

NORTHERN TERRITORY OF AUSTRALIA

ELECTRICITY STANDARDS OF SERVICE CODE

1 December 2012

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1 Introduction

1.1 Authority

1.1.1 This **Code** is made by the **Commission** under section 24 of the **Act**.

1.1.2 The **Commission** is authorised to make a **Code** relating to standards of service in the **electricity supply industry** under section 24 of the **Act** and regulation 2B of the *Utilities Commission Regulations*.

1.2 Scope

1.2.1 Without limiting clause 1.1.2, this **Code** may deal with any one or more of the following:

- (a) **target standards**;
- (b) compliance with **target standards**;
- (c) **performance indicators** and reporting in relation to **performance indicators**; and
- (d) **data** quality.

1.2.2 For the avoidance of doubt, this **Code** will only apply to an **electricity entity** to the extent that it provides **generation services**, **network services**, or **retail services** in the **regulated network**.

1.2.3 In making this **Code**, the **Commission** has:

- (a) sought to promote and achieve the object of the **Act**;
- (b) sought to promote and achieve the objects of the **ERA**; and
- (c) had regard to the matters listed in section 6(2) of the **Act**.

1.3 Date of commencement

This **Code** takes effect on and from the **Commencement Date**.

1.4 Interpretation

1.4.1 The **Interpretation Act** applies to the interpretation of this **Code**.

1.4.2 Unless the contrary intention is apparent:

- (a) a reference to a clause or Schedule is a reference to a clause or Schedule in this **Code**;
- (b) a reference in this **Code** to a document or a provision of a document includes an amendment or supplement to, or replacement or novation of, the document or provision;
- (c) words appearing in bold and italics like **this** are defined in Schedule 4 of this **Code**; and
- (d) without limiting clause 1.4.1:
 - (i) the word “may” in conferring a power will be interpreted to imply that a power may be exercised or not, at discretion;
 - (ii) the word ‘must’ in conferring a function will be interpreted to mean that the function so conferred must be performed.

1.5 Application

This **Code** applies to **electricity entities** in the Northern Territory.

1.6 Objectives

1.6.1 The objectives of this **Code** are to:

- (a) establish standards of service and performance measures in the **electricity supply industry**;
- (b) develop, monitor and enforce compliance with and promote improvement in standards of service by **electricity entities** in the **electricity supply industry**; and
- (c) require **electricity entities** to have adequate systems in place which allow for regular reporting of actual performance in accordance with this **Code**.

1.7 Preservation of Other Obligations

Nothing in this **Code** will derogate from any obligation imposed upon an **electricity entity** under an **applicable regulatory instrument**.

1.8 Guidelines

1.8.1 The **Commission** may publish guidelines relating to (amongst other things) the application or interpretation of matters arising under this **Code** including but not limited to:

- (a) the administrative procedures and arrangements that the **Commission** intends to adopt when administering the **Code**; and/or
- (b) the **Commission's** interpretation of any clauses or terms used in this **Code**.

1.8.2 In publishing a guideline under clause 1.8.1, the **Commission** must:

- (a) give notice to all **electricity entities**; and
- (b) publish the guideline on the **Commission's** website.

1.8.3 A guideline takes effect from the date of its publication or from such later date as the **Commission** specifies in the guideline.

1.9 Directions

1.9.1 The **Commission** may issue a direction to an **electricity entity** regarding any matter that is related to this **Code**. An **electricity entity** must comply with any direction issued by the **Commission** (and notified in writing to the **electricity entity**) from time to time.

1.9.2 Without limiting clause 1.9.1, the **Commission** may issue a direction requiring the **electricity entity** to:

- (a) segment **performance indicators**; and
- (b) report on **performance indicators**,

in any way that the **Commission** considers is appropriate in the circumstances.

2 Adding to or Amending this Code

2.1 Variation or revocation by the *Commission* under the *Act*

2.1.1 The *Commission* may at any time vary or revoke any part of this *Code* in accordance with section 24 of the *Act*.

2.2 Request by an *electricity entity* for variation or revocation

2.2.1 An *electricity entity* may request the *Commission* to vary or revoke any part of this *Code*.

2.2.2 Unless the *Commission* considers that the request has been made on trivial or vexatious grounds (in which case the *Commission* may immediately reject the request) an application to vary or revoke any part of this *Code* will be dealt with by the *Commission* in accordance with this clause 2.

2.3 Matters which the *Commission* will have regard to in making a decision

2.3.1 In deciding whether to vary or to revoke this *Code* or any part of this *Code* under clause 2.1 or 2.2 above, or impose any additional or varied obligations on an *electricity entity*, the *Commission* will have regard to:

- (a) the objectives of this *Code*; and
- (b) the matters listed in section 6(2) of the *Act*.

2.4 Commencement of variation or revocation

2.4.1 A notice in relation to a variation or revocation will have effect:

- (a) 30 days after the later of the date on which the notice is given to the relevant *electricity entity* or the date on which the notice is published in the Gazette; or
- (b) on such later date as the *Commission* specifies in the notice.

3 **Target Standards**

3.1 **Establishing target standards**

- 3.1.1 An **electricity entity** that provides **network services** must, no later than the date notified in writing to the **electricity entity** by the **Commission** (being a date that is prior to the commencement of the **regulatory control period** in which the proposed **target standards** will apply) submit to the **Commission** for approval, the proposed **target standards** for that **regulatory control period** developed in accordance with this clause 3.1.
- 3.1.2 The proposed **target standards** submitted under clause 3.1.1 must:
- (a) include the **performance indicators** requiring a **target standard** in Schedule 2;
 - (b) be calculated in accordance with clause 3.1.3;
 - (c) be segmented in accordance with clause 6; and
 - (d) not be less than the **target standards** for the current **regulatory control period**.
- 3.1.3 The proposed **target standards** must be calculated by:
- (a) averaging the **data** from the preceding five **financial years**;
 - (b) if that type of **data** is not available, averaging comparable and available **data** from each of the preceding five **financial years**; or
 - (c) utilising such other methodology that the **Commission** considers is appropriate and notifies to the **electricity entity** from time to time.
- 3.1.4 An **electricity entity** must provide all information that is requested by the **Commission** from time to time in relation to the proposed **target standards**.
- 3.1.5 In deciding whether to approve the proposed **target standards**, the **Commission** will have regard to:
- (a) the matters listed in section 6(2) of the **Act**;
 - (b) the objectives of this **Code**; and
 - (c) whether the proposed **target standards** comply with **good electricity industry practice**.
- 3.1.6 In deciding whether to approve the proposed **target standards**, the **Commission** may consult with other **electricity entities**, the **Minister** and anyone else the **Commission** considers should be consulted, in any way the **Commission** sees fit.
- 3.1.7 The **Commission** may approve the proposed **target standards** subject to such conditions as the **Commission** considers are appropriate.
- 3.1.8 If the **Commission** does not:
- (a) receive; or
 - (b) approve,

proposed **target standards** under this clause 3.1 for a **regulatory control period**, the **Commission** may, prior to the commencement of that **regulatory control period**, set a **target standard** for each **performance indicator** that requires a **target standard** in any way the **Commission** sees fit.

3.2 Varying the **target standards**

- 3.2.1 If in the **Commission's** reasonable opinion a **target standard** is contrary to the objectives of this **Code** or the matters listed in section 6 (2) of the **Act**, the **Commission** may vary that **target standard** (in which case the **Commission** must provide reasonable notice to the relevant **electricity entity**) at any time and in any way the **Commission** sees fit (but not in a manner which is inconsistent with the **Act**).
- 3.2.2 An **electricity entity** that provides **network services** may at any time request the **Commission** to vary a **target standard**.
- 3.2.3 A request under clause 3.2.2 must:
- (a) state the reasons for varying the **target standards**;
 - (b) contain sufficient information and supporting documentation to support the request to vary the **target standard**; and
 - (c) specifically address the objectives of the **Code** and the matters listed in section 6 (2) of the **Act**.
- 3.2.4 The **Commission** must, within 20 **business days** of receiving a request under clause 3.2.2, advise the **electricity entity** of any further information or clarification which is required in support of the **electricity entity's** request if, in the **Commission's** reasonable opinion, the request:
- (a) is incomplete; or
 - (b) contains information which requires clarification.
- 3.2.5 If any further information or clarification required pursuant to clause 3.2.4 is not provided to the **Commission's** satisfaction within 10 **business days** of the request, then the **electricity entity** will be deemed to have withdrawn the request.
- 3.2.6 If no further information or clarification is required pursuant to clause 3.2.4, the **Commission** will deal with a request under clause 3.2.2:
- (a) as soon as practicable after receipt of that request; and
 - (b) in accordance with clause 3.1.5 and 3.1.6 of this **Code**.
- 3.2.7 In considering a request under clause 3.2.2, the **Commission** may consult with anyone the **Commission** considers is appropriate to consult with before considering whether to vary a **target standard**.

