

# Electricity Distribution Code Review

Response to Issues Paper

13 September 2019

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## Submission to the ESC on Electricity Distribution Code Review - Issues Paper

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### 1 Summary of Responses to Key Issues

AusNet Services welcomes the Electricity Distribution Code (Victoria) Review and Issues Paper published as providing an opportunity to modernise and refine the technical requirement and customer protections for all Victorian electricity customers.

The Issues Paper focuses on the technical and customer service standards in support of our rapidly changing energy system and to ensure all customers continue to receive a safe and reliable electricity distribution service. Our submission seeks to inform the Commission in relation to the questions raised and provides best practice recommendations, including:

- Improving communication with customers affected by outages, and where customers have agreed, enabling digital communications in preference to written notifications sent in the mail;
- Updating of Guaranteed Service Level (GSLs) schemes to align with national arrangements and better acknowledge the experience of customers suffering from the most frequent supply interruptions; and
- Modernisation and harmonisation of technical standards to better serve all customers, in particular, aligning voltage management thresholds with Australian Standards to provide a greater operating range for both the distribution network service providers and renewable energy generators.

As part of our customer engagement, AusNet Services is the first Australian utility business to trial a new process that places customers at the heart of developing our expenditure plans. This new process involves the establishment of a Customer Forum that is capable of representing the perspective of our customers<sup>1</sup>.

Established in March 2018, the Customer Forum consists of a Chairperson and four members. The Customer Forum members were chosen in an independent and rigorous process, including thorough consultation with Energy Consumers Australia and the Australian Energy Regulator (AER). The members were selected for their diverse skills, complementary experience and their ability to credibly represent the perspectives of customers.

In providing our response, we have incorporated our learnings from engaging extensively with the Customer Forum established to inform our Electricity Distribution Pricing Review (EDPR) proposal for the 2021-26 regulatory period. Answers to questions are provided in section 5.

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<sup>1</sup> <https://ausnetservices.com.au/en/Misc-Pages/Links/About-Us/Charges-and-revenues/Electricity-distribution-network/Customer-Forum>

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### 1.1 AusNet Services focus on Customer Centricity

AusNet Services has a very clear strategy and it is anchored by our customer. We believe that good customer outcomes lead to good business outcomes and one of the most important of our 5 strategic pillars is Customer Centricity.

The energy sector is facing considerable change, and the last good experience a customer has sets the standard for what they expect of our services. In order to have a seat at the table in the future we need to service our customers' basic needs as they expect.

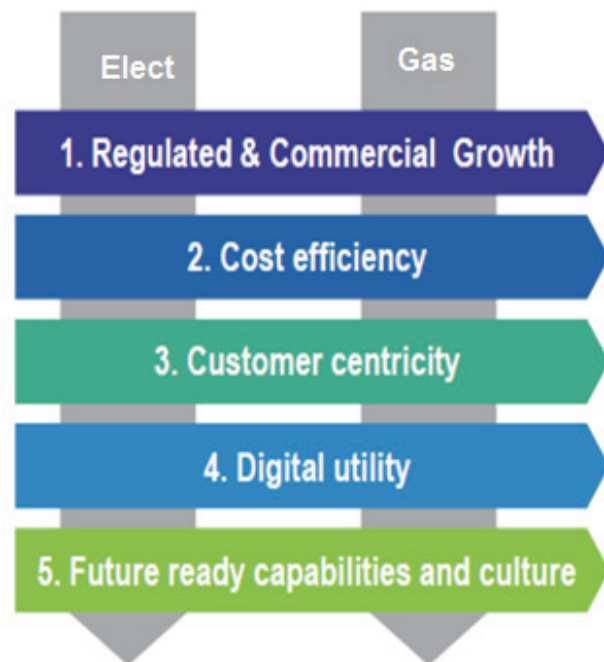
Secondly, customers have more choice now than ever before. The cost pressure of utility bills is influencing the decisions they make around energy consumption and generation.

And lastly, while retailers are typically the first port of call for customers when it comes to energy services, AusNet Services forms an essential part of the 'energy chain' when it comes to delivering seamless connections and outage management amongst other things. Customer satisfaction is dependent on us getting our part right.

Over the past 18 months, AusNet Service has worked hard to bring Customer Centricity to life:

- We have clarified and segmented our customers. We have anchored ourselves firmly in delivering solutions for the end consumers of our products and services.
- We are actively testing these solutions with our customers.
- We have put in place a robust measure of customers' satisfaction and are rolling that into performance measures and our ways of working.
- We implemented a solar pre-approval tool to vastly improve the processing of solar connection applications.
- We have improved our customer connection timeframes, and our notifications to customers before, during and after outages.
- We have set up a dedicated division to focus on the end to end improvement of the journeys that are important to our customers; these include Distributed Energy Resources, outage management, new connections and with all of them, care for our customers registered with Life Support equipment.
- We recruited a Customer Forum to negotiate the customer outcomes for the next regulatory period, this is an industry first and has driven some great improvements already.

We have an active strategy to improve our customer satisfaction and embed customer thinking across the organisation. This includes better communications capability, more relationship management for our larger customers and more capability in the area of customer experience design, all of which would support the changes proposed in this code review.



