



Northern Ireland Electricity Networks Ltd



Condition 19 Transmission and Distribution System Performance Report 2022/23

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**Transmission and Distribution
System Performance Report**

2022/23

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Transmission and Distribution System Performance Report

In accordance with the requirements of Condition 19 of the **Electricity Distribution Licence** and **Participate in Transmission Licence** granted to **Northern Ireland Electricity Networks Ltd**, the licensee hereby submits to the Northern Ireland Authority for Utility Regulation, a System Performance Report for the year 2022/23.

1. Performance of the Transmission System

System Security - Losses of Supply

The following information has been provided on Customer Related Supply Failures resulting from faults on the Northern Ireland transmission system.

Incidents – 2022/23

Incident Date & Time	Customer Supply Interruptions	Location and Comments
NONE		

Incident History

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Total Number of Incidents per Year	1	1	2	7	4	3	0	2	1	0
Customer Supply Interruptions	19,568	2,552	231,132	180722	47,049	77,077	0	68,579	20,908	0
Customer Interruptions per 100 connected customers	2.2	0.3	26.0	20.1	5.2	8.4	0.0	7.3	2.2	0.0

2. Performance of the Distribution System

Definitions of Measurement

2.1 Security

Number of Supply interruptions per 100 connected customers[§] from:

- (a) distribution faults in total and categorised by voltage levels
- (b) distribution planned outages
- (c) other systems (transmission / non-embedded generation faults – see note 10, page 7)

Total from all causes (a)+(b)+(c)

Tabulation includes historical data and a moving average.

2.2 Availability

Total supply minutes lost per connected customer[§] from:

- (a) distribution faults in total and categorised by voltage levels
- (b) distribution planned outages
- (c) other systems

Total from all causes (a)+(b)+(c)

Tabulation includes historical data and a moving average.

2.3 Quality of Service

(i) Percentage of customer interruptions from distribution faults restored within:

- (a) 3 hours
- (b) 24 hours

in total and categorised by voltage levels.

(ii) Number of verified voltage complaints / 10,000 connected customers.

Tabulation includes historical data and a moving average.

2.4 Reliability

Number of faults per 100km of NIE Networks distribution system, overall, and categorised by voltage level.

Tabulation includes historical data and a moving average.

Note: The % difference has been calculated as the percentage difference between the 2022/23 figures and the 10 year average. (With the exception of 'Quality of Service', negative values indicate an improvement)

$$\% \text{ Difference} = \{(2022/23 \text{ figure} - 10 \text{ Year Average}) / (10 \text{ Year Average})\} \times 100$$

[§] See note 2 (page 7) for definition of 'Connected Customer'

Performance of the Distribution System

2.1 Security of Supply: Number of Supply Interruptions per 100 Connected Customers due to:

Performance Criteria	13/14		14/15	15/16	16/17		17/18		18/19		19/20	20/21	21/22		22/23	10 Year Average	% Diff.
(a) Distribution Faults																	
- LV	3.2	2.7 ¹	4.1	4.0	3.6	3.6 ²	4.3	3.7 ³	4.4	3.7 ⁴	3.4	3.5	3.3	3.2 ⁵	3.0	3.5	-14%
- HV	53.1	46.9 ¹	48.2	46.0	44.4	43.0 ²	64.4	53.2 ³	62.2	50.3 ⁴	39.8	37.5	47.2	44.5 ⁵	34.5	44.4	-22%
- EHV	16.0	13.6 ¹	21.2	12.6	15.4	15.4 ²	17.0	13.8 ³	17.0	14.4 ⁴	12.1	16.1	12.3	11.8 ⁵	4.5	13.5	-67%
- Total	72.3	63.2 ¹	73.5	62.6	63.3	61.9 ²	85.7	70.7 ³	83.5	68.4 ⁴	55.3	57.1	62.8	59.5 ⁵	42.0	61.4	-32%
(b) Planned Outages	13.6		14.8	18.9	17.3		15.3		11.7		13.8	14.8	10.8		10.6	14.1	-25%
(c) Other Systems	2.2		0.3	26.0	20.1	13.3 ²	5.2	4.0 ³	8.4		0.0	7.3	2.2		0.0	6.5	-100%
(d) Total (a)+(b)+(c)	88.1	79.0 ¹	88.6	107.5	100.7	92.4 ²	106.1	89.9 ³	103.6	88.5 ⁴	69.1	79.2	75.7	72.5 ⁵	52.7	82	-36%

