



Service Standards Indicators – Performance Targets

**Administrative Determination issued pursuant to the Regulatory
Authority (Service Standards Indicators for Electricity Licensees)
General Determination 2019**

Matter: 20210916

Date: 16 September 2021

ORDER

1. THIS ORDER is issued by the Regulatory Authority of Bermuda ("RA") in accordance with the Regulatory Authority (Service Standards Indicators for Electricity Licensees) General Determination 2019.
2. Annex 1 has effect.
3. This Order shall become effective on the date of its publication.
4. So ordered this 16 day of September 2021.



Chairman, Regulatory Authority of Bermuda

ANNEX 1

Table of contents

1	Introduction	6
1.1	Background	6
1.2	Purpose	7
1.3	Sources of information.....	8
1.4	Reporting process	8
1.5	Updates to targets.....	9
1.6	Allowances made for Force Majeure events.....	9
1.7	Tolerance ranges	10
2	Reliability of electricity supplied to customers	11
2.1	Introduction	11
2.2	System Average Interruption Frequency Index (“SAIFI”).....	11
2.3	System Average Interruption Duration Index (“SAIDI”).....	12
3	Efficiency of electricity supplied to customers	13
3.1	Introduction	13
3.2	Heat Rate.....	13

Acronyms

AMI	Advanced metering infrastructure
HR	Heat Rate
IEEE	Institute of Electrical and Electronics Engineers
NPS	North Power Station
RA	Regulatory Authority of Bermuda
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
TD&R	Transmission, Distribution and Retail

1 Introduction

1.1 Background

This Administrative Determination (“AD”) has been prepared by the Regulatory Authority of Bermuda (“the RA”) following the publication of the *Regulatory Authority (Service Standards Indicators for Electricity Licensees) General Determination 2019* (“the Service Standards”) dated 4 April 2019. It is intended to list the target levels of performance that the RA expects BELCO to achieve as the sole Transmission, Distribution and Retail (“TD&R”) licensee and as a Bulk Generation (“BG”) licensee.

The Service Standards have initially been set to measure and incentivise licensees’ performance in the following areas:

1. Customer service levels;
2. Reliability of electricity supplied to customers;
3. Quality of electricity supplied to customers;
4. Efficiency of electricity supplied to customers; and
5. Meeting safety and environmental goals.

The determination of performance targets, at this stage, focuses on an initial list of Service Standards across two of those areas: the reliability of electricity supplied to customers (2), and the efficiency of electricity supplied to customers (4). In due course, performance targets will be set for the remaining of the Service Standards across all areas.

In line with provisions made in the Service Standards, the targets set in this AD will be used in the context of the Retail Tariff Methodology, which was established by general determination of the RA in October 2018.

The Service Standards and Retail Tariff Methodology have been produced at a time of significant change within the Bermuda electricity sector, with consequential influence on the setting of targets. Some of these changes are briefly discussed in **Table 1**.

Table 1: Summary of changes in the Bermuda electricity sector influencing the setting of performance targets

Development	Influence on performance targets
Accounting separation of BELCO generation and TD&R activities	Targets will be set, and performance measured, for generation and TD&R activities separately.
Electricity network capital plan upgrades and installation of advanced meters between 2018 and 2022	<p>The significant upgrades to the network should increase the reliability of supply to customers as existing old and decommissioned cables are replaced.</p> <p>The installation of advanced meters (advanced metering infrastructure, “AMI”) should increase the quality of the data that BELCO has on customer outages and the quality of electricity supplied, enabling it to respond to interruptions more quickly and proactively.</p>
Retirement of some existing generation units and commissioning of the North Power Station (“NPS”) in 2020	The older generation units (those installed before 1995) are generally less reliable than the newer units (installed since 1995); therefore, the aggregate performance of the generation fleet should increase from 2020.
Tariff Review for the next price control period	Tariffs are to be reviewed and revised prices implemented in 2022. Performance against service standards targets in 2021 (among other factors) will influence the level of allowable costs to be recovered in the tariffs from 2022. The level of targets for 2022 onwards (among other factors) will influence the level of costs that need to be recovered in the tariffs from 2022 onwards.

1.2 Purpose

The main purpose of this AD is to describe the targets to be set for BELCO for an initial selection of indicators, and to provide further instructions in relation to their calculation.