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## 2 Improving communication to customers affected by outages

### 2.1 Managing outages for Life Support customers

Obligations to protect customers registered with Life Support equipment are amongst the most important for any distribution network. Victoria is fortunate to be able to take advantage of its smart meter network which provides much greater visibility and, therefore, protection of these customers. In particular, visibility allows problems to be identified and solved quickly. Smart meters also provide the opportunity for all Victorian Distributors to put in additional safety precautions not enjoyed in other States. It is likely that Victorian customers registered with Life Support equipment are protected as well as anywhere in the world and many of the improvements the Commission are proposing will ensure this continues.

Customers registered with Life Support equipment have a critical dependency for the continued supply of electricity. For this reason, it is important that Distribution Businesses provide a notification at least 4 business days before a planned outage, and customers registered with Life Support equipment have emergency plans in place in the event of an unplanned supply interruption and have discussed those arrangements with their General Practitioner (GP).

The Issues Paper discusses the Commission's consideration of establishing obligations to notify vulnerable customers during extended supply interruptions, and potentially extending current obligations to notifying relevant government departments during a wide-spread outage of residential customers with extended supply interruptions.

AusNet Services endeavours to keep all impacted customers up to date of identified supply interruptions and provides useful information as to the expected resolution time. We do this by providing SMS (or emails if the mobile number is unavailable and the email address is) notifications and show the outage information on our website in the form of an interactive map. Additionally, we provide better communication to Life Support customers in advance of planned outage by the use of community messaging channels and social media.

In the case of customers registered with Life Support equipment, we

- provide a heightened level of notification support;
- focus on improving their restoration times; and
- reduce the likelihood of missed outage notifications by taking more steps to confirm the accuracy of the data used to initiate outage notifications.

#### **Providing a heightened level of notification support for Life Support customers**

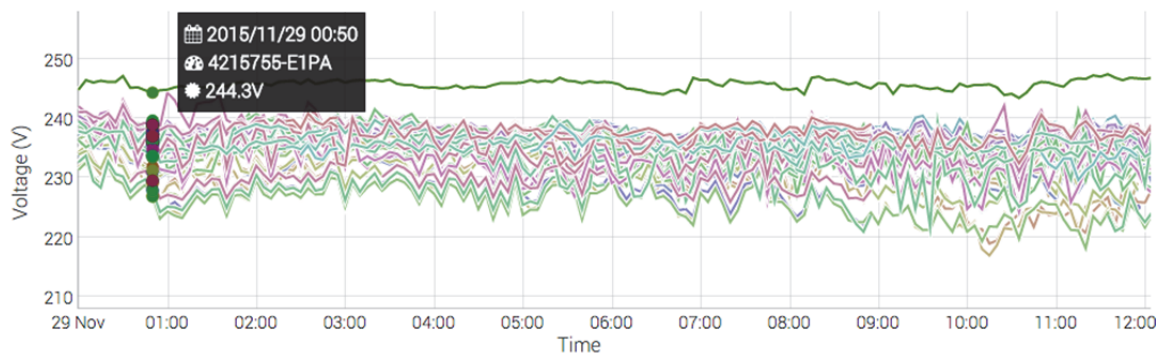
As a matter of good customer service during a widespread outage, AusNet Services contacts affected customers registered with Life Support equipment (or their nominated contact) via phone or SMS in the event of an extended outage, as well as, informing relevant government departments. If their outage is likely to continue overnight we do so within 6 hours from their supply interruption occurring. Sometimes, feeders have multiple points of interruption and the customers' expected restoration times are difficult to predict, but being in contact with these medically confirmed vulnerable customers provides much needed assurance.

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### Confirm the accuracy of the data used to initiate outage notifications

All new registrations of Life Support equipment trigger a process where our people investigate the powerline from the customer's premises to distribution transformer and checking to ensure our graphical information system (GIS) data aligns.

Our information systems generate an automatic cross reference check, using AMI meter data, to ensure all customers newly registered with Life Support equipment are labelled correctly. This check relies on premises supplied by the same substation displaying similar electrical characteristics and spotting the odd one out as illustrated below.



### Improved restoration times for customers registered with Life Support equipment

The Electricity Distribution Code does not specifically incentivise faster restoration times for Life Support customers, nor does our economic regulatory framework does not specifically incentives it, but we are working to provide customers registered with Life Support equipment with faster restoration times in recognition of their medical needs. In consultation with the Customer Forum established for our EDPR, we have agreed to establish Life Support customer restoration time benchmarks.

Using smart meter data, AusNet Services is improving restoration times for Life Support customers. The data collected from our smart meters is used to identify the fault and confirm restoration. Where a feeder has multiple points of interruption, but having to ability to check if the works just undertaken to fix one fault has restored the customers power leads to faster restoration times. As we refine and better integrate this process into our field operations we expect future improvement in our Life Support customer restoration time benchmarks.

Also in consultation with the Customer Forum as part of our customer centric EDPR process we have agreed to extend our efforts even further. To provide Life Support customers with more coordinated community support, we will identify the key social workers engaging with vulnerable customers on our distribution network, then co-develop energy resources to provide social workers to help them in better assisting vulnerable customers.

