nationalgrid

Report to the Gas and Electricity Markets Authority

National Electricity Transmission System Performance Report
2011 - 2012

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Contents

National Electricity Transmission System Performance Report

Introduction

The electricity transmission networks in Great Britain are owned by National Grid Electricity Transmission plc (NGET) in England and Wales, Scottish Power Transmission Limited (SPTL) in south and central Scotland and Scottish Hydro Electric Transmission Limited (SHETL) in the north of Scotland. These three networks form the Onshore Transmission System. The National Electricity Transmission System (NETS) is comprised of the Onshore Transmission System and the Offshore Transmission System.

In addition to its role as the Transmission Owner in England and Wales, NGET became the Great Britain System Operator (GBSO) on 1 April 2005, and subsequently on 24th June 2009, National Electricity Transmission System Operator (NETSO) which includes the Offshore Transmission System.

In accordance with Standard Licence Condition C17 (Transmission System Security, Standard and Quality of Service) of its Transmission Licence, NGET, as NETSO, is required by the Gas and Electricity Markets Authority, to report National Electricity Transmission System performance in terms of availability, system security and the quality of service.

The Onshore and Offshore Transmission Systems broadly comprises circuits operating at 400kV, 275kV and also includes 132kV within the Scottish and offshore transmission networks. The formal definition of the National Electricity Transmission System is contained in the NETS Grid Code and NETS Security and Quality of Supply Standard (NETS SQSS). The fully interconnected transmission system provides a consistently high quality of supply and also allows for the efficient bulk transfer of power from remote generation to demand centres.

Information relating to Scottish Power Transmission Limited, Scottish Hydro Electric Transmission Limited, TC Robin Rigg OFTO Limited, TC Barrow OFTO Limited, TC Gunfleet Sands OFTO Limited and Blue Transmission Limited have been provided by the Transmission Owners in accordance with Licence Condition D3 (Transmission System Security Standard and Quality of Service) of their Transmission Licences.

When considering the performance of the Scottish transmission networks it should be recognised that this can be influenced by both the Scottish Transmission Owners and the NETSO.

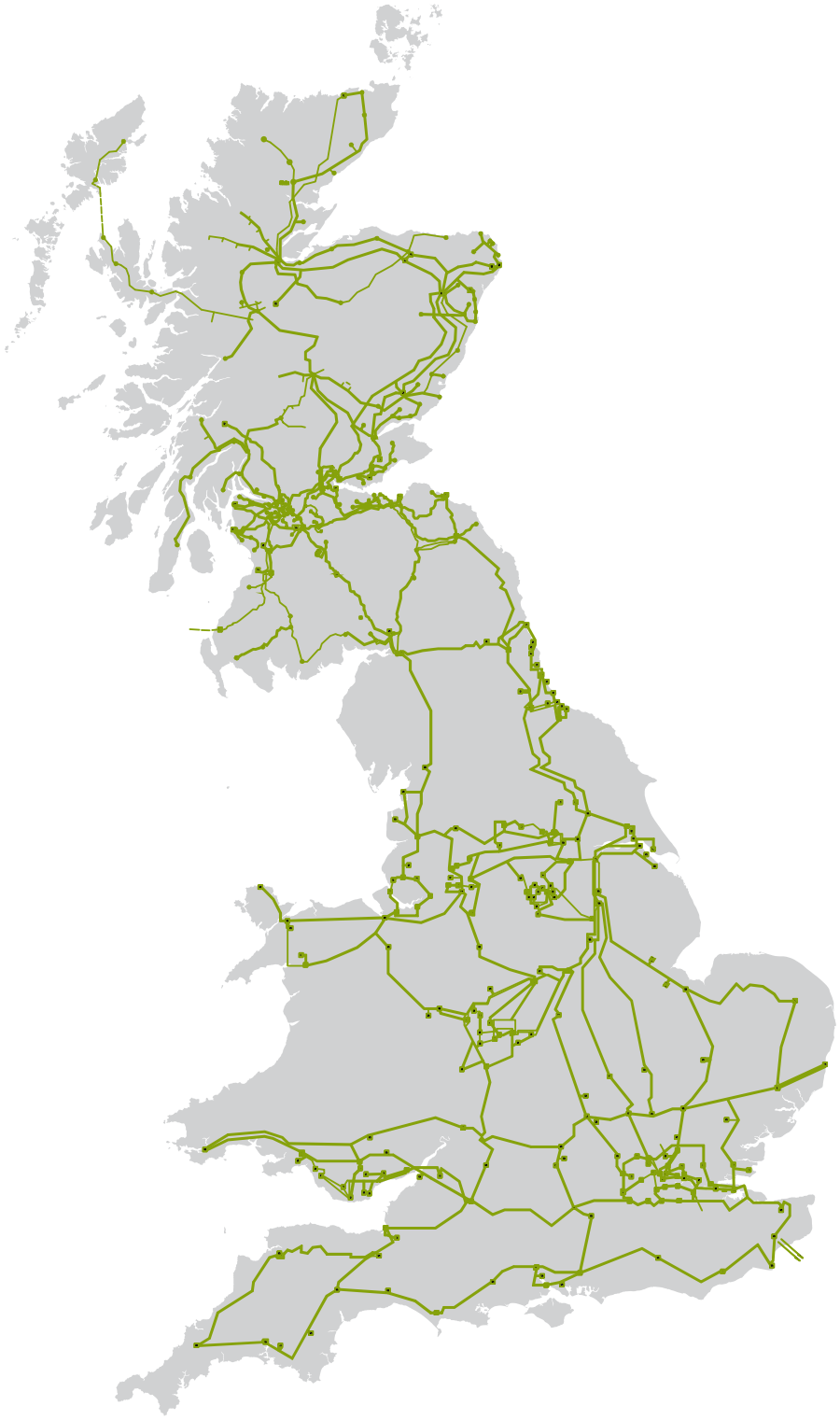
The National Electricity Transmission System is connected via interconnectors to transmission systems in France, Northern Ireland and Netherlands. The Northern Ireland Interconnector is regulated by the Northern Ireland Regulator (NIAUR) and falls outside the scope of this report.

Information relating to the Interconnexion France - Angleterre (IFA) has been provided by National Grid Interconnectors Limited (NGIC) in accordance with Licence Condition D5 (Transmission System Security Standard and Quality of Service) of the NGIC Transmission Licence.

Information relating to the interconnector between England and the Netherlands (BritNed) has been provided by National Grid in conjunction with TenneT due to the joint ownership of the equipment.

Section One

National ElectricityTransmission System (GB Network)



Availability

The definitions and criteria for system availability can be found in the Glossary of Terms at the end of this report.

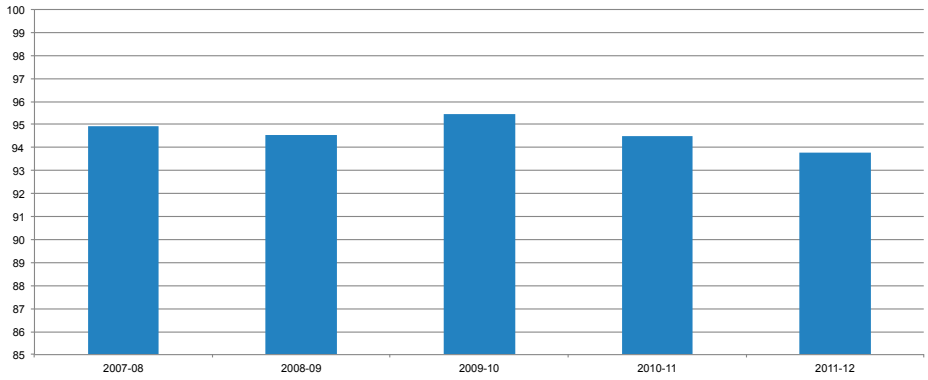
National Electricity Transmission System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability.

Annual System Availability

Annual System Availability of the National Electricity Transmission System for 2011-2012 was:

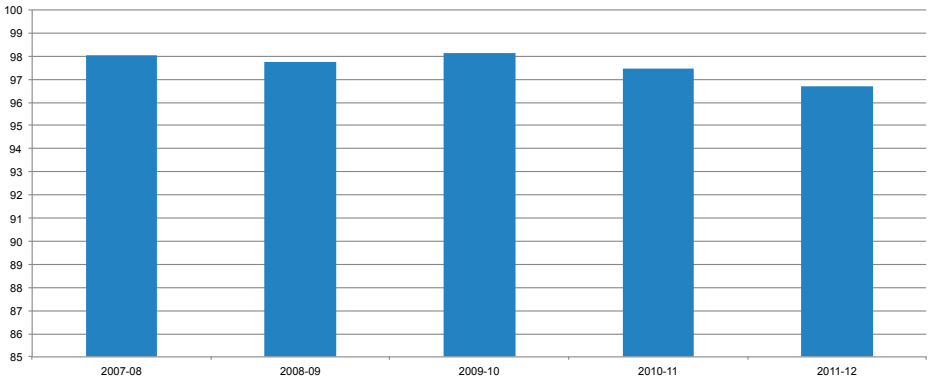
93.78%

% Annual System Availability



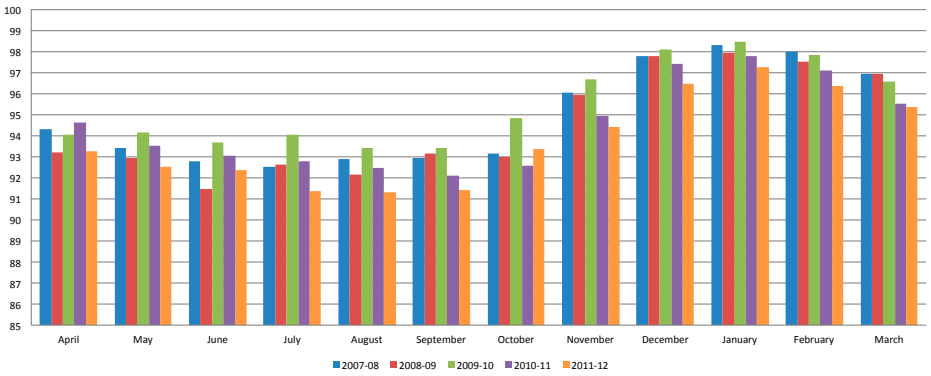
2007-08	2008-09	2009-10	2010-11	2011-12
94.91	94.55	95.44	94.47	93.78

% Winter Peak System Availability



2007-08	2008-09	2009-10	2010-11	2011-12
98.02	97.75	98.15	97.45	96.71

% Monthly System Availability



	2007-08	2008-09	2009-10	2010-11	2011-12
April	94.33	93.20	94.07	94.65	93.25
May	93.41	92.94	94.17	93.55	92.51
June	92.80	91.48	93.70	93.04	92.39
July	92.53	92.64	94.07	92.79	91.36
August	92.91	92.14	93.45	92.50	91.30
September	92.96	93.15	93.42	92.12	91.43
October	93.16	92.98	94.85	92.60	93.35
November	96.04	95.93	96.67	94.97	94.45
December	97.78	97.77	98.11	97.40	96.48
January	98.31	97.96	98.48	97.82	97.26
February	98.00	97.51	97.82	97.12	96.38
March	96.96	96.93	96.59	95.55	95.38

Security

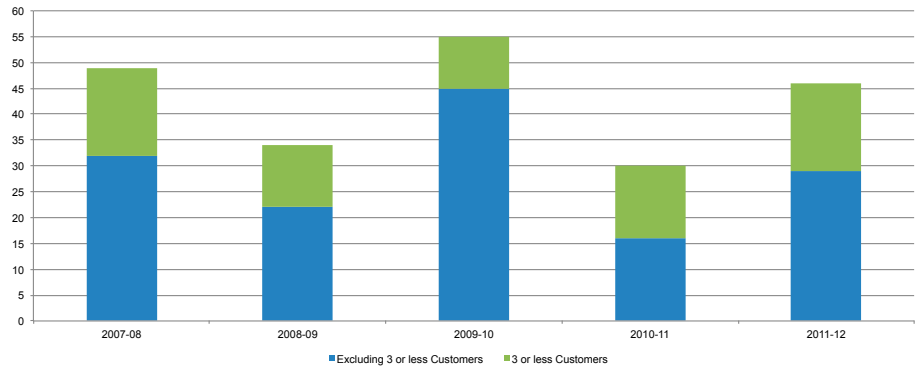
The definitions and criteria for system security can be found in the Glossary of Terms at the end of this report.