3.2.8 A variation to a **target standard** under this clause 3.2 will take effect:

- (a) on the date agreed upon by the **Commission** and the relevant **electricity entity**,
or
- (b) if no such date exists, 20 **business days** after the date upon which the variation to the **target standard** is approved by the **Commission**, or such later date as the **Commission** specifies in that approval.

3.3 Target standard obligations

3.3.1 An **electricity entity** that provides **network services** must use its **best endeavours** to meet the **target standards** approved by the **Commission** under this clause 3.

3.4 Publication of target standards

3.4.1 The **Commission** will publish the **target standards** on the **Commission's** website.

4 Reporting

4.1 Obligations to report actual performance

4.1.1 An **electricity entity** that provides:

- (a) **generation services**;
- (b) **network services**; or
- (c) **retail services**;

must as soon as practicable after the end of each **financial year** (but by no later than 1 November of the next **financial year**) submit to the **Commission** a report on its actual performance against the **performance indicators** for those services during the preceding **financial year**.

4.1.2 A report under clause 4.1.1 must:

- (a) in relation to **generation services**, include the performance of the **electricity entity** against the **generation services performance indicators** set out in Schedule 1;
- (b) in relation to **network services**, include the performance of the **electricity entity** against the **network services performance indicators** set out in Schedule 2;
- (c) in relation to **retail services**, include the performance of the **electricity entity** against the **retail services performance indicators** set out in Schedule 3; and
- (d) be segmented in accordance with clause 6.

4.1.3 A report under this clause 4 must include a **responsibility statement**.

4.1.4 The **Commission** may request further information or clarification of a report submitted under this clause 4.

4.1.5 An **electricity entity** must respond to a request under clause 4.1.4 within 20 **business days** of receipt of that request or as otherwise specified by the **Commission**.

4.2 Reporting against target standards

4.2.1 This clause 4.2 applies to an **electricity entity** that provides **network services**.

4.2.2 If an **electricity entity** fails to meet a **target standard** for a **financial year**, the report submitted to the **Commission** by that **electricity entity** for that **financial year** under this clause 4 must include:

- (a) a statement of the reasons for that failure;
- (b) a statement that explains and demonstrates how the **electricity entity** has used its **best endeavours** to meet the relevant **target standard**; and
- (c) a statement on the measures the **electricity entity** proposes to take to ensure that the relevant **target standard** will be met during the next **financial year**.

4.3 Reporting of natural events identified using the IEEE 2.5 beta method

4.3.1 This clause 4.3 applies to an **electricity entity** that provides **network services**.

4.3.2 If an **electricity entity** excludes a **network outage** from the **adjusted** category in accordance with clause 6.2.3 (f), the report submitted to the **Commission** by that **electricity entity** for that **financial year** under this clause 4 must include information on that exclusion including:

- (a) the relevant event identified under clause 6.2.3 (f);
- (b) information and documentation on the circumstances surrounding the event;
- (c) information detailing the reasons why the event is excluded; and
- (d) the extent of the exclusion from the **adjusted** category.

4.4 The Commission's obligations

4.4.1 On receipt of a report submitted under this clause 4, the **Commission**:

- (a) will publish an assessment of the report;
- (b) may make the report publicly available; and
- (c) must ensure that any information made publicly available by the **Commission** complies with section 26 of the **Act**.

5 **Data Quality**

5.1 **Data quality**

- 5.1.1 An **electricity entity** must, in accordance with **good electricity industry practice**:
- (a) periodically collect and maintain such **data** (in connection with the **target standards, performance indicators** or reporting requirements under clause 4), as is reasonably sufficient for the purpose of complying with its obligations under this **Code** and enabling the **Commission** to perform its functions under this **Code**; and
 - (b) make this **data** available on request to the **Commission** or an auditor appointed under clause 5.2.1.

5.2 **Audit of data**

- 5.2.1 The **Commission** may at any time, by giving notice to the **electricity entity**, require the **electricity entity** to appoint an independent auditor to undertake an audit of the **electricity entity's** compliance with clause 5.1.1(a).
- 5.2.2 The audit requirements will be determined by the **Commission** in consultation with the **electricity entity**.
- 5.2.3 An auditor appointed under this clause 5.2 must have the necessary technical expertise determined by the **Commission** and notified to the **electricity entity**.
- 5.2.4 If the **electricity entity** fails to comply with a notice given by the **Commission** under this clause 5.2 by the date set out in that notice, the **Commission** may appoint an independent auditor to undertake an audit of the **electricity entity's** compliance with clause 5.1.1(a).
- 5.2.5 An **electricity entity** must meet the costs of any audit under this clause 5.2.

6 **Data Segmentation**

6.1 **Data segmentation**

6.1.1 An **electricity entity** must segment the **performance indicators** in accordance with the categories listed against the relevant **performance indicator** in Schedules 1 to 3.

6.2 **Adjusted and unadjusted performance indicators**

6.2.1 This clause 6.2 applies to an **electricity entity** that provides **network services**.

6.2.2 An **electricity entity** must segment the **performance indicators** separately for the following categories:

- (a) **adjusted**; and
- (b) **unadjusted**,

in accordance with Schedule 2 and clause 6.2.3.

6.2.3 An **electricity entity** may only exclude a **network outage** from the **adjusted** category if the event that caused that **network outage** is listed below and was beyond the reasonable control of the **electricity entity**:

- (a) **load shedding** due to a shortfall in generation;
- (b) a **network interruption** where more than two **business days'** notice was given to **customers** by the **electricity entity** and the **electricity entity** has otherwise complied with the relevant requirements of the **applicable regulatory instruments**;
- (c) the **System Controller** exercising any functions or powers under an **applicable regulatory instrument**, a direction by a police officer or another authorised person exercising powers in relation to public safety, but only to the extent that the exercise of that function or power, or the giving of that direction, is not caused by a failure by the **electricity entity** to comply with any **applicable regulatory instrument**;
- (d) a traffic accident;
- (e) an act of vandalism;
- (f) a natural event that is identified as statistical outliers using the **IEEE 2.5 beta method**; or
- (g) a **network interruption** caused by a **customer's electrical installation**.

Schedule 1 – **GENERATION SERVICES PERFORMANCE INDICATORS**

1.1 Interpretation

1.1.1 Where information in this Schedule is set out in brackets (namely “[” and “]”), and preceded by the expression “Example” or “Note”, the information:

- (a) is provided to assist readers; and
- (b) may be used in interpreting this **Code**.

1.2 Application of Schedule 1

1.2.1 This Schedule defines the **performance indicators** for **electricity entities** that provide **generation services**.

1.2.2 In particular, this Schedule specifies the way in which the **data** is to be used to calculate the **performance indicators** for **generation services**.

1.2.3 An **electricity entity** that provides **generation services** must calculate the **performance indicators**:

- (a) identified in Table 1 of this Schedule; and
- (b) in accordance with the formulas set out in this Schedule.

1.2.4 The **data** used to calculate each **performance indicator** must correspond with the **reporting period** for that **performance indicator**.

1.3 Generation services performance indicators

1.3.1 Table 1:

- (a) lists the **generation services performance indicators** for the purpose of clause 4 of this **Code**; and
- (b) specifies the way in which these **performance indicators** must be segmented for reporting under this **Code**.

TABLE 1 – GENERATION SERVICES PERFORMANCE INDICATORS

Performance Indicator	Report	Segmentation
Availability Factor (AF)	Yes	Power station
Unplanned Availability Factor (UAF)	Yes	Power station
Equivalent Availability Factor (EAF)	Yes	Power station
Forced Outage Factor (FOF)	Yes	Power station
Equivalent Forced Outage Factor (EFOF)	Yes	Power station
System Average Interruption Duration Index (SAIDI)	Yes	Power system and region

System Average Interruption Frequency Index (SAIFI)	Yes	Power system and region
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1.4 **Generating unit availability performance indicators**

1.4.1 The **generating unit availability performance indicators** in this clause 1.4 of this Schedule are based on the group performance indices in the US Institute of Electrical and Electronics Engineers (IEEE) Standard 762-2006.