AusNet Services cares for our customers registered with Life Support equipment and recognises their reliance on the continued supply of electricity. As a matter of good practice, we provide customers registered with Life Support equipment a heightened level of notification support, better restoration times, and a reduced the likelihood of a missed outage notifications.

Having adopted these higher standards, we consider it should not become a minimum standard obligated in regulation because doing so may discourage further innovation and customer improvements by businesses.

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### 2.2 Planned outages

We conduct planned outages each year for general maintenance and safety reasons. Customers have told us that they would like improved communication from us prior to, during and after an outage has occurred.

We welcome the Issues Paper's focus on improving customer satisfaction in respect to planned outages. Again Victoria is fortunate to be able to take advantage of its smart meter network which provides much greater visibility where planned outages go wrong. All Victorian Distributors consistently achieve notification accuracy rates of above 99.90%. This exceptional performance is likely to be amongst the best in the world and continues to improve as investments continue to be made in better systems. Our AMI data has been critical to more accurately mapping our network to ensure that customers are correctly notified about planned outages and provide increased visibility of customers impacted by planned outages through near real-time meter (and hence supply) status to ensure every customer has supply restored.

AusNet Services, nonetheless has considerably more planned outages than the other Distributors, mainly due to the major replacement programs and upgrades focused on improved bushfire mitigation for our communities. This higher level of planned outages results in a higher number of incorrect notifications. We recognise planned outages are inconvenient and when they are cancelled at short notice or notification has failed the inconvenience is magnified greatly. Our number of outage alterations and cancellations have significantly reduced over the last two years.

Therefore, through preparation for lodging our EDPR Customer Forum engagement, AusNet Services agreed to establish an independently verified Customer Satisfaction (C-SAT) monthly metric and incentive to improve our engagement with customers affected by outages and our understanding of customers.

AusNet Services provides notifications to customers affected by planned outages in the form of letters sent via mail. Where the customer's retailer has provided AusNet Services with either the email address or mobile phone for the outage contact details, we also provide an electronic notification.

Retailers are the primary source of customers' outage contact information, such as mobile phone numbers and email addresses, however the reliability and consistency of this data provision varies across retailers. Also, not all retailers ask customers, if they authorise the use of the SMS (or emails if the mobile number is unavailable and the email address is available) outage contact information provided as their primary means of outage notifications (i.e. whether customers want their notifications by SMS or email and not posted). Customers now often prefer digital notifications and do not want notifications in their post box where digital notifications are sent. Ideally, the Energy Retail Code should ask customers to nominate their preferred means of notification (e.g. digital or physical written letter), and provide those digital contact details to the relevant Distribution Business where the customer prefers digital contact details.

In situations of our plans for works changing more than 9 business days before the date of a planned outage, we advise customers with a letter in the mail and by digital notification (where digital contact details are available). As is often the case, our plans to undertake work based on weather forecasts are sometimes rescheduled or cancelled a few days before the planned outage. Digital notifications are improving customer awareness of these events and enable customers to be better informed of late changes to the planned outage. This is improving the satisfaction levels experienced by our customers who welcome digital notifications.

The Issues Paper asks whether Distributors should be required to advise of planned notification changes, we consider keeping our customers better informed of a planned outage is good customer service. Our new independently verified C-SAT metrics and our proposed Customer Satisfaction Incentive Scheme (CSIS) will give us strong incentives to provide this greater level of customer service.

Instead of prescribing changes in the Electricity Distribution Code to mandate obligations to inform customers of changes that are often short notice and provided digitally, we recommend adding new obligations in the Energy Retail Code on retailers to ask customers for digital outage contact details and if the customer prefers this means of notification over a physical written letter.

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### 2.3 Compensation for customers where planned outages notifications are not provided

Distribution Businesses are liable for significant fines for failing to notify each customer of a planned outage. These fines serve as a strong incentive to apply best endeavours for the remediation any identifiable or systemic issues. All Victorian Distributors have received such fines and looking to find ways to prevent future fines.

Fines are an inappropriate means to incentivise distribution performance, particularly when any fair reading of the evidence suggests performance is good compared to other Jurisdictions. Our new C-SAT metric incentivises us to provide timely, reliable and accurate notification using better data and process conformance. Finally, fines do not compensate the customer affected for any inconvenience caused. In other Jurisdictions, customers are entitled receive a GSL payment in such circumstances.

Therefore, consistent with other Jurisdictions, a GSL payment should be introduced in Victoria to compensate the customers not notified of a planned outage. Harmonising with this national arrangement would provide the Commission with greater flexibility to regulate the better provision of electricity distribution services.

Fines should only be used to address systemic issues or failures by a distribution network.

AusNet Service recommends the Commission adopt a Victorian GSL payment obligation, consistent with the principles discussed above, to compensate all customers not notified of planned outages, and re-purpose the existing compliance obligations to only address systemic failures.

