



**Submission on the Proposed Quality Targets  
and Incentives for Default Price-quality paths  
from 1 April 2015**

**Unison Networks Limited**

**29 August 2014**

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## **1. INTRODUCTION AND EXECUTIVE SUMMARY**

### **1.1 Opening comment**

1. This submission constitutes Unison's response to the Commerce Commission's "Proposed Quality Targets and Incentives for Default Price-quality Paths from 1 April 2015" (Consultation Paper).
2. Unison has read and contributed to the ENA's submission. We strongly support its conclusions and recommendations. We have not sought to comment on all issues raised in the Consultation Paper, but focus on issues important to Unison.

### **1.2 Executive summary**

3. Unison welcomes the Commission's proposed move to a revenue-linked quality incentive scheme. The shift to a regime based on incentives was a recommended outcome from the assessment and consultative process undertaken by the Quality of Supply and Incentives (QoSI) Working Group. In addition, section 53M of the Commerce Act 1986 (the Act) expressly provides that a price-quality path may include incentives for an individual supplier to maintain or improve its quality of supply.
4. However, care needs to be taken in the development of such an incentive scheme, to ensure the parameters are appropriately established to achieve the outcomes intended. The Commission sets out in the overview to the approach that the intended purpose of the scheme is to provide services at a quality that consumers demand, and thus incentivise EDBs to invest in maintaining and improving service quality.
5. Although the Commission has provided guidance on what it seeks the scheme to promote, Unison submits that it would be helpful to have a clearly defined objective as a reference point when reviewing features of the incentive scheme. Unison proposes, words to the effect:

The objective of this revenue-linked quality incentive scheme is to reward/penalise EDBs for systematic improvement/deterioration in quality performance.

6. Unison submits the proposed scheme in its current form will not result in penalty or rewards that link to systematic changes to the underlying quality performance of EDBs, but are more likely be based on variations in the weather. An incentive scheme unduly influenced by the frequency and magnitude of severe unplanned events, which are predominately weather related, is inappropriate and should not be implemented until corrected for identified flaws.
7. The IEEE standard for measuring and assessing reliability performance requires that major events are identified and treated separately from performance on normal days. The Commission's proposed approach does not meet this fundamental requirement, and continues to conflate underlying performance with outcomes driven by the extent and frequency of major events in the calculation of penalties and rewards. As such, the proposal in its current state is little more than a random means of sharing  $\pm 1\%$  of MAR between EDBs and consumers.
8. The proposed conflation of quality performance under normal operating conditions and performance on major event days appears to be driven by a concern that absent some form of incentive, EDBs would allow outages to unduly extend following storms. While we understand

the Commission's theoretical concern, the proposed solution does not actually address it: the only valid approach is to keep the two issues separate and develop incentive schemes for each.

9. With respect to the Commission's proposals, Unison agrees:

- In principle with the move away from the current pass/fail scheme to an incentive-based scheme where EDBs are rewarded or penalised for quality changes relative to a target level of quality.
- A ten year data series to establish the reference period will more accurately represent the range of service quality performance, and is also consistent with the "no material deterioration requirement" that has under-pinned quality regulation since 2004.
- That the 50% de-weighting to planned interruptions is reasonable, reflecting that consumers are less affected by planned outages than unplanned outages.
- With the proposal to set revenue at risk as 1% of starting price maximum allowable revenue for the regulatory period.

10. However, we strongly disagree:

- That the frequency of interruptions should solely be used as the trigger for a major event day. Unison strongly advocates that the SAIDI and SAIFI need to have separate triggers to identify extreme events. Under the Commission's proposals a number of clearly extreme events that Unison has experienced in the reference period would not be normalised, because the SAIFI trigger had not been met.
- With the proposed approach to normalisation, EDBs are unduly influenced by the frequency and severity of extreme weather events because the boundary value would be used to replace actual SAIDI and SAIFI on major event days.
- With the Commission's proposal not to normalise events that span multiple days.

11. We address these key points individually in the following sections.

## **2. INTRODUCTION OF AN INCENTIVE SCHEME**

### **2.1 Commission's proposal**

12. The Commission provides that the implementation of a revenue-linked quality incentive scheme is an appropriate mechanism to incentivise distributors to maintain and improve service quality or penalise any deterioration in quality.