System performance is monitored by the Estimated Unsupplied Energy from the National Electricity Transmission System for each incident.

During 2011-12 there were 796 NETS events where transmission circuits were disconnected either automatically or by urgent manual switching. The vast majority of these events had no impact on electricity users with only 46 resulting in loss of supplies to customers.

Number of Loss of Supply Incidents

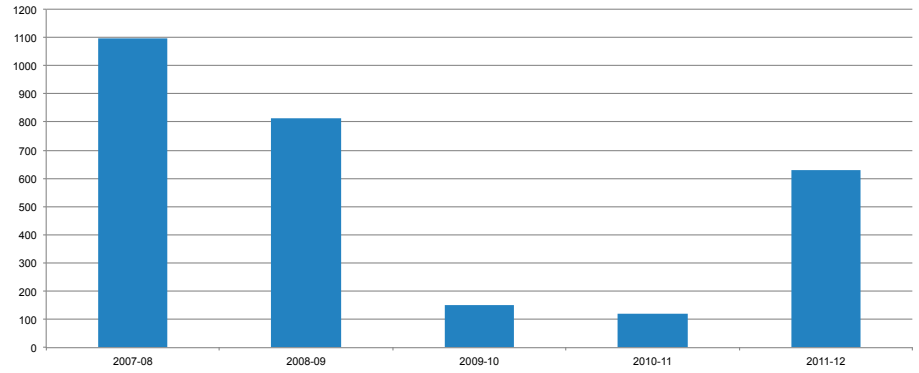
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the National Electricity Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	32	22	45	16	29
3 or less Customers	17	12	10	14	17

Estimated Unsupplied Energy

The chart shows the annual comparison of the Estimated Unsupplied Energy, excluding 3 or less customers, for Loss of Supply Incidents that occur within the National Electricity Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	1095.44	814.48	150.55	120.54	628.88
3 or less Customers	579.50	33.80	520.85	863.10	788.70

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the National Electricity Transmission System during 2011-12 was:

1417.58 MWh

Reliability of Supply

The Overall Reliability of Supply for the National Electricity Transmission System during 2011-12 was:

99.99954%

compared with 99.99969% in 2010-11 and 99.99979% in 2009-10

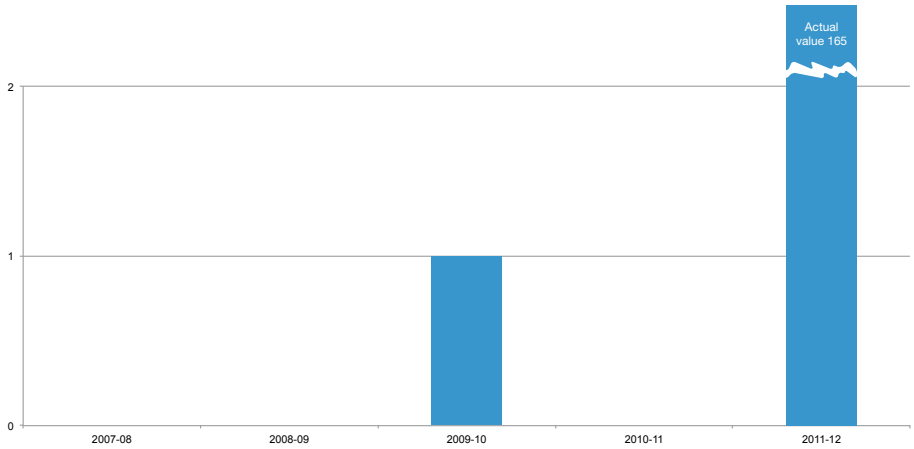
Quality of Service

Quality of service is measured with reference to system voltage and frequency. The criteria for reportable Voltage and Frequency Excursions can be found in the Glossary of Terms at the end of this report.

Voltage Excursions

During 2011-12 there were 165 reportable Voltage Excursions within the National Electricity Transmission System.

The chart below summarises the reportable voltage excursions that have occurred on the National Electricity Transmission System within England and Wales during 2011-12. These excursions have occurred mainly in the south of England. NGET considers that this is primarily a result of an abnormally rapid decline in overnight reactive power (MVAr) demand affecting the national electricity system.



	2007-08	2008-09	2009-10	2010-11	2011-12
Number of NGET Excursions	0	0	1	0	165
Number of SPT Excursions	0	0	0	0	0
Number of SHETL Excursions	0	0	0	0	0

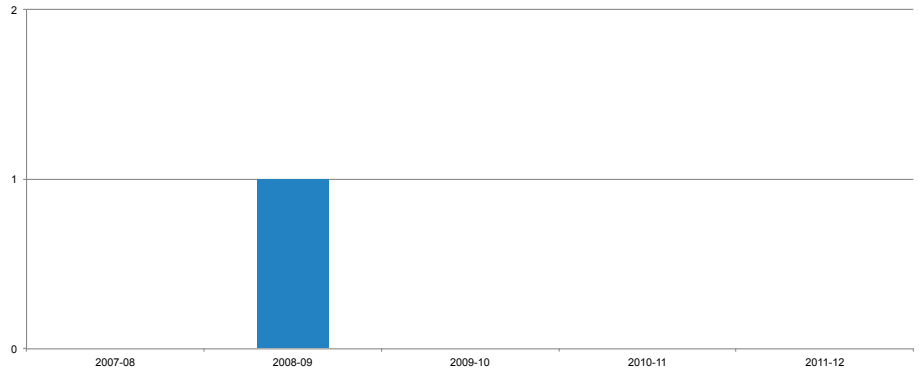
The chart below shows the Voltage Excursions month by month.

GB System - Number of Voltage Excursions	
April	33
May	21
June	08
July	38
August	05
September	09
October	25
November	12
December	09
January	01
February	02
March	02

Frequency Excursions

During 2011-12 there have been no reportable Frequency Excursions.

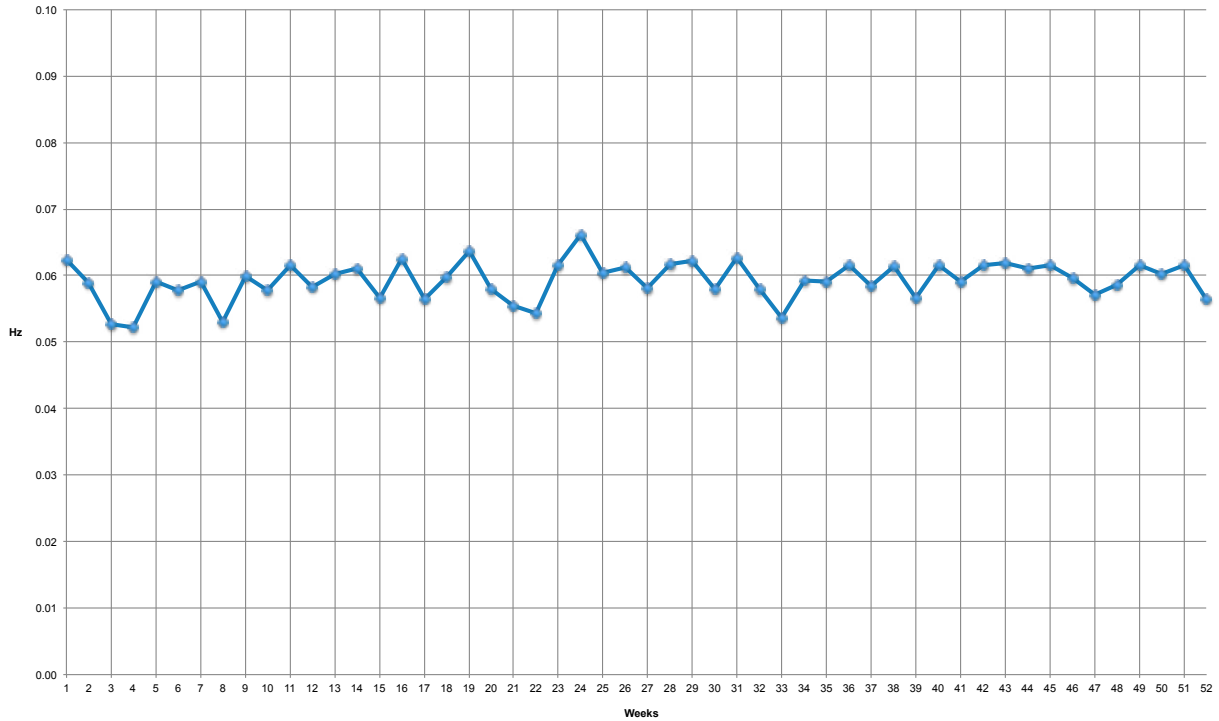
The chart below shows the annual comparison of the reportable Frequency Excursions that occurred within the National Electricity Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Number of Excursions	0	1	0	0	0

