ENA WORKING GROUP ON QUALITY OF SERVICE REGULATION

INTERIM REPORT TO THE COMMERCE COMMISSION

1 October 2018

This is an interim report for discussion with the Commerce Commission and there is further work to be completed by the QoS working group on the detailed recommendations for the regulation of quality, including for the 2020 DPP.

Contents

1. Introduction

The DPP reset for non-exempt EDBs takes place in 2020. The ENA's Regulatory Working Group (RWG) has established a working group to consider quality of service issues (QoS working group) and to provide both the ENA members and the Commerce Commission with a set of recommendations on how regulation of the quality of service provided by Electricity Distribution Businesses (EDBs) could be improved.[1]

In this report we summarise the working group's interim recommendations for discussion with the Commerce Commission. We also outline the work that the ENA is planning to undertake to further develop these recommendations. We note that this is a working group report, and ENA members may have additional or alternative contributions they wish to make to the discussion of how to regulate EDB quality of service.

The working group also notes that, if implemented, many of the interim recommendations included in this report will require EDBs to collate and report on information which is currently not readily available. It is expected that additional investment in systems and resources will be required to achieve this. At this stage there has been no work undertaken to estimate the scope or scale of this additional investment for EDBs.

The area of work covered by the working group, and the scope of this report is, by design, quite narrowly focused on quality of service for electricity delivery. It is important, however, to note that quality of service regulation is only one aspect of a wider regulatory regime for EDBs, including that imposed under Part 4A of the Commerce Act by the Commerce Commission, and the market regulation imposed by the Electricity Authority. While the discussion and recommendations below are stand-alone suggestions for improving the quality of service regulations, they should also be considered against the wider regulatory background. Not only is there the well-known trade-off between the general cost of electricity distribution and the quality of supply, but other important considerations include for example the complexity and demands of regulatory compliance; how to best reflect customer preferences and evolving requirements; and how to cost-effectively manage an environment with rapidly changing technology.[2]

Lastly, the working group delved into areas for improving the quality of supply regulation and, by implication, ways of measuring and potentially avoiding poor or deteriorating network performance. As this can come across as negative, or suggesting major performance issues, it is important to put some broader context around this.

Electricity networks in New Zealand are performing well, by international comparison as well as when compared against their historical performance. The large majority of customers have their electricity connected and available for more than 99.9% of the time, and in many parts of networks most customers would see less than one interruption per year. By industry standards the levels of customer complaints or disputes about the service provided by EDBs are also very low.

The recommendations below should therefore be read as opportunities for incremental improvements to the overall quality of service regulations, not as an indication of material performance issues that need to be addressed.

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[1] Note that considering technical quality of supply measures fall outside the scope of the working group's considerations. These are measures related to signal quality such as voltage regulation, harmonic distortion, or system frequency. The regulations associated with these technical measures are applied elsewhere, and do not fall under the Commission's regulation of quality of supply.

[2] As an example, several of the recommendations in this report relate to improving the visibility of customers' quality of service experience. One such key aspect is measuring the reliability performance of LV networks, which will require potentially major expansion of the measurement capabilities of EDBs on this part of their network. More broadly however, as the use of distributed generation expands, close monitoring of the LV quality of supply will also become imperative in order to deal with two-way power-flows and to ensure that network stability can be maintained. This will also likely require material investment in monitoring and control equipment – which can be the same as that used to measure reliability.

2. Our approach to this Quality of Service review

2.1. Objectives for QoS working group

Late in 2017 the RWG determined the following objectives for the QoS working group.

1. *Gather evidence as appropriate and review the performance of the quality incentive scheme applying from 1 April 2020. This would include:*
   a. *Undertake a survey of non-exempt EDBs to assess the impact on incentives of the current scheme, including compliance standards.*
   b. *Review the technical characteristics of the scheme, including the methods for identifying and correcting for a maximum event day.*
   c. *Review the effectiveness of SAIDI/SAIFI, including the 50% weighting of planned outages as measures of reliability performance.*
   d. *Analyse the impacts of changes in health and safety legislation on reliability.*
   e. *Assess whether adjustments can or should be made for other trends impacting on reliability. For example:*
      i. *Impacts of more variable climatic conditions due to climate change;*
      ii. *Impacts of population growth on incidence of motor vehicle accidents.*
2. *Review other jurisdictions for alternative measures of customer experience.*
3. *Make recommendations on improvements to the current regime or suggest alternatives/additions to ensure that the final quality of supply arrangements is fit for purpose from April 2020.*

The QoS working group convened in early 2018 and, in consultation with external parties, primarily the Commission[3], developed an overarching framework to guide the working group's investigations. This framework comprised three work streams, as set out in Table 1 following.

The working group also reviewed the ENA's QoS working group report from 2014[4] and reconsidered its recommendations for the current and future regulatory periods. These were found to be still largely relevant.

2.2. A principled approach to quality of service regulatory design

At its heart, good quality of service regulation should reflect the importance to customers of the quality of their electricity service, but also the reality that a balance needs to be struck between this quality of service and the price of electricity. This has been a guiding principle for New Zealand's electricity regulation, which has been reasonably successful in avoiding deteriorating quality of electricity supply, and at the same time avoiding excessive price increases. However, not only is the regulatory regime still developing, with areas for improvement remaining, but the operating environment for EDBs also continues to evolve, bringing new challenges for delivering electricity. Some important emerging themes that the working group had to consider in its work include:

- Customers' expectations of having a reliable, resilient electricity supply continues to increase. At the same time however, there is no appetite for increased costs to achieve this improvement.
- Customers also care about more than just supply reliability – the experience they have when interacting with their electricity suppliers is as important. In addition, there is also an increasing requirement for better transparency and communication by EDBs.

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[3] The Major Electricity Users Group (MEUG) and the Electricity Retailers Association of New Zealand (ERANZ) were also consulted when defining the scope of work and framework.

[4] Pathway to Quality, Quality of Supply and Incentives Working Group Report, February 2014

Table 1: Q of S WORKGROUP FRAMEWORK

Work stream	Topics	Suggested tasks/investigations/questions
Understanding customer views	1. How do EDBs determine customer needs	• Repeat 2014 QoS EDB survey on current practice and learnings • Expand to include customer service measures and customer engagement protocols
	2. What measures matter to customers 3. What quality performance standards do customers want	• Consult/survey customer representatives • Research international precedent • New Zealand literature review • Leverage ENA's customer working group, and separate consumer panel • Consider average network measures and other measures that better reflect actual customer experience
DPP quality standard design	4. How is quality measured in the DPP	• Reliability (SAIDI/SAIFI) measures • If so, what is included, excluded, normalised and how • Impact of uncontrollable events • Customer service, power quality or resilience measures • Research international practice
	5. How the DPP standards for each EDB are determined	• Should historical performance set future standards? If not, what can be used instead • Network wide performance or disaggregated performance? • Treatment of planned and unplanned outages? • Impact of daily work practices - what has changed and why • Research international practice
	6. What determines compliance/non-compliance	• How have EDBs responded to the compliance standard • Does the compliance standard meet customer expectations for EDB quality of service
	7. What incentives and penalties should apply	• How has the QoS incentive operated to date • How has it impacted customers? • How have EDBs responded to the QoS incentive? What behaviours/outcomes has it created • How does the QoS incentive relate to other incentives/penalties (ie? IRIS, breach investigations)
Future developments	8. What further research and refinements should be undertaken before the next regulatory period	• To be developed on completion of tasks above

Progress against this framework is documented in the Appendix.