### **2.2 Unison's submissions**

13. Unison agrees that such a proposal is consistent with Part 4A of the Act, and is potentially an improvement on the current regime which is based on a pass/fail arrangement. As highlighted by the Quality of Supply and Incentives Working Group's report 'Pathway to Quality' (QoSI Report), international regimes have evolved from the pass/fail arrangement on the basis such arrangements do not incentivise improvements in the quality standard being delivered.
14. However, as detailed in the QoSI report, if an incentive mechanism is not based on sound methodologies or there is potential for perverse results, the scheme would not be an improvement on the current arrangement.
15. Unison submits that under the Commission's proposals, the incidence of penalties and rewards would be highly dependent on the frequency of major events in the reference dataset relative to what may occur during the regulatory period. If there have been high numbers of major events in the reference period, then an EDB may be rewarded for a fall in number of extreme events even if underlying quality has deteriorated, or conversely, if extreme events in the reference period are under-represented then EDBs may have to pay consumers because of a higher frequency of extreme events, even if underlying quality has improved. Given the increasing consensus in the scientific community that there is likely to be an increasing incidence and severity of severe weather events, the Commission's proposals seem likely to bias towards EDBs making pay-outs for bad weather.
16. Unison submits that an appropriate objective of a revenue-linked quality incentive scheme is to reward/penalise EDBs for systematic improvement/deterioration to underlying quality performance. This requires normalisation of major events, so that the remaining performance can be regarded as a true indicator of the performance of the network and the effectiveness of an EDB in responding to outages.
17. Unison recognises that performance during a major event is also of concern to consumers too, not just performance on a normal day. Consumers understandably want power restored as quickly as possible, but effective performance during severe weather conditions is much harder to assess. Every major event is different, with the length of outages dependent on multiple factors such as the severity and duration of the weather event that causes the outages, the specific location of damage and its accessibility, limitations on work hours for crews responding to events, ground conditions at repair sites if wind has been accompanied by significant rainfall or flooding, time of day when repairs can commence (it is much slower to work at night, even where conditions are safe enough to work) etc.
18. If the Commission wishes to introduce incentives for EDBs to better manage extreme events, then Unison submits that this should be addressed separately. Changes should not be made to the IEEE method, which requires separate consideration of major event days, to create some form of hybrid measure, as the Commission has proposed.

19. Unison's concerns regarding the Commission's proposed scheme are set out below. In particular we do not believe the quality incentive scheme will achieve the intended objective, unless:
- SAIDI and SAIFI have their own independent triggers for identifying an extreme event; and
  - Extreme events are better normalised.
20. Unison agrees with ENA consideration of the proposal against key success criteria that have been identified as relevant features of a quality incentive scheme. This has been a useful undertaking, with the identification that the following success criteria have not been met in the Commission's proposals:
- Data is adequately normalised for extreme events;
  - Normal statistical variation about the average is accommodated;
  - Compliance and enforcement approaches are reasonable.
21. Until the proposed scheme demonstrates that it results in materially better outcomes than the status quo, we do not believe that the scheme will be successful in linking penalties or rewards to the underlying quality performance of EDBs, whether it be performance on normal days or in severe weather conditions.

### **3. NORMALISATION METHODOLOGY FOR RELIABILITY TARGETS**

22. Unison agrees with the Commission's rationale for normalisation, recognising that for extreme events it is appropriate that protection is provided against high impact interruptions when assessing quality performance.
23. However, we submit that the Commission's approach of substituting the boundary value on extreme days, and requiring that a SAIDI major event day is dependent on SAIFI exceeding boundary on the same day would result in flawed statistical outcomes, such that the incidence of penalties and rewards will be substantially driven by the relative frequency of bad weather.
24. The requirement that the SAIFI boundary needs to be triggered before a SAIDI major event day is recognised, will result in only a portion of extreme events being normalised. This will distort the measurement of underlying SAIDI reliability performance.
25. As highlighted in Wellington Electricity's submission<sup>1</sup> weather events are becoming more frequent and extreme. It is therefore critical that the normalisation process is appropriate to deal with such events, so that EDBs are not unduly penalised by the resulting quality targets.
26. In the remainder of this section we address the components of the normalisation methodology used to set the proposed reliability targets.

#### **3.1 Weighting of planned and unplanned interruptions proposals**

##### **Commission's proposal**

27. The Commission proposes that a planned interruption is weighted at half that of an unplanned interruption.

##### **Unison's submission**

28. Unison supports the proposal to apply a 50% de-weighting to planned interruptions, providing that the normalisation methodology for extreme events is improved. If no changes are made, such that the relative frequency of extreme events will determine the incidence of incentive payments, then Unison submits that there should not be a 50% de-weighting of planned outages. This is because EDBs could seek to make up ground by lowering the amount of planned outages or undertaking live-line work, if an above average frequency of major events is experienced during the year.
29. The introduction of such a weighting recognises the lower impact that planned outages have on consumers, on the basis that consumers have advanced notice and such outages are can be scheduled to minimise the impact on consumers.

<sup>1</sup> Wellington Electricity Lines Limited's submission *Issues paper on 2015-2020 Default Price-quality Path*; 30 April 2014.

### **3.2 Both SAIDI and SAIFI should have separate major event day triggers**

#### **Commission's proposal**

30. The Commission proposes that the SAIFI boundary should be the sole trigger for major event days to apply.
31. SAIFI is considered the most appropriate by the Commission as extreme events are most likely to affect a large number of customers, which EDBs have no control over. In comparison the Commission argues that use of a SAIDI trigger has the potential to create perverse incentives as EDBs do have some control over the duration time of any outage resulting from a major event.