1.4.2 When calculating the **generating unit availability performance indicators** for each **power station**, only **generation outages** that are caused by a **generation event** that relates to **generating units** that form part of the same **power station** are to be included.

[Note: Each value that is used to calculate the **generating unit availability performance indicator** must be weighted by multiplying the value with the **generating unit's gross maximum capacity**. All those products are then summed over all of the **generating units** which make up the relevant **power station**. Where necessary, this is reflected in the formula. For the avoidance of doubt, each value is weighted while calculating the **performance indicator** and not after.]

1.4.3 Each **electricity entity** must provide the following information in relation to its **generating units** and **power stations** to the **Commission** in the report submitted to the **Commission** pursuant to clause 4.1.1 of this **Code**:

- (a) the **gross maximum capacity** of each **generating unit**;
- (b) any **unit derating** for each **generating unit** (permanent or otherwise); and
- (c) information that explains any changes in **gross maximum capacity** or **unit derating** from the previous **reporting period**.

[Note: The **Commission** intends to compare this information with the report submitted for the previous **reporting period** to assess any changes in **gross maximum capacity** and **unit derating** and to ensure that the **generating unit availability performance indicators** are calculated correctly and accurately to reflect the true availability of **generating units** in the **reporting period**.]

1.4.4 In circumstances where it is necessary to calculate the '**equivalent partial outage hours**' that a **generating unit** is unavailable due to a **generation outage** that results in a **unit derating**, the following formula will be used:

[Note: This formula is used to calculate the number of **equivalent partial outage hours** (EH) that a **generating unit** is unavailable due to **partial planned outages**, **partial unplanned outages** or **partial forced outages**. The EH due to **partial planned outages** and **partial unplanned outages** are used as an input to calculate the Equivalent Availability Factor (clause 1.4.7 of this Schedule) whereas the EH due to **partial forced outages** are used as an input to calculate the Equivalent Forced Outage Factor (clause 1.4.9 of this Schedule).]

$$\text{Equivalent Partial Outage Hours (EH)} = H \times \left(\frac{\text{UD}}{\text{GMC}} \right)$$

Where:

H is the total number of **hours** that a **generating unit** is unavailable due to a **generation outage** that results in a **unit derating**;

UD (or 'unit derating') is the **unit derating value**.

GMC is the **gross maximum capacity**.

*[Example: If a **generating unit** with a **gross maximum capacity** of 10.1 MW had its output reduced to 6.06 MW for a period of 30 days the Equivalent Partial Outage Hours will be:*

$$30 \text{ (days)} \times 24 \text{ (hours)} \times (6.06 / 10.1) = 432 \text{ hours.}]$$

1.4.5 Availability Factor (AF)

$$AF = \left(1 - \frac{\left(\sum_{i=1}^n (UH_i \times GMC_i) \right)}{\left(\sum_{i=1}^n (H_i \times GMC_i) \right)} \right) \times 100$$

Where:

i is each **generating unit**.

UH (or 'unavailable hours') is the total number of **hours** that a **generating unit** is unavailable due to **planned outages** and **unplanned outages**. This excludes the number of **equivalent partial outage hours** due to **partial planned outages** and **partial unplanned outages**.

H is the total number of **hours**. However, if a **generating unit** is commissioned during the relevant **reporting period**, H will be the total number of **hours** from the date the **generating unit** is commissioned up until the end of that **reporting period**.

[Example:

*If a **generating unit** is commissioned at 12:00 p.m on 1 December of the **reporting period**, H will be the total number of hours from 12:00 p.m on 1 December up until the end of the **reporting period**.]*

GMC is the **gross maximum capacity** (applicable to weighted multiple **generating units** that are part of the same **power station**).

The AF is expressed as a percentage.

*[Example: Assuming a **power station** has two **generating units**, A and B, with a **gross maximum capacity** of 10 and 20 MW respectively - if **generating unit A** is shut down for a total of exactly 30 days and **generating unit B** is shut down for a total of exactly 20 days for **planned outages** or **unplanned outages** in a **reporting period** of one year, it would have been unavailable for 1,200 hours (720 hours for **generating unit A** and 480 hours for **generating unit B**).*

*The AF for the **power station** is calculated as follows:*

$$AF = (1 - ((720 \times 10) + (480 \times 20)) / ((8760 \times 10) + (8760 \times 20))) \times 100$$

$$AF = 93.61\%$$

1.4.6 Unplanned Availability Factor (UAF)

$$UAF = \left(1 - \frac{\left(\sum_{i=1}^n (UOH_i \times GMC_i) \right)}{\left(\sum_{i=1}^n (H_i \times GMC_i) \right)} \right) \times 100$$

Where:

i is each **generating unit**.

UOH (or ‘unplanned outage hours’) is the total number of **hours** that a **generating unit** is unavailable due to **unplanned outages**. This excludes the number of **equivalent partial outage hours** due to **partial unplanned outages**.

H is the total number of **hours**. However, if a **generating unit** is commissioned during the **reporting period**, H will be the total number of **hours** from the date the **generating unit** is commissioned up until the end of the **reporting period**.

GMC is the **gross maximum capacity** (applicable to the weighted multiple **generating units** that are part of the same **power station**).

The UAF is expressed as a percentage.

*[Example: Assuming a **power station** has two **generating units**, A and B, with a **gross maximum capacity** of 10 MW and 20 MW respectively - If **generating unit** A is shut down for 12 days and generating unit B is shut down for 15 days for **unplanned outages**, both **generating units** would have been unavailable for 288 hours and 360 hours respectively.*

*The UAF for the **power station** is calculated as follows:*

$$UAF = (1 - ((288 \times 10) + (480 \times 20)) / ((8760 \times 10) + (8760 \times 20))) \times 100$$

$$UAF = 95.25\%$$

1.4.7 Equivalent Availability Factor (EAF)

$$EAF = \left(1 - \frac{\sum_{i=1}^n ((UH_i + EUH_i) \times GMC_i)}{\sum_{i=1}^n (H_i \times GMC_i)} \right) \times 100$$

Where:

i is each **generating unit**.

UH (or ‘unavailable hours’) is the total number of **hours** that a **generating unit** is unavailable due to **planned outages** and **unplanned outages**. This excludes the number of **equivalent partial outage hours** due to **partial planned outage** and **partial unplanned outages**.

EUH (or ‘equivalent unavailable hours’) is the total **equivalent partial outage hours** due to **partial planned outages** and **partial unplanned outages**.

H is the total number of **hours**. However, if a **generating unit** is commissioned during the **reporting period**, H will be the total number of **hours** from the date the **generating unit** is commissioned up until the end of the **reporting period**.

GMC is the **gross maximum capacity** (applicable to weighted multiple **generating units** that are part of the same **power station**).

The EAF is expressed as a percentage.

*[Example: Assuming a **power station** has two **generating units**, A and B, with a **gross maximum capacity** of 10 MW and 20 MW respectively – If **generating unit** A is shut down due to **planned outages** and **unplanned outages** for 30 days and **generating unit** B had its output reduced by a **partial outage** to 60% of its total generation output for a further period of 30 days, its **Equivalent Partial Outage Hours** will be 30 (days) x 24 (hours) x 0.6 = 432 hours.*

*The EAF for the **power station** is calculated as follows:*

$$EAF = (1 - ((720 \times 10) + (432 \times 20)) / ((8760 \times 10) + (8760 \times 20))) \times 100$$

$$EAF = 86.85\%$$

1.4.8 Forced Outage Factor (FOF)

$$FOF = \left(\frac{\sum_{i=1}^n (FOH_i \times GMC_i)}{\sum_{i=1}^n (H_i \times GMC_i)} \right) \times 100$$

Where:

i is each **generating unit**.

FOH (or 'forced outage hours') is the total number of **hours** that a **generating unit** is unavailable due to **forced outages**. This excludes **equivalent partial outages hours** due to **partial forced outages**.

H is the total number of **hours**. However, if a **generating unit** is commissioned during the **reporting period**, H will be the total number of **hours** from the date the **generating unit** is commissioned up until the end of the **reporting period**.

GMC is the **gross maximum capacity** (applicable to weighted multiple **generating units** that are part of the same **power station**).

FOF is expressed as a percentage.