## 3 Updating of GSL schemes to align with national arrangements and better compensate customers for the impact of poor service

### 3.1 Reliability GSL schemes

The reliability of an electricity network is an economic decision embodied in the independently set value of customer reliability (Value of Customer Reliability, which is currently being reviewed by the AER). This value is used to underpin distribution planning standards and the AER reliability incentive scheme which incentivises improvements to reliability where the benefits out way the costs.

Under two decades of this scheme (including the similar State based schemes in early years) AusNet Services has reduced the number of outages by 50% and the duration of outages by over 30%. Improvements to the cost of GSL payments, particularly GSL payments associated with the number outages have also fallen as a result.

GSL payments are usually heavily weighted to the worst performing parts of the network, typically long rural feeders in difficult, highly vegetated terrain. The level of payments over time move up and down in direct proportion to the weather experienced over the year. The combination of low customer density and high cost remote parts of the network means that GSLs do not come close to incentivising reliability improvements. With this combination of factors, the reliability GSLs scheme should be seen as compensation scheme, and not an incentive scheme.

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Additionally, the cost per customer associated with managing the long rural feeders in highly vegetated terrain are higher than the cost per customer of managing urban part of the network. There are circumstances where it is not always efficient to augment the network to improve reliability for particular customers. That is, the majority of customers on high reliability parts of the network are compensating customers in poor performing parts of the network.

The State based reliability GSL scheme does not fully align with the AER reliability schemes, which causes confusion and conflict between the schemes, particularly with respect to exclusions. Aligning with the definitions used by the AER would improve the effectiveness of benchmark as methodology for comparing the reliability performance of Victorian Distribution Businesses with businesses outside of Victoria. This statistically based methodology would more fairly treat each distribution business.

Therefore, AusNet Service would support the adoption of the national scheme. Our customers would also welcome the alignment with the AER's definition of inadequate level of customer service (customer worst served). Customers are often judging their reliability customer service over a number of years. When we had a good reliability year (e.g. 2017), customers in some rural parts of our network, that typically have low reliability GSL payments, called us the following year asking for their GSL payment, even though their reliability over the year did not exceed the threshold for payment.

These changes would, however, should not create step change to the cost of efficiently maintaining distribution networks in terms of capital investment and ongoing costs.

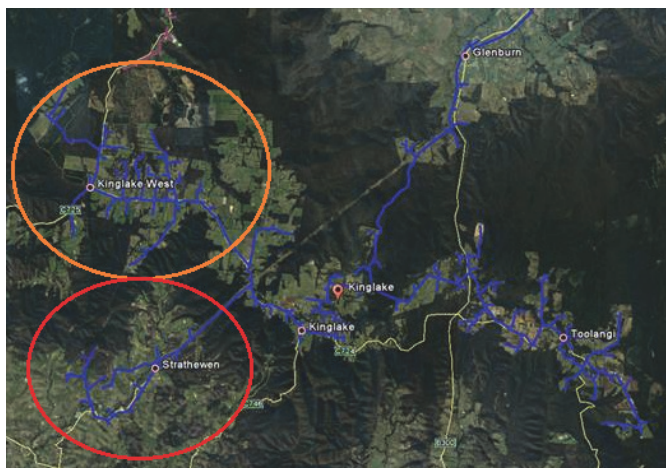
The Issue Paper suggests there is no financial impact to the distributor regardless of the number of GSL payments made. We disagree, the costs incurred by low reliability GSLs impact the benchmarking performance (e.g. the risk of benchmarking reducing AER approved expenditure allowances). The net costs associate with poor performance cannot be recovered until the next regulatory period. Not allowing cost recovery for reliability payments would incentivises more investment in network improvements not otherwise justified. Therefore, it is important to maintain the principle of allowing recovery of expenditure which businesses have a limited ability to control.

Harmonisation with national reliability GSL schemes would provide better compensation to worst serviced customers and fairer treatment of businesses and customers in different network areas.

### 3.2 REFCL exclusion to GSL payments

In accordance with Victorian legislation, AusNet Services has deployed substantial numbers Rapid Earth Fault Current Limiters (REFCLs) to prevent the ignition of bushfires. REFCLs are deployed in areas where the Victorian Government determined the risk posed to the community warrants to significant expenditure. When a REFCL operates all customers on the feeder are left without supply until the fault that caused the operation is isolated or otherwise fixed.

This means, there will be customers between the REFCL zone substation and the electrical fault on the power line that will experience a supply interruption solely because of the REFCL operation. To illustrate the point see the diagram to the right, an electrical fault in Strathewen (red oval) on the Kinglake Zone Substation would also cause an outage for all the customers in Kinglake West (orange oval) until the fault is isolated or otherwise fixed.





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The outage for the Kinglake West customers would be solely a result of the REFCL operation, while the outage of the Strathewen customers would have occurred in any case due to the fault between them and the Zone Substation.

We recommend an exemption from GSL payments for outages caused solely by the REFCL operation or mandated testing. In terms of the above illustration, the outage experienced by customers in Strathewen would attribute to GSL payments, because without the REFCL there would have still been an outage. The outage experienced by customers in Kinglake West would not attribute to GSL payments, because their outage is solely related to the REFCL operation. Customers not compensated for outages due solely to REFCL operation would acknowledge that their outage is part of the price paid to keep their community safe from bushfires.