1.3 Sources of information

Table 2 provides a summary of the information that BELCO has provided to the RA which has been used to establish the targets presented in this AD.

Table 2: Summary of relevant information provided by BELCO

Date provided	Type & ref.	Description of data
12 March 2021	Letter B-R236	Additional calculations pertaining to 2021 heat rate targets.
5 February 2021	Letter B-R225	Revised heat rate calculations derived from updated PLEXOS © models.
1 February 2021	Letter B-R222	High-level explanation of how BELCO uses PLEXOS © in its operations.
17 November 2020	Attachment b. 2. To Letter B-R202 (Tariff Application for 2021)	Forecast Heat Rate outputs from PLEXOS © simulations carried out by BELCO for 2021.
13 July 2020	BELCO 2017-2019 Network Reliability Indicators	Network reliability indicators for 2017, 2018, and 2019.
March 2020	Response to RA's Information Request dated 5 February 2020	Responses to clarification questions related to performance indicators.
5 April 2019	Response to RA's Information Request submitted under cover ref. B-R117	Worked examples of calculations for all performance indicators listed in the Service Standards together with descriptions of the data sources, methodology, historical performance and target performance.

1.4 Reporting process

As outlined in the Service Standards, the detailed reporting process ("Minimum Filing Requirements") will be defined by Administrative Determination in due course. In the meantime, it is expected that BELCO will report on performance against targets set in this AD on an annual basis, and in response to Information Requests to be issued by the RA to BELCO in the context of Retail Tariff reviews (or annual adjustments to Retail Tariffs, in the case of multi-year tariff periods).

1.5 Updates to targets

Although this AD sets targets for 2021 and 2022, it is expected that targets will be revised every year by an Administrative Determination.

1.6 Allowances made for Force Majeure events

The performance of the TD&R licensee can be expected to reduce during Force Majeure events. The definition of Force Majeure events adopted is as follows – in line with that currently used in the TD&R License.

“acts of God, war, warlike operations, civil commotion, major strikes or any other significant or protracted industrial action, fire, tempest or any other causes beyond the Licensee’s reasonable control”

The following provides further guidance on the qualification of Force Majeure events and on when Force Majeure events are deemed to start / end.

- A weather event should be deemed a Force Majeure event when the intensity of the weather event is such that Government officials advise citizens to shelter in their homes or non-essential business are advised to close. In determining the start of such weather force majeure event, the starting point will be the point at which the Government states that sheltering in place ought to begin and/or non-essential businesses ought to be closed, whichever is the earliest. The end point will be the point at which the TD&R Licensee declares that all customers impacted by such an event have had their electricity service restored. Information pertaining to events occurring at any point between the start and the end of Force Majeure events should not impact calculations of Service Standards.
- For other Force Majeure events (whether or not weather-related), the starting point of the Force Majeure event will be the point at which the TD&R Licensee has declared that the first customer is off supply due to an incident directly caused by such event. The end point will be the point at which the TD&R Licensee declares that all customers impacted by such an event have had their electricity service restored. Information pertaining to events occurring at any point between the start and the end of Force Majeure events should not impact calculations of Service Standards.

1.7 Tolerance ranges

In this AD, tolerance ranges are defined in relation to specific targets – this is to reflect that:

- as this is the first time that such Performance Targets are enforced in Bermuda, such a process needs to be fully tested before more stringent expectations are set; and
- targets have been established on the basis of historical data which, unavoidably, does not meet every specific calculation instruction which have been set ex-post of BELCO having to compute and submit such data. As such, 2021 indicators calculated in line with instructions set forth in this AD will further inform the setting of targets for 2022, and so forth.

Tolerance ranges may not be defined for all targets and may be revised or removed in administrative determinations of Performance Targets for subsequent years.

Tolerance ranges are inclusive – meaning that for a tolerance range of $[a ; b]$ ($a < b$), any value comprised between a and b (including a and b) are deemed to fall into this tolerance range.

If BELCO's performance against a specific indicator fails to achieve (or exceeds) the target set forth in this AD but falls within the tolerance range set forth for this indicator, then there would not be any penalty (or incentive) issued to (or awarded to) BELCO.

If BELCO's performance against a specific indicator falls outside of the tolerance range set forth in this AD, then there would be a penalty (or incentive) issued to (or awarded to) BELCO. Penalty and incentive mechanisms have already been clarified to BELCO in the context of the 2021 Retail Tariff Review.