Frequency Standard Deviation

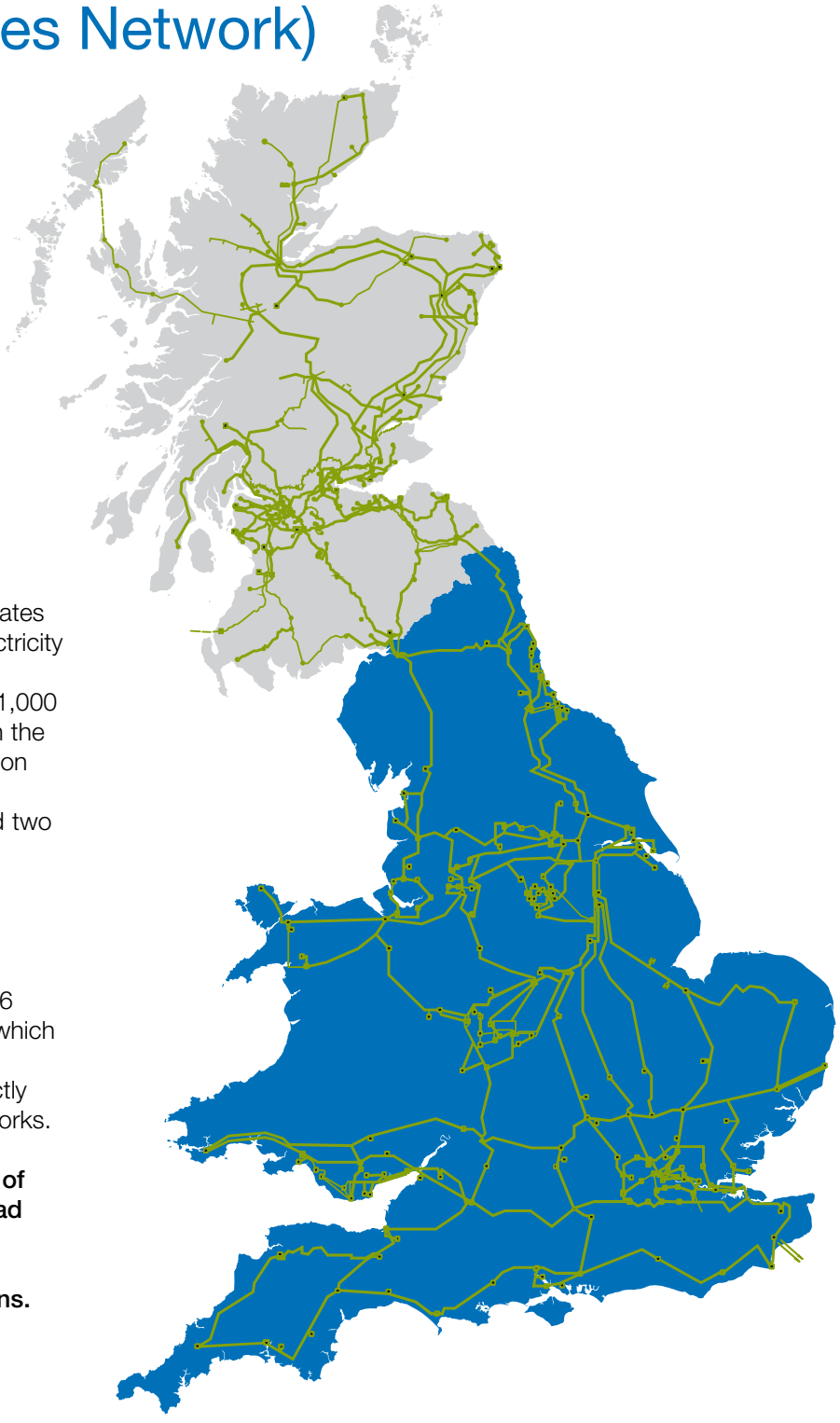
The chart below displays the recorded Frequency Standard Deviation from 50Hz on a weekly basis for the year 2011-12.




FREQUENCY 50.033
DEMAND 39676
NEC

Section Two

NGET System (England & Wales Network)



System Description

The NGET Transmission System operates at 400, 275 and 132kV supplying electricity to consumers in England and Wales, covering an area of approximately 151,000 square kilometres, in accordance with the standards laid down in the Transmission Licence. It is connected to the SPTL Transmission System to the north and two HVDC interconnectors to France and Holland.

There are 70 large power stations connected to the England and Wales transmission system comprised of 176 Balancing Mechanism Units (BMU's) which supply electricity to 12 distribution networks and a small number of directly connected customers such as steelworks.

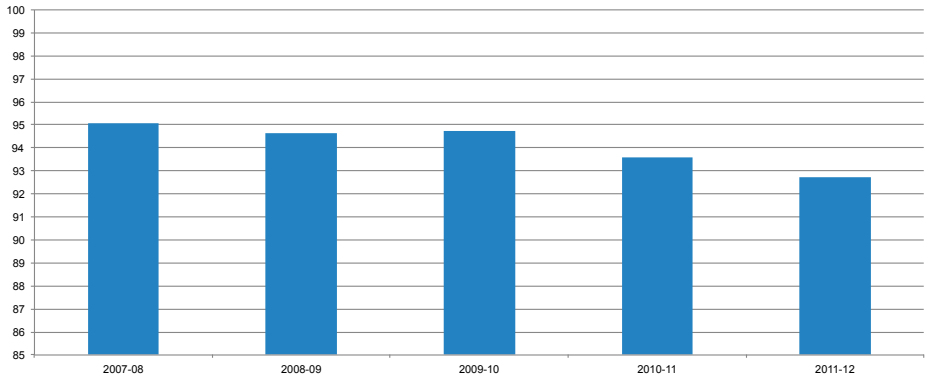
The Transmission System consists of 14,091 circuit kilometres of overhead line and 635 circuit kilometres of underground transmission cables interconnecting over 300 substations.

Availability

The definitions and criteria for system availability can be found in the Glossary of Terms at the end of this report.

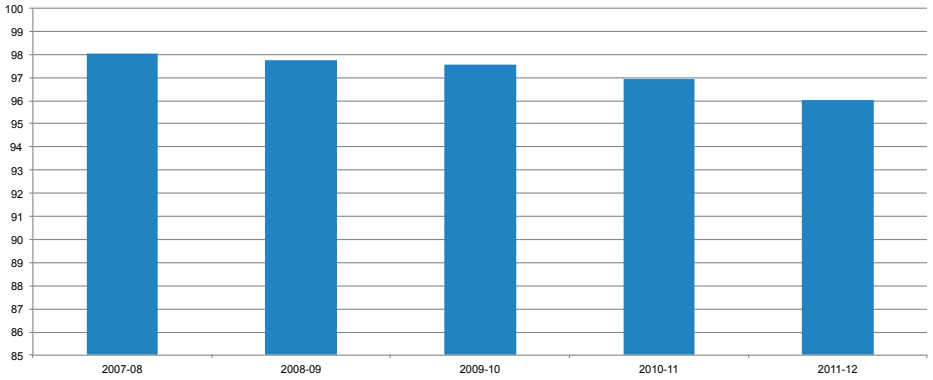
System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability. There is also a breakdown of Planned and Unplanned System Unavailability.

% Annual System Availability



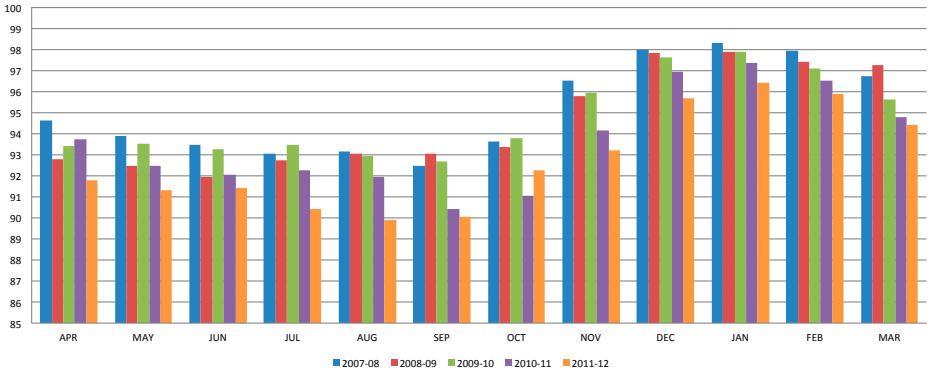
2007-08	2008-09	2009-10	2010-11	2011-12
95.09	94.64	94.76	93.60	92.71

% Winter Peak System Availability



2007-08	2008-09	2009-10	2010-11	2011-12
98.02	97.73	97.55	96.95	96.01

% Monthly System Availability

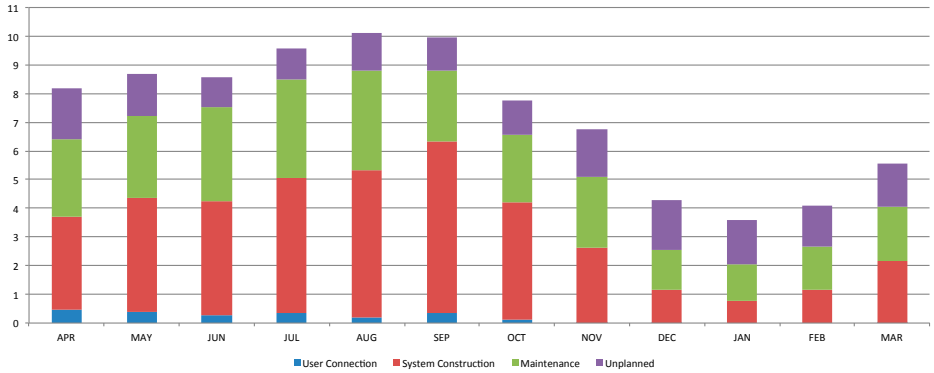


	2007-08	2008-09	2009-10	2010-11	2011-12
April	94.63	92.81	93.44	93.74	91.81
May	93.89	92.47	93.55	92.48	91.33
June	93.49	91.94	93.27	92.05	91.42
July	93.07	92.75	93.47	92.28	90.41
August	93.15	93.06	92.95	91.94	89.88
September	92.48	93.05	92.69	90.42	90.03
October	93.64	93.35	93.80	91.08	92.25
November	96.55	95.80	95.95	94.18	93.24
December	97.98	97.83	97.61	96.92	95.71
January	98.31	97.92	97.88	97.36	96.40
February	97.94	97.44	97.11	96.53	95.91
March	96.72	97.29	95.61	94.79	94.44

Planned and Unplanned System Unavailability

The table and the chart show the monthly variation in Planned and Unplanned System Unavailability.

Unavailability is defined as (100 – Availability) %



	User Connection	System Construction	Maintenance	Unplanned	Total
April	0.45	3.25	2.72	1.77	8.19
May	0.41	3.94	2.85	1.47	8.67
June	0.26	3.98	3.29	1.04	8.58
July	0.36	4.68	3.45	1.10	9.59
August	0.21	5.12	3.46	1.32	10.12
September	0.36	5.98	2.49	1.15	9.97
October	0.11	4.10	2.34	1.20	7.75
November	0.01	2.60	2.47	1.69	6.76
December	0.00	1.16	1.39	1.74	4.29
January	0.00	0.79	1.27	1.53	3.60
February	0.00	1.15	1.51	1.43	4.09
March	0.01	2.14	1.92	1.49	5.56

Security

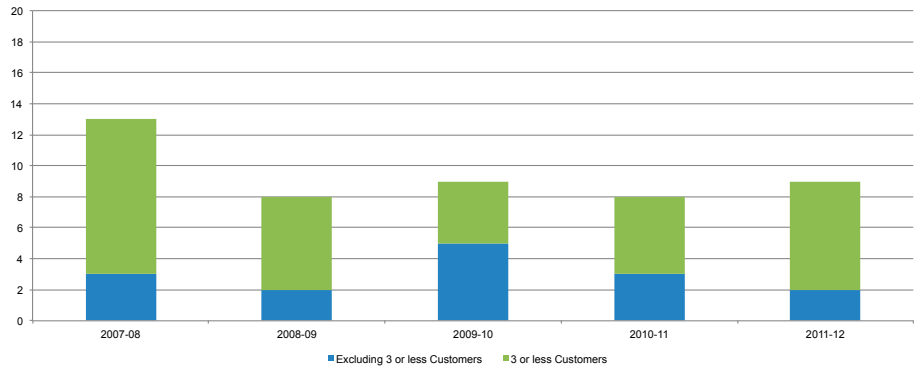
The definitions and criteria for system security can be found in the Glossary of Terms at the end of this report.