*[Example: Assuming a **power station** has two **generating units**, A and B, with a **gross maximum capacity** of 10 MW and 20 MW respectively, if **generating unit** A is forced out of service on two occasions for periods of 5 days and 3 days in the **reporting period**, its total forced outage time is 192 hours. If **generating unit** B is forced out of service for a period of 2 days, its total **forced outage** time is 48 hours.*

*The FOF for the **power station** is calculated as follows:*

$$FOF = ((192 \times 10) + (48 \times 20)) / ((8760 \times 10) + (8760 \times 20)) \times 100$$

$$FOF = 1.10\%$$

1.4.9 Equivalent Forced Outage Factor (EFOF)

$$EFOF = \left(\frac{\sum_{i=1}^n ((FOH_i + EFOH_i) \times GMC_i)}{\sum_{i=1}^n (H_i \times GMC_i)} \right) \times 100$$

Where:

i is each **generating unit**

FOH (or 'forced outage hours') is the total number of **hours** that a **generating unit** is unavailable due to **forced outages**.

EFOH (or 'equivalent forced outage hours') is the **equivalent partial outage hours** due to **partial forced outages**.

H is the total number of **hours**. However, if a **generating unit** is commissioned during the **reporting period**, H will be the total number of hours from the date the **generating unit** is commissioned up until the end of the **reporting period**.

GMC is the **gross maximum capacity** (applicable to weighted multiple **generating units** that are part of the same **power station**).

EFOF is expressed as a percentage.

*[Example: Assuming a **power station** has two **generating units**, A and B, with a **gross maximum capacity** of 10 MW and 20 MW respectively – During the **reporting period** **generating unit** A was forced out of service for 8 days and was also restricted to 50% of its total generation output for 80 hours because of a **partial forced outage**. **Generating Unit B** was restricted to 30% of its total generation output for 48 hours.*

*The **power station**'s EFOF would be calculated as*

$$EFOF = (((192 + (80 \times 0.5)) \times 10)) + ((48 \times 0.3) \times 20)) / ((8760 \times 10) + (8760 \times 20)) \times 100$$

$$EFOF = 0.99\%$$

1.5 Generation services reliability performance indicators

1.5.1 When calculating **generation services** reliability **performance indicators**:

- (a) for each **power system**:
 - (i) only include those **generation interruptions** that are caused by **generation events** that are related to **generation units/facilities** that form part of the same **power system** and affect **supply** to **customers** located within the same **power system**; and
 - (ii) only include those **customers** who are supplied by the same **power system**; and
- (b) for each **region**:
 - (i) only include those **generation interruptions** that are caused by **generation events** that are related to **generation units/facilities** that form part of the same **power system** and affect **supply** to **customers located** within the boundaries of the same **region**; and
 - (ii) only include those **customers** who receive **supply** from within the boundaries of the same **region**.

1.5.2 System Average Interruption Duration Index (SAIDI)

$$SAIDI = \left(\frac{ID}{CS} \right)$$

Where:

ID (or 'interruption duration') is the sum of the duration of each **generation interruption** expressed in minutes.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**.

For the avoidance of doubt, **generation interruptions** and **customers** must be identified in accordance with clause 1.5.1 of this Schedule 1.

1.5.3 System Average Interruption Frequency Index (SAIFI)

$$SAIFI = \left(\frac{TI}{CS} \right)$$

Where:

TI (or 'total interruptions') is the total number of **generation interruptions**.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**.

For the avoidance of doubt, **generation interruptions** and **customers** must be identified in accordance with clause 1.5.1 of this Schedule 1.

*[Note: For the avoidance of doubt, clause 6.2.3 of this Code does not apply to **generation services reliability performance indicators**. However, any **generation event** that affects **supply** to **customers** and is caused by assets or equipment that are outside **plant management control** in accordance with the IEEE Standard 762-2006 is to be excluded for the purpose of calculating **generation services reliability performance indicators**.]*

Schedule 2 – NETWORK SERVICES PERFORMANCE INDICATORS

1.1 Interpretation

1.1.1 Where information in this Schedule is set out in brackets (namely “[” and “]”), and preceded by the expression “Example”, the information:

- (a) is provided to assist readers; and
- (b) may be used in interpreting this **Code**.

1.2 Application of Schedule 2

1.2.1 This Schedule defines the **performance indicators** for **electricity entities** that provide **network services**.

1.2.2 In particular, this Schedule specifies the way in which **data** is to be used to calculate those **performance indicators**.

1.2.3 This Schedule is separated into three sections; **transmission network performance indicators**, **distribution network performance indicators**, and transmission and distribution customer service **performance indicators**.

1.2.4 An **electricity entity** must calculate the **performance indicators**:

- (a) identified in the relevant tables of this Schedule; and
- (b) in accordance with the formulas set out in this Schedule.

1.2.5 The **data** used to calculate each **performance indicator** must correspond with the relevant **reporting period**.

1.3 Transmission Network Performance Indicators

1.3.1 Table 2:

- (a) lists the **performance indicators** to measure performance of the **transmission network** for the purposes of clause 4 of this **Code**;
- (b) identifies whether a **target standard** needs to be set for each **performance indicator** for the purposes of clause 3 of this **Code**; and
- (c) specifies the way in which the **performance indicators** are to be segmented for the purpose of setting **target standards** and reporting under this **Code**.

TABLE 2: TRANSMISSION NETWORK PERFORMANCE INDICATORS

Performance Indicator	Report	Segmentation	Target Standard	Segmentation
Average Circuit Outage Duration (ACOD) Unadjusted	Yes	Power System	Not Required	N/A
Average Circuit Outage Duration (ACOD) Adjusted	Yes	Power System	Yes	Transmission network

Frequency of Circuit Outages (FCO) Unadjusted	Yes	Power System	Not Required	N/A
Frequency of Circuit Outages (FCO) Adjusted	Yes	Power System	Yes	Transmission network
Average Transformer Outage Duration (ATOD) Unadjusted	Yes	Power System	Not Required	N/A
Average Transformer Outage Duration (ATOD) Adjusted	Yes	Power System	Yes	Transmission network
Frequency of Transformer Outages (FTO) Unadjusted	Yes	Power System	Not Required	N/A
Frequency of Transformer Outages (FTO) Adjusted	Yes	Power System	Yes	Transmission network
System Average Interruption Duration Index (SAIDI) Unadjusted	Yes	Power System	Not Required	N/A
System Average Interruption Duration Index (SAIDI) Adjusted	Yes	Power System	Not Required	N/A
System Average Interruption Frequency Index (SAIFI) Unadjusted	Yes	Power System	Not Required	N/A
System Average Interruption Frequency Index (SAIFI) Adjusted	Yes	Power System	Not Required	N/A

1.3.2 A **network outage** must be reported as starting when the **remote monitoring equipment** signals a loss of **supply**.

1.4 **Transmission network circuit performance indicators**

1.4.1 When calculating **transmission network circuit performance indicators**:

- (a) for each **power system** – only include a **network outage** if the **network outage** is caused by a **transmission network related event** that occurs on a part of the **transmission network** that forms part of the same **power system**; and
- (b) by **transmission network**:
 - (i) only include a **network outage** if the **network outage** is caused by a **transmission network related event** that occurred within the **transmission network**; and
 - (ii) exclude **network outages** that are caused by **transmission network connection assets**.

1.4.2 **Average Circuit Outage Duration (ACOD) Unadjusted**

$$\text{ACOD Unadjusted} = \left(\frac{\text{COD}}{\text{CO}} \right)$$

Where:

COD (or 'circuit outage duration') is the sum of the duration of each **network outage** expressed in minutes.

CO (or 'circuit outages') is the total number of **network outages**.

ACOD Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.4.1 of this Schedule 2.

1.4.3 Average Circuit Outage Duration (ACOD) Adjusted

$$\text{ACOD Adjusted} = \left(\frac{\text{COD}}{\text{CO}} \right)$$

Where:

COD (or 'circuit outage duration') is the sum of the duration of each **network outage** expressed in minutes.

CO (or 'circuit outages') is the total number of **network outages**.

ACOD Adjusted must be **adjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.4.1 of this Schedule 2.

1.4.4 Frequency of Transmission Circuit Outages (FCO) Unadjusted

$$\text{FCO Unadjusted} = \text{CO}$$

Where:

CO (or 'circuit outages') is the total number of **network outages**.

FCO Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.4.1 of this Schedule 2.

1.4.5 Frequency of Transmission Circuit Outages (FCO) Adjusted

$$\text{FCO Adjusted} = \text{CO}$$

Where:

CO (or 'circuit outages') is the total number of **network outages**.

FCO Adjusted must be **adjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.4.1 of this Schedule 2.