#### **Unison's submissions**

32. Unison does not support the Commission's proposal. We strongly submit that both SAIDI and SAIFI should have separate triggers for when major event days apply.
33. Although SAIDI and SAIFI outcomes are related they are not entirely dependent. The variation in the frequency and duration of outages experienced by customers originates from a number of factors, such as network design, topography, and localised weather conditions. If SAIFI alone is used as a trigger, the true impact of extreme events will not be correctly provided for, resulting in a distorted measurement of a network's underlying quality performance.
34. If SAIDI is not also used independently as a trigger for SAIDI normalisation, situations where a number of customers are affected by a small number of events, will not be adequately captured. In particular, the normalisation process would not reflect the effects of severe damage in rural network areas, where a number of customers are supplied by one substation or feeder and prolonged outages can occur due to the weather, safety concerns, distance and access. Rural customers supplied from long lines are in general more affected by severe weather events due to hazards such as trees, wind, and flooding, than underground networks and urban parts of the network where there is the option to back feed.
35. On 17 April this year, Unison experienced a major event day (under the current DPP requirements), where strong winds in Rotorua uprooted trees bringing down power lines and breaking a number of power poles. As a result of the extreme weather conditions, there were a total of 24 unplanned outages originating on this day. The Tarawera feeder, which is a long rural feeder in the Rotorua district, was significantly impacted resulting in a high number of customers experiencing a 22 hour power outage. Due to the environmental constraints at the time, and safety requirements for Unison employees, the remedial work could not be completed any sooner. Under the proposed scheme if the SAIFI boundary was to be a trigger for the recording of a SAIDI major event day, this extreme weather event would not be recorded as SAIFI (unplanned) was only 0.143 for the day. This results in Unison's underlying quality performance being distorted with the inclusion of 17.81 SAIDI (unplanned) rather than being normalised.
36. Historically, Unison has been greatly affected by flooding, landslides and falling vegetation. Incidents from these types of hazards can destroy network assets on a large scale. The picture below illustrates the impact on vegetation and Unison's lines (which are under the fallen trees)



in late April 2011, when severe weather events resulted in whole forests being snapped off in rural areas of Rotorua and Broadlands.



37. The extent of damage in the Rotorua and Broadlands area from particular faults led to customers being without power for over four days. Although the first day of the extreme weather event would have qualified as major event day under the proposed scheme, the subsequent day would not have, resulting in a total of 16.38 SAIDI not being normalised, unduly distorting SAIDI reliability performance. Further detail is provided in Appendix A.
38. Unison submits that it is unreasonable that the proposed scheme would not record the subsequent day as a major event day, despite the boundary value for SAIDI being exceeded by the resulting high winds and flooding. This clearly illustrates that the proposed scheme would be disproportionately influenced by the relative frequency of adverse weather in the reference and assessment periods.
39. Under the proposed scheme, for the ten year reference dataset, Unison would have exceeded a SAIDI boundary in ten separate events. However, within those ten events the SAIFI boundary would have only been exceeded twice, resulting in eight events being excluded from the extreme event normalisation.
40. The table below illustrates, where significant weather events have impacted SAIDI to a much greater extent than SAIFI on Unison's network.

**Table 1. The 20 Highest SAIDI Days from Reference set.  
(Highlighted values indicate where the proposed threshold has been exceeded)**

Date	Fin Year	Daily SAIDI (B)	Daily SAIDI (C)	Daily SAIFI (B)	Daily SAIFI(C)	Description
26/04/2011	2012		68.7580		0.2315	NIWA reported; triple the normal rainfall for the Hawke's Bay, mostly falling in two days (26th and 28th). State of emergency was declared on the 28th due to flooding and slips. Severe south west winds effected much of the east coast. Winds also destroy forestry blocks on a large scale surrounding the Taupo and Rotorua regions. SH5 between Taupo and Rotorua was closed. Many roads in the Bay of Plenty, Taupo area and Hawke's Bay were closed by slips and flooding. Napier received daily rainfall of 125mm (3rd highest since 1870). 3rd highest wind gust speed in Taupo and Rotorua since records began. Unison: The Central network (Taupo and Rotorua) was effected by strong winds, where particular examples include; entire forestry blocks being snapped off and/or uprooted (picture included earlier in document) which created a multitude of safety factors preventing immediate remedial action, and then consequently long

# UNISON SUBMISSION ON THE PROPOSED QUALITY TARGETS AND INCENTIVES FOR DPP



Date	Fin Year	Daily SAIDI (B)	Daily SAIDI (C)	Daily SAIFI (B)	Daily SAIFI(C)	Description
						<p>durations to clear the area and rebuild the network. Another example included roofs being torn of buildings neighbouring a zone substation in Taupo with outdoor switchgear, again safety factors were restrictive for restoration, where it was unsafe to send crews in to remove debris when roofing iron is flying about in winds exceeding 130kmhr<sup>-1</sup>. Meanwhile the Hawke's Bay expected a huge amount of rainfall creating widespread flooding and slips, which prevented access.</p>
20/03/2012	2012	0.9269	36.7973	0.0080	0.2175	<p>NIWA reported; strong south easterly winds brought down trees between Taupo and National Park blocking roads including SH4, 46 47 and 49. Air NZ flights were cancelled or delayed to majority of the North Island. Record high wind gusts for March were recorded in Taupo.</p> <p>Unison; Again strong winds snapped or uprooted trees. During this event all three of Unison's sub transmission circuits supplying Taupo (via two different routes) were effected by large falling trees, breaking poles and conductor, where remedial work is</p>