System performance is monitored by the Estimated Unsupplied Energy from the NGET Transmission System for each incident.

During 2011-12 there were 351 NGET system events where transmission circuits were disconnected either automatically or by urgent manual switching. The vast majority of these events had no impact on electricity users with only 9 resulting in loss of supplies to customers.

Number of Loss of Supply Incidents

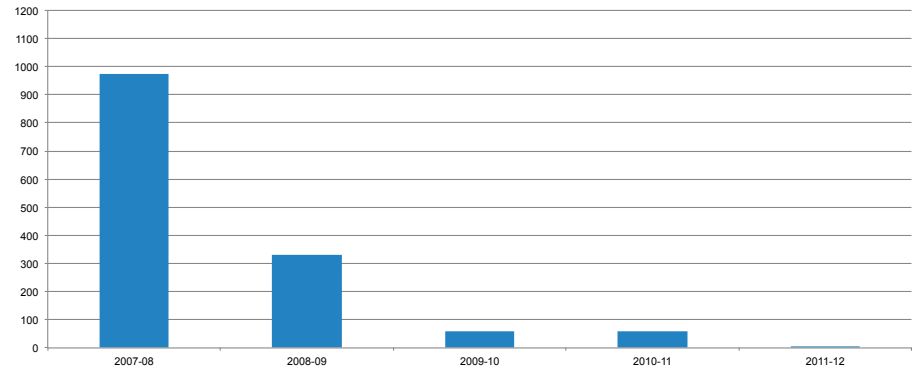
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the NGET Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	3	2	5	3	2
3 or less Customers	10	6	4	5	7

Estimated Unsupplied Energy

The chart shows the annual comparison of the Estimated Unsupplied Energy, excluding 3 or less customers, for Loss of Supply Incidents that occur within the NGET Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	974.50	329.50	61.00	59.50	2.50
3 or less Customers	538.50	6.00	426.00	3.00	788.50

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the NGET Transmission System during 2011-12 was:

791 MWh

Reliability of Supply

The Overall Reliability of Supply for the NGET Transmission System during 2011-12 was:

99.99972%

compared with 99.99998% in 2010-11 and 99.99983% in 2009-10

Loss of Supply Incident Details

NGET Loss of Supply Incidents excluding '3 or less customers' sites

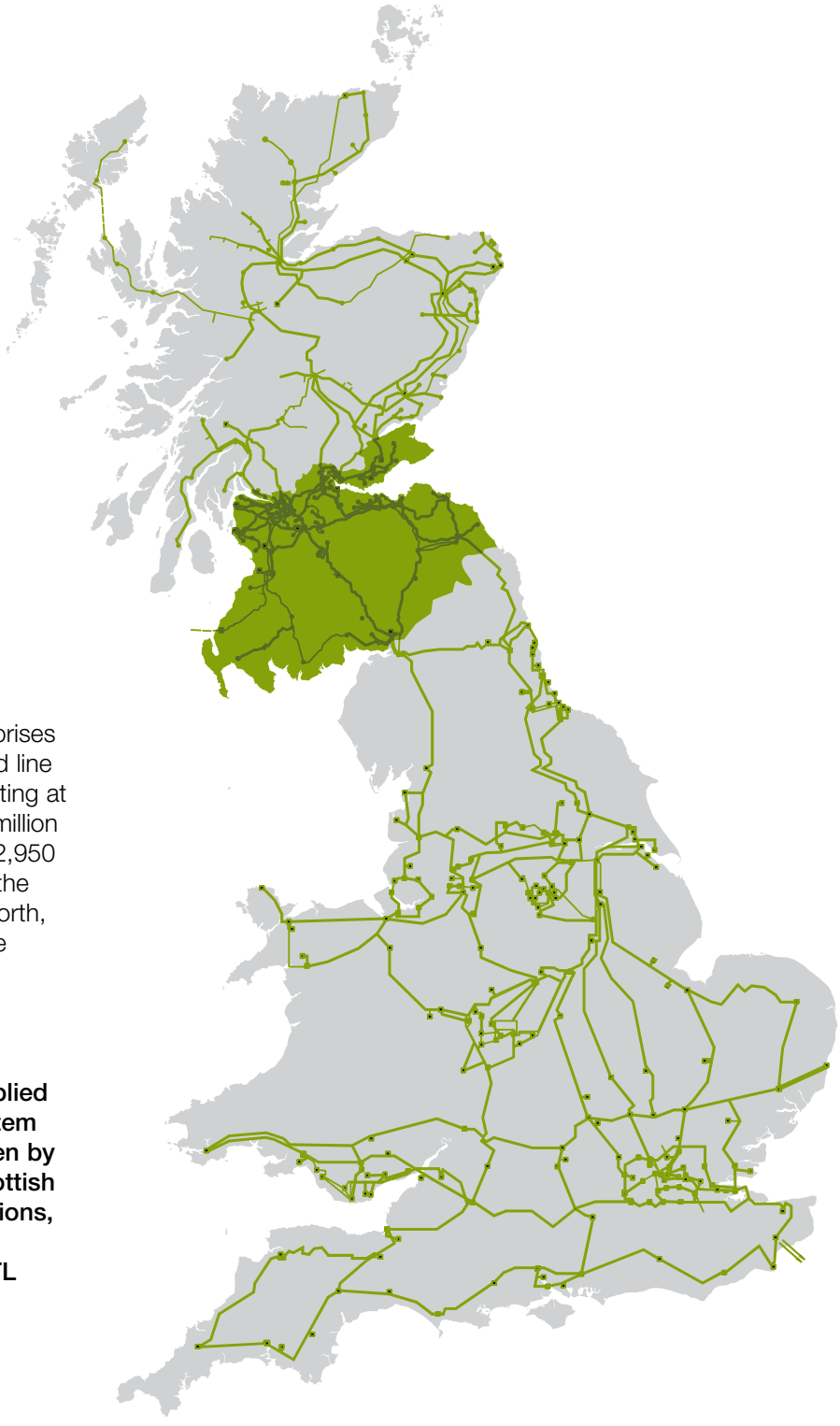
Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
7 September 2011, 11:37 hrs at St. John's Wood 275 kV substation A protection operation caused the trip of mesh corner 2 and supergrid transformers 2A and 2B, resulting in a loss of supply for auto-reclose time of less than 2-seconds.	**174**	**0**	**0.5**
13 December 2011, 13:38 hrs at Pyle 275 kV substation A protection alarm caused the Aberthaw - Pyle circuit, Pyle supergrid transformers 1 and 2, Aberthaw-Cardiff East-Pyle circuit and Cardiff East supergrid transformer 2 to all trip simultaneously, resulting in a loss of supply for auto-reclose time of less than 1-minute. There were reports of lightning in the area at that time of the trip.	**119**	**1**	**2**
		Total	**2.5 MWh**

NGET Loss of Supply Incidents affecting '3 or less customers' sites

Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
8 April 2011, 12:52 hrs at Penrhos 132 kV substation A protection operation caused the trip of the Penrhos – Wylfa 2 circuit, resulting in a loss of supply for 10-minutes.	**1.4**	**10**	**0.5**
20 April 2011, 08:40 hrs at Penrhos 132 kV substation A protection operation caused the trip of the Penrhos – Wylfa 2 circuit, resulting in a loss of supply for 4-minutes.	**1.4**	**4**	**0.5**
28 May 2011, 10:16 hrs at Elstree 400 kV substation The Elstree – Sundon circuit was switched out due to abnormal system conditions during planned maintenance, resulting in a loss of supply to Network Rail Bushey for 10-seconds.	**0**	**0**	**0.5**
16 October 2011, 11:48 hrs at Wymondley 400 kV substation A protection operation caused the trip of supergrid transformer 3, resulting in a loss of supply to Network Rail. Within 4-minutes, supplies were restored by local switching.	**0**	**4**	**0.5**
17 November 2011, 01:05 hrs at Tremorfa 275 kV substation A protection operation caused the trip of Aberthaw – Tremorfa and Tremorfa - Uskmouth – Whitson circuits and supergrid transformers 1 and 2, resulting in a loss of supply to Celsa UK Ltd Steelworks. Within 2-hours and 43-minutes, supplies were restored by telecommand switching.	**3.4**	**163**	**9**
17 November 2011, 15:49 hrs at Tremorfa 275 kV substation The Aberthaw – Tremorfa and Tremorfa - Uskmouth – Whitson 275kV circuits and Tremorfa supergrid transformers 1 and 2 were switched out of service for urgent maintenance, resulting in a loss of supply to Celsa UK Ltd Steelworks. Within 9-hours and 19-minutes supplies were restored by telecommand switching.	**0.4**	**554**	**3.5**
30 November 2011, 07:11 hrs at Aldwarke 275 kV substation A protection operation caused Aldwarke supergrid transformer 4, mesh corner 4, Aldwarke – West Melton circuit, West Melton mesh corner 1 and supergrid transformers 1A and 1B to trip, resulting in a loss of supply to Corus Steel. Within 9-hours and 33-minutes supplies were restored by telecommand switching.	**81**	**573**	**774**
		Total	**788.5 MWh**

Section Three

SPTL System



System Description

The SPTL Transmission System comprises of 4,495 circuit kilometres of overhead line and cable and 131 substations operating at 400, 275 and 132kV supplying 1.99 million customers and covering an area of 22,950 square kilometres. It is connected to the SHETL Transmission System to the north, the NGET Transmission System to the south and the Northern Ireland Transmission System via an HVDC interconnector.

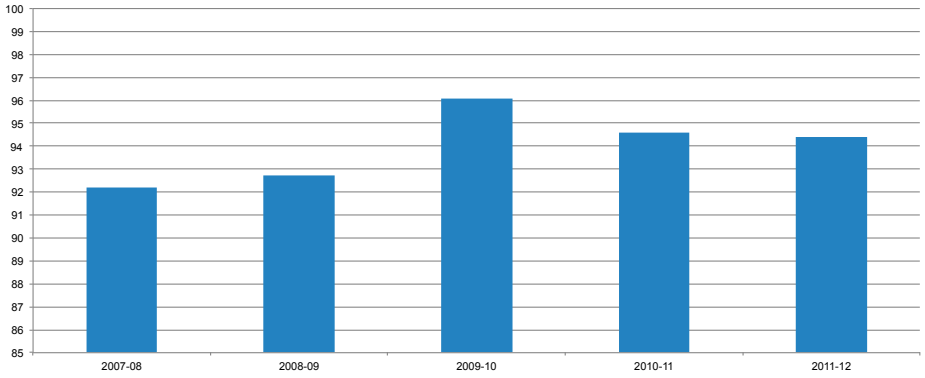
There are 18 major customers supplied directly from the Transmission System with the bulk of the load being taken by the Distribution Network within Scottish Power. Seventeen large power stations, totalling over 8.8GW of generation capacity, are connected to the SPTL Transmission System.

Availability

The definitions and criteria for system availability can be found in the Glossary of Terms at the end of this report.