1.5 Transmission network transformer performance indicators

1.5.1 When calculating **transmission network transformer performance indicators**:

- (a) for each **power system** – only include **network outages** if the **network outage** is caused by a **transformer related event** that occurs on a part of the **transmission network** that forms part of the same **power system**; and
- (b) by **transmission network**:
 - (i) only include **network outages** if the **network outage** is caused by a **transformer related event** that occurred within the **transmission network**; and
 - (ii) exclude **network outages** caused by **transmission network connection assets**.

1.5.2 Average Transformer Outage Duration (ATOD) Unadjusted

$$\text{ATOD Unadjusted} = \left(\frac{\text{TOD}}{\text{TO}} \right)$$

Where:

TOD (or 'transformer outage duration') is the sum of the duration of each **network outage** expressed in minutes.

TO (or 'transformer outages') is the total number of **network outages**.

ATOD Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.5.1 of this Schedule 2.

1.5.3 Average Transformer Outage Duration (ATOD) Adjusted

$$\text{ATOD Adjusted} = \left(\frac{\text{TOD}}{\text{TO}} \right)$$

Where:

TOD (or 'transformer outage duration') is the sum of the duration of each **network outage** expressed in minutes.

TO (or 'transformer outages') is the total number of **network outages**.

ATOD Adjusted must be **adjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.5.1 of this Schedule 2.

1.5.4 Frequency of Transformer Outages (FTO) Unadjusted

$$\text{FTO Unadjusted} = \text{TO}$$

Where:

TO (or 'transformer outages') is the total number of **network outages**.

FTO Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.5.1 of this Schedule 2.

1.5.5 Frequency of Transformer Outages (FTO) Adjusted

$$\text{FTO Adjusted} = \text{TO}$$

Where:

TO (or 'transformer outages') is the total number of **network outages**.

FTO adjusted must be **adjusted**.

For the avoidance of doubt, **network outages** must be identified in accordance with clause 1.5.1 of this Schedule 2.

1.6 Transmission network reliability performance indicators

- 1.6.1 The **transmission network reliability performance indicators** in clause 1.6 of this Schedule are based on the reliability indices in the US Institute of Electrical and Electronics Engineers (IEEE) Standard 1366-2012.

1.6.2 A **network interruption** must be reported when the **remote monitoring equipment** signals a loss of **supply** or when the **customer** signals the loss of **supply** to the **electricity entity** whichever is the first to occur.

1.6.3 When calculating **transmission network** reliability **performance indicators** for each **power system**:

- (a) only include those **network interruptions** that are caused by a **transmission network related event** and occur on a part of the **transmission network** that forms part of the same **power system**; and
- (b) only include those **customers** who are supplied by the same **power system**.

1.6.4 **System Average Interruption Duration Index (SAIDI) Unadjusted**

$$\text{SAIDI Unadjusted} = \left(\frac{\text{ID}}{\text{CS}} \right)$$

Where:

ID (or 'interruption duration') is the sum of the duration of each **network interruption** expressed in minutes.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** at the end of the **reporting period**.

SAIDI Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.6.3 of this Schedule 2.

1.6.5 **System Average Interruption Duration Index (SAIDI) Adjusted**

$$\text{SAIDI Adjusted} = \left(\frac{\text{ID}}{\text{CS}} \right)$$

Where:

ID (or 'interruption duration') is the sum of the duration of each **network interruption** expressed in minutes.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** at the end of the **reporting period**.

SAIDI Adjusted must be **adjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.6.3 of this Schedule 2.

1.6.6 **System Average Interruption Frequency Index (SAIFI) Unadjusted**

$$\text{SAIFI Unadjusted} = \left(\frac{\text{TI}}{\text{CS}} \right)$$

Where:

TI (or 'total interruptions') is the total number of **network interruptions**.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**.

SAIFI Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.6.3 of this Schedule 2.

1.6.7 System Average Interruption Frequency Index (SAIFI) Adjusted

$$\text{SAIFI Adjusted} = \left(\frac{\text{TI}}{\text{CS}} \right)$$

Where:

TI (or 'total interruptions') is the total number of **network interruptions**.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**.

SAIFI Adjusted must be **adjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.6.3 of this Schedule 2.

1.7 Distribution Network Reliability Performance Indicators

1.7.1 Table 3:

- (a) lists the **performance indicators** to measure performance of the **distribution network** for the purpose of clause 4 of this **Code**;
- (b) identifies whether a **target standard** needs to be set for each **performance indicator** for the purpose of clause 3 of this **Code**; and
- (c) specifies the way in which the **performance indicators** are to be segmented for **target standard** setting and reporting under this **Code**

TABLE 3: DISTRIBUTION NETWORK PERFORMANCE INDICATORS

Performance Indicator	Report	Segmentation	Target Standard	Segmentation
System Average Interruption Duration Index (SAIDI) Unadjusted	Yes	Region and Feeder Category	Not Required	N/A
System Average Interruption Duration Index (SAIDI) Adjusted	Yes	Region and Feeder Category	Yes	Feeder Category
System Average Interruption Frequency Index (SAIFI) Unadjusted	Yes	Region and Feeder Category	Not Required	N/A
System Average Interruption Frequency Index (SAIFI) Adjusted	Yes	Region and Feeder Category	Yes	Feeder Category

Poorly Performing Feeders	Yes	Individual Feeder	Not Required	N/A
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- 1.7.2 The **distribution network** reliability **performance indicators** in clause 1.7 of this Schedule are based on the reliability indices in the US Institute of Electrical and Electronics Engineers (IEEE) Standard 1366-2012.
- 1.7.3 A **network interruption** must be reported when the **remote monitoring equipment** signals a loss of **supply** or when the **customer** signals the loss of **supply** to the **electricity entity** whichever is the first to occur.
- 1.7.4 For the purpose of calculating **distribution network performance indicators**:
- (a) for each **region**:
- (i) only include those **network interruptions** that are caused by a **distribution network related event** and occur on a part of the **distribution network** that is within the boundaries of the same **region**; and
- (ii) only include those **customers** (excluding **transmission customers**) who receive **supply** from within the boundaries of the same **region**; and
- (b) for **feeder category**:
- (i) only include those **network interruptions** that are caused by individual feeders that are part of the same **feeder category**; and
- (ii) only include those **customers** (excluding **transmission customers**) who are supplied by a group of individual feeders that are part of the same **feeder category**.

1.7.5 **System Average Interruption Duration Index (SAIDI) Unadjusted**

$$\text{SAIDI Unadjusted} = \left(\frac{\text{ID}}{\text{CS}} \right)$$

Where:

ID (or 'interruption duration') is the sum of the duration of each **network interruption** expressed in minutes.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**

SAIDI Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.7.4 of this Schedule 2.

1.7.6 **System Average Interruption Duration Index (SAIDI) Adjusted**

$$\text{SAIDI Adjusted} = \left(\frac{\text{ID}}{\text{CS}} \right)$$

Where:

ID (or 'interruption duration') is the sum of the duration of each **network interruption** expressed in minutes.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**

SAIDI Adjusted must be **adjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.7.4 of this Schedule 2.

1.7.7 System Average Interruption Frequency Index (SAIFI) Unadjusted

$$\text{SAIFI Unadjusted} = \left(\frac{\text{TI}}{\text{CS}} \right)$$

Where:

TI (or 'total interruptions') is the total number of **network interruptions**.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**.

SAIFI Unadjusted must be **unadjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.7.4 of this Schedule 2.

1.7.8 System Average Interruption Frequency Index (SAIFI) Adjusted

$$\text{SAIFI Adjusted} = \left(\frac{\text{TI}}{\text{CS}} \right)$$

Where:

TI (or 'total interruptions') is the total number of **network interruptions**.

CS (or 'customers supplied') is the average of the number of all **customers** supplied at the beginning of the **reporting period** and the number of all **customers** supplied at the end of the **reporting period**.

SAIFI Adjusted must be **adjusted**.

For the avoidance of doubt, **network interruptions** and **customers** must be identified in accordance with clause 1.7.4 of this Schedule 2.

1.7.9 Poorly Performing Feeders

To determine whether an individual feeder has performed poorly in a **reporting period**, the 'SAIDI Performance Ratio' for the individual feeder must be determined:

$$\text{SAIDI Performance Ratio} = \left(\frac{\text{SAIDI Performance of Individual Feeder}}{\text{SAIDI Target Standard of Individual Feeder's Feeder Category}} \right)$$

Where:

SAIDI Performance of individual feeder is:

$$\left(\frac{\text{ID}}{\text{CS}} \right)$$

Where:

ID (or 'interruption duration') is the sum of the duration of each **network interruption** expressed in minutes and caused by the individual feeder.