# UNISON SUBMISSION ON THE PROPOSED QUALITY TARGETS AND INCENTIVES FOR DPP



Date	Fin Year	Daily SAIDI (B)	Daily SAIDI (C)	Daily SAIFI (B)	Daily SAIFI(C)	Description
						restricted by unsafe environmental conditions, causing a long duration outage.
18/10/2004	2005	0.0062	21.4053	0.0000	0.0704	Unison: Significant flooding effected the majority of urban underground feeders, where transformers and switchgear were caught in rising water, compromising their safety. Little could be done, but wait for the water to recede and then begin remedial work.
4/10/2009	2010		17.3895		0.0403	NIWA reported: coldest October in 64 years. Record or near record cold on the 4/5th with heavy snowfall in the central North Island. 50cm of snow was dumped overnight on the Napier - Taupo road overnight on the 4/5th. Unison: Heavy snowfall on the Napier-Taupo road and Taupo plain destroyed large blocks of forestry and according Unisons overhead assets in their path. With heavy snowfall and many broken poles, reaching the damaged assets proved very difficult. Once the weather allowed many poles were helicoptered directly to sites, but this

# UNISON SUBMISSION ON THE PROPOSED QUALITY TARGETS AND INCENTIVES FOR DPP



Date	Fin Year	Daily SAIDI (B)	Daily SAIDI (C)	Daily SAIFI (B)	Daily SAIFI(C)	Description
						was inherently time consuming.
27/04/2011	2012	0.7266	16.3797	0.0046	0.0404	Unison: As a follow on from events on the 26th seeing further road closed due to more slips and flooding
19/03/2012	2012	0.1269	15.7128	0.0009	0.0873	Unison: As a precursor to events experienced on the 20th this day served as a ramp up for the worst of the winds and rainfall.
17/09/2010	2011		13.1988		0.0259	Unison: high winds over the day caused many outages with restoration restricted and conditions were safe enough to allow crew on certain sites and the ability to climb ladders or use elevated platforms
22/06/2006	2007	0.3973	12.6585	0.0014	0.0320	Unison: the northern part of the Hawke's Bay network had feeders experiencing multiple faults at any time due to heavy snowfall. Faultmen at the time reported combating one meter deep snow, restricting vehicle access until roads were able to be graded.
21/03/2012	2012	0.1478	11.3062	0.0010	0.0522	Unison: follow on from events on the 20th

# UNISON SUBMISSION ON THE PROPOSED QUALITY TARGETS AND INCENTIVES FOR DPP



Date	Fin Year	Daily SAIDI (B)	Daily SAIDI (C)	Daily SAIFI (B)	Daily SAIFI(C)	Description
24/01/2011	2011	0.1185	9.9972	0.0019	0.0236	Unison: High winds in Rotorua effected several feeders, but one in particular where the outage duration was extended by restricted access to equipment on a Transpower site.
30/06/2004	2005		9.7023		0.1572	Unison: Hawke's Bay feeders effected by high winds. (lack of detail due to age of fault information)
28/12/2010	2011	0.0387	8.9277	0.0002	0.0922	Unison: high winds across entire network causing a large number of faults and stretching resource for restoration
11/09/2013	2014	0.3053	8.6699	0.0037	0.0242	Unison: the northern part of the Hawke's Bay network had forestry trees uprooted bringing down poles and conductor. For one particular fault 11 spans of conductor and the associates 11 poles were broken.
12/06/2006	2007	0.1069	8.0673	0.0011	0.0924	Unison: A storm in the Central region network area created widespread damage.
20/12/2010	2011	0.0318	8.0285	0.0005	0.2033	Unison: In this instance the severity of this fault does not reflect the cause. This event was cause by an external person cutting down a tree several hundred meters from the Transpower grid exit point supplying Napier. This caused a large number of customers to be interrupted, but Unison was able to fix