The figures marked ¹, ², ³, ⁴ and ⁵ are revised figures for the Distribution system excluding the impact of the major storm periods in 2013/14, 2016/17, 2017/18, 2018/19 and 2021/22 respectively - see note 9 (page 7) for further details.

These revised figures are used to provide a comparison for long term trends (10 year average) of System Performance.

2.11 Security of Supply¹ – Historical & Forecast: Number of Supply Interruptions per 100 Connected Customers due to:

Performance Criteria	Historical						Forecast
	17/18	18/19	19/20	20/21	21/22	22/23	23/24
(a) Distribution Faults	70.7	68.4	55.3	57.1	59.5	42.0	68.0
(b) Planned Outages	15.3	11.7	13.8	14.8	10.8	10.6	18.0
(c) Other Systems	4.0	8.4	0.0	7.3	2.2	0.0	6.0
(d) Total (a)+(b)+(c)	89.9	88.5	69.1	79.2	72.5	52.7	92.0

Distribution Fault CI :

For 2022/23 Distribution Fault CI out-turned at 42.0 CI against a forecast of 68 CI. The forecast for 2023/24 is 68 CI.

Planned Outages CI :

For 2022/23 the Planned Outages CI out-turned at 10.6 CI against a forecast of 18 CI. The forecast for 2023/24 is 18 CI.

¹, ², ³, ⁴ and ⁵ Excludes Severe Weather Events

2.2 Availability of Supply: Supply Minutes Lost per Connected Customer due to:

Performance Criteria	13/14		14/15	15/16	16/17		17/18		18/19		19/20	20/21	21/22		22/23	10 Year Average	% Diff.
(a) Distribution Faults																	
- LV	9.3	6.0 ¹	9.1	8.7	6.9	6.9 ²	12.3	7.3 ³	14.5	6.3 ⁴	5.8	6.1	6.3	6.1 ⁵	6.1	6.8	-11%
- HV	52.7	43.5 ¹	48.5	49.8	44.0	42.0 ²	64.4	42.9 ³	70.5	37.6 ⁴	28.7	27.6	39.8	35.8 ⁵	27.6	38.4	-28%
- EHV	4.1	3.0 ¹	6.5	3.9	6.5	6.5 ²	5.9	4.8 ³	8.4	4.7 ⁴	3.6	4.8	3.4	3.1 ⁵	1.8	4.3	-58%
- Total	66.1	52.5 ¹	64.1	62.4	57.4	55.4 ²	82.6	55.0 ³	93.3	48.5 ⁴	38.0	38.4	49.4	45.0 ⁵	35.5	49.5	-28%
(b) Planned Outages	47.6		52.3	70.2	64.8		56.1		41.6		43.5	32.9	36.9		37.7	48.4	-22%
(c) Other Systems	0.2		0.0	5.0	3.6	3.3 ²	3.0	2.5 ³	2.9		0.0	1.6	0.0		0.0	1.6	-100%
(d) Total (a)+(b)+(c)	113.9	100.3 ¹	116.4	137.6	125.7	123.5 ²	141.7	113.6 ³	137.8	93.0 ⁴	81.6	79.2	86.3	81.9 ⁵	73.3	99.4	-26%

The figures marked ¹, ², ³, ⁴ and ⁵ are revised figures for the Distribution system excluding the impact of the major storm periods in 2013/14, 2016/17, 2017/18, 2018/19 and 2021/22 respectively - see note 9 (page 7) for further details.

These revised figures are used to provide a comparison for long term trends (10 year average) of System Performance.