AusNet Services recommends a new GSL exemption for outages caused solely by the REFCL operation, in recognition that the customer impact is part of the price paid to keep Victorians safe from bushfires.

### 3.3 Connection related GSL schemes

The current focus of the connection (and temporary connection) timeframe service target in the current Electricity Distribution Code already addresses the concerns of residential customers (e.g. families) in being able to move in to a customer's premises within 2 weeks. These GSL payments are largely controllable and should act as an incentive for good customer service. In our EDPR Customer Forum engagement, we have agreed to forego cost recovery for GSL payments related to missing this minimum 10 business day connection timeframe and missed agreed appointments. The reason for doing was the costs were considered controllable, in comparison to reliability GSL payments.

Establishing GSLs payments for National Metering Identifier (NMI) allocations would not be beneficial to customers. On average, we take 2 business days to perform this function and typically no more than 3 business days. We use this extra time to resolve address discrepancies caused by other sectors (e.g. difficulties in changing property titles).

We could completely automate this function and reduce this timeframe to less than 1 business day. However, providing a NMI is the most logical process to resolve address discrepancies with Local Councils. These address discrepancies, if not resolved, would prevent customers from switching retailers in the following years. In other Jurisdictions, these address discrepancies have resulted in significant problems for customers in accessing retail contestability and been the subject of recommendations from the AEMC's Review of Electricity Customer Switching.<sup>2</sup>

The other timeframes outlined in the Issues Paper are subject to much longer timeframes in the end-to-end process of developing new lots of property, which typically takes between 200 and 300 business days. The timeframes we are in control of are limited to:

- scheduling a network auditor for two audits (we provide each audit in less than 10 business days and average less than 5 business days);
- approving a design (we aim to approve, or reject, a design in 20 business days);
- booking an access permit for the developer's contract to tie-in a connection (we provide this in less than 25 business days).

We recommend retaining the existing new connection GSL and not introducing new obligations in the Electricity Distribution Code to regulate the other connection services discussed in the Issues Paper.

<sup>2</sup> AEMC, 2014 Review of Electricity Customer Switching. <https://www.aemc.gov.au/sites/default/files/content/01ecf407-d9df-4dd6-92f3-593692abb14a/Final-Report.pdf>

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### 4 Modernisation and harmonisation of technical standards to better serve all customers

#### 4.1 Voltage standards and their application to embedded generators

AusNet Services supports adopting the industry-recognised Australian Standard for voltage management (AS 61000.3.100) and its functional compliance assessment framework.<sup>3</sup> Adopting this more flexible national standard would align with the current best endeavour practices of Distribution Businesses that sometimes result in high or low voltages, and it would recognise that customers' inverter based energy systems generate electricity at higher voltages than permitted by the current Electricity Distribution Code. It would allow more uptake and installation of distributed energy resources.

Distribution Businesses in all other jurisdictions are already afforded greater flexibility to manage voltage. Queensland and South Australia regulations apply AS 61000.3.100,<sup>4</sup> and NSW distributors have set their voltage standards in reference to AS 61000.3.100. We note the conclusion made by the Queensland Department of Energy and Water Supply in deciding to adopt the standard, "the statistical assessment of steady-state electricity supply conditions will bring forward more efficient, best practice management of electricity networks as well as the integration of additional renewable energy generation, with the greatest net benefit to customers and industry objectives."<sup>5</sup>

The Australian Standard for voltage management provides Distribution Businesses greater flexibility to approve a new solar inverter connection application when the voltage on the powerlines to the customer's premises sometimes exceeds the maximum voltage limit (currently at 253V).

In our EDPR Customer Forum engagement, we discussed targeting to achieve functional compliance in accordance with AS 61000.3.100, rather than providing a service always within the current limits. Retaining the existing standard would result in a higher level of investment and increase the cost of electricity for all customers with negligible benefits. Therefore, Victorian customers would be able to benefit from through the greater access to renewable energy and lesser network costs, and these benefits would be provided with no detriment to the life of appliances purchased since 2000 that comply with the Australian Standard.

In moving to this statically based methodology, we acknowledge there is a need to specify some outer voltage limits in order for Guideline 11 to protect customers with damaged equipment. This outer voltage limit would also need to apply to embedded generators (e.g. solar inverters). As network voltage rises caused by embedded generators can impact other nearby customers. We suggest aligning to NSW Distribution Businesses' steady state outer voltage limits of 207V to 262V.<sup>6</sup> These limits would align with our recently updated connection agreement discussed in section 4.2 below.

Monitoring of voltage with smart meters was not envisaged in AS 61000.3.100 but is vastly superior to the prescribed method. The standard presumes a statistically significant population of dedicated voltage monitoring equipment that averages the voltage every 10 minutes. Smart meter voltage measurements are different and vastly superior to sampling with dedicated voltage monitoring equipment, because measurements can be taken within each premises electrical installation.

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<sup>3</sup> AS 61000.3.100 functional compliance would require 95% of customers have a voltage less than 253V 99% of the time.