CS (or ‘customers supplied’) is the average of the number of all **customers** supplied by the individual feeder at the beginning of the **reporting period** and the number of all **customers** supplied by the individual feeder at the end of the **reporting period**.

SAIDI Performance of individual feeder must be **adjusted**.

For the avoidance of doubt **network interruptions** and **customers** must be identified in accordance with clause 1.7.4 of this Schedule 2.

SAIDI **target standard** of individual feeder’s **feeder category** is the **target standard** approved by the **Commission** (and in effect for the relevant **reporting period**) for the individual feeder’s **feeder category**.

This formula must be applied to the current **reporting period** and the previous **reporting period**.

If the SAIDI Performance Ratio for an individual feeder exceeds the **SAIDI threshold** in at least two consecutive **reporting periods** (including the current **reporting period**), the individual feeder will be deemed to have performed poorly in the current **reporting period**.

After determining the individual feeders that have performed poorly, the relevant **electricity entity** must provide the following information to the **Commission**:

- (a) the SAIDI Performance Ratio that was used to identify each individual feeder that has performed poorly;
- (b) the total number of individual feeders that have performed poorly; and
- (c) a statement that explains the poor SAIDI performance of each of these individual feeders for the current **reporting period** and the action the **electricity entity** intends to take to improve the poor SAIDI performance of these individual feeders for the next **reporting period**.

1.8 Transmission and Distribution Customer Service Performance indicators

1.8.1 Table 4:

- (a) lists the **performance indicators** to measure **customer** performance of the relevant **electricity entity**; and
- (b) specifies the way in which the **performance indicators** are to be segmented for the purpose of reporting under this **Code**.

TABLE 4: TRANSMISSION AND DISTRIBUTION CUSTOMER SERVICE PERFORMANCE INDICATORS

Performance Indicator	Report	Segmentation
Connections	Yes	CBD area/urban area; rural area
Phone Answering	Yes	NT
Network Complaints	Yes	Region
Written Enquiries	Yes	Region

1.8.2 Connections

- (a) The **performance indicators** are:

- (i) the percentage and total number of re-connections not undertaken within 24 **hours** of receipt by the **network provider** of a valid request for re-connection from the **customer**;
- (ii) the percentage and total number of new connections not undertaken in the **CBD area** or **urban areas** within 5 **business days** of receipt of a valid electrical certificate of compliance issued under Part 5 of the **ERA** from the **customer** or as otherwise agreed with the **customer**, excluding connections to new subdivisions where minor extensions or augmentation is required;
- (iii) the percentage and total number of new connections in **rural areas** not undertaken within 10 **business days** of receipt of a valid electrical certificate of compliance issued under Part 5 of the **ERA** from the **customer**, or as otherwise agreed with the **customer** excluding connections to new subdivisions where minor extensions or augmentation is required; and
- (iv) the number and average length of time taken to provide new connections in **urban areas** to new subdivisions where minor extensions or augmentation is required.

1.8.3 Phone Answering

- (a) The **performance indicators** are:
 - (i) the average time taken to answer the phone;
 - (ii) the percentage and total number of calls not answered within 30 seconds of caller asking to talk to a person; and
 - (iii) the percentage and total number of calls abandoned.
- (b) Where relevant, and unless the **Commission** otherwise considers appropriate, the results will be a combined total for both **PAWC Networks** and **PAWC Retail**.

1.8.4 Network Complaints:

- (a) The **performance indicators** are:
 - (i) the percentage and total number of **complaints** associated with **transmission network** and **distribution network** related activities segmented into **complaint categories**; and
 - (ii) the percentage and total number of **complaints** associated with the **transmission network** and **distribution network** quality of **supply** issues.

1.8.5 Written Enquiries

The **performance indicator** is the average time taken to respond to a **customer's written** enquiry.

Schedule 3 – **RETAIL SERVICES PERFORMANCE INDICATORS**

1.1 **Retail Services Performance Indicators**

1.1.1 This Schedule defines the **performance indicators** for **electricity entities** that provide **retail services**.

1.1.2 Table 5:

- (a) lists the **performance indicators** to measure **customer** performance of an **electricity entity** that provides **retail services**; and
- (b) specifies the way in which the **performance indicators** are to be segmented for the purposes of reporting under this **Code**.

1.1.3 For the purpose of calculating retail services **performance indicators**:

- a) for Phone Answering, **Complaints** and **Written Enquiries** – only include those **customers** that are taking (or likely to take less than) 160 megawatt hours of electricity from the **distribution network** during the **reporting period**; and
- b) for **Hardship** – only include those **residential customers** that are taking (or likely to take less than) 160 megawatt hours of electricity from the **distribution network** during the **reporting period**.

TABLE 5: RETAIL SERVICES PERFORMANCE INDICATORS

Performance Indicator	Report	Segmentation
Phone Answering	Yes	NT
Complaints	Yes	Region
Hardship	Yes	Region
Written Enquiries	Yes	Region

1.1.4 The **data** used to calculate each **performance indicator** must correspond with the **reporting period**.

1.1.5 **Phone Answering**

- (a) The **performance indicators** are:
 - (i) the average time taken to answer the phone;
 - (ii) the percentage and total number of calls not answered within 30 seconds of the caller asking to talk to a person; and
 - (iii) the percentage and total number of calls abandoned.
- (b) Where relevant, and unless the **Commission** otherwise considers appropriate, the results will be a combined total for **PAWC Networks** and **PAWC Retail**.

1.1.6 **Complaints**

The **performance indicator** is the percentage and total number of **complaints**, associated with **retail services** segmented into **complaint categories**.

1.1.7 Customer hardship measures

- (a) The **performance indicators** are:
- (i) the total number of disconnections for failure to pay and reconnections in same name; and
 - (ii) the total number of **customer** service **complaints** associated with customer **hardship** measures;
 - (iii) performance measures associated with a **customer hardship program** including:
 - 1) number of **customers** on a **customer hardship program** at the end of the **reporting period**;
 - 2) For the purpose of clause 1.1.7 (a) (iii) (1), the number of **customers** must be segmented into **customers** with an average **electricity bill** that is:
 - I. between \$0 and \$500;
 - II. over \$500 but less than \$1 500;
 - III. \$1 500 but less than \$2 500; and
 - IV. \$2 500 or more;
 - 3) number of **customers** that completed a **customer hardship program**. A **customer** has completed a **customer hardship program** if the **customer** no longer meets the eligibility criteria (as defined in the relevant **customer hardship program**) due to the **customer's** participation in that **customer hardship program**;
 - 4) number of **customers** that exited a **customer hardship program**. A **customer** has exited the relevant **customer hardship program** if the **customer** has come to an agreement with the relevant **electricity entity** to exit that **customer hardship program**.
 - 5) number of **customers** that were removed from a **customer hardship program**. A **customer** has been removed from the relevant **customer hardship program** if (in the relevant **electricity entity's** reasonable opinion) the **customer** has not complied with its obligations under that **customer hardship program**.
 - 6) number of **customers** on a **customer hardship program** that received **hardship** vouchers or equivalent under (and as defined in) the relevant **customer hardship program**;
 - 7) number of **customers** on a **customer hardship program** that ceased to be a **customer** under a contract for **supply** with a relevant **electricity entity**;
 - 8) number of **customers** that applied for a **customer hardship program** and had their application refused by a relevant **electricity entity**. An application is refused when a **customer** does not (in the **electricity entity's** reasonable opinion) meet the eligibility criteria in the relevant **customer hardship program**; and
 - 9) the average **electricity bill** of all **customers** who were on the **customer hardship program**, as identified in clause 1.1.7 (a) (iii) (1) of this Schedule 3;

1.1.8 **Written Enquiries**

- (a) The ***performance indicator*** is the average time taken to respond to a ***customer's written*** enquiry.