- EDBs are strongly incentivised to ensure that their customers receive a good quality electricity supply, and regulation plays an important role in this. Successful regulation should however focus on areas that are within EDBs' reasonable control – an aspect that appears to become increasingly problematic as operating environments change, resulting from changes in the natural environment, customer trends, safety regulations and technological change.
- There is an increasing regulatory focus on the effectiveness with which EDBs manage their assets, and an expectation that asset management practices will improve. Since good asset management goes hand in hand with the quality of service delivered, these aspects have to be considered in conjunction with each other.

Taking the above into consideration, the working group adopted the following principles in order to guide its considerations.

- Focus on quality which customers' value. Reliability performance is important to customers, but other service outcomes also matter. Widen the measures to improve incentives for EDB customer service outcomes and rebalance the weight on reliability performance.
- Breaches of the quality standards should reflect material deterioration of the quality of service and focus on areas which EDBs are able to control.
- False positives. False positives should be minimised to avoid undue cost and provide clear incentives for EDB performance and good customer outcomes.
- Incremental improvement. Leverage the improvements to the DPP Quality Standards introduced in 2015 by focusing on refinements and possible extensions to promote better quality outcomes for customers and reduce compliance complexity.
- Regulatory mechanisms. Acknowledge that DPP quality standards are one component of wider regulation of quality, including through Information Disclosure, dispute resolution processes, and enforcement. Also acknowledge that DPPs are relatively low-cost regulatory mechanisms which benefit from common quality standards across non-exempt EDBs.
- Operating and external environments. Reliability performance is influenced by the operating environments of EDBs, and changes to those environments need to be accommodated in the quality standards.
- Incentives. The quality standards should incentivise EDBs to maintain quality of service consistent with customer needs, network obligations and expenditure allowances in DPP price paths. Incentives should be proportionate and focused on achieving good quality outcomes for consumers. This is a particularly important consideration where improvements could lead to additional cost of supply.
- Regulatory certainty. The regulation of quality should be sufficiently predictable and targeted at quality outcomes which EDBs can control. Regulatory incentives for quality performance must be well understood, including the consequences of breaching quality standards.

2.3. QoS working group process

The following information sources informed the working group:

- A survey was undertaken during May 2018 of all New Zealand EDBs, asking questions about their current reliability practices, customer service practices, experiences with quality of supply regulation and suggested improvements.
- Discussions with representatives of the Commission, ERANZ and MEUG.
- Workshops with both the ENA's member Customer working group and a Consumer Reference Panel. This Panel was made up of representatives of interest groups able to express consumer views.[5]
- International regulatory practice, in particular AER's and Ofgem's[6] approaches to regulating quality for electricity distributors.
- EDB specific research including customer value research.
- The 2014 QoS working group report.

Sub-groups were formed to consider:

- Potential improvements to the way that reliability of service is measured and regulated.
- Whether customer value measures could be introduced to quality of service regulation, and if so what measures.

The subgroups reported back to the full working group, which discussed the regulatory design implications of the sub-group recommendations. The full ENA membership was consulted on the working group's initial proposals. This included a workshop on 12 September 2018, which was attended by 23 EDBs.

3. Summary of our recommendations

The recommendations below are the outputs of the QoS working group as at September 2018. In the body of this report we describe the rationale for each recommendation, the working group's implementation considerations and the benefits the working group expects to result from these recommended improvements.

Table 2: SUMMARY OF INTERIM RECOMMENDATIONS

Ref	Measure/Option	PQ	ID[7]
RECOMMENDATIONS FOR RELIABILITY			
Improve the visibility of the actual reliability seen by customers			
1	Disaggregate SAIDI and SAIFI by network category and region for annual disclosure reporting		X
2	Modify the AMP disclosure requirements to include information about the worst-served customers on a network		X

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[5] The Panel was co-ordinated by the ENA on a trial basis, and was formed to consider a range of issues, which included quality of service.

[6] Given the similarities between electricity network architecture, electricity market arrangements, and social practices in New Zealand and those in the UK and Australia, more weight is placed on the regulatory examples from these countries than on others.

[7] PQ refers to proposed changes for price/quality regulation; ID refers to proposed changes to Information Disclosure regulation.

Ref	Measure/Option	PQ	ID
3	Modify the AMP disclosure requirements to include information about LV network performance		X
Improve how underlying network performance is assessed			
4	Discontinue the substitution of the SAIDI or SAIFI boundary value on MEDs and substitute with the average daily SAIDI or SAIFI.	X	X
5	Refine the current MED definition by allowing MEDs to be identified on a rolling 24-hour period, rather than only within a calendar day	X	X
Improve mechanisms to reflect the reliability impact of changing operational environments			
6	EDBs are able to apply to the Commission to adjust their outage reference datasets to be used for the 2020 DPP, to reflect the impact of changes in their operating environments which have occurred during the current regulatory period	X	
7	Ensure there are appropriate mechanisms in place, so quality standards can be reset if the operating environment of an EDB changes to the extent that it was a material, unavoidable, impact on reliability performance.	X	
Separate the regulation of planned and unplanned outages			
8	Separate planned from unplanned outages for the DPP quality standards	X	
9	Remove planned outages from the financial incentive scheme	X	
10	Unplanned outage targets are linked to historical performance, and planned outage targets reflect expected performance	X	
11	Retain annual unplanned outage compliance standards, and assess planned outage compliance at the end of the regulatory period	X	
Investigate guaranteed service level (GSL) schemes			
12	Consider whether a GSL scheme forms part of the Part 4 regulation of quality and how it could be funded	X	
RECOMMENDATIONS FOR CUSTOMER SERVICE			
Introduce customer service metrics to the DPP incentive scheme			
13	Introduce a measure of average time taken for an EDB to process new connection applications	X	
14	Introduce a measure of the proportion of planned outages notified in advance	X	
AMPs to include customer service information			
15	Modify the AMP disclosure requirements to include information about customer service performance		X
OTHER RECOMMENDATIONS FOR QUALITY REGULATION			
Modify DPP Financial Incentive Scheme			
16	1% MAR revenue at risk is allocated between unplanned SAIDI, unplanned SAIFI, and the two customer service measures	X	
Develop Enforcement Guidelines for the DPP Quality Standards			
17	Enforcement guidelines are published setting out the Commission's expectations for performance against the quality standards and the enforcement process that will be followed after a breach.	X	
Ensure Information Disclosure regulation of quality is fit for purpose			
18	Update Information Disclosure requirements for quality		X

4. Our recommendations in more detail

RECOMMENDATIONS FOR RELIABILITY

As a result of the research undertaken, working group discussions and the EDB survey results, it was determined that a complete revision of current reliability measures was not practical or desirable for the 2020 DPP reset.[8] In light of this, the working group developed the following set of underlying principles to guide potential improvements to reliability measures.

