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Mr Alan Tregilgas
Utilities Commissioner
Utilities Commission
5th Floor, Cavenagh Street
Darwin NT 0800

Dear Utilities Commissioner

**Re: Standards of Service Code - Initial Minimum Standards for Reliability
Standards Indicators**

Please find attached the Power and Water Corporation's proposed Initial Minimum Standards for Reliability Standards Indicators in accordance with the Utilities Commission's NT Electricity Standards of Service Code (the Code).

As required by the Code, the Initial Minimum Standards proposed have been set in reference to Power and Water's actual performance in 1999/2000, where reliable data is available. Where Alternative Minimum Standards have been proposed, justification has been provided.

Please contact Mr Darren Nelson, Manager Economic Regulation and Services, on (08) 8985 8444 and/or at darren.nelson@powerwater.com.au if you have any further queries.

Yours sincerely



Kim Wood
Managing Director

24 May 2006

GPO Box 1921 Darwin NT 0801



STANDARDS OF SERVICE INITIAL MINIMUM STANDARDS RELIABILITY STANDARDS INDICATORS

MAY 2006

Power and Water Corporation
GPO Box 1921, Darwin NT 0801

1. SYSTEM-WIDE RELIABILITY

Schedule 1 (1.5) of the Utilities Commission's Standards of Service Code requires the Power and Water Corporation (PWC) to report on system-wide reliability under the following categories:

- (a) *distribution and transmission system* (Network Reliability); and
- (b) *generation (interruptions due to generation deficiency resulting in load shedding)* (Generation Reliability)

1.1 NETWORK RELIABILITY

Schedule 1 (1.4) and Schedule 2 (1.2) of the Standards of Service Code requires PWC's Initial Minimum Standards to be set by reference to actual performance in 1999-2000 for the following network reliability indicators:

- (a) *the average minutes of off-supply per customer ("interruption duration")*

AVERAGE MINUTES OF OFF-SUPPLY PER CUSTOMER (ie. NETWORK SAIDI¹)	1999-2000 ACTUAL PERFORMANCE ²	PROPOSED MINIMUM STANDARD
Darwin	219.9	219.9
Katherine	401.0	401.0
Tennant Creek	411.0	411.0
Alice Springs	108.0	108.0

- (b) *the average number of interruptions per customer ("interruption frequency")*

AVERAGE NUMBER OF INTERRUPTIONS PER CUSTOMER (ie. NETWORK SAIFI³)	1999-2000 ACTUAL PERFORMANCE ²	PROPOSED MINIMUM STANDARD
Darwin	4.2	4.2
Katherine	9.6	9.6
Tennant Creek	9.8	9.8
Alice Springs	2.9	2.9

- (c) *the average interruption duration per customer*

AVERAGE INTERRUPTION DURATION PER CUSTOMER (ie. NETWORK CAIDI⁴)	1999-2000 ACTUAL PERFORMANCE ²	PROPOSED MINIMUM STANDARD
Darwin	52.0	52.0
Katherine	42.0	42.0
Tennant Creek	41.8	41.8
Alice Springs	37.2	37.2

¹ SAIDI = System Average Interruption Duration Index

² These figures exclude load sheds and momentary interruptions, and there was no abnormal event.

³ SAIFI = System Average Interruption Frequency Index

⁴ CAIDI = Customer Average Interruption Duration Index

1.2 GENERATION RELIABILITY

Schedule 1 (1.4) and Schedule 2 (1.2) of the Standards of Service Code requires PWC's Initial Minimum Standards to be set by reference to actual performance in 1999-2000 for the following generation reliability indicators:

(a) the average minutes of off-supply per customer ("interruption duration")

AVERAGE MINUTES OF OFF-SUPPLY PER CUSTOMER (ie. GENERATION SAIDI¹)	1999-2000 ACTUAL PERFORMANCE ²	PROPOSED MINIMUM STANDARD
Darwin	9.5	42.7
Katherine	7.0	25.7
Tennant Creek	125.0	125.0
Alice Springs	13.0	122.5

(b) the average number of interruptions per customer ("interruption frequency")

AVERAGE NUMBER OF INTERRUPTIONS PER CUSTOMER (ie. GENERATION SAIFI³)	1999-2000 ACTUAL PERFORMANCE ²	PROPOSED MINIMUM STANDARD
Darwin	1.3	3.9
Katherine	0.2	1.1
Tennant Creek	12.5	12.5
Alice Springs	1.7	3.6

(c) the average interruption duration per customer

AVERAGE INTERRUPTION DURATION PER CUSTOMER (ie. GENERATION CAIDI⁴)	1999-2000 ACTUAL PERFORMANCE ²	PROPOSED MINIMUM STANDARD
Darwin	7.6	10.9
Katherine	32.8	24.5
Tennant Creek	10.0	10.0
Alice Springs	7.6	34.2

¹ SAIDI = System Average Interruption Duration Index

² These figures exclude momentary interruptions, and there was no abnormal event in that year.