Schedule 4 – Definitions and Interpretation

“**Act**” means the *Utilities Commission Act*;

“**adjusted**” means to exclude all **network outages** that meet the requirements of clause 6.2 of this **Code**;

“**applicable regulatory instruments**” means the **Act**, the **ERA**, the **ENTPA Act**, any regulation made under those Acts, any condition of a licence issued to an **electricity entity** or any other code, rule, determination or relevant statutory instrument made by the **Commission** under the **Act**;

“**best endeavours**” means to act in good faith and use all reasonable efforts, skill and resources;

“**bulk supply point**” means a major substation where **transformers** reduce the **transmission network** voltage to a lower level suitable for the **distribution network**;

“**business day(s)**” means a day which is not a Saturday, Sunday or observed as a public holiday in the Northern Territory;

“**CBD area(s)**” means the area identified as the ‘CBD area’ in a map published by the **network provider** or as otherwise directed by the **Commission**;

“**CBD feeders**” means any feeder which forms part of the **regulated network** and is located within the **CBD area** or as otherwise directed by the **Commission**;

“**Code**” means this Electricity Standards of Service Code;

“**Commencement Date**” means the date on which this **Code** is gazetted, or a later date specified in that gazette as the date upon which this **Code** will commence operation;

“**Commission**” means the Utilities Commission of the Northern Territory established under the **Act**;

“**complaint**” means written or verbal expression of dissatisfaction about an action, or a proposed action, or a failure to act by an **electricity entity**, its employees, agents or contractors, and includes failure by an **electricity entity** to observe its published or agreed practices or procedures;

“**complaint category**” means the type of complaint specified by the relevant **electricity entity** which accurately reflects the type of dissatisfaction expressed by the **customer**;

“**connection point**” has the meaning given in the **ENTPA Act**;

“**customer(s)**” has the meaning given in the **ERA**;

“**customer hardship program**” is a scheme that is governed by an **electricity entity** that provides **retail services** and includes policies on any of the following matters:

- a) processes to identify **customers** experiencing payment difficulties due to **hardship**, including identification by the relevant **electricity entity** and self-identification by a **customer**;
- b) process for early response by the relevant **electricity entity** in cases where **customers** are identified as experiencing payment difficulties due to **hardship**;
- c) flexible payment options (including a prepayment plan) for the payment of **electricity bills** by **hardship customers**;
- d) processes to identify appropriate government concession programs and appropriate financial counselling services and to notify **hardship customers** of those programs and services;
- e) an outline of a range of programs that the relevant **electricity entity** may use to assist **hardship customers**;

- f) process to review the appropriateness of a **hardship customer's** contract of **supply** in accordance with the purpose of the **customer hardship policy**;
- g) processes or programs to assist **customers** with strategies to improve their energy efficiency, where such processes or programs are required under an **applicable regulatory instrument**; and
- h) and other matter required by an **applicable regulatory instrument**;

“**data**” means the data that results from measuring the performance of **generation services**, **network services**, or **retail services** for the purpose of complying with the reporting requirements of this **Code**;

“**distribution assets**” include:

- (a) distribution lines including all poles and associated hardware;
- (b) terminating switchgear (circuit breakers and isolators) including associated protection and controls;
- (c) **transformers** between **distribution network** voltage levels;
- (d) switchgear for the above **transformers**; and
- (e) underground cable systems including conduits and trenching;

“**distribution network connection assets**” include:

- (a) service lines plus meters for **customers** that are taking (or likely to take less than) 160 megawatt hours of electricity from the **distribution network** in a **financial year**; and
- (b) service lines, high voltage lines and plant, meters, dedicated **distribution network transformers** and associated switchgear for **customers** that are taking (or likely to take more than) 160 megawatt hours of electricity from the **distribution network** in a **financial year**;

“**distribution network**” means that part of the **regulated network** that is not part of the **transmission network** and includes **distribution assets** and **distribution network connection assets** owned or operated by the relevant **network provider**;

“**distribution network related event**” means any event caused by assets or equipment within the **distribution network** that affects the conveyance or the control of conveyance of electricity within the **distribution network**;

“**electricity bill**” means the monetary amount billed to a **customer** in accordance with the relevant contract of **supply** between that **customer** and an **electricity entity**. For the avoidance of doubt, the monetary amount may be calculated through a meter reading at the relevant premises or an estimated meter reading for that premises;

“**electrical installation**” has the meaning given in the **ERA**;

“**electricity entity/entities**” has the meaning given in the **ERA**;

“**electricity network** or **network assets/facilities**” has the meaning given in the **ENTPA Act**;

“**electricity supply industry**” has the meaning given in the **ERA**;

“**ENTPA Act**” means the *Electricity Networks (Third Party Access) Act*;

“**entry point**” has the meaning given under the **ENTPA Act**;

“**ERA**” means the *Electricity Reform Act*;

“**equivalent partial outage hours**” is calculated in accordance with the ‘equivalent partial outage hours’ formula in Schedule 1 and represents the number of **hours** that a **generating unit** is **unavailable** due to a **generation outage** that results in a **unit derating**;

“**feeder category**” means any of the following:

- (a) **CBD feeders**;

- (b) **urban feeders**;
- (c) **rural long feeders**; and
- (d) **rural short feeders**;

“**financial year**” means a year commencing 1 July and ending 30 June;

“**forced outage**” means a **generation outage** (that is not a **partial forced outage**) of a **generating unit** caused by a **generation event** that requires the performance of breakdown maintenance or repairs in relation to that **generating unit** which can not be delayed until the next period of reduced **power system** demand as determined by the **System Controller**;

“**generator or generation unit/facilities**” has the meaning given in the **ENTPA Act**;

“**generation event(s)**” means any event caused by a **generator or generation unit/facilities** that affect a **generating unit’s operating capacity** but excludes events caused by assets or equipment that are outside **plant management control** as determined by the relevant **electricity entity**;

“**generation interruption**” means a **generation outage** that results in a temporary unavailability or temporary curtailment of **supply** to a **customer** by the relevant **generator** and excludes **generation interruptions** that are less than one (1) minutes duration;

“**generation outage**” means any full or partial unavailability of a **generating unit**, or related equipment and excludes **generation outages** that are less than one (1) minutes duration;

“**generation services**” means the services provided by an **electricity entity** that is licensed to generate electricity for sale under the **ERA** and excludes the services provided by an **Independent Power Producer**;

“**generating unit/facilities**” has the meaning given in the **ENTPA Act**;

“**good electricity industry practice**” means the exercise of that degree of skill, diligence, prudence and foresight that would reasonably be expected from a significant portion of **electricity entities** carrying on operations in the **electricity supply industry** under conditions comparable to those applicable to the relevant **electricity entity** consistent with the **applicable regulatory instruments**, safety and environmental protection. The determination of comparable conditions is to take into account factors such as the relative size, duty, age and technological status of the relevant **electricity entity** and the **applicable regulatory instruments**;

“**gross maximum capacity**” is the ‘gross maximum capacity’ value for a **generating unit** expressed in MWs and calculated in accordance with US Institute of Electrical and Electronics Engineers (IEEE) Standard 762-2006;

“**hardship**” includes financial **hardship**;

“**hour(s)**” means 60 minutes or part thereof;

“**IEEE 2.5 Beta Method**” means the 2.5 method described in the US Institute of Electrical and Electronics Engineers (IEEE) Standard 1366-2012;

“**Independent Power Producer**” means an **electricity entity** identified as an ‘Independent Power Producer’ in the relevant generation licence issued by the **Commission** in accordance with the **ERA**;

“**Interpretation Act**” means the *Interpretation Act*;

“**load shedding**” has the meaning given in the **System Control Technical Code**;

“**Minister**” means the Minister of the Crown who is responsible for the administration of the **ERA**;

“**network interruption**” means a **network outage** that results in a temporary unavailability or temporary curtailment of **supply** to a **customer** by the relevant network and excludes **network interruptions** that are less than one (1) minutes duration;

“**network outage**” means any full or partial unavailability of apparatus, equipment, plan and buildings used to convey, and control the conveyance of electricity and excludes **network outages** that are less than one (1) minutes duration;

“**network services**” has the meaning given in the **ERA**;

“**network provider**” has the meaning given under the **ENTPA Act**;

“**operating capacity**” is the reduction of a **generating unit’s** output from its **gross maximum capacity**;

“**partial forced outage**” means a **generation outage** (that is not a **forced outage**) of a **generating unit** that results in a **unit derating** that requires the performance of breakdown maintenance or repairs in relation to that **generating unit** which can not be delayed until the next period of reduced **power system** demand as determined by the **System Controller**;

“**partial unplanned outage**” means an **unplanned outage** that results in a **unit derating**;

“**partial planned outage**” means a **planned outage** that results in a **unit derating**;

“**performance indicators**” means the ‘**performance indicators**’ prescribed in Schedules 1 to 3 of this **Code**;