- Customers care about the quality of service they receive from their electricity suppliers. Customers consistently indicate that they expect their utilities to avoid deteriorating quality of supply, while keeping costs down.
- Given the value placed on quality of service, visibility of the actual service customers' experience (as opposed to current network average reporting) is valuable. In addition to providing customers more accurate and relevant information, im
- proved visibility on network performance will provide valuable information for EDBs for improved network maintenance and investment planning.
- Price/quality trade-offs are important and must be recognised. While a section of network might show as not performing well, it will not automatically follow that investing to improve this is appropriate or desirable to customers. Improved visibility will therefore provide a useful platform for better informed discussion with customers around price and quality expectations.
- SAIDI and SAIFI will be retained as the primary measures for network reliability. It is recognised that there are several shortcomings to these indices9, not least of which is that they aggregate customers' reliability experience rather than provide individual measures. However, improved measures that are practical, low cost and simple to implement are not readily available. In addition, continued use of SAIDI and SAIFI allows for relatively straightforward trend analysis and assessment of the performance of networks (also against international comparators).
- To achieve the desired improved visibility of the reliability customers actually experience, while retaining relatively straightforward reliability measures, will require improvements to the way that SAIDI and SAIFI are measured – in particular breaking down the current network-wide figures into more granular reporting.
- Even improved SAIDI and SAIFI measures will not fully reflect actual customer experience. It may therefore be appropriate to separately identify customers that are experiencing substantially sub-par performance and introduce appropriate regulatory oversight.

4.1. Improve the visibility of the actual reliability seen by customers

It is proposed that additional reliability performance information is included in the Information Disclosure requirements from the beginning of the next regulatory period.

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[8] A summary of potential changes to the reliability measures that were considered, but not selected to further pursue, is given at the end of this report.

[9] See the 2014 Quality of Supply report (supra note 4) for a more fulsome discussion on this topic.

Annual reporting of disaggregated SAIDI and SAIFI

Recommendation 1: Disaggregate SAIDI and SAIFI by network category and region for annual disclosure reporting.

It is suggested that annual SAIDI and SAIFI performance is reported:

- By network type – for example by following the Australian classification into CBD, urban, rural and deep rural networks but using definitions that are appropriate for New Zealand conditions.
- By region – for networks with large and varying geographical footprints or serving large customer numbers in areas with substantially different network performance characteristics.

Setting DPP targets and incentives based on disaggregated reliability, and monitoring performance against these would not be appropriate for the DPP, which is a relatively low cost regulatory mechanism, currently focused on network-wide performance. In addition, some implementation experience will be necessary to ensure that the definitions used to disaggregate network performance are practical and work across all EDBs.

The proposed improvement is intended to:

- Improve visibility of the customer reliability experience on different parts of a network and in different regions, for both customers and EDBs.
- Provide comparisons of the experiences of customers located in similar parts of EDB networks. This could aid customers in making investment or expansion decisions and assist improved EDB investment and operational decision making. It should also enhance the basis for discussing price/quality trade-offs with customers.
- Improve the basis for determining what the appropriate customer experience should be for different parts of a network, rather than relying on average historical network performance.
- Improve the basis for accurately comparing actual customer experience across New Zealand.

Implementation of this recommendation will require consideration of network types and regions, boundary issues where feeders transition between different network types or regions and establishing appropriate reporting systems. Accordingly, it is expected that there will be some implementation costs for EDBs.

AMPs to include visibility of worst-served customers on networks

Recommendation 2: Modify the AMP disclosure requirements to include information about the worst-served customers on a network.

Measure and report on the worst-served customers on a network and how the service to these customers is being managed, for example, as a minimum, the number and duration of outages for worst served customers. The working group considered more prescriptive requirements for worst-served customers, the expected variation in such measures - between networks and over time for individual networks - and also how this information might be perceived by customers and other stakeholders. As a result, it was concluded that it is appropriate that EDBs determine how best to respond to this additional regulatory disclosure requirement in the context of their AMPs, and their own particular network circumstances. It would also allow a direct link between reporting on network performance and EDBs' intended response plans – which is not feasible in Information Disclosure schedules.

The proposed improvement is intended to:

- Provide transparency on the actual performance experienced by the worst served customers on the network, improving visibility to customers and EDBs of parts of the network where improvements, or alternative measures, may be necessary.
- Improved visibility will also provide a good basis for discussions with customers on appropriate service quality and price trade-offs.

It is recognised that with existing measurement systems and capability, it is likely that the actual service levels experienced by all customers cannot be determined. Identifying the worst-served customer may therefore require a level of aggregation – for example, most EDBs can identify the worst-performing distribution transformers on their networks and would be able to identify and report on the group of customers connected to these transformers. This situation can be improved over time, with the information on how this is to be achieved included in AMPs.

AMPs to include low voltage network performance information

Recommendation 3: Modify the AMP disclosure requirements to include information about LV network performance.

Preliminary research by group members indicate that LV outages (and resulting SAIDI and SAIFI) are likely to be a substantial portion of the that seen by customers on some networks. (Given the strong coincidence with HV outages, characteristics such as customer density, network layout and number of customers will influence the contribution that LV outages make to the total for different networks.) Presently reliability measures only capture high and medium voltage (6.6 kV and up) outages, and therefore materially underreport the actual customer experience. This is also inconsistent with international good regulatory practice, for example Ofgem's and the AER's regulatory requirements in the UK and Australia.

Improving the visibility of LV network performance is also becoming increasingly important in the context of future energy developments. In particular, new technology developments related to energy use and generation, particularly those on the customer side, are anticipated to have a material impact on power consumption and power flow patterns in future. This could impact significantly on network power quality (positively or negatively), in particular on LV networks. EDBs therefore have to consider investing, or planning to invest in, improved LV monitoring capability. This recommendation is consistent with the increasing criticality and focus on the reliability performance of LV networks.

Achieving accurate LV outage monitoring and reporting could involve significant investment. Accordingly, it is recommended that EDBs determine how best to respond to this additional AMP information requirement, in the context of their own network information and operating systems. Initially it may be necessary to accept the limitations posed by existing systems and assets in reporting LV outages. However, over time it is expected that information about LV network performance will have to be improved, for the reasons stated above.[10]

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[10] One area that could address many of the EDB's needs with potentially less cost implications, would be the implementation of smart meters that can capture and convey LV performance information in near real-time; which is made freely available to EDBs to act on. (Current smart meters and data access issues make this impossible.)

The proposed improvement is intended to:

- Improve understanding of customers' actual network reliability experience. This would assist EDBs' focus on required network investments and operations.
- Improved visibility on LV network performance, and factors such as LV connectivity models and LV system stability would help ensure that electricity networks can effectively (economically and technically) deal with changing customers' requirements and energy consumption patterns.
- Customers would be better-informed about their actual service experience and realistic expectations for this. This can help their investment decisions and engagement with their supplier.
- Ensure smart meters are appropriately equipped to record LV outages accurately and that this information is available to EDBs in a timely manner.

4.2. Improve how underlying network performance is assessed

Normalisation is one of the methods used to identify underlying network performance for the purpose of the DPP quality standards, and annual information disclosures of network reliability performance. This helps to avoid false positives, which occur where an EDB may be in breach of the DPP quality standards but where there is no material deterioration of network performance. Normalisation affects the calculation of quality targets and assessed values and the financial incentive payments that apply under the revenue linked incentive scheme.