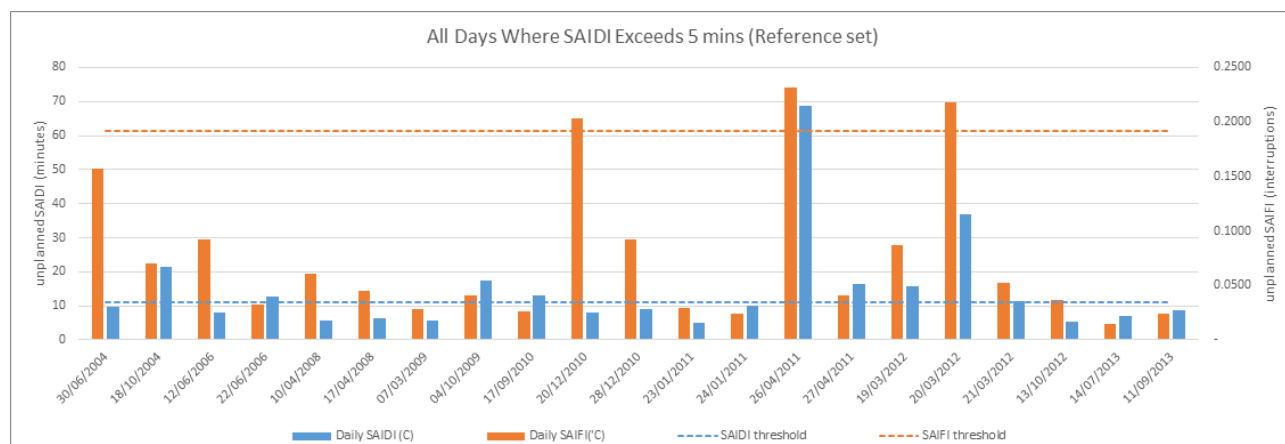
# UNISON SUBMISSION ON THE PROPOSED QUALITY TARGETS AND INCENTIVES FOR DPP



Date	Fin Year	Daily SAIDI (B)	Daily SAIDI (C)	Daily SAIFI (B)	Daily SAIFI(C)	Description
						the fault and restore power relatively quickly.
14/07/2013	2014	0.0161	6.8613	0.0001	0.0150	Unison: High winds in the Rotorua area effected a number of feeders largely due to falling trees. Remedial work was restricted by safety.
17/04/2008	2009	0.1553	6.3383	0.0007	0.0454	Unison: This day was representative of several mutually exclusive events including lightning strikes, a motor accident and some asset failure
10/04/2008	2009	0.1855	5.8259	0.0010	0.0610	Unison: This day was representative asset failure within a zone substation in central Rotorua. Where once the fault was established and under control the majority of load was transferred and customers restored.
7/03/2009	2009	-	5.6535	-	0.0282	Unison: this day's poor performance was driven largely by one event, where a tree fell through a sub-transmission circuit.
13/10/2012	2013	0.2602	5.2808	0.0016	0.0366	Unison: A storm in the Central region network area created widespread damage.

41. Unison strongly disagrees that the SAIFI trigger alone appropriately identifies and captures all major event days to ensure acceptable normalised quality targets.
42. In addition, the graph below demonstrates that under the proposed scheme the SAIDI threshold would be exceeded by extreme weather events significantly more than SAIFI. As a result the proposed SAIFI trigger results in a number of days where extreme weather events are not normalised.

**Figure 1: Days where SAIDI Exceeds 5 Minutes in Reference data set**



43. The impact of SAIFI being the sole trigger is further illustrated in Appendix A, which shows the effect of the scheme in a sample year.
44. Unison is concerned with the Commission’s reasoning, that because EDBs do have some control over the duration of an outage, there is the perverse incentive to not minimise the duration of an event once the boundary is exceeded. A major event day is typically an extension of some severe weather event which often does not permit immediate safe access for field staff to undertake remedial work. No EDB will send any of its employees into an unsafe situation in order to get power back on sooner.
45. When the network is impacted in severe weather events, in particular rural areas, access for restoration can be severely restricted. Historically Unison has experienced difficulties due to the terrain and weather, for example:
  - Forestry trees still falling in the damaged network area due to continuous bad weather, or impact on terrain.
  - Areas still flooded making structures and electrical work unsafe
  - Damaged poles located on difficult terrain. Access may continue to be unsafe after the event due to the impact of the rain for vehicle access, or resulting wind for helicopter access.
46. There are also severe reputational implications to an EDB if an outage appears to continue beyond a reasonable duration. Unison is a consumer-owned EDB, with profits largely recycled back to its Hawke’s Bay consumers. Unison has no interest in artificially extending the duration of an outage.
47. Unison also observes that the Commission proposes that the failure to meet either, or both the SAIDI target or SAIFI target would constitute non-compliance with the quality standards, allowing the Commission to take enforcement action and seek pecuniary penalties. On this basis it would appear unjustified that SAIDI extreme event days will only be normalised if there is a corresponding SAIFI major event day. Breaching regulatory obligations should not be a function of the weather.



48. Finally, Unison notes that the Commission's proposals run counter to the "safety over productivity" philosophy underpinning the Health and Safety legislation reforms. EDBs should not have to suffer financial penalties because it is unsafe to send in crews to restore power during adverse weather events.

### **3.3 Major event days replaced with a boundary value**

#### **Commission's proposal**

49. The Commission's proposed normalisation methodology to moderate the effect of major events is to replace the observed SAIDI and SAIFI with boundary values.
50. The Commission's paper provides that the boundary values are to be derived from a modified IEEE 2.5 beta method, which customises the k-value for each EDB on the expectation that an EDB will have 2.3 interruption days per year that are major event days. The boundary values will be applied only to unplanned outages and after adjusting the method to accommodate zero event days.

#### **Unison's submissions**

51. Unison supports the ENA's submission that the normalising of a major event day with the average from the reference dataset (after normalisation) is consistent with providing an underlying reliability measure. Unison strongly submits that the proposal to submit actual SAIDI and SAIFI values on major event days with the boundary values is flawed and will lead to uncertain statistical outcomes. In order to determine the underlying trend in the performance of EDBs, extreme events need to be appropriately replaced with either the average daily SAIDI/SAIFI (from the reference dataset). If extreme events are not correctly adjusted for each year, the frequency of such events is likely to result in an overall measurement outcome that is not indicative of underlying quality performance.
52. Unison also supports consideration of an alternative approach whereby the SAIDI and SAIFI values on major event days are replaced with zero. For Unison, the difference between substituting the daily average or zero is immaterial to the targets and calculated performance because the daily SAIDI and SAIFI averages are so small. The process of replacing major event days with zero would be a simpler process to implement, consistent with the intent of the DPP regime.
53. The Commission's boundary values for Unison would be considerably larger than our daily average values (in order of 20 times the daily average for SAIDI and SAIFI), resulting in any major event days contributing substantial outages to Unison's annual result. The annual result would not show Unison's true underlying reliability performance, rather the frequency of bad weather. The tables below illustrate the impacts on Unison's targets, caps and collars that would result from substitution of zero for SAIDI and SAIFI on major event days, with the different triggers for replacement (SAIFI only, or both SAIDI and SAIFI).