<sup>4</sup> South Australia, Electricity (General) Regulations 2012, section 46(b), [https://www.legislation.sa.gov.au/LZ/C/R/ELECTRICITY%20\(GENERAL\)%20REGULATIONS%202012/CURRENT/2012.19.9.AUTH.PDF](https://www.legislation.sa.gov.au/LZ/C/R/ELECTRICITY%20(GENERAL)%20REGULATIONS%202012/CURRENT/2012.19.9.AUTH.PDF)

<sup>5</sup> Queensland statutory voltage limits – Decision RIS, Department of Energy and Water Supply, 2017, [https://www.dnrme.qld.gov.au/\\_data/assets/pdf\\_file/0005/1279571/decision-ris-qld-statutory-voltage-limits.pdf](https://www.dnrme.qld.gov.au/_data/assets/pdf_file/0005/1279571/decision-ris-qld-statutory-voltage-limits.pdf)

<sup>6</sup> AusGrid. <https://www.ausgrid.com.au/-/media/Documents/Technical-Documentation/NS/ns238.pdf?la=en&hash=C9AC61391301F48E1F6CCE3F5800A244812FC997>

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AusNet Services voltage monitoring consists of a smart meter at 99% of premises measuring the instantaneous voltage every 5 minute and voltage band recording in the smart meter. Our approach creates a rich source of network data, but it is more sensitive to sub-minute and sub-second voltage variations than dedicated voltage monitoring equipment. Dedicated voltage monitoring equipment averages these short duration voltage variations. To resolve these complexities, there is merit in updating voltage monitoring arrangements in Electricity Distribution Code clause 4.2.6 to reflect the best standards in measuring voltage variations.

AusNet Services recommends adopting the industry-recognised AS 61000.3.100 and its functional compliance assessment framework, and aligning with the NSW outer voltage limits for the purpose of the continued application of Guideline 11. We would be pleased to work with the Commission and trusted independent experts to determine the most appropriate standards for voltage variations measurements.

### 4.2 Connection agreement conformance and mutual cooperation with embedded generators

Also relevant to our management of a greater participation from distributed energy resources, the AER has recently approved changes to our embedded generator basic connection services agreement that will require all new or altered inverter based connections to cooperate with us in moderating the voltage with volt-var support,<sup>7</sup> and within the range between 253V and 259V where the customer's inverters will reduce output and not trip off.<sup>8</sup> Changing to more flexible voltage limits enables us to better leverage this cooperative arrangement.

These settings in our standard agreement only apply if customers (or their installer on acting behalf of the customers) inform us and seek a connection agreement. Customer compliance with our connection agreement, including agreed settings, is an important achieving best practice management of distributed energy resources by Distribution Businesses. We currently have more than 28,000 customers not conforming to connection agreement requirements. If any changes to the Electricity Distribution Code placed a greater responsibility on the Distribution Business to resolve voltage issues or to pay compensation for voltage issues beyond damaged equipment, we would need greater powers to participate in the enforcement of connection conformance issues.<sup>9</sup> Also we may become more conservative in our assessment of connection applications for new or upgraded embedded generators.

At this stage, while the grid is evolving to better handle reverse power flows and the distributed energy resource markets are rapidly changing, we recommend a greater focus on measurement, and reporting so we can work with the Commission and the AER to establish an agreed best practice.

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<sup>7</sup> Volt-var support marginally reduces the voltage dips and rises on the network.

<sup>8</sup> We allow installer to increase the inverter's 10-minute steady state voltage trip limit from 255V to 258V.

<sup>9</sup> Customers also need to conform to the requirements of the General Exemption Order.

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### 4.3 Harmonic standards

Harmonics in electricity networks result from the connection of equipment that distorts the current waveform. Some network distribution assets can cause harmonic voltage, but customer loads (such as computers and any inverter based equipment) can also cause harmonic currents. Higher harmonics mean both network and customer equipment needs greater voltage and power tolerance.

The Electricity Distribution Code places obligations on customers to limit their harmonic currents (clause 4.4.3), and an obligation on distributors to maintain harmonic voltages below a threshold (clause 4.4.1). Put simply, the Electricity Distribution Code requires equipment to not cause more than a Total Harmonic Voltage Distortion (THD) of 3%. Existing distribution network assets comply with this minimum distortion limit. The Australian Standard for harmonics AS 61000.3.6 mandates a minimum THD of 5%.

In Victoria, Distribution Businesses have deployed substantial numbers Rapid Earth Fault Current Limiters (REFCLs) to prevent the ignition of bushfires. REFCL performance and ability to perform this important task becomes compromised by harmonic voltage distortion greater than 2% THD. Large industrial Variable Speed Drive harmonic content presents a serious risk to network performance. If the harmonic distortion is greater the network needs to invest in expensive filtering equipment. Moving to the AS 61000.3.6 would cause unnecessary network costs in situations where large customers purchase new equipment that complies with the Australian Standard, but causes substantial harmonic current distortions impacting REFCLs.

Therefore, AusNet Services does not support adopting AS 61000.3.6 and recommends retaining existing harmonic distortion limits to avoid deterioration of REFCL performance or associated costs to resolve.