Improvements to the methods for normalising unplanned outages for the impact of extreme events were introduced for the 2015 DPP, however further improvements can be made. A number of EDBs have exceeded their quality limits in the current regulatory period, and major events have been significant contributors to these outcomes. The following recommendations seek to improve the normalisation methods to better identify underlying network performance, and therefore reduce the instances of false positives.

Boundary values

Recommendation 4: Discontinue the substitution of the SAIDI or SAIFI boundary value on MEDs and instead substitute with the average daily SAIDI or SAIFI.

This approach would apply when setting the quality standards, and in annual assessments of reliability performance. DPP Compliance Statements could also be enhanced with explanations for why the cause or impact of the event was outside the reasonably expected control of the EDB to avoid the MED.

The proposed improvement is intended to:

- Ensure that analysis of reliability trends focuses on the true underlying network performance, which EDBs can realistically influence. The impact of MEDs is so severe that there is a high likelihood that an EDB experiencing an above average number of such events will exceed their regulatory targets or limits regardless of whether these events exceeded their reasonable (or economically justifiable) capacity to manage them. By avoiding substitution with the boundary values, the major distortionary impact of MEDs on annual reliability statistics will be substantially mitigated. This will allow more accurate analysis of the true underlying reliability trends of networks.

- Align the MED method with international standards, including those applied in many states of the US, and by the AER11, while maintaining incentives for EDBs to respond effectively during major events by including average performance in place of MEDs in the annual assessments.
- Reduce the number of spurious breaches of the DPP quality standards leading to false positives.

There have been concerns raised in the past that EDBs would, during days with high SAIDI or SAIFI impact, willingly allow MEDs to arise by allowing MED boundary values to be exceeded, rather than respond as best possible. Evidence from working group members however strongly indicates that this is not the case. Approximately 70% of major events are storm or environment related, which generally cause a high number of simultaneous outages. In these cases, EDBs' full capacity is directed to responding and keeping the network and customers safe – there is no scope for keeping a running tally of the reliability impact of the multiple outages.

Guidelines for what is considered within EDBs' reasonable ability to manage could be established to assist in explaining why an event was a MED. This aligns with our recommendation for enforcement guidelines for DPP quality standards (refer Recommendation 17). This could include consistent information on the following.

- Environmental circumstances such as wind gusts, sustained wind-speeds, lightning, seismic information.
- Fault volumes and causes.
- Response to the event including technician roster, rostering and emergency management protocols implemented before and during the event and any mutual aid resources called upon.

Events spanning measurement periods

Recommendation 5: Refine the current MED definition by allowing MEDs to be identified on a rolling 24-hour period, rather than only within a calendar day.

This approach would apply when setting the quality standards, and in annual assessments of reliability performance. It will address situations when an event stretches over two calendar days, with a total impact in a 24-hour period qualifying for MED treatment, but where the impact on either of the calendar days is not sufficient to qualify. This would also improve alignment with international practice. For example, under Ofgem's rules the full period of time where the network is beyond its normal operating capabilities is recognised and normalised for network performance reporting purposes.

The proposed improvement is intended to:

- Result in a more accurate identification of real MEDs, avoiding the current, somewhat arbitrary, measure that results in some MEDs not being identified.
- Help to ensure that analysis of reliability trends focuses on the true underlying network performance.
- Reduce the number of spurious breaches of the DPP quality standards leading to false positives.

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[11] Ofgem has adopted a somewhat different approach to identifying major events. However, they also apply the principle of identifying such events and then excluding their impact from reliability figures for assessment purposes.

Preliminary research by working group members indicates that there is a reasonably high incidence of events that have historically not been classed as MEDs, that would have been MEDs had a rolling 24-hour measure been applied. It is noted that existing outage recording systems may have to be modified to be able to conduct rolling 24-hour reliability assessments.

4.3. Improve mechanisms to reflect the reliability impact of changing operational environments

There have been changes to the operating practices of EDBs which have led to ongoing breaches of the quality standards for some EDBs in the current DPP regulatory period. SAIDI and/or SAIFI limits were exceeded four times in 2016, nine times in 2017 and 13 times in 2018 by non-exempt EDBs subject to the DPP.

The increasing incidence reflects in part the introduction of new operating practices since the Health and Safety at Work Act 2015 (the Act) came into effect, and EDBs worked with industry bodies to assess current work practices in light of the Act. As a result, some EDBs are unlikely to meet their DPP quality standards for the remainder of the current regulatory period.

The reopener provisions for the current DPP have been interpreted very narrowly. Accordingly, there has been no opportunity for EDBs to apply for revised DPP quality standards to reflect their changes in operating practices which have arisen in response to external factors, such as the Act.[12]

Reference data is adjusted for changes in EDB operating environments

Recommendation 6: EDBs are able to apply to the Commission to adjust their outage reference datasets to be used for the 2020 DPP, to reflect the impact of changes in their operating environments which have occurred during the current regulatory period.

The purpose of the adjustment is to address the impact of changes in operational environments which have occurred during the current regulatory period and which have impacted the reference periods for SAIDI and SAIFI target setting.

Current regulatory targets, limits, caps and collars are set based on historical network performance. In situations where EDBs have experienced material changes in their operating environment due to factors outside their control, historical targets are no longer appropriate. Adjustments are to be EDB specific, limited to a value that can be supported by quantified evidence provided by the EDB and approved by the Commission. This is consistent with meeting customer demands for quality while ensuring each EDB is able to meet its external obligations, and prudently manage its operating risks.

The proposed improvement is intended to:

- Allow more accurate analysis of the true underlying reliability trends of networks by establishing regulatory targets which reflect the current operating environments of EDBs.
- Reduce number of false positive breaches of the quality standards by removing those incidents where the historical target is no longer relevant for an EDB or its customers. Accordingly, the remaining breaches are more likely to expose actual network problems.

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[12] The Commission's recent draft decision on Vector's application for a reopener to reflect changes in legislative requirements illustrates these restrictions.

- Appropriately reflect the requirement of EDBs to comply with the Act, with ongoing benefits for public and employee safety.
- Result in regulatory targets which reflect prudent industry practice. Otherwise EDBs will not be able to meet targets without compromising their network operating practices. This is not in the long-term interests of consumers.
- Alternatively, the EDB could specify what incremental resourcing it requires to return quality performance to historical levels if recalibrating from historical performance is not considered appropriate.

This process will require individual EDBs to make their case. In order to standardise this process as much as possible, the working group suggests that the ENA develops guidance (in consultation with the Commission) which can be used by EDBs when making applications for adjustments to reference datasets. This guidance is intended to minimise complexity by ensuring the quality of applications is fit for purpose. It is also intended to standardise the application process as much as possible to minimise costs and provide a basis for the Commission to compare the evidence provided by EDBs, to assist in its evaluation.

It is expected that applications will include:

- Description of permanent material changes to operating environments.
- Quantification of the reliability impact of these changes, with supporting evidence which quantifies the adjustments to be made to reference datasets to better reflect the current operational environment of the EDB.
- Demonstration of why the changes are beyond the reasonable capacity of EDBs to manage within existing reliability limits.
- The rationale for the operational changes made, including consideration of the impact on customers.