2 Reliability of electricity supplied to customers

2.1 Introduction

This section sets targets for two of the Service Standards covered under this theme – they both relate to the performance of the TD&R Licensee:

- The System Average Interruption Frequency Index (“SAIFI”); and
- The System Average Interruption Duration Index (“SAIDI”).

As described in the Service Standards, the performance indicators and definitions are derived from *IEEE Standard 1366-2012: IEEE Guide for Electric Power Distribution Reliability Indices*.

For both indicators, data pertaining to Force Majeure events should be excluded from the calculations.

2.2 System Average Interruption Frequency Index (“SAIFI”)

Indicator description:	System Average Interruption Frequency Index.										
Further instructions for calculation:	<ul style="list-style-type: none">• Calculation should only consider “sustained interruptions”, as defined in IEEE 1366. A “sustained interruption” lasts more than five minutes, whereas the maximum duration of a “momentary interruption event” is less than or equal to five minutes.• Force Majeure events should be excluded from the calculations										
Specific performance targets and tolerance range:	<table border="1"><thead><tr><th>Year</th><th>Specific target*</th><th>Tolerance range*</th></tr></thead><tbody><tr><td>2021</td><td>2.1</td><td>[1.6 ; 2.4]</td></tr><tr><td>2022**</td><td>2.0</td><td>[1.6 ; 2.2]</td></tr></tbody></table>		Year	Specific target*	Tolerance range*	2021	2.1	[1.6 ; 2.4]	2022**	2.0	[1.6 ; 2.2]
Year	Specific target*	Tolerance range*									
2021	2.1	[1.6 ; 2.4]									
2022**	2.0	[1.6 ; 2.2]									

*Units are in number of occurrences per year and per customer

** To be reviewed and confirmed at a later date

2.3 System Average Interruption Duration Index (“SAIDI”)

Indicator description: System Average Interruption Duration Index

Further instructions for calculation:

- Calculation should only consider “sustained interruptions”, as defined in IEEE 1366. A “sustained interruption” lasts more than five minutes, whereas the maximum duration of a “momentary interruption event” is less than or equal to five minutes.
- Force Majeure events should be excluded from the calculations

Specific performance targets and tolerance range:

Year	Specific target*	Tolerance range*
2021	165	[140 ; 200]
2022**	140	[120 ; 160]

*Units are in minutes

**To be reviewed and confirmed at a later date

3 Efficiency of electricity supplied to customers

3.1 Introduction

This section sets a target for one of the Service Standards covered under this theme – the Standard selected relates to the performance of the BG Licensee: the Heat Rate (“HR”).

3.2 Heat Rate

Indicator description:	Heat rate, expressed in kJ/kWh, is a measure of the efficiency of conversion of fuel to electricity. It is calculated in line with the formula provided in the Service Standards.		
Further instructions for calculation:	<ul style="list-style-type: none"> • Heat rates can typically be reported for individual power units or for multiple units – in which case the metric is generally referred to as an “aggregate” heat rate. • Heat Rate should be calculated for each month for: <ul style="list-style-type: none"> ○ Each individual unit in service (“unit heat rate”); ○ Each group of units (“aggregate unit group heat rate”); and ○ All units (“aggregate system heat rate”). • This Service Standard Indicator refers to the aggregate system heat rate, other metrics listed above are to be reported to provide contextual historical information only. • The aggregate system heat rate is impacted by several factors including, but not limited to, the efficiency of individual power units, the dispatch and maintenance schedules, and the calorific value of fuels purchased by BELCO. • Periods of engine test runs should be excluded from the calculation, but BELCO should provide all data necessary to remove test run periods from the data. • Periods of unplanned outage(s) attributed to Force Majeure events should be excluded from the calculation. • Whenever possible, the calculation should rely on physical measurements realised by BELCO on individual units. When this is not practical, approximations may be done by BELCO when computing the results (e.g. in relation to calorific values), provided that all assumptions are thoroughly justified by BELCO along with the submission of performance results. 		
Specific performance targets and tolerance range:	Year	Specific target*	Tolerance range*
	2021	8,400	[8,200 ; 8,550]
	2022**	8,400	[8,200 ; 8,450]

*Units are in kJ/kWh

** To be reviewed and confirmed at a later date