DER are not managed or DER is not used to its full potential.	AEMC/AER/TR/ Commission (to the extent that it has some existing provisions)