Quality standard reopeners

Recommendation 7: Ensure there are appropriate mechanisms in place, so quality standards can be reset if the operating environment of an EDB changes to the extent that it was a material, unavoidable, impact on reliability performance.

The new DPP quality standard reopener will apply from the beginning of the next DPP regulatory period. The reopener will provide the mechanism for responding to changes in operating environments which occur during the next and subsequent regulatory periods.

It is recommended that guidance is prepared in advance to indicate how this reopener process can be applied in practice to address particular circumstances. The guidance referred to above, for adjustments to the reference datasets for setting the 2020 DPP quality standards, may provide a useful template for quality standard reopeners in future regulatory periods.

4.4. Separate the regulation of planned and unplanned outages
Planned outages

Recommendation 8: Separate planned from unplanned outages for the DPP quality standards.

Separating planned and unplanned outages for the DPP quality standards will remove the current incentive to reduce planned outages in years with poor unplanned outage performance. This practice has negative long-term outcomes and may contribute to longer-term deterioration in network performance. The working group notes that the AER, for example, excludes planned outages from its regulated service target and focusses on unplanned outages, supplemented with customer service metrics.

Planned and unplanned SAIDI and SAIFI are also separately measured and reported as part of information disclosure. This will also occur in DPP Compliance Statements.

The proposed improvement is intended to:

- Avoid the existing incentive to reduce planned work during years with a higher-than-average incidence of unplanned outages. This will help ensure that required network maintenance and construction work will still proceed as required, even in these years. The counterfactual leads to increasing long-term network performance problems, especially if planned work is delayed too long.
- The improved visibility of the unplanned outage performance of networks will allow more accurate assessment of true underlying network performance.

Recommendation 9: Remove planned outages from the financial incentive scheme.

This recommendation will remove financial rewards and penalties from planned outages, thus improving incentives to plan and execute work programmes across the regulatory period without undue focus on single year outcomes. As customers are less disrupted by planned outages, but value good communication about them, the incentive scheme is strengthened by including a planned outage notification measure to replace the planned SAIDI and SAIFI measures (Refer Recommendation 14). This appropriately moves the financial incentive to the planned outage service metric that matters most to customers.

Planned and unplanned outage targets

Recommendation 10: Unplanned outage targets are linked to historical performance, but planned outage targets reflect expected performance.

Unplanned SAIDI and SAIFI targets for each EDB to continue to be based on a ten-year reference period, with modified normalisation of extreme events (refer Recommendations 4 and 5), and adjustments for individual EDBs for changes in operating environments (refer Recommendation 6).

The ten-year reference period for unplanned outages is appropriate because it helps mitigate year on year variation due to circumstances outside EDB control, and the longer duration captures the longer-term weather cycles. This is consistent with the no material deterioration standard.

Planned SAIDI and SAIFI targets for each EDB are to be based on a five-year forecast, for the next regulatory period. The de-linking of planned outages from unplanned outages provides an opportunity to establish a new basis for the standard. Use of forecasts will align more closely with current customer expectations, operating practices, network performance and expenditure plans for each EDB.

This will require EDBs to submit forecasts for planned outages consistent with the planned capital and maintenance works described in their AMPs, to better tie the DPP planned outage targets to their actual expected works plans (rather than historical expenditure plans). This in turn will allow EDBs to plan and

execute their investment plans with fewer unnecessary constraints and hence more efficiently, which in the medium to longer term should result in better customer outcomes.

At the same time, there will be good visibility provided on the need and scope for these planned outages, thus allowing customers (and the Commission) the means to assess the reasonableness thereof and to engage in early discussions on the issue. The working group is set to consider the feasibility of developing a relatively straightforward model that can be used by all EDBs to forecast planned outage levels based on their investment plans – recognising that the complexity of such a model will by necessity be limited for it to be appropriate for a DPP environment.

An alternative also considered by the working group was to use a five-year historical reference dataset for setting planned outage targets. A shorter, more recent dataset than for unplanned outages was considered appropriate because it would better (albeit still imperfectly) reflect current operating environments and the benchmark expenditure levels which influence DPP revenue paths. This may also be a default option available for EDBs who have insufficient certainty over future planned outages at the time the 2020 DPP is reset.

The working group considers that it is appropriate to retain EDB specific reliability targets, reflecting each EDB's performance standards and investment plans. This maintains a link between prices and quality standards under the DPP, and the current expectations of each EDB's customer base for reliability performance.

There is no strong evidence available to suggest that customers are seeking comparable reliability standards, set with reference to other networks. EDBs acknowledge the limitations of engagements with customers on the prices they are willing to pay for different levels of services. However, the information available at this time suggests customers generally are not willing to pay more for improved service levels, as would be required in some instances if comparable reliability standards had to be achieved.

In addition, while some customers may be willing to accept lower levels of reliability for reduced prices, this would require support from a large proportion of an EDB's customer base before it could be reflected in network wide quality standards. Customer feedback to date strongly suggests that declining reliability standards are not generally acceptable. It is also unlikely to be able to be implemented in the short term.

Planned and unplanned outage compliance standards

Recommendation 11: Retain annual unplanned outage compliance standards and assess planned outage compliance at the end of the regulatory period.

Specify the DPP Quality Standards to include:

- Unplanned SAIDI and SAIFI limits set to targets plus 1 standard deviation, assessed annually.
- Planned SAIDI and SAIFI limits based on the sum of the annual targets over the 5-year regulatory period, plus the average annual standard deviation derived from historical data for each of SAIDI and SAIFI.

Annual reliability compliance will be assessed against unplanned SAIDI and SAIFI. While annual targets will still be set and reported against for planned SAIDI and SAIFI, there will be no annual compliance test. This will reduce the annual compliance obligations for planned outages, while maintaining a compliance standard, on average, over the regulatory period.

Maintaining a buffer between the targets and the limits is an appropriate unplanned outage compliance standard as it allows for year on year variation. Current experience with the DPP is that actual annual assessments have fallen above the target 52 times, and below the target 44 times. It is noted that the below-target outcomes are becoming less common, for SAIDI in particular. This will be in part due to changes in operating practices introduced since the beginning of the DPP regulatory period, but other factors such as changing weather patterns may also play a role.

The proposed improvement is intended to:

- Maintain consistency with the no-material-deterioration principle by defining quality standards above the targets and using statistical analysis of the reliability performance of each EDB to set the buffer between the target and the limits.
- Incentivise EDBs to manage their programmes of planned work as effectively as possible, without undue influence from short term DPP compliance obligations (i.e. providing the ability to optimise capital and maintenance plans over a five-year period). This also recognises that planned outages are on balance more acceptable to customers, than unplanned outages, so long as good communication is in place (refer Recommendation 14), and they can see the longer-term benefits that would arise from the planned work.

We note that some care may be required where the reference datasets have been adjusted for rolling MEDs and changes to operating environments, as this may have the potential to disrupt the statistical properties of the data, which will impact the standard deviation calculations.