³ SAIFI = System Average Interruption Frequency Index

⁴ CAIDI = Customer Average Interruption Duration Index

1.3 JUSTIFICATION FOR PWC'S PROPOSED GENERATION RELIABILITY ALTERNATIVE MINIMUM STANDARDS

(as compared to PWC's 1999-2000 actual performance)

PWC have proposed Alternative Minimum Standards as PWC's generation reliability historic data (including 1999-2000) has never been audited. Additionally, the accuracy of PWC's historic generation reliability statistics is influenced by the role that System Control and Networks play in the re-connection of customers after load shedding.

Historic data shows a general decrease in reliability over the past six years. This is mainly due to aging plant. PWC have budgeted significant capital expenditure for Generation over the next four years to augment the aging plant and expect generation reliability to improve over this period.

PWC have taken a conservative approach, by proposing the Initial Minimum Standards for Generation reliability in reference to the standards of service for the worst performance year since 1999-2000 for each of the regions. PWC propose to monitor and audit this data over the next two years and may then propose revised standards. PWC will seek to achieve reliability improvements over this period.

A conservative approach is preferable because if the Initial Minimum Standards are set at levels that are too high, the cost of compliance will be considerable, involving major capital expenditure (above PWC's budgeted expenditure) and significant additional operating costs to increase plant reserve margins and spinning reserve.

2. POORLY PERFORMING FEEDERS

Schedule 1 (1.7) and Schedule 2 (1.2) of the Standards of Service Code requires the PWC Initial Minimum Standards to be set by reference to actual performance in 1999-2000 for the following indicators of poorly performing feeders:

- (a) the number of feeders that experience more than x interruptions per year;*
- (b) the percentage of consumers supplied by feeders that experience more than x interruptions per year;*
- (c) the number of feeders that experience more than y minutes of interruptions per year.*

Data relating to poorly performing feeders was not measured accurately in 1999-00. It is therefore necessary for PWC to propose Alternative Minimum Standards. PWC's Alternative Minimum Standards for poorly performing feeders is based on past performance and the performance of Power and Water's closest peer, Ergon Energy.

2.1 "x" INTERRUPTIONS AND "y" MINUTES OF INTERRUPTIONS

Most jurisdictions set an annual SAIDI and SAIFI threshold by feeder type in order to identify the worst performing feeders, or target a set percentage of their worst performing feeders, and as such do not set a specific "x" or "y" value. Ergon Energy's Guaranteed Service Levels (GSL) scheme has been used as a basis in setting PWC's "x" interruptions and "y" minutes of interruptions. Ergon has been selected due to its similar network and operating environment as compared to PWC. Ergon and PWC operate in regional areas with similar climatic and weather conditions, and cover similar distances and networks characteristics.

Separate values for "x" and "y" have been selected for interconnected distribution networks (Darwin - Urban and Alice Springs) versus distribution networks which are radial in nature (Darwin - Rural, Katherine, Tennant Creek). This distinction is made to reflect the fact that radial distribution networks are mostly supplied from only one source, and there is little opportunity for interconnection with other circuits for security and continuation of supply when performing maintenance activities or in the event of unplanned outages. Feeders on these distribution networks therefore tend to have higher interruption frequencies and duration than feeders on interconnected networks.

"x" interruptions

Ergon's service levels for unplanned interruption frequency is:

- Urban = 13 or more interruptions
- Rural = 21 or more interruptions

Based on these values and including a factor for planned outages, PWC propose the following values for "x":

- Interconnected networks: x = 15 interruptions
- Radial networks: x = 27 interruptions

"y" minutes of interruptions

Ergon's service level for a single unplanned interruption duration is:

- Urban = 1080 minutes
- Rural = 1440 minutes

Based on these values and including a factor for planned outages, PWC propose the following values for "y":

- Interconnected networks: y = 1500 minutes
- Radial networks: y = 2500 minutes

It should also be noted that PWC's target is an annual figure, whereas Ergon's applies to a single interruption.

SUMMARY OF PROPOSED "x" AND "y" VALUES	"x" interruptions per year	"y" minutes of interruptions per year
Interconnected Distribution Networks (Darwin - Urban, Alice Springs)	15	1500
Radial Distribution Networks (Darwin - Rural, Katherine, Tennant Creek)	27	2500

2.2 POORLY PERFORMING FEEDERS MINIMUM STANDARDS – INTERCONNECTED DISTRIBUTION NETWORKS

PWC propose the following Minimum Standards for its interconnected distribution networks, given PWC's proposed "x" and "y" values. The Minimum Standards are based on PWC's historical performance, with minor adjustments made for data abnormalities (a justification follows). Data relating to poorly performing feeders was not measured accurately by PWC in 1999-00. Data from 2000-01 is the next available actual data.