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### 5 Response to questions

AusNet Services positions with respect to these questions raised in the Options Paper are given in the answers below:

Question	Response
Chapter 1: Notifying customers during an unplanned power outage	
<p><i>1. Should we set an obligation on distributors to proactively contact vulnerable (such as life support) customers before a potential unplanned outage?</i></p>	<p>In respect to potential outages, we have no reasonable way of reliably anticipating an unplanned outage, because damaging winds that typically trigger these events are often localised. Sending notifications to all Life Support customers for outages that don't occur may increase their anxiety and may not be helpful.</p> <p>Other emergency services already provide general geographically specific notifications.</p> <p>In 2018, we discussed with the Customer Forum, how Distribution Businesses (DBs) can assist economically and socially vulnerable customers by providing energy literacy advice in reducing their consumption and hence their benefits. However, the only group of vulnerable customers known to DBs are customers registered with Life Support equipment. In support of these discussions, we contacted Thriving Communities to determine if their listing was available to DBs, but determined it could only be shared between participating retailers. Therefore, we consider only medically vulnerable customers registered with Life Support equipment should receive a higher level of notifications for outages, than other groups' economically or socially vulnerable customers who would likely benefit more from energy literacy advice and site specific recommendations based on AMI metering data.</p>
<p><i>2. How should we update the current obligation on distributors informing government departments of unplanned long outages?</i></p>	<p>AusNet Services has adopted this higher standard of customer service in notifying customers registered with Life Support equipment outlined in section 2.1 above, we consider it should not become a minimum standard imposed in regulation because doing so may discourage further innovation and customer improvements.</p> <p>However, we would support an obligation that ensures, at a minimum, customers registered with Life Support a notification in the same timeframe as relevant government departments are notified.</p>
Chapter 1: Notifying customers of planned power outages	
<p><i>3. What form of notification or engagement should be provided to customers by electricity distributors before a planned outage?</i></p>	<p>The EDC should make it clear that where customers have provided digital outage contact details and agreed to receive electronic notifications that DBs can provide electronic notifications and do not have to provide a written notification in the mail.</p>
<p><i>4. Should we impose a new obligation to notify customers of a cancelled or rescheduled planned outage?</i></p>	<p>As outlined in section 2.2 above, we do not recommend changes in the EDC to mandate obligations to inform customers of changes that are often made at short notice and provided digitally. We already do this.</p> <p>Instead, we recommend adding new obligations in the Energy Retail Code on retailers to ask customers for digital contact details and to ask the customer if the customer prefers this means of notification over a physical written letter.</p>

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Chapter 1: Is the purpose of the guaranteed service level scheme still appropriate?	
<i>5. Should the purpose of the scheme be redirected to address poor service or something else altogether?</i>	We consider the GSL scheme's current purpose remains appropriate in alignment with past reviews undertaken by the Commission.
<i>6. Are there other ways we should think about improving service levels for the worst parts of the network in the code?</i>	As outlined in section 2.2 above, we suggest harmonisation with national reliability GSL schemes.
Chapter 1: Are the payment categories still appropriate for the guaranteed service level scheme?	
<i>7. Is each payment category still fit-for-purpose in meeting the overall purpose of the guaranteed service level scheme?</i>	We are proposing no changes to each GSL category.
<i>8. Should customers receive a low reliability payment and a restoration payment?</i>	In terms of economic theory, paying customers for a supply interruption with a long restoration, having that same supply interruption contribute to a low reliability is inefficient.  However, separating these circumstances from our GSL calculations would be difficult, and it would be complicated to explain to customers calling us to inquire about their expected GSL payment.
<i>9. Are there new categories that we should consider including in the guaranteed service level scheme?</i>	As discussed in section 2.3, AusNet Service recommends the Commission adopt a Victorian GSL payment obligation to compensate all customers not notified of planned outages, and re-purpose the existing compliance obligations to only address systemic issues.
Chapter 1: Who are the worst service customers?	
<i>10. Should we change our principle of worst served customer to capture systemic poor performance?</i>	AusNet Services agrees, in principle, with adopting the ESC's principle of worst served customer as it relates to alignment with national standards.
Chapter 1: Are guaranteed service level exclusions appropriate?	
<i>11. Are there any outage scenarios we should include or exclude from the guaranteed service level scheme?</i>	We suggest adding the exclusions of: <ul style="list-style-type: none"> <li>• a new exclusion for outages exclusively caused by REFCL operation, see section 3.2;</li> <li>• emergency services, and</li> <li>• exercise of legislative obligation, right or discretion.</li> </ul> <p>The latter two additions would better align with national exclusions.</p> <p>We also suggest updating to the statistically based calculation of thresholds for Major Event Days. These thresholds were determined at a time before AusNet Services implemented significant network and automation technology upgrades, and no longer represent our performance levels.</p>
Chapter 1: Payment timing requirements	
<i>12. Should we impose timeframes for the guaranteed service level payments?</i>	We agree that customers should receive GSL payments earlier than Q1 or Q2 in the following year. GSL payments could be calculated every quarter. However, adopting earlier payments to customers would require a new obligation on retailers in the Energy Retail Code to pass on the payment to the customer in the next 3 months.  The alternative is that DBs make the GSL payment directly to the customer, rather than through the retailer. However, we recommend against the mandating of direct GSL payments.  In making this recommendation, we have reflected on our discussion with the Customer Forum on the merits of paying GSLs to customers directly or via the customer's retailer. We concluded paying GSLs via the customer's retailer is less onerous on customers, and better meets the needs of customers on payment plans.