4.5. Investigate guaranteed service level (GSL) schemes

GSL scheme funding

Recommendation 12: Consider whether a GSL scheme forms part of the Part 4 regulation of quality and how it could be funded.

GSL type schemes are widely used internationally as part of the legislative or regulatory frameworks for service quality. For example, in Australia and the UK, minimum service levels and inconvenience payments are specified, and networks must make payments to customers when these service levels are not achieved.

The working group notes that the Electricity Authority (EA) is continuing its work on Default Distribution Agreements (DDAs). This may involve GSL scheme type provisions. The working group considers this type of regime is more within the Commission's Part 4 Commerce Act mandate of prescribing price/quality obligations for EDBs.

The working group has considered the role of a GSL scheme for EDBs in the context of the Part 4 price-quality framework, however there is considerable further work required on the design of such a scheme. This will include external expert input on the design and operation of successful GSL schemes.

The basic principle of a GSL scheme is that customers who receive a service below minimum acceptable levels will be entitled to a service level payment. The service measures commonly included in GSL schemes include:

- More than a predefined number of extended outages per year.
- More than a predefined duration of outages per year.

The working group considers, a predetermined amount of revenue set aside for the scheme, funded through the regulatory cost base will allow the scheme to operate in a manner consistent with price-quality trade-offs for investment and works programmes. A funded GSL scheme will allow appropriate transparent trade-offs to be made for improving service for customers experiencing service at levels below that specified by the GSL framework. There will be merit in considering funding mechanisms and allowances for any such scheme as part of the 2020 DPP reset process. This will remove a potential barrier to implementing such a scheme during the next regulatory period.

The service level targets for a GSL could be based on country-wide performance figures, for different network types. The same GSL targets could therefore apply to all EDBs. For this to work in practice, there will have to be different targets for different network types (for example rural and urban network performance will have to be separately assessed). Alternatively, it may be necessary to adopt network-specific targets to manage the costs of a scheme, particularly given the wide range of network type and performance across New Zealand.

A GSL also includes a framework to exclude certain events from the scheme, such as major events causing widespread damage, planned outages, third party events and limited site access following an event.

A GSL scheme is intended to:

- Recognise customer service levels that are worse than a minimum acceptable level.
- Improve transparency on customers' actual service level experience. This should better inform discussions about price/quality trade-offs.
- Provide an economic signal for investing in improving networks (or alternative solutions).
- Align to international practice, reflecting increasing focus on customer engagement and service standards globally.

Considerable more work will be required to consider the details of such a scheme, including how a GSL scheme may be interpreted under the Consumer Guarantee Act. It is expected that this will continue over the next 12 months.

RECOMMENDATIONS FOR CUSTOMER SERVICE

As a result of the research undertaken, working group discussions and the EDB survey results, it was determined that the introduction of specific customer service measures was desirable for the 2020 DPP reset. The ENA's Customer working group was consulted, specifically on the services that customers value, and the ability to measure and report on metrics which reflect these values. The ENA also convened a Consumer Reference Panel, which met in late July. This Panel was also able to contribute to the determination of the aspects of EDB service which customers value most.

The customer sub-group applied the following set of underlying principles to guide evaluation of possible regulatory customer service measures.

- Multiple reference points are needed to validate consumer values.
- If applied to a compliance or incentive regime, any proposed measure must be able to be implemented before the 2020 DPP reset.

- Customer service measures relate to values that are not associated to price or reliability of the network.
- Assessment of a measure needs to be based on historical data, benchmarks or easily and collectively-agreed targets (individual company or industry wide).
- Certain measures will naturally align with compliance and incentive mechanisms, while others won't. This needs to be considered and IDs used to provide confidence that EDBs are focused on meeting customer values. It is noted that ID changes impact all EDBs.
- Introduction of new customer metrics must recognise the different business models operated by EDBs and not require unfeasible changes to core approaches.
- Based on available performance data and measuring capability, it is unlikely that service level measures can be designed that perfectly accord with customer values. It is therefore inevitable that proxy measures may have to be used, based on data that is available and can be measured.

4.6. Introduce customer service metrics to the DPP incentive scheme

The customer sub-group's assessment framework identified a number of customer service measures that potentially could be incorporated into the DPP quality standards. Together the measures represent features of EDB quality of supply performance which customers' value. These are consistent with other regulatory regimes which include broader measures of customer service.

The recommendations are for two customer service measures to be included in the quality incentive scheme, but not included in the DPP compliance framework. This will provide incentives for EDBs to maintain or improve target service levels and reward customers for under performance against the targets.

As described below, as EDBs have not reported against such measures to date, and as the processes for collating the required information are yet to be developed, the working group considers that it is not appropriate to impose a compliance obligation on prescribed standards for these measures during this next regulatory period. It is anticipated that the experience with the new measures during the next regulatory period will support a review of this approach for the 2025 DPP.

Efficiency of new connection process (EDB role)

Recommendation 13: Introduce a measure of average time taken for an EDB to quote new connection applications.

Average time taken to quote new connections was identified as being of notable customer value. This was specifically identified by the ENA Customer working group during the review of customer values identified from existing individual EDB research, as well as though the ENA Consumer Reference Panel, and through review of overseas regimes. It is also a useful proxy for measuring the customer focus of an EDB.

The proposed improvement is intended to:

- Demonstrate that customer service levels matter in addition to network performance.
- Improve the actual customer connection experience.
- Provide visibility on the time taken to connect customers across EDBs.
- Complement the move to a revenue cap by applying incentives on EDBs to connect customers in a timely way.

The QoS working group and Customer working group are continuing to develop this recommendation. Research is focused on the connection standards used by EDBs, measures and targets, and what stages in the connection process they are applied. The working group agreed a measure relating to the time to quote for works to a proposed connecting party provides a controllable output and meets customer expectations for customer responsiveness and planning. This will also eliminate the complications of the development process where connections are subject to other constraints such as town planning rules and financing risk.

We note that some EDBs completely outsource their customer connection processes. However, the working group believes that in spite of such arrangements, EDBs are still ultimately responsible for ensuring acceptable service levels to their customers. Accordingly, the time to provide connection quotes should be measured and reported.

Incentive caps and collars will also need to be considered further once an approach to setting targets is determined. It is expected that current and recent levels of performance for the customer service measures will be used to determine expected variation around the target for establishing appropriate caps and collars.

Further considerations include the systems required to record the information, which may require some investment by EDBs, access to information held by contractors, and how the performance information may be audited.

Notification of planned outages

Recommendation 14: Introduce a measure of the proportion of planned outages notified in advance.

Communication of planned outages to customers was one of the top priorities identified by customers and supporting research. Timely, accurate and reliable notification of planned outages reduces the impact of an outage and leads to a better customer experience. Currently EDBs are required to provide customers with a minimum of 10 days' notice of a planned outage. Evidence exists through consumer feedback that while this occurs the majority of the time, for various reasons not all planned outages are notified.

It is proposed to include a measure into the DPP quality incentive scheme that reflects annual performance against target percentage of planned outages notified in advance. This would apply regardless of whether the notification is through retailers, or directly to customers.

The proposed improvement is intended to:

- Demonstrate that customer service levels matter.
- Increase the focus on delivering the commitment to notify customers of a planned outage.
- Reduce the instances of customer's experiencing disruption as a result of planned outages occurring without prior notification.