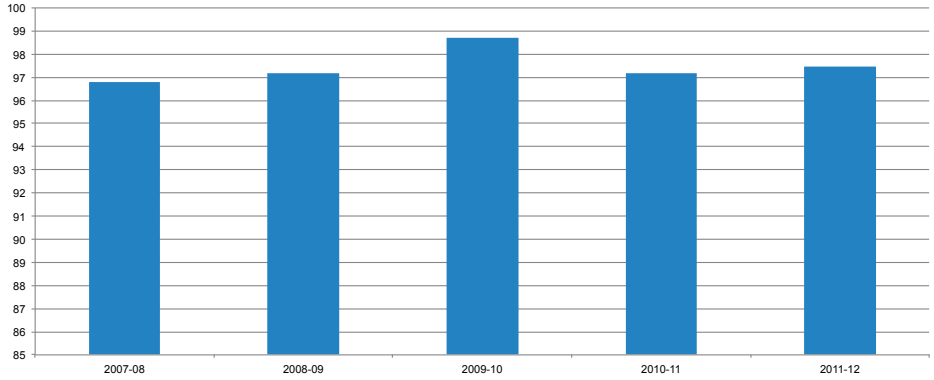
System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability. There is also a breakdown of Planned and Unplanned System Unavailability.

% Annual System Availability



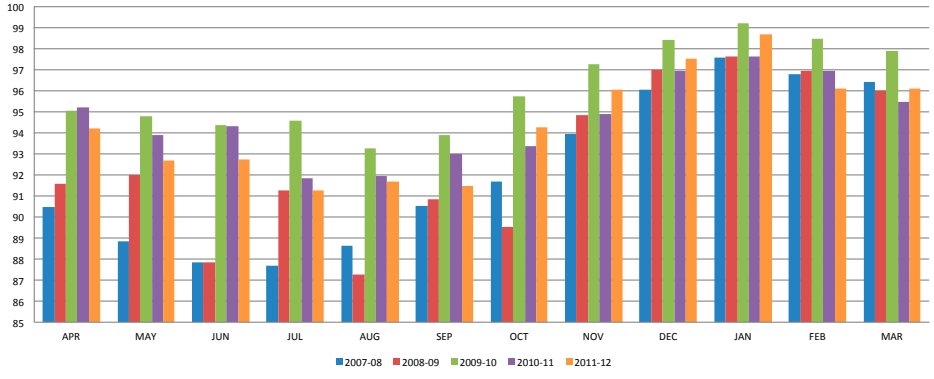
2007-08	2008-09	2009-10	2010-11	2011-12
92.21	92.74	96.09	94.62	94.41

% Winter Peak System Availability



2007-08	2008-09	2009-10	2010-11	2011-12
96.80	97.19	98.71	97.17	97.46

% Monthly System Availability

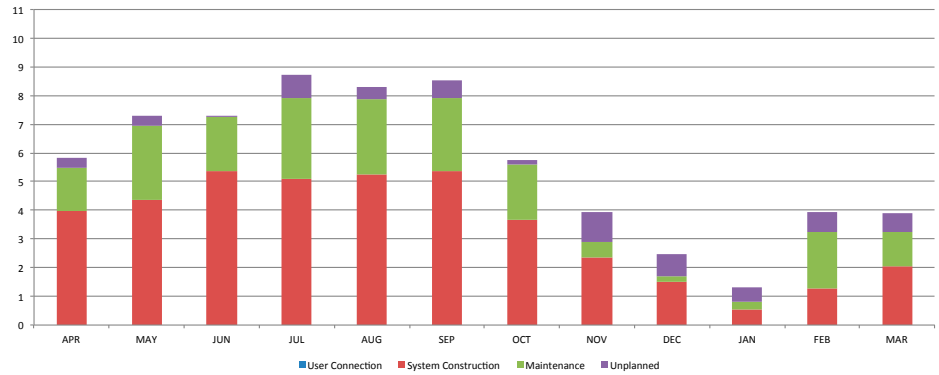


	2007-08	2008-09	2009-10	2010-11	2011-12
April	90.49	91.60	95.07	95.22	94.19
May	88.86	92.01	94.80	93.87	92.70
June	87.82	87.83	94.38	94.31	92.72
July	87.67	91.28	94.57	91.82	91.27
August	88.63	87.28	93.29	91.97	91.69
September	90.54	90.83	93.90	93.02	91.48
October	91.70	89.52	95.75	93.37	94.26
November	93.96	94.85	97.29	94.87	96.07
December	96.06	97.00	98.42	96.94	97.51
January	97.56	97.61	99.23	97.63	98.70
February	96.77	96.93	98.45	96.94	96.08
March	96.42	95.98	97.88	95.46	96.11

Planned and Unplanned System Unavailability

The table and the chart show the monthly variation in Planned and Unplanned System Unavailability.

Unavailability is defined as (100 – Availability) %



	User Connection	System Construction	Maintenance	Unplanned	Total
April	0.00	3.98	1.50	0.33	5.81
May	0.00	4.35	2.61	0.34	7.30
June	0.00	5.38	1.89	0.01	7.28
July	0.00	5.11	2.80	0.82	8.73
August	0.00	5.26	2.62	0.43	8.31
September	0.00	5.36	2.55	0.61	8.52
October	0.00	3.66	1.93	0.15	5.74
November	0.00	2.37	0.54	1.02	3.93
December	0.00	1.51	0.19	0.79	2.49
January	0.00	0.56	0.27	0.47	1.30
February	0.00	1.28	1.98	0.66	3.92
March	0.00	2.03	1.22	0.64	3.89

Security

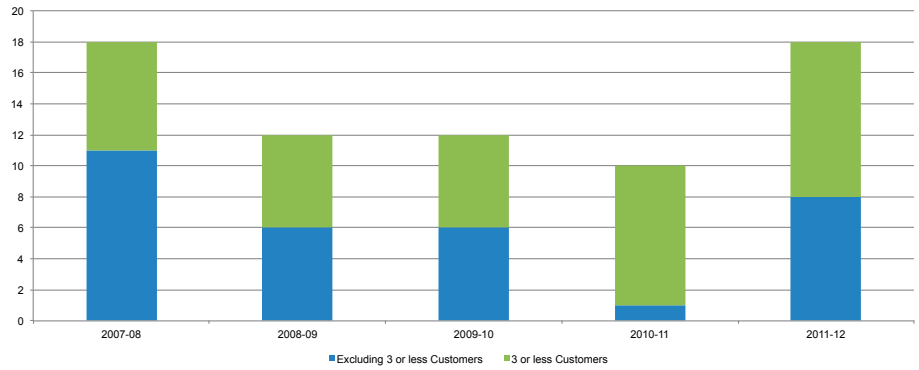
The definitions and criteria for system security can be found in the Glossary of Terms at the end of this report.

System performance is monitored by the Estimated Unsupplied Energy from the SPTL Transmission System for each incident.

During 2011-12 there were 236 SPTL system events where transmission circuits were disconnected either automatically or by urgent manual switching. The vast majority of these events had no impact on electricity users with only 18 resulting in loss of supplies to customers.

Number of Loss of Supply Incidents

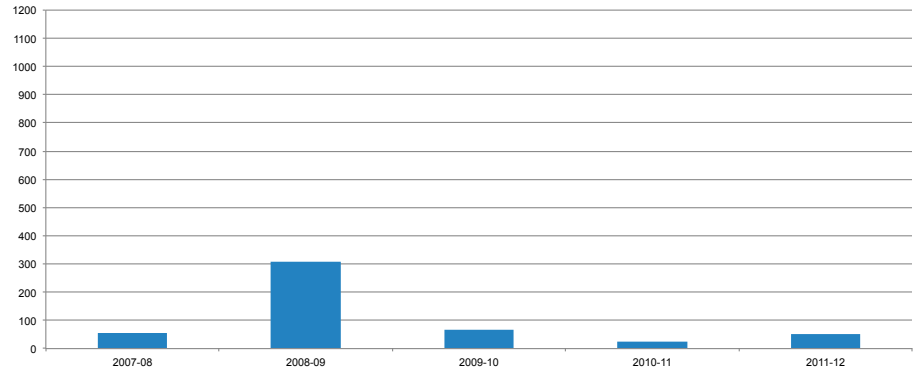
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the SPTL Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	11	6	6	1	8
3 or less Customers	7	6	6	9	10

Estimated Unsupplied Energy

The chart shows the annual comparison of the Estimated Unsupplied Energy, excluding 3 or less customers, for Loss of Supply Incidents that occur within the SPTL Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	56.71	306.40	67.85	25.70	52.50
3 or less Customers	41.00	27.80	94.85	860.10	0.20

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the SPTL Transmission System during 2011-12 was:

52.7 MWh

Reliability of Supply

The Overall Reliability of Supply for the SPTL Transmission System during 2011-12 was:

99.99975%

compared with 99.99600% in 2010-11 and 99.99927% in 2009-10

Loss of Supply Incident Details

SPTL Loss of Supply Incidents excluding '3 or less customers' sites

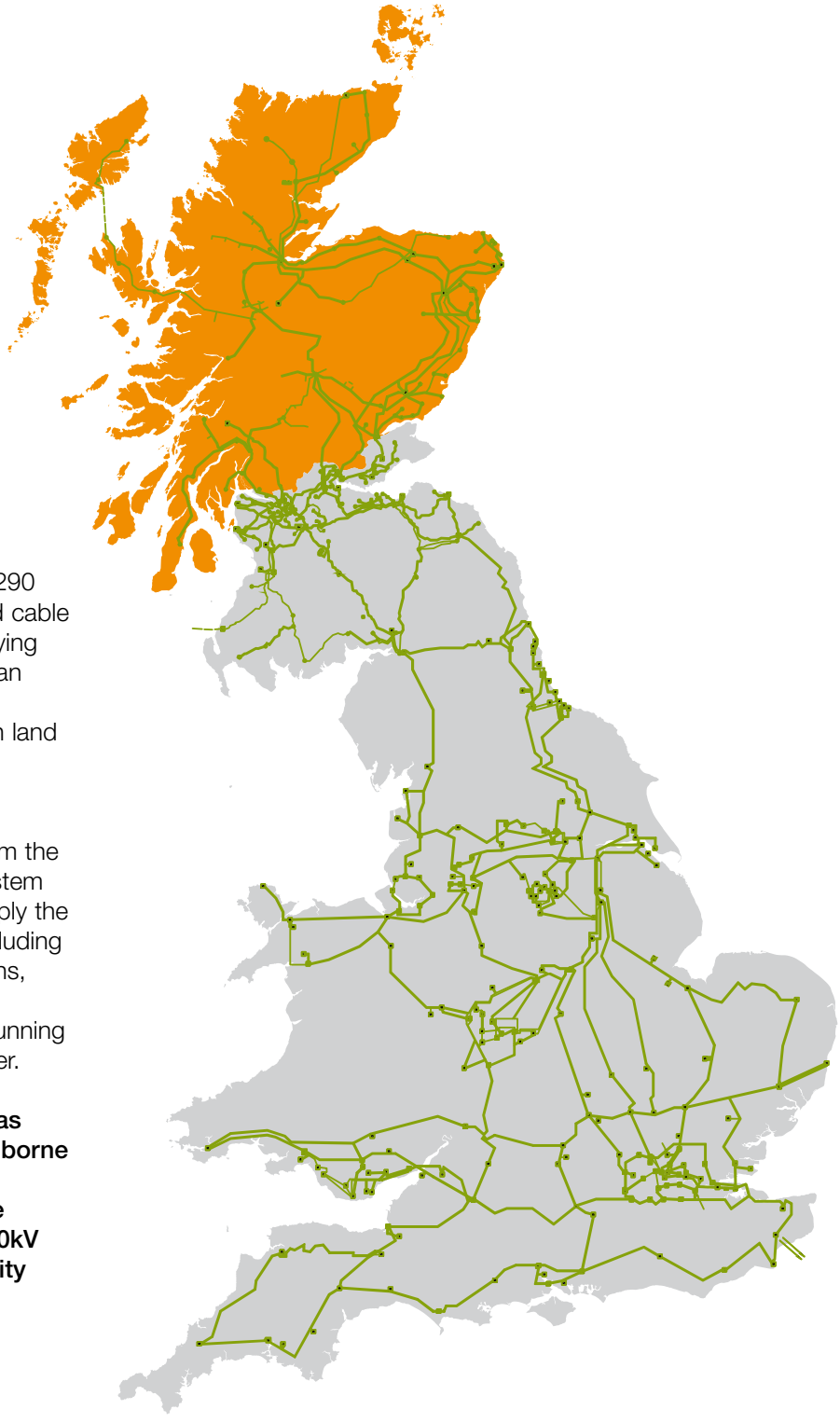
Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
18 April 2011, 04:06 at Kendon GSP High winds caused a transient fault on the Coylton-Maybole-Kendoon circuit, this resulted in the loss of supplies to 228 customers for 9 minutes.	0.5	45	0.4
7 July 2011, 03:14 at Glenluce and Newton Stewart GSP's A lightning strike caused both Glenlee-Newton Stewart-Glenluce 1 and 2 circuits to trip, this resulted in supplies to 17,875 customers being lost for an average of 2-minutes.	8.5	2	0.3
4 October 2011, 18:58 at Telford Road GSP The directional overcurrent protection operated at Telford Road causing the operation of the Telford Road Grid 1 circuit breaker while the No.2 transformer was switched out for planned work, this resulted in supplies being lost to 24,513 customers for an average of 8-minutes.	32.3	8	2.2
4 October 2011, 19:34 at Telford Road GSP Immediately after the restoration of supplies the directional overcurrent protection operated causing the Telford Road Grid 1 circuit breaker to open for a second time while the No.2 transformer was switched out for planned work, this resulted in supplies being lost to 24,513 customers for an average of 26-minutes.	20.5	26	10.1
23 October 2011, 11:29 at Easterhouse GSP Easterhouse SGT2 was de-energised during routine switching on the Newarthill-Easterhouse-Dalmarnock-Charlotte Street circuit while a 33kV feeder attached to Easterhouse SGT1 was out of service, this resulted in supplies being lost to 11,569 customers for an average of 4-minutes.	13.0	4	0.8
7 November 2011, 19:37 at Govan and Haggs Road GSP's Vandals set fire to both 132kV underground cables feeding the Govan and Haggs Road GSP's, this resulted in the loss of supplies to 46,524 customers for an average of 29-minutes.	69.3	29	33.8
3 January 2012, 07:32 at Kilmarnock Town GSP At Kilmarnock South 275kV Substation extremely high winds blew debris onto the disconnector of the Kilmarnock South-Kilmarnock Town 1 circuit, causing the circuit to trip. This resulted in the loss of supplies to 35,722 customers for an average of 4-minutes.	51.2	4	3.1
6 January 2012, 20:42 at Innerwick and Dunbar GSP's During the restoration and repair of a BT pilot wire fault testing caused the operation of the protection on both the Torness-Innerwick-Dunbar 1 and 2 circuits, this resulted in the loss of supplies to 14,317 customers for an average of 6-minutes.	18.0	6	1.8
		Total	**52.5 MWh**

SPTL Loss of Supply Incidents affecting '3 or less customers' sites

Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
3 June 2011, 12:13 at Parkhead 25kV Substation Both circuits from Carntyne 132kV Substation to the Parkhead 25kV Network Rail Feeder station were de-energised to allow repairs to the earthing system following the theft of earthing from the substation. This resulted in supplies being lost to 1 customer for 41-minutes.	0.0	41	0.0
23 June 2011, 14:47 at Dumfries GSP Lightning caused the Chapelcross-Dumfries 1 - Dumfries Grid T4 circuit to trip, the circuit was restored by the successful use of delayed auto-reclosing (DAR). This resulted in a loss of supply to 1 customer for 1-minute.	9.0	1	0.2
8 August 2011, 17:45 at Hadyard Hill Windfarm The overload protection on the Neilston-Coylton-Maybole circuit operated due to generator outputs being above agreed limits, this resulted in supplies being lost to 1 customer for 11-minutes.	0.0	11	0.0
16 August 2011, 14:46 at Hadyard Hill Windfarm The overload protection on the Neilston-Coylton-Maybole circuit operated due to generator outputs being above agreed limits, this resulted in supplies being lost to 1 customer for 30-minutes.	0.0	30	0.0
26 August 2011, 14:46 at Mark Hill and Arecleoch Windfarms While work was being carried out on the Ayrshire Operational Intertrip System an intertrip signal was sent which caused the loss of the supplies to 2 customers for 213-minutes.	0.0	213	0.0
5 September 2011, 22:41 at Hadyard Hill Windfarm The overload protection on the Neilston-Coylton-Maybole circuit operated due to generator outputs being above agreed limits, this resulted in supplies being lost to 1 customer for 19-minutes.	0.0	19	0.0
6 September 2011, 14:47 at Hadyard Hill Windfarm The overload protection on the Neilston-Coylton-Maybole circuit operated due to generator outputs being above agreed limits, this resulted in supplies being lost to 1 customer for 26-minutes.	0.0	26	0.0
11 September 2011, 09:23 at Hadyard Hill Windfarm The overload protection on the Neilston-Coylton-Maybole circuit operated due to generator outputs being above agreed limits, this resulted in supplies being lost to 1 customer for 53-minutes.	0.0	53	0.0
12 September 2011, 07:12 at Hadyard Hill Windfarm The overload protection on the Neilston-Coylton-Maybole circuit operated due to generator outputs being above agreed limits, this resulted in supplies being lost to 1 customer for 41-minutes.	0.0	41	0.0
3 October 2011, 11:42 at Hadyard Hill Windfarm The overload protection on the Neilston-Coylton-Maybole circuit operated due to generator outputs being above agreed limits, this resulted in supplies being lost to 1 customer for 16-minutes.	0.0	16	0.0
		Total	**0.2 MWh**

Section Four

SHETL System



System Description

The SHETL Transmission System comprises of 100 substations and 5,290 circuit kilometres of overhead line and cable operating at 275kV and 132kV supplying 0.71 million customers and covering an area of approximately 55,000 square kilometres or 25% of the Great Britain land mass. It is connected to the SPTL Transmission System to the south.

80% of these transmission assets form the main interconnected transmission system whilst the remaining 20% radially supply the more remote areas of the territory including the outlying islands. Some connections, mainly in the more remote areas, can involve non-standard connection or running arrangements chosen by the customer.

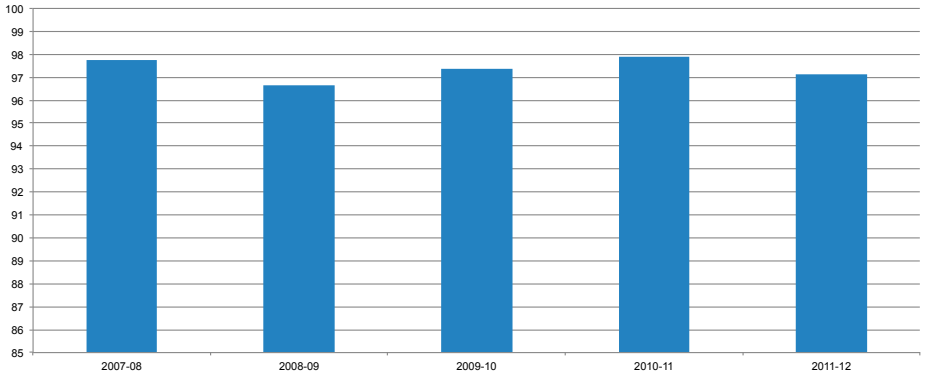
When considering 132kV systems as transmission voltages it should be borne in mind that amounts of power transmitted at this voltage level are generally lower than at 275 and 400kV and as such may have lower security standards applied.

Availability

The definitions and criteria for system availability can be found in the Glossary of Terms at the end of this report.

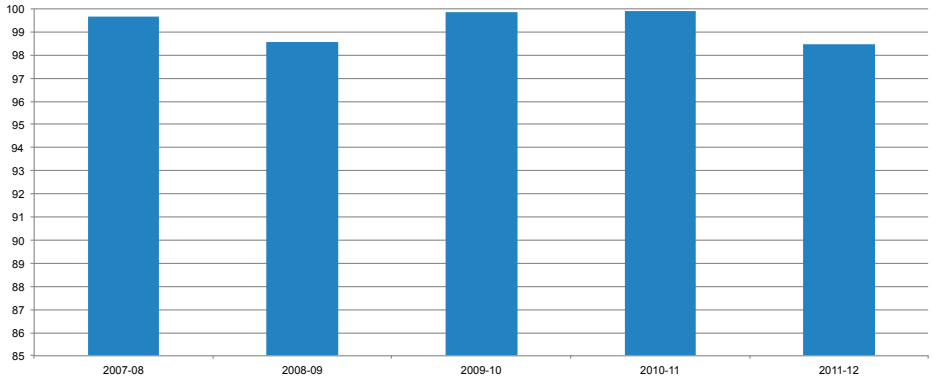
System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability. There is also a breakdown of Planned and Unplanned System Unavailability.