**Table 2: Impacts on SAIDI target, caps and collars of replacement of SAIDI on MEDs with zero**

Year	Commission proposal			MED replaced with zero- SAIFI trigger			MED replaced with zero - dual trigger		
	Unplanned	0.5planned	assessed value	unplanned	0.5planned	Total	unplanned	0.5planned	Total
2005	130.05	12.66	142.71	130.051	12.662	142.71	108.646	12.662	121.31
2006	105.44	13.29	118.99	105.444	13.287	118.73	105.444	13.287	118.73
2007	106.28	16.70	122.98	106.283	16.696	122.98	93.624	16.696	110.32
2008	78.64	19.60	98.24	78.641	19.603	98.24	78.641	19.603	98.24
2009	78.37	25.50	103.87	78.366	25.502	103.87	78.366	25.502	103.87
2010	72.84	19.03	91.87	72.836	19.030	91.87	55.446	19.030	74.48
2011	102.28	12.85	115.13	102.278	12.848	115.13	89.079	12.848	101.93
2012	137.13	14.23	151.36	115.236	14.225	129.46	71.837	14.225	86.06
2013	55.52	16.86	72.38	55.519	16.855	72.37	55.519	16.855	72.37
2014	78.86	16.06	96.73	78.859	16.059	94.92	78.859	16.059	94.92
		average	111.43			109.03			98.22
		std dev	22.65			19.64			15.93
		cap	134.08			128.67			114.15
		collar	88.77			89.39			82.30

**Table 3: Impacts on SAIFI target, caps and collars of replacement of SAIFI on MEDs with zero**

Year	Commission proposal			MED replaced with zero			MED replaced with zero - dual trigger		
	unplanned	0.5planned	assessed value	unplanned	0.5planned	Total	unplanned	0.5planned	Total
2005	3.05	0.09	3.14	3.051	0.086	3.14	3.051	0.086	3.14
2006	2.65	0.08	2.73	2.645	0.084	2.73	2.645	0.084	2.73
2007	1.96	0.12	2.08	1.957	0.119	2.08	1.957	0.119	2.08
2008	1.74	0.15	1.89	1.738	0.149	1.89	1.738	0.149	1.89
2009	1.82	0.13	1.95	1.823	0.127	1.95	1.823	0.127	1.95
2010	1.39	0.10	1.49	1.390	0.100	1.49	1.390	0.100	1.49
2011	1.63	0.09	1.72	1.440	0.092	1.53	1.440	0.092	1.53
2012	2.34	0.10	2.45	1.960	0.104	2.06	1.960	0.104	2.06
2013	1.32	0.16	1.47	1.318	0.156	1.47	1.318	0.156	1.47
2014	1.45	0.15	1.60	1.451	0.146	1.60	1.451	0.146	1.60
		Average	2.05			1.99			1.99
		std dev	0.53			0.53			0.53
		Cap	2.58			2.52			2.52
		Collar	1.52			1.47			1.47

54. Table 2, in particular, demonstrates that normalised performance is far more stable if MEDs are replaced with zero, with much smaller standard deviation reported than under the Commission’s proposal. This illustrates that in order to achieve the incentive payment, EDBs would need to make changes in their networks or in maintenance practices to bring their SAIDI values down, whereas under the Commission’s approach such efforts would likely be swamped by variations due to the frequency of major events.

55. At paragraphs 3.25 to 3.30 the Commission sets out its brief consideration of the different options for other replacements for the observed SAIDI and SAIFI in the event of a major event day. The Commission concludes that if major event days were:

- Normalised to the daily average;
- removed or zeroed out; or
- replaced with historical average, or some value lower than the boundary, in conjunction with applying a positive marginal incentive for further SAIDI and SAIFI in excess of the boundary value

there may be an incentive for EDBs to not provide the best possible quality performance if they are nearing a major event day. The Commission concludes that any marginal incentives to reduce the duration of an interruption should be present after normalisation.