(a) the number of feeders that experience more than 15 interruptions per year

NUMBER OF FEEDERS THAT EXPERIENCE MORE THAN 15 INTERRUPTIONS PER YEAR	2000-01 ACTUAL PERFORMANCE	PROPOSED MINIMUM STANDARD
Darwin – Urban	10	10
Alice Springs	2	4

(b) the percentage of consumers supplied by feeders that experience more than 15 interruptions per year

PERCENTAGE OF CONSUMERS SUPPLIED BY FEEDERS THAT EXPERIENCE MORE THAN 15 INTERRUPTIONS PER YEAR ¹	2000-01 ACTUAL PERFORMANCE	PROPOSED MINIMUM STANDARD
Darwin – Urban	27%	27%
Alice Springs	6%	10%

(c) number of feeders that experience more than 1500 minutes of interruptions per year

NUMBER OF FEEDERS THAT EXPERIENCE MORE THAN 1500 MINS OF INTERRUPTIONS PER YEAR	2000-01 ACTUAL PERFORMANCE	PROPOSED MINIMUM STANDARD
Darwin – Urban	12	9
Alice Springs	1	4

¹ This data is a function of the number of consumers on feeders that experience more than 15 interruptions per year (a) and the total number of consumers in each region.

2.3 POORLY PERFORMING FEEDERS MINIMUM STANDARDS – RADIAL DISTRIBUTION NETWORKS

PWC propose the following Minimum Standards for its radial distribution networks, given PWC's proposed "x" and "y" values. The Minimum Standards are based on PWC's historical performance, with minor adjustments made for data abnormalities (a justification follows). Data relating to poorly performing feeders was not measured accurately by PWC in 1999-00. Data from 2000-01 is the next available actual data.

(a) the number of feeders that experience more than 27 interruptions per year

NUMBER OF FEEDERS THAT EXPERIENCE MORE THAN 27 INTERRUPTIONS PER YEAR	2000-01 ACTUAL PERFORMANCE	PROPOSED MINIMUM STANDARD
Darwin – Rural	8	8
Katherine	10	7
Tennant Creek	3	3

(b) the percentage of consumers supplied by feeders that experience more than 27 interruptions per year

PERCENTAGE OF CONSUMERS SUPPLIED BY FEEDERS THAT EXPERIENCE MORE THAN 27 INTERRUPTIONS PER YEAR ¹	2000-01 ACTUAL PERFORMANCE	PROPOSED MINIMUM STANDARD
Darwin – Rural	75%	50%
Katherine	83%	50%
Tennant Creek	32%	32%

(c) number of feeders that experience more than 2500 minutes of interruptions per year

NUMBER OF FEEDERS THAT EXPERIENCE MORE THAN 2500 MINS OF INTERRUPTIONS PER YEAR	2000-01 ACTUAL PERFORMANCE	PROPOSED MINIMUM STANDARD
Darwin – Rural	6	9
Katherine	6	6
Tennant Creek	3	3

¹ This data is a function of the number of consumers on feeders that experience more than 27 interruptions per year (a) and the total number of consumers in each region. Darwin - Rural and Katherine figures are higher due to the higher number of feeders experiencing more than x interruptions per year and the small number of consumers in the regions.

2.4 JUSTIFICATION FOR PROPOSED POORLY PERFORMING FEEDERS ALTERNATIVE MINIMUM STANDARDS

(as compared to PWC's 2000-01 actual performance)

Darwin Rural Region

In 2000-01, interruptions due to flying foxes were concentrated in the Humpty Doo area. This resulted in a below average number of feeders experiencing higher interruption frequency and duration (ie. poor performance). PWC's proposed minimum standards for poorly performing feeders reflect a more typical flying fox concentration for the Darwin Rural region.

Alice Springs Region

Alice Springs had a particularly high amount of rainfall in 2000-01 when compared to other years. This resulted in a significant reduction in the number of interruptions due to flocks of birds, as the birds were able to source alternate water supplies (normally they are drawn to Alice Springs urban areas as it is a constant source of water). PWC's proposed minimum standard for Alice Springs poorly performing feeders reflects this abnormality and takes into account the typical climate for the region.

2.5 EXPLANATION OF REGIONAL VARIANCES IN THE MINIMUM STANDARDS

Power and Water has two distinct climatic regions, Northern (Darwin - Urban, Darwin - Rural and Katherine) and Southern (Tennant Creek and Alice Springs). The Northern region has a high incidence of lightning, high rates of vegetation growth and is periodically affected by large numbers of flying foxes, resulting in more frequent interruptions as compared to the Southern region.