% Annual System Availability



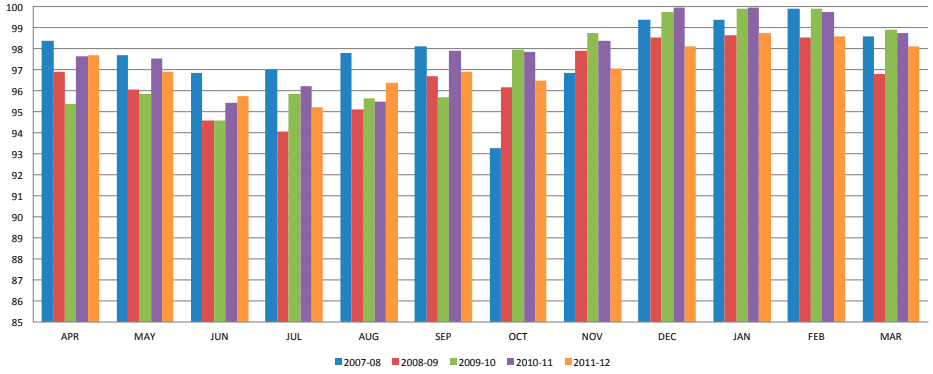
2007-08	2008-09	2009-10	2010-11	2011-12
97.75	96.66	97.37	97.89	97.14

% Winter Peak System Availability



2007-08	2008-09	2009-10	2010-11	2011-12
99.67	98.56	99.84	99.90	98.47

% Monthly System Availability

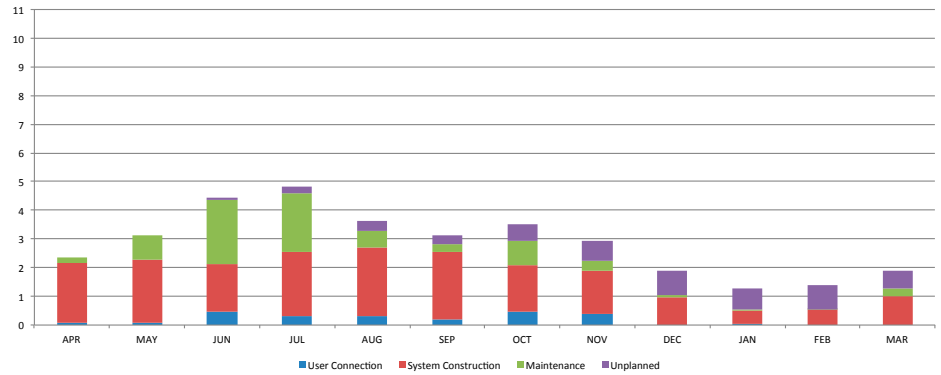


	2007-08	2008-09	2009-10	2010-11	2011-12
April	98.36	96.89	95.35	97.64	97.66
May	97.68	96.04	95.86	97.53	96.89
June	96.84	94.57	94.58	95.40	95.76
July	96.97	94.05	95.83	96.19	95.19
August	97.77	95.11	95.64	95.50	96.36
September	98.08	96.68	95.71	97.91	96.87
October	93.25	96.17	97.94	97.85	96.49
November	96.84	97.88	98.75	98.37	97.06
December	99.35	98.55	99.74	99.97	98.12
January	99.35	98.62	99.90	99.95	98.73
February	99.88	98.52	99.87	99.76	98.59
March	98.59	96.79	98.92	98.76	98.09

Planned and Unplanned System Unavailability

The table and the chart show the monthly variation in Planned and Unplanned System Unavailability.

Unavailability is defined as (100 – Availability) %



	User Connection	System Construction	Maintenance	Unplanned	Total
April	0.09	2.06	0.19	0.00	2.34
May	0.07	2.20	0.84	0.00	3.11
June	0.46	1.85	1.85	0.08	4.24
July	0.33	2.22	2.06	0.20	4.81
August	0.32	2.37	0.58	0.37	3.64
September	0.20	2.36	0.26	0.31	3.13
October	0.47	1.61	0.84	0.59	3.51
November	0.39	1.51	0.34	0.70	2.94
December	0.01	0.97	0.05	0.85	1.88
January	0.04	0.47	0.03	0.73	1.27
February	0.00	0.53	0.02	0.86	1.41
March	0.00	0.99	0.29	0.63	1.91

Security

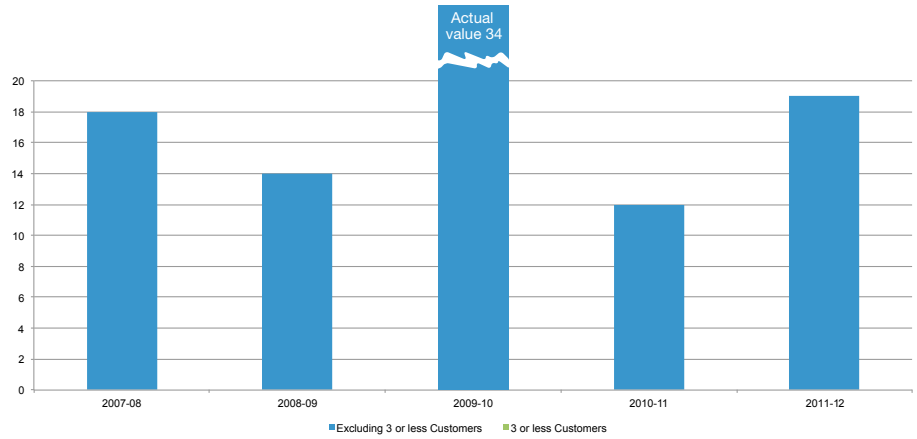
The definitions and criteria for system security can be found in the Glossary of Terms at the end of this report.

System performance is monitored by the Estimated Unsupplied Energy from the SHETL Transmission System for each incident.

During 2011-12 there were 209 SHETL system events where transmission circuits were disconnected either automatically or by urgent manual switching. The vast majority of these events had no impact on electricity users with only 19 resulting in loss of supplies to customers.

Number of Loss of Supply Incidents

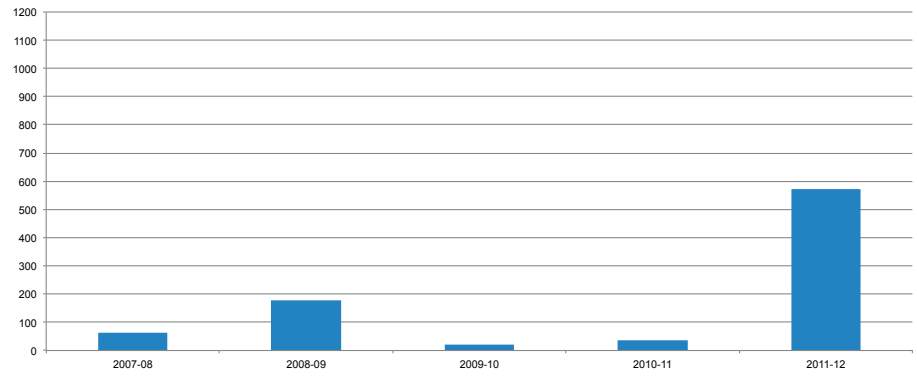
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the SHETL Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	18	14	34	12	19
3 or less Customers	0	0	0	0	0

Estimated Unsupplied Energy

The chart shows the annual comparison of the Estimated Unsupplied Energy, excluding 3 or less customers, for Loss of Supply Incidents that occur within the SHETL Transmission System.



	2007-08	2008-09	2009-10	2010-11	2011-12
Excluding 3 or less Customers	64.23	178.58	21.70	35.34	573.88
3 or less Customers	0.00	0.00	0.00	0.00	0.00

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the SHETL Transmission System during 2011-12 was:

573.88 MWh

Reliability of Supply

The Overall Reliability of Supply for the SHETL Transmission System during 2011-12 was:

99.99228%

compared with 99.99956% in 2010-11 and 99.99973% in 2009-10

Loss of Supply Incident Details

SHETL Loss of Supply Incidents excluding '3 or less customers' sites

Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
24 April 2011, 16:32 at Fort Augustus 132kV Substation The Fort William - Broadford 132kV circuit tripped and auto-reclosed due to an unknown transient fault.	33	0.7	0.38
7 May 2011, 15:23 at Sloy 132kV Substation The Sloy - Clachan - Inveraray 132kV circuit tripped during lightning. Demand was restored in stages.	4.5	14	1.05
23 May 2011, 13:10 at Inveraray 132kV Substation The Inveraray - An Suidhe - Port Ann - Caradale 132kV circuit tripped and auto-reclosed during storm conditions.	22	0	0.12
23 May 2011, 13:11 at Inveraray 132kV Substation The Inveraray - An Suidhe - Port Ann - Caradale 132kV circuit tripped during storm conditions. Demand was restored via DNO network.	22	169	50.13
23 May 2011, 17:13 at Tealing Substation The Tealing - Arbroath South 132kV circuit tripped during storm conditions after a tree fell against the conductor. The Tealing - Arbroath North circuit was out of service at the time of the trip. Demand was restored via DNO network.	27	16	7.28
23 May 2011, 19:07 at Errochty Substation The Errochty - Fort Augustus 132kV double circuit tripped during storm conditions. Demand was restored in stages.	354	252	269
22 July 2011, 03:36 at Sloy 132kV Substation The Sloy - Dunoon - Windyhill 132kV circuit tripped and auto-reclosed due to an unknown transient fault. Dunoon Grid Transformer No.2 on planned outage.	8.5	0.4	0.06
1 September 2011, 06:12 at Fort Augustus 132kV substation The Fort Augustus - Fort William - Quoich - Broadford 132kV circuit tripped and auto-reclosed due to an unknown transient fault.	20	0.5	0.17
12 September 2011, 20:19 at Beauly 275kV Substation The Beauly 275kV South Bus Bar was inadvertently tripped while commissioning new circuit protection.	2.5	68	2.83
6 October 2011, 06:59 at Fort Augustus 132kV substation The Fort Augustus - Fort William - Quoich - Broadford 132kV circuit tripped and auto-reclosed due to an unknown transient fault.	33	0.7	0.38
18 October 2011, 07:11 at Sloy 132kV Substation The Sloy - Clachan - Inveraray 132kV circuit tripped and reclosed via telecontrol during lightning activity.	7	7	0.82
8 December 2011, 11:49 at Fort Augustus 132kV substation The Fort Augustus - Fort William - Quoich - Broadford 132kV circuit tripped due to an unknown transient fault during storm conditions. Demand was restored in stages.	48	11	5.43
8 December 2011, 13:24 at Fort Augustus 132kV Substation 33kV CB 1T0 opened coincident with a 33kV fault during severe gales and heavy showers.	4	24.5	1.63
8 December 2011, 13:51 at Fort Augustus 132kV Substation The Fort Augustus - Fort William - Quoich - Broadford 132kV circuit tripped and auto reclosed due to an unknown transient fault during storm conditions.	43	0.53	0.38
22 December 2011, 12:29 at Fort Augustus 132kV Substation The Fort Augustus - Fort William - Quoich - Broadford 132kV circuit tripped when a crane came into contact with the conductors. Demand was restored in stages.	28	456	209
28 December 2011, 12:22 at Fort Augustus 132kV Substation The Fort Augustus - Fort William - Quoich - Broadford 132kV circuit tripped and auto reclosed due to an unknown transient fault during storm conditions.	40	0.62	0.41
28 December 2011, 16:29 at Fort Augustus 132kV Substation The Fort Augustus - Fort William - Quoich - Broadford 132kV circuit tripped and auto reclosed due to an unknown transient fault during storm conditions.	46	0.65	0.50
6 January 2012, 05:45 at Peterhead 132kV Substation The Peterhead - St Fergus - Peterhead Grange 132kV double circuit switched out to allow the safe removal of a third party rocket firing line.	10	143	24.31
14 February 2012, 14:28 at Shin 132kV Substation Grid Transformer No.1 tripped due to a damaged bushing. Demand restored via DNO network.	1.5	0.02	0.0004
		Total	**573.88 MWh**