“**planned outage**” means a **generation outage** that is planned in advance and notified to **System Control** in accordance with the **System Control Technical Code**;

“**plant management control**” is the methodology in the US Institute of Electrical and Electronics Engineers (IEEE) Standard 762-2006 that is used to determine causes that are internal or external to plant operation and equipment;

“**Power and Water Corporation**” has the meaning given in the **ENTPA Act**;

“**PAWC Networks**” has the meaning given in the **ENTPA Act**;

“**PAWC Retail**” means the business division of the **Power and Water Corporation** responsible for the operation of **retail services** operated by the **Power and Water Corporation**;

“**power station**” means the electricity generating plant identified as a ‘power station’ in a generation licence issued by the **Commission** in accordance with the **ERA**, which is connected to a **regulated network**, and excludes minor **power stations** as specified by the **Commission**;

“**power system**” means:

- (a) the Darwin-Katherine power system;
- (b) Tennant Creek power system; and
- (c) Alice Springs power system;

“**remote monitoring equipment**” includes faulted circuit indicators (or equivalent) and related equipment commonly used to monitor **network outages**;

“**reporting period**” means the reporting period that corresponds with the reporting requirements in clause 4 of this **Code**;

“**residential customer**” means a **customer** who purchases electricity principally for its own personal, household or domestic use at premises;

“**responsibility statement**” means a statement in the form of the template set out in Schedule 6, completed, signed, and dated by the Chief Executive Officer or a delegate of the Chief Executive Officer of an **electricity entity**;

“**retail services**” means the services provided by an **electricity entity** that is licensed to trade in electricity and to retail electricity to **customers** under the **ERA**;

“**regulatory control period**” has the meaning given under the **ENTPA Act**;

“**regulated network**” means an electricity network prescribed by the **Minister** by notice in the Gazette as an electricity network covered by the Network Access Code in accordance with the **ENTPA Act**. For the avoidance of doubt, the **regulated network** ceases at the **electrical installation**;

“**region**” includes the:

- (a) Darwin region;
- (b) Katherine region;
- (c) Tennant Creek region; and
- (d) Alice Springs region;

“**rural area**” means the area identified as the “rural area” in the map published by the **network provider** or as otherwise directed by the **Commission**;

“**rural long feeders**” means any feeder which forms part of the **regulated network** and is located within the **rural area** and has a total route length of more than 200 kilometres or as otherwise directed by the **Commission**;

“**rural short feeders**” means any feeder which forms part of the **regulated network** and is located within the **rural area** and is not classified as a **rural long feeder** or as otherwise directed by the **Commission**;

“**SAIDI threshold**” means a multiple of a **distribution network** feeder’s **target standard** as directed by the **Commission**;

“**supply**” means the supply of electricity;

“**System Controller**” has the meaning given under the **ERA**;

“**System Control Technical Code**” means the code of that name authorised by the **Commission** and published by the **Power and Water Corporation**;

“**target standard**” means a standard of performance which is approved by the **Commission** from time to time in accordance with clause 3 of this **Code**;

“**transmission assets**” include:

- (a) transmission lines;
- (b) switchgear (circuit breakers and isolators) on transmission lines and **transformers** which form part of the **transmission network**;
- (c) **transformers** which transform voltage between transmission levels;
- (d) any dynamic reactive plant and associated switchgear and transformation regardless of voltage level;
- (e) all existing static reactive plant and associated switchgear; and
- (f) all system controls required for monitoring and control of the integrated transmission system – this includes remote monitoring and associated communications, load shedding and special control schemes and voltage regulating plan required for operation of the system;

“**transmission customer**” means a **customer** having a **connection point** with the **transmission network**;

“**transmission network**” means that part of the **regulated network** that operates at a high voltage level suitable for the **transmission network** to convey electricity from the relevant **entry point** to the **bulk supply point** and to **supply transmission customers**, and includes the **bulk supply points**, **transmission assets** and **transmission network connection assets** owned or operated by the relevant **network provider**;

“transmission network connection assets” are assets used to supply **transmission customers** at the interface between the **transmission customer’s** facility and the **transmission network** (including transmission lines connecting a **generation unit/facility** to **transmission assets**);

“transmission network related event” means any event caused by assets or equipment within the **transmission network** that affects the conveyance or the control of conveyance of electricity within the **transmission network**;

“transformer” means a facility or device that reduces or increases the voltage of alternating current;

“transformer related event” means a **transmission network related event** that is caused by a **transformer** and affects the conveyance of electricity within the **transmission network**;

“unadjusted” means to include all **network outages** that would normally be excluded if **adjusted**;

“unit derating” for a **generating unit** is when the **generating unit** is partially operational and its output is the **unit derating value**;

“unit derating value” for a **generating unit** is the ‘unit derating’ expressed in MWs and calculated in accordance with US Institute of Electrical and Electronics Engineers (IEEE) Standard 762-2006;

“unplanned outage” means a **generation outage** that is not a **planned outage**;

“urban area” means the area identified as the “urban area” in a map published by the **network provider** or as otherwise directed by the **Commission**;

“urban feeders” means any feeder which forms part of the **regulated network** and is located within the **urban area** or as otherwise directed by the **Commission**; and

“written” includes any electronic communication capable of being reduced to paper form by being printed.

Schedule 5 – Transitional provisions

1.1 **Target standards 2009-14 regulatory control period**

1.1.1 This Schedule applies to the:

- (a) approval of **target standards**; and
- (b) reporting of actual performance against the **target standards**,

for the remainder of the 2009-14 **regulatory control period**.

1.1.2 The remainder of the 2009-14 **regulatory control period** will be the period commencing on the **Commencement Date** and ceasing immediately prior to the commencement of the 2014-19 **regulatory control period**.

1.1.3 Unless the **Commission** otherwise considers appropriate, any minimum standards approved by the **Commission** and in force prior to the **Commencement Date** will not apply to this **Code** and will immediately cease to apply.

1.1.4 A reference to minimum standards is taken to be a reference to the minimum standards approved by the **Commission** under the revoked Standards of Service Code in force immediately prior to the **Commencement Date**.

1.1.5 An **electricity entity** that provides **network services** must within 3 months of the **Commencement Date** submit to the **Commission** proposed **target standards** for the remainder of the 2009-14 **regulatory control period**.

1.1.6 The proposed **target standards** submitted under clause 1.1.5 of this Schedule 5 must:

- (a) include the **performance indicators** requiring a **target standard** in Schedule 2;
- (b) be calculated in accordance with clause 3.1.3 of this **Code**; and
- (c) be segmented in accordance with clause 6 of this **Code**.

1.1.7 Subject to clause 1.1.8 of this Schedule 5, the **Commission** may approve the proposed **target standards** submitted to the **Commission** under clause 1.1.5 of this Schedule 5 in accordance with clause 3.1.5 and clause 3.1.6 of this **Code**.

1.1.8 If the **Commission** does not approve the proposed **target standards** submitted to the **Commission** under clause 1.1.7 of this Schedule 5, the **Commission** may:

- (a) set **target standards** for each **network service performance indicator** requiring a **target standard** in any way the **Commission** sees fit; or
- (b) waive any of the requirements of this Schedule 5.

1.1.9 Nothing in this Schedule 5 will derogate from any other obligation under this **Code**.

Schedule 6 – *Responsibility Statement*

Responsibility Statement

This report has been prepared by [name of **electricity entity**] with all due care and skill in accordance with the requirements of the Electricity Standards of Service Code issued by the Utilities Commission of the Northern Territory.

The report covers the **reporting period** from [date] to [date] during which period [name of **electricity entity**] had effective policies, systems and procedures in place to monitor compliance with the Electricity Standards of Service Code in accordance with its license.

This report includes:

- If applicable, a list of the **target standards** relevant to [name of **electricity entity**] as agreed with the Utilities Commission of the Northern Territory on [date];
- If applicable, a list of **performance indicators** relevant to [name of **electricity entity**] which failed to meet the **target standards**; and
- A list of the results achieved for all **performance indicators** relevant to [name of **electricity entity**] for the period of this report;

Date:

Signed:

Print name:

Chief Executive/Delegate of Chief Executive Officer

Failure to comply with the Electricity Standards of Service Code is a breach of the licence and the Electricity Reform Act and may attract civil penalties. The Utilities Commission Act and the Electricity Reform Act makes it a serious offence to give false or misleading information to the Utilities Commission. If a corporation contravenes this obligation, each director of the corporation is also taken to have contravened this obligation to comply.