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Chapter 2: Voltage standard	
<i>13. Should the commission review the distributor's voltage standards in the way distributors should manage voltage? In particular, we are seeking stakeholder feedback on the potential options for reviewing voltage standards, such as considering a 'best endeavours' approach or adapting the industry-recognised Australian Standard (AS 61000.3.100) for voltage management?</i>	AusNet Services supports adopting the industry-recognised Australian Standard for voltage management (AS 61000.3.100), for reasons outline in section 4.1.  Doing so, would not adversely impact Victorian customers and allow DBs and embedded generators greater operating flexibility reducing costs for all customers. Hence would support the connection of more distributed energy resources at less cost to all customers.
<i>14. What are the appropriate customer protections relating to voltage management that we should consider? In particular, we welcome stakeholder feedback on how any changes to voltage standards might interact with Electricity Industry Guideline 11 – Voltage variation compensation.</i>	AusNet Services would support the establishment of outer voltage limits for the purpose of enabling Guideline 11 to effectively protect customers with equipment damaged by voltage variations.
Chapter 2: Frequency management in micro-grids and stand-alone power systems	
<i>15. Is there a need to consider the management of frequency in micro-grids and stand-alone power systems? Is it appropriate for these standards to be included in the Electricity Distribution Code?</i>	There is merit in applying frequency management provisions to micro grids and stand-alone power systems. The EDC is the logical place for these provisions because they pertain to electricity distribution. Even stand-alone power systems typically have components that distribute electricity.
Chapter 2: Specific requirements for synchronous generators	
<i>16. Should we consider expanding the existing standards to capture all embedded generation technology?</i>	We agree that the technical standards of synchronous generators are not all fit for inverter based non-synchronous generators. Non-synchronous generators would need the appropriate ride-through and re-start settings. AEMO and Network Service Provider apply these relevant requirements at the point of connection agreement, but alignment with the EDC would help establish greater enforcement.
Chapter 2: Aggregation and other models	
<i>17. Aggregation is a new and evolving model in the energy landscape. What matters should we be taking into consideration? Are there other matters we should be taking into consideration for this topic?</i>	Aggregators are not involved in the distribution of electricity. Although activities undertaken by aggregators could impact customers and DBs, there appears to be no need to regulate them in the EDC.
Chapter 2: Register of embedded generation	
<i>18. Should we retire our register and harmonise by requiring distributors to comply with the national register only? What may be the potential benefits or issues with retiring our register?</i>	The EDC DER register should be retired since the adoption of chapter 5A of the National Electricity Rules in Victoria and the recent DER Register rule change request makes EDC obligations for a DER register redundant.
Chapter 2: Power factor	
<i>19. Should we review the power factor range and consider alignment with industry practices?</i>	Retaining or altering the power factor limits to align with national standards does not materially impact DBs. Where power factor is of concern demand network that charge for reactive power can be applied.
Chapter 2: Harmonics	
<i>20. Should we consider harmonising with the National Electricity Rule and adapt the Australian Standard (AS 61000.3.6) for harmonics? What may be the potential benefits and or issues with harmonising?</i>	For reasons set out in section 4.2, we do not support adopting AS 61000.3.6 and retain existing harmonic distortion limits to avoid circumstances REFCL performance or cost issues.

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Chapter 2: Negative sequence	
<i>21. Should the negative sequence limits of the code be harmonised with the national limits? What may be the potential benefits and or issues with harmonising?</i>	The current formula for load balance in the EDC clause 4.7 is better suited to installations with 3-phase induction motors, but it is not suited to residential installations with two or three phase electrical installation. It is important the EDC provides reasonable guidance or refer to the Service Installation Rules to specify requirements for wiring multiphase residential installations.
Chapter 3: Updates to definitions in the code	
<i>22. Are there any defined terms that you think are no longer correct or relevant that we need to address?</i>	No
<i>23. Should we align as much as possible and adopt national definitions set out in Appendix I? What may be the potential benefits or issues to align with the national definitions?</i>	<p>AusNet Services agrees with adopting national definitions for terms in Appendix I related to measuring network reliability. Aligning with the definitions used by the AER would improve the effectiveness of benchmark as methodology for comparing the reliability performance of Victorian DBs with DBs outside of Victoria.</p> <ul style="list-style-type: none"> <li>• As discussed, earlier the AER definition of “inadequate level of customer service” better meets customer expectations.</li> <li>• The current inconsistency in the momentary interruption definition means Victorian DBs need to maintain two different reporting processes for the same metric. Harmonising would be more efficient.</li> <li>• The current EDC urban feeder definition is based on load density for the previous year and hence some feeders changes from year to year. The AER reference to average maximum demand over three years is more stable.</li> </ul>
Chapter 3: Further clarifications	
<i>24. Are there particular clauses that stakeholders think need to be made clearer?</i>	No further clarification