The quality of supply working group and customer working group are continuing to work on this recommendation. Considerations include how to set the target and how to measure the notifications. Research is ongoing on current performance measurement used by EDBs and the range of targets and performance. There are also implementation considerations including where EDBs operate manual systems, and how reserve days are treated.

4.7. AMPs to include customer service information

Recommendation 15: Modify the AMP disclosure requirements to include information about customer service performance.

Other customer service measures identified are not recommended for DPP quality standards at this time, as the required information, systems or measurement tools are not consistently in place.

It is therefore proposed that information about other service outcomes which are valued by customers is included in AMPs. These include indicators:

- That demonstrate EDBs are planning for future customer needs, eg. reporting against commitments to develop a network for the future, and reporting the number of new DG connections, as a leading indicator of technology uptake.
- Of planned outage commitments, eg. proportion of planned outages proceeding on date notified and completed on the date/within the time notified.
- Of environmental commitments, eg. waste reduction targets, SF6 reductions, oil leakages.

The working group considers that the AMP is the appropriate place for this information because relevant context can be included to assist stakeholders understand each EDB's service performance outcomes and plans.

OTHER RECOMMENDATIONS FOR QUALITY

Drawing on the recommendations for reliability and customer service performance, the working group also considered whether other aspects of the regulation of EDB quality of service may be improved, including for the 2020 DPP reset.

4.8. Modify DPP financial incentive scheme

The EDB survey highlighted operational responses that EDBs have made in response to DPP compliance issues including, targeted use of mobile generation, deferral of planned work, increased vegetation programmes, and increased fault dispatch resourcing. However, it was noted that these actions are unable to fully mitigate breaches which are caused by major events, or changes in network operating practices in response to external factors.

Accordingly, during the current regulatory period, the financial incentive scheme has operated in practice as a financial penalty for EDBs (or subsidy for consumers) for circumstances which EDBs are largely unable to control (particularly weather-related).

There are a number of refinements of the quality incentive regime therefore which are recommended for the next regulatory period to improve incentives on EDBs and their behavioural responses, for the overall benefit of customers. These include improving the unplanned reliability quality standard to better reflect underlying network performance (Recommendations 4, 5 and 6), removing planned outages from the incentive scheme (Recommendation 9) and expanding the quality metrics to include customer service measures (Recommendations 13 and 14).

Revenue at risk allocation

Recommendation 16: 1% MAR revenue at risk is allocated between unplanned SAIDI, unplanned SAIFI, and the two customer service measures.

As it is suggested that the revenue component linked to planned SAIDI and SAIFI is removed, the working group recommends that this same proportion of revenue is allocated to the new customer service measures. That would suggest a weighting of around 0.15 percent revenue at risk to each of the two customer-related measures. Unplanned SAIFI and SAIDI would still be incentivised at around 0.70 percent (0.35 percent each) of revenue.[13]

The working group recommends that the total revenue at risk is retained at 1 percent of maximum allowable revenue (MAR) for the next regulatory period. A higher revenue at risk is not recommended at this stage as there is not yet sufficient evidence that this incentive scheme is achieving the intended purpose.[14]

. However further work is required to assess whether this are appropriate methods for determining EDB specific/network wide incentive rates. This could be undertaken before the 2025 DPP reset.

Caps and collars will need to be developed for each measure included in the incentive scheme.

- For unplanned SAIDI and SAIFI, the caps and collars which provide the upper and lower limits for the financial incentives (and which derive the effective incentive rates) are proposed to be set on the basis of plus or minus 1 standard deviation from the annual mean – consistent with the current approach.
- It is expected that current and recent levels of performance for the customer service measures will be used to determine expected variation around the target for the purpose of establishing appropriate caps and collars.

The proposed improvements are intended to reduce the financial incentive weighting on reliability performance, and thus improve the incentives by weighting more towards service outcomes over which EDBs have more control, and which customers value. This is expected to improve the incentive properties and outcomes of the scheme.

4.9. Develop enforcement guidelines for the DPP quality standards

Recommendation 17: Enforcement guidelines are published setting out the Commission's expectations for performance against the quality standards and the enforcement process that will be followed after a breach.

Currently there is significant uncertainty about the consequences of breaching the quality standards, and the enforcement process. This uncertainty compromises regulatory incentives for quality performance.

During the current DPP period, there have been 11 breaches of the quality standards (3 in 2016, 2 in 2017 and 6 in 2018). However, at this time, none of these breaches have been resolved, as they remain under investigation by the Commission. We note that some EDBs have breaches in more than one year, and therefore ongoing investigations may address multiple breaches.

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[13] Under the current regime, planned SAIDI and SAIFI are de-weighted at 50%.

[14] There is a perception that the scheme is currently more a penalty for bad weather, or reward for good weather than an incentive to invest to improve network performance.

There are precedents for enforcement guidelines for quality regulation. However, this recommendation extends beyond the enforcement process, timetable and enforcement criteria to include a description of the Commission's expectations for compliance and consequences of non-compliance. The working group plans to consider further that principles that would provide useful guidance for EDBs in considering how to effectively comply with the DPP quality standards.

The proposed improvement is intended to:

- Improve regulatory certainty.
- Improve EDB understanding of the regulatory regime leading to improved operational decisions within their businesses.
- Improve compliance outcomes as EDBs will have a better understanding of the Commission's expectations for how they are to respond during outages, including where the EDB has reported previous breaches of the quality standards.
- Reduce regulatory costs as EDBs will be able to anticipate the Commission's investigation process and information requirements.
- Reduce the time taken to complete investigations.
- A clear and transparent guideline ensures stakeholders are confident of incidental breaches that are false positives are treated as such.

4.10. Ensure Information Disclosure regulation of quality is fit for purpose

Recommendation 18: Update Information Disclosure requirements for quality.

This recommendation includes:

- Aligning the ID determination with the DPP quality of service measures at the beginning of each DPP regulatory period, to reduce cost and complexity and improve information on EDB quality performance for customers.
- Improving the ID definitions of faults and outages.

Currently there is a suite of quality metrics reported annually through ID, including actual and forecast performance. These have been in place since 2012 and require EDBs to present their outage and fault data using common reporting formats. Some refinements are required to improve the usefulness and/or change the scope of this information so that it better reflects network performance and measures which matter to customers.

In addition, there is a disjoint between ID and DPP quality standard metrics which adds undue cost and complexity into the regime for stakeholders and EDBs. Currently ID uses different measures which de-weight planned outages and apply different normalisation for major events to the DPP methods. This requires non-exempt EDBs to prepare two sets of annual performance measures for SAIDI and SAIFI.

The EDB survey also highlighted inconsistencies in the measurement of faults. A review of the current ID Determination revealed that guidance which had been included in previous ID requirements had been omitted from the current version, leading to some confusion about what to include and exclude when measuring faults and outages. In addition, further consideration could be given to improving the information about causes of

events, such as for vegetation debris (inside and outside of the cut zone), and major event reporting (such as wind speeds).