2.21 Availability of Supply¹ – Historical & Forecast: Number of Supply Interruptions per 100 Connected Customers due to:

Performance Criteria	Historical						Forecast
	17/18	18/19	19/20	20/21	21/22	22/23	23/24
(a) Distribution Faults	55.0	48.5	38.0	38.4	45.0	35.5	50.0
(b) Planned Outages	56.1	41.6	43.5	32.9	36.9	37.7	50.0
(c) Other Systems	2.5	2.9	0.0	1.6	0.0	0.0	2.0
(d) Total (a)+(b)+(c)	113.6	93.0	81.6	72.9	81.9	73.3	102.0

Distribution Fault CML:

For 2022/23 Distribution Fault CML out-turned at 35.5 CML against a forecast of 50 CML. The forecast for 2023/24 is 50 CML.

Planned Outages CML:

For 2022/23 Planned Outages CML out-turned at 37.7 CML against a forecast of 50 CML. The forecast for 2023/24 is 50 CML.

¹ Excludes Severe Weather Events

2.3 Quality of Service:

(i) Percentage of Customers restored within:

Performance Criteria	13/14		14/15	15/16	16/17		17/18		18/19		19/20	20/21	21/22		22/23	10 Year Average	% Diff
(a) 3 Hours																	
- LV	55.7%	61.4% ¹	60.4%	63.7%	66.6%	66.5% ²	58.8%	66.3% ³	62.1%	71.8% ⁴	73.2%	72.4%	68.5%	69.1% ⁵	66.5%	67.1%	-1%
- HV	88.4%	89.7% ¹	89.0%	88.0%	89.3%	89.6% ²	89.8%	93.9% ³	86.1%	93.8% ⁴	94.5%	94.0%	91.6%	92.5% ⁵	94.1%	91.9%	2%
- EHV	99.4%	99.3% ¹	99.5%	99.3%	99.5%	99.5% ²	98.9%	99.4% ³	95.2%	99.4% ⁴	99.0%	99.7%	98.7%	99.2% ⁵	98.7%	99.3%	-1%
Fault Total	89.4%	90.6% ¹	90.4%	88.7%	90.5%	90.7% ²	90.0%	93.5% ³	86.7%	93.8% ⁴	94.2%	94.3%	91.7%	92.6% ⁵	92.5%	92.1%	0%
(b) 24 Hours																	
- LV	97.9%	99.9% ¹	99.9%	99.8%	99.9%	99.9% ²	98.0%	99.9% ³	93.3%	99.9% ⁴	99.9%	99.9%	99.9%	99.9% ⁵	99.9%	99.9%	0%
- HV	100%	100% ¹	100%	100%	100%	100% ²	99.9%	100.0% ³	99.5%	100.0% ⁴	100.0%	100.0%	100.0%	100.0% ⁵	100.0%	100%	0%
- EHV	100%	100% ¹	100%	100%	100%	100% ²	100.0%	100.0% ³	100.0%	100.0% ⁴	100.0%	100.0%	100.0%	100.0% ⁵	100.0%	100%	0%
Fault Total	99.9%	100% ¹	100%	100%	100%	100% ²	99.8%	100.0% ³	99.3%	100.0% ⁴	100.0%	100.0%	100.0%	100.0% ⁵	100.0%	100%	0%

The figures marked ¹, ², ³, ⁴ and ⁵ are revised figures for the Distribution system excluding the impact of the major storm periods 2013/14, 2016/17, 2017/18, 2018/19 and 2021/22 respectively - see note 9 (page 7) for further details.

These revised figures are used to provide a comparison for long term trends (10 year average) of System Performance.

The % difference has been calculated as the percentage difference between the 2022/23 figures and the 10 year averages.

(Quality of Service: positive values indicate an improvement from the 10 Year average figure)

(ii) Number of Verified Voltage Complaints per 10,000 Connected Customers

Performance Criteria	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	10 Year Average	% Diff
Number of Verified Voltage Complaints /10,000 Customers	0.48	0.36	0.34	0.33	0.34	0.23	0.23	0.13	0.16	0.09	0.27	-65%

The % difference has been calculated as the percentage difference between the 2022/23 figures and the 10 year averages.