56. Unison takes strong offence that we would seek to delay the restoration of power, or not provide the best quality service, to manage major event days. Such a view is highly disrespectful to those that work on the networks to maintain and restore customer power in challenging weather conditions. We routinely receive accolades from our customers for being out in all weather to restore power, as well as taking other actions like providing individual customers with generators, without any incentives to motivate such behaviour.
57. Notwithstanding that view, the Commission's concern that EDBs may not be incentivised to respond effectively in a major event, does not make it appropriate to distort the IEEE methodology for measuring quality performance. Even if the Commission's proposed solution of replacement with the boundary value were to sharpen incentives, this effect would be substantially dwarfed by the fact that an EDB which experiences an above average frequency of MEDs in a year would be severely penalised.
58. In addition, we believe the following statement from the Commission confuses the understanding of how an EDB manages extreme events:

*3.29 We considered replacing actual reliability performance with the historic average, or some value lower than the boundary, in conjunction with applying a positive marginal incentive on further observed SAIDI and SAIFI.... This has the advantage of placing an incentive on distributors to minimise SAIFI after a major event day has been triggered.*

59. This does not apply to SAIFI as suggested, on the basis there is no way to reduce SAIFI after a major event day is triggered, unless the network can somehow mitigate any further interruptions from happening. The question would be then, why would they not initiate the mitigation of the frequency pre-trigger.
60. Unison strongly submits that the Commission should adopt a methodology that replaces the average daily SAIDI/SAIFI from the reference dataset (or zero), where the boundary values are exceeded. This would provide a robust basis for establishing targets that are not affected by extreme weather events.

#### **Other issues with the calculation of boundary values**

61. Unison submits the following additional concerns in relation to the Commission's proposal:
- The 2.5 beta method is formulated based on the removal of major event days from the indices total, it appears that the commission is applying pieces of the 2.5 beta method but ignoring other aspects on which it is based.
  - The assumption that an EDB can expect 2.3 major event days per year. When applying the methodology and reference dataset Unison would have only experienced three major event days in the past ten years. If the trigger was extended to include SAIDI then under the same conditions Unison would have experienced ten major event days (one per year).

62. The Commission notes that some submitters suggested that a more simplistic approach to defining boundary values was appropriate, such as multiple of the daily average SAIDI or SAIFI value. However, the Commission disagrees with these submissions on the basis that it considers that it is unlikely that one multiple would be appropriate for all EDBs, given the variability of interruptions on each network. Unison submits that a solution would be to set the multiple, which is applied to the daily average, via a methodology whereby the multiple is a custom value for each EDB.

### **3.4 Major events that span multiple days**

#### **Commission's proposal**

63. The Commission does not accept the industry's suggestion that maximum event days that span multiple days and cause multiple individual outages should be treated as a single event.
64. Although the Commission agrees that this may be desirable, it identifies three problematic data issues for applying this consistently across distributors:
- Setting targets based on the available historical data that we have;
  - Interpreting the start and end dates of a major event and which interruptions apply to that event; and
  - Verifying that the same major event is applicable to multiple days.

#### **Unison's submissions**

65. Unison submits that the impact of a major event spanning multiple days, can have a significant bearing on how an EDB's quality is measured. Such an event can in turn lead to multiple interruptions which may, or may not, be enough in themselves to reach the major event day boundary. If the multiple individual interruptions associated with the extreme event are not enough to reach the boundary value, the EDB would be penalised by a number of successive high SAIDI/SAIFI days, ineligible for major event day normalisation.
66. In 2011/12 assessment period, under the current scheme, Unison experienced four major event days: 26/27 of April, 2011 and 19/20 of March 2012. It is easy to discern that these were two major weather events spanning multiple days, as the impact of the weather on the network resulted in each day on both occasions to independently qualify as a major event day. However, under the proposed scheme, even though we would have no difficulty in establishing that the subsequent days in these examples can be attributed to the extreme event, they would not be enough in themselves to reach the major event day boundary. Appendix A provides further detail of these events.
67. Unison understands that there may be limits on how sophisticated the regime can be, and associated data issues, however, we disagree that the acknowledged concerns are not to be considered further to formulate a workable solution.
68. EDBs can also be impacted by planned outages that result from major events that span multiple days. As previously submitted, an over-ride mechanism may be a solution to ensure EDBs are not punished purely on the basis of severe weather events:

*the recent storms in the South Island have demonstrated there can be significant lingering effects that result from storms, such that even though the power may be back on as temporary repairs are put in place, further planned outages are required to make permanent repairs. It may be difficult to normalise for such events, so Unison submits that the Commission should also consider “over-ride” mechanisms where the operation of the scheme may be suspended for particular EDBs that experience such severe events that it would be unreasonable to punish them for experiencing a prolonged repair period.*

69. Unison continues to submit that EDBs should be able to apply for a cessation of the scheme where events are so clearly out of the norm and not reflected in the reference dataset that it would be unreasonable to apply penalty payments.

## **4. RELIABILITY TARGETS**

### **4.1 Period to establish reliability targets**

#### **Commission's proposal**

70. The Commission proposes to set the target level of quality based on SAIDI/SAIFI performance measured over a 10 year reference period.

#### **Unison's submission**

71. Unison agrees that the 10 year reference period (1 April 2004 to 31 March 2014) is a reasonable period to adopt. It is more likely to be representative of the range of quality outcomes that an EDB can experience than a shorter period of, say, five years. For the most recent five year period, in some years Unison has experienced some of the most benign weather conditions ever experienced, relative to what we could expect in an average year. It is important for the Commission to recognise that even aside from extreme weather conditions, weather plays a significant role in the frequency of outages. For example, in a wetter year than average we would expect a higher frequency of outages resulting from "car versus pole" incidents.
72. While a shorter reference period may be argued to better reflect the current state of the network and maintenance practices, the reality is that it can take substantial periods of investment and changes in maintenance regimes to make a material difference to network performance. In the most recent year, of the 62.3 minutes of unplanned SAIDI on Unison's network, only 22% of the total duration of outages related to "defective equipment", with the great majority of outages relating to weather, vegetation and third party interference (typically car v pole). Accordingly, a longer averaging period to smooth out these effects is appropriate. Indeed, Unison submits that for the next reset, the Commission should examine whether an annual performance measure is appropriate, or whether incentive payments should be linked to performance over multiple years.