The proposed improvement is intended to:

- Avoid the complexity arising from inconsistencies between DPP and ID measures of quality. This will also reduce compliance costs.
- Improve information for customers and other stakeholders by aligning EDB reporting of performance against regulatory targets with annual disclosure information.
- Align quality of service measures for exempt and non-exempt EDBs, providing improved comparisons.
- Improve comparability of outage reporting by EDBs.
- Improve understanding of causes of outages and responses to events including where the events arise from circumstances within EDBs' control, or from external factors.
- Further understanding of vegetation related outages, to assist in possible improvements to the Electricity (Hazards from Trees) regulations, in order to reduce vegetation disruption to overhead network supply quality.

5. Further work planned

This report sets out the interim findings of the QoS working group for the 2020 DPP reset. It has been published in September 2018 to provide input for the Commission's DPP Issues Paper to be released before the end of 2018.

It should be noted that the working group has not yet completed its work, and some of the high-level recommendations require further investigation. Over the next few months the QoS working group, in conjunction with the ENA's customer working group, will be further investigating and developing:

- The definition of the categories required for disaggregating SAIDI and SAIFI reporting, including resolving potential boundary issues.
- The nature of the evidence to be provided by EDBs to the Commission to support adjustments to their outage reference datasets, in response to changes in operational environments during the current regulatory period.
- Simple methods for forecasting planned outages, with reference to expenditure forecasts.
- Customer service metrics and targets.
- The design of the quality incentive scheme, including for customer service metrics.
- The design of GSL schemes.
- Principles for enforcement guidelines for quality standard breaches.

Appendix – Progress against framework

Work stream	Topics	Suggested tasks/investigations/questions	Progress to date
Understanding customer views	1. How do EDBs determine customer needs	• Repeat 2014 QoS EDB survey on current practice and learnings • Expand to include customer service measures and customer engagement protocols	• Survey completed, and results considered by working group • Customer sub group formed to focus on customer service measures
	2. What measures matter to customers 3. What quality performance standards do customers want	• Consult/survey customer representatives • Research international precedent • New Zealand literature review (eg. VOLL studies, CPP applications) • Leverage ENA's customer working group, and separate consumer panel • Consider average network measures and other measures that better reflect actual customer experience	• Consulted with Customer working group and ENA end-customer Customer Panel • International review completed • Assessed services that customers value against possible metrics and EDB data sources • Identified potential measurable customer service metrics to be included in the regulatory regime
DPP quality standard design	4. How is quality measured in the DPP	• Reliability (SAIDI/SAIFI) measures • If so, what is included, excluded, normalised and how • Impact of uncontrollable events • Customer service, power quality or resilience measures • Research international practice	• Sub-group focussed on reliability • Examined experiences of EDBs during current DPP period • International review completed, with particular focus on the UK and Australia. This confirmed that SAIDI and SAIFI (or derivatives) remain the most widely used network reliability measures. • Identified areas for improvement, both around improving visibility of the reliability measures, and for more effectively normalising for major events. • Recommended the introduction of customer service measures.
	5. How the DPP standards for each EDB are determined	• Should historical performance set future standards? If not, what can be used instead • Network wide performance or disaggregated performance?	• Considered historical, adjusted historical and forecast performance for reliability standards • Researched international practice

		• Treatment of planned and unplanned outages? • Impact of daily work practices - what has changed and why • Research international practice	• Recommended changes to datasets, planned vs unplanned outages for DPPs • Recommended disaggregated performance measurement and reporting for ID • Recommended an approach to managing a changing operating environment
	6. What determines compliance/non-compliance	• How have EDBs responded to the compliance standard • Does the compliance standard meet customer expectations for EDB quality of service	• Examined compliance outcomes and enforcement action • Identified areas for improvement • Considered wider measures of customer service
	7. What incentives and penalties should apply	• How has the QoS incentive operated to date • How has it impacted customers? • How have EDBs responded to the QoS incentive? What behaviours/outcomes has it created • How does the QoS incentive relate to other incentives/penalties (ie? IRIS, breach investigations)	• Examined EDB experience to date, behavioural responses and consequences for customers • Noted that breach investigations were ongoing • Identified areas for improvement, with associated recommendations • To liaise with RWG on interaction with other financial incentives
Future developments	8. What further research and refinements should be undertaken before the next regulatory period	• To be developed on completion of tasks above	• As documented in this interim report

Appendix – Other improvements considered but not recommended

The QoS working group also considered other potential refinements to the regulation of quality but has not included the following in the recommendations at this time.

Short-duration outages

Measure and report on short-duration outages (< 1 minute) that are currently excluded from regulatory SAIDI and SAIFI measurements.

Many customers are adversely affected by short-term outages. This is particularly the case where electronic systems and computers are in widespread use. Motor starting, and other industrial processes can also be adversely affected. Improving the visibility of the extent and trends of short-duration outages could provide better insights and a stronger basis for engaging with customers on their experience and expectations.

However, this information is expected to be of more value to asset managers than customers, and of lesser value to customers than other measures considered and included in the working group's recommendations. It is therefore recommended that customer views on short-term outages are considered during the next regulatory period, before committing to additional reporting of this measure.

Other reliability indices

There are a number of other reliability indices that are used in selected applications. Some of these addresses a number of intrinsic shortcomings of the SAIDI and SAIFI measures, while others (for example that used in the UK) are variants of SAIDI and SAIFI.

Of particular interest are measures that consider the quantum of load dropped at the time of an outage, or the estimated volume of energy not served as a result of an outage. These measures provide a better approximation of the real impact of outages on customers using electricity at the time, as well as reflect the magnitude of electricity used.

However, there are substantial practical difficulties in implementing these measures, as well as some material drawbacks. These include:

- Measuring the load dropped during an outage would require granular and sophisticated metering around the network. This is generally not available to New Zealand EDBs and to implement would require considerable investment.15
- Setting up substantial back-office systems to correlate load readings with outages, which would allow the impact to be assessed.

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[15] Smart meters that are set up to measure outage durations and the load dropped during outages could support the implementation of these indices. At present however, the large majority of smart meters in New Zealand are not set up with this capability. EDBs also do not have easy access to the meters or meter data. Even if this data was available, considerable development of back-office systems to link outages with meter data would be required.

- SAIDI and SAIFI (and variants thereof) are very widely used international measures that are compatible across different network sizes and can be directly accumulated. This allows effective understanding and comparison of relative network performance in and outside New Zealand.
- Conversely, the load dropped during outages is network size related, and would have to be normalised in some manner to allow comparison between networks. The indices are also not widely used, so the ability for comparative performance assessment is limited.
- There are long-term SAIDI and SAIFI trends established for New Zealand EDBs. This allows analysis of performance over time and assessment of investment and operational decisions. No such history exists for the load-linked measures.

Based on these drawbacks, the working group decided not to further pursue these alternative reliability measures – focusing instead on retaining SAIDI and SAIFI as primary network reliability measures and considering how these could be improved.

Additional customer service metrics

Given the challenges in defining and reporting on comparable measures for these service outcomes, it was concluded that the following metrics were not well suited to annual ID metric reporting.

- Customer satisfaction with overall EDB service (for example: Net Promoter Score survey)
- Ease of access to information and ease of understanding information (for example: Information (on outages, new connections, complaints, key contacts) is available through different sources, % of communication considered clear, accurate and timely.