(Voltage Complaints: negative values indicate improvement from the 10 Year average figure)

2.4 Reliability: Number of Faults per 100km of the Distribution System

Performance Criteria	13/14		14/15	15/16	16/17		17/18		18/19		19/20	20/21	21/22		22/23	10 Year Average	% Diff
Number of Faults per 100 km of NIE Distribution System																	
LV	27.1	22.9 ¹	28.6	25.8	22.5	22.4 ²	18.7	18.6 ³	24.8	20.4 ⁴	28.8	29.4	30.7	29.8 ⁵	26.6	25.5	4%
HV	8.2	7.5 ¹	8.2	7.3	7.1	6.8 ²	10.2	7.8 ³	9.9	8.2 ⁴	7.9	7.3	8.4	8.0 ⁵	7.0	7.6	-8%
EHV	5.9	5.3 ¹	5.5	4.5	5.7	5.6 ²	7.5	6.5 ³	8.8	7.9 ⁴	7.8	6.4	5.7	5.5 ⁵	6.0	6.1	-2%
Fault Total	14.3	12.4 ¹	14.7	13.2	12.1	11.9 ²	13.2	11.8 ³	15.5	12.8 ⁴	15.9	15.7	16.7	16.1 ⁵	14.4	13.9	3%

The figures marked ¹, ², ³, ⁴ and ⁵ are revised figures for the Distribution system which exclude the impact of the major storm periods in 2012/13, 2013/14, 2016/17, 2017/18, 2018/19 and 2021/22 respectively - see note 9 (page 7) for further details.

These revised figures are used to provide a comparison for long term trends (10 year average) of System Performance.

The % difference has been calculated as the percentage difference between the 2022/23 figures and the 10 year averages.
(Reliability: negative values indicate improvement from the 10 Year average figure)

Performance of the Distribution System

Explanatory Notes

1. - Reporting is carried out in accordance with the definitions and principles of the **National Fault and Interruption Reporting Scheme (NAFIRS)** (Engineering Recommendation G43/4).
2. - The definition of 'Connected Customers' (revised in 2004/05) is : "Any energised or de-energised entry or exit point to the distribution system operated by Northern Ireland Electricity Networks Ltd within its designated area of supply, where metering equipment is used for the purpose of calculating charges for electricity consumption".
3. - Calculations of the number and duration of supply interruptions are based on recorded failures of the company's distribution system and exclude:
 - (a) incidents relating to unmetered connected supplies (e.g. public lighting, street furniture) which do not involve other customers
 - (b) failure of less than one minute
4. - For the purpose of calculation, a period of supply interruption is deemed to have commenced from the receipt of the first customer's call, or from the first automatic system indication, whichever is the earlier.
5. - Verified voltage complaint (2.3(ii)): supply voltage falling outside the boundary limits set by **The Electricity Supply Regulations (Northern Ireland) 1991** during normal system operation.
6. - The Reliability Indices (2.4) relates to faults due to all causes at each voltage level on the distribution system, excluding service faults.
7. - The effects of national/regional emergencies and disputes are excluded.
8. - Historical data includes the current ten year period and the associated moving average.
9. - The symbol ¹ denotes figures for the Distribution system for 13/14 excluding the effect of the major storm periods 5th – 6th December, 2013 and 26th – 27th December, 2013.

The symbol ² denotes figures for the Distribution system for 16/17 excluding the effect of the major storm periods 6th – 7th June, 2016.

The symbol ³ denotes figures for the Distribution system for 17/18 excluding the effect of the major storm periods 22nd – 23rd August, 2017, 16th – 18th October, 2017, 2nd – 5th January, 2018 and 16th – 17th January, 2018.

The symbol ⁴ denotes figures for the Distribution system for 18/19 excluding the effect of the major storm periods 13th – 15th June, 2018 and 19th – 22nd September, 2018.

The symbol ⁵ denotes figures for the Distribution system for 21/22 excluding the effect of the major storm periods 20th – 22nd February, 2022.

The revised figures listed above are used to provide a comparison for long term trends (10 year average) of System Performance.
10. - 'Other System' figures are those due to faults associated with the NIE Networks Transmission System and non-embedded generation.