### **4.2 Dead-band around reliability targets**

#### **Commission's proposal**

73. The Commission proposes that the SAIDI and SAIFI annual target are to be calculated independently, and the reliability target is the adjusted average of the annual normalised SAIDI and SAIFI over the reference period (1 April 2004 to 31 March 2014). No allowances are to be made for small amounts of random variation from the averages in calculating incentive payments.

#### **Unison's submission**

74. Although Unison supports the proposed target is to reflect the historical average, we are concerned that there is no buffer about the average to reflect normal variation.
75. In order to take into account the variability of network performance, which is inevitable due to the nature of network assets and weather conditions, we strongly recommend the Commission apply a dead-band around the reliability targets, where no penalties or rewards would apply.

76. In paragraph 4.15, the Commission responds to previous submissions that that a dead-band around the reliability target would be appropriate to reflect natural variation:

We consider this unnecessary as:

- 4.15.1 assuming a suitable reliability target and normalisation methodology is implemented, natural variation will not unduly penalise, reward or create perverse incentives; and
- 4.15.2 we expect natural variation will be symmetric and not biased, and variation will tend to be offsetting over the regulatory period.
77. Unison submits that there can be no guarantee that even a ten-year timeframe for averaging SAIDI and SAIFI would result in targets that are representative of the true mean of expected performance. Moreover, even if natural variation is symmetric and unbiased, it is unclear what purpose there is for EDBs to make or receive incentive payments based on small amounts of random variation about the mean.
78. Accordingly, Unison supports the ENA's submission that a deadband of  $\pm 0.2$  standard deviations about the mean should be set so that penalties and rewards are not paid out for relatively minor deviations from the mean, which are unlikely to be indicative of a systematic change in the level of network performance.



**5. REVENUE AT RISK**

**Commission's proposal**

79. The Commission proposes that the revenue at risk is to be 1% of the starting price maximum allowable revenue, and will be allocated equally between SAIDI and SAIFI.

**Unison's submissions**

80. Unison agrees that it would be prudent to adopt a cautious approach initially in setting the revenue at risk per year at 1% of the starting price maximum allowable revenue.

**APPENDIX A**

81. Unison’s reliability experience in 2011/12 illustrates the following concerns we have with the proposed scheme:

- The SAIFI boundary being the sole trigger for major event days to apply.
- No provision for major events that span multiple days.
- The disproportionate influence of weather conditions.

82. In 2011/12, under the current scheme (with SAIDI as a trigger), Unison experienced four major event days.

83. In comparison, under the proposed scheme with SAIFI as the trigger for extreme SAIDI days to be normalised, only two of these extreme events would qualify as major event days.

84. As illustrated in the following table, the four major event days experienced by Unison under the current scheme were related to significant weather events.

Date	Unplanned SAIDI	Unplanned SAIFI	Description
26/04/2011	68.7580	0.2315	MED under proposed changes. Severe wind and heavy rain affected the entire network. High winds lashed the Central network flattening forests and tearing roofs from buildings, whilst flooding and slips scarred the coastal landscape
27/04/2011	16.3797	0.0404	Not MED under proposed changes.
19/03/2012	15.7128	0.0873	Not MED under proposed changes. As with earlier in the financial year, high winds tore through the Central network toppling large trees, with multiple days required to effect a full restoration.
20/03/2012	36.7973	0.2175	MED under proposed changes.
21/03/2012	11.3062	0.0522	Not MED under proposed changes.
Total	148.9540	0.6289	
Total Normalised	54.75	0.384	Normalised for everything exceeding thresholds (regardless of trigger)

85. It is notable that the five largest days<sup>2</sup>, for SAIDI in 2011/12 gave a total normalised SAIDI value of 65.3 minutes under the Commission’s proposed approach.

86. Without the appropriate normalisation, these two extreme weather events would have penalised Unison by their maximum revenue at risk from SAIFI (\$0.5M). In addition Unison would potentially be subject to investigation by the Commission for exceeding the cap.

87. The normalised SAIFI for these events (4 four days as opposed to 5 five for SAIDI) would total 0.56 interruptions (more than one fifth of Unison’s total target in 4 four days).

<sup>2</sup> March 21, 2012 was not considered a major event day under the current DPP quality regime, however it would exceed the SAIDI threshold but not the SAIFI threshold under the proposed changes.

88. Unison submits that it would be manifestly unfair to implement a regime where such severe weather events would not be fully normalised (including by replacing the SAIDI and SAIFI values with the average or zero). Under the Commission's proposals these severe events would require Unison to make penalty payments to consumers, which is unreasonable and not consistent with a regime that seeks to reward or penalise performance that is controllable by EDBs.