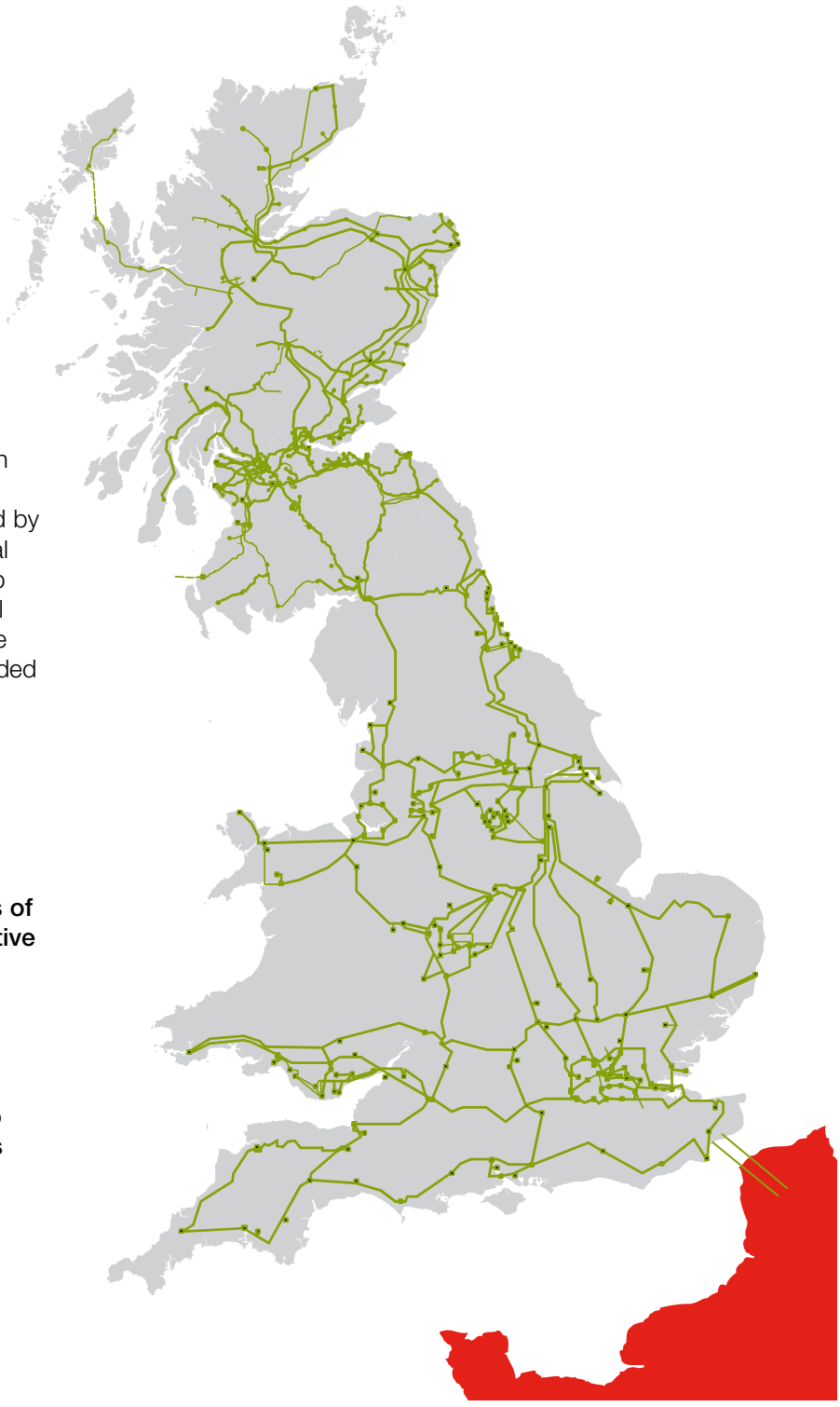
SHETL Loss of Supply Incidents affecting '3 or less customers' sites

Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
		None	**None**

Section Five

Interconnectors

England - France Interconnector



System Description

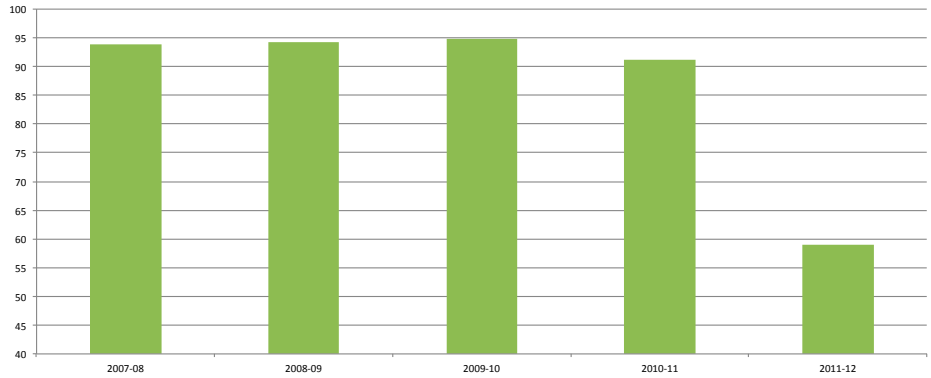
The National Grid transmission system owned and operated by National Grid Electricity Transmission (NGET) has an interconnection with the Réseau de Transport d'Electricité (RTE) transmission system in France. Until August 2006 the interconnector was owned and operated by NGET and RTE. In August 2006 National Grid transferred its part of the ownership and operational responsibility to National Grid Interconnectors Limited (NGIC). The information in this report has been provided by NGIC, the Interconnector Licence holder.

Outages are co-ordinated, as far as practical, between NGIC and RTE to allow work to be undertaken by both parties during an outage. Availability reductions are attributed on the basis of work being carried out by the respective parties.

The total capability of the England – France Interconnector is 2000MW. This is made up of four 'circuits', each of 500MW. There is no redundancy of the major components making up each circuit; hence all outages have an effect on real time capability.

Annual Availability

The chart below shows the annual comparison of availability of the England – France Interconnector.

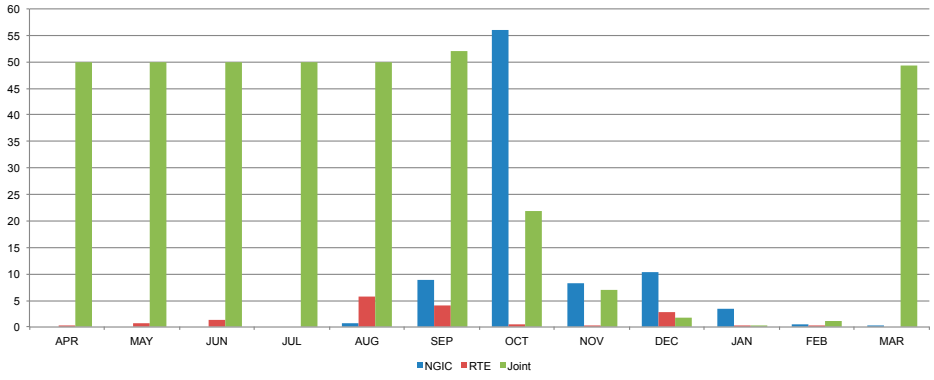


2007-08	2008-09	2009-10	2010-11	2011-12
93.92	94.30	94.80	91.25	59.09

The low availability percentage during 2011-12 is due to the Valve Replacement Project, undertaken from March to October 2011, and March 2012.

Monthly Unavailability

% England - France Interconnector Monthly Unavailability



	NGIC	RTE	Joint
April	0.00	0.06	50.00
May	0.00	0.68	50.00
June	0.00	1.33	50.00
July	0.00	0.00	50.00
August	0.77	5.74	50.00
September	8.85	4.06	52.04
October	56.11	0.49	21.86
November	8.18	0.32	7.06
December	10.33	2.86	1.70
January	3.37	0.17	0.03
February	0.50	0.24	1.22
March	0.40	0.00	49.30
Average	7.47	1.34	32.10

The high unavailability percentage during 2011-12 is due to the Valve Replacement Project, undertaken from March to October 2011, and March 2012.

Annual System Availability

Annual Availability of
England – France Interconnector for
2011-2012 was:

59.09%

Outages 2011-12 (April - March)

Notes: Valve Replacement is a major committed interconnector project (€70m jointly) and when completed will address a mode of failure which has featured a number of times in 2011 and 2012 (see Chart 3 for further details).

The first and second charts refer to Planned and Unplanned Outages. In this context Planned are notified prior to Day Ahead. Unplanned are notified at Day Ahead or within the Contract Day.

Chart 1 below shows the Interconnector Planned Outages on a per month basis.

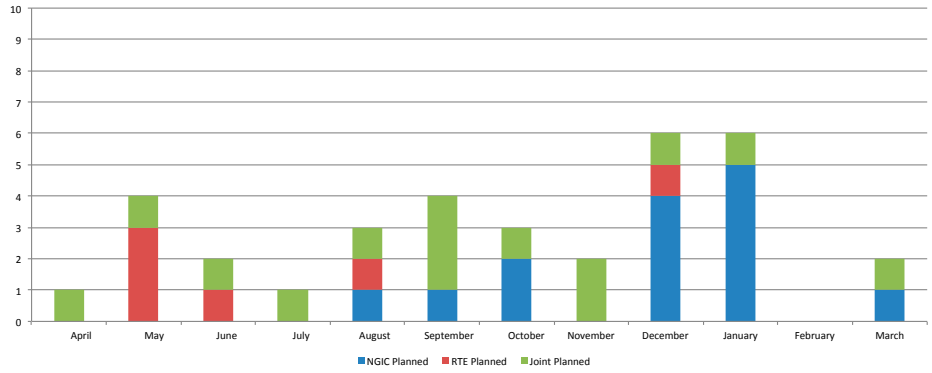


Chart 1

	NGIC	RTE	Joint
April	0	0	1
May	0	3	1
June	0	1	1
July	0	0	1
August	1	1	1
September	1	0	3
October	2	0	1
November	0	0	2
December	4	1	1
January	5	0	1
February	0	0	0
March	1	0	1
Total	14	6	14

Chart 2 below shows the Interconnector Unplanned Outages on a per month basis.

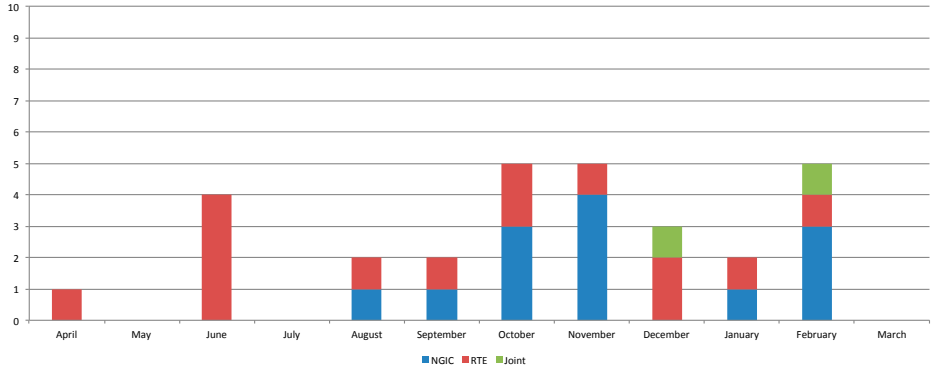


Chart 2

	NGIC	RTE	Joint
April	0	1	0
May	0	0	0
June	0	4	0
July	0	0	0
August	1	1	0
September	1	1	0
October	3	2	0
November	4	1	0
December	0	2	1
January	1	1	0
February	3	1	1
March	0	0	0
Total	13	14	2

Chart 3 below shows all the Interconnector Outages on a per month basis. Outages related to assets (Valve/Control) in scope of the Valve Replacement Project are compared to outages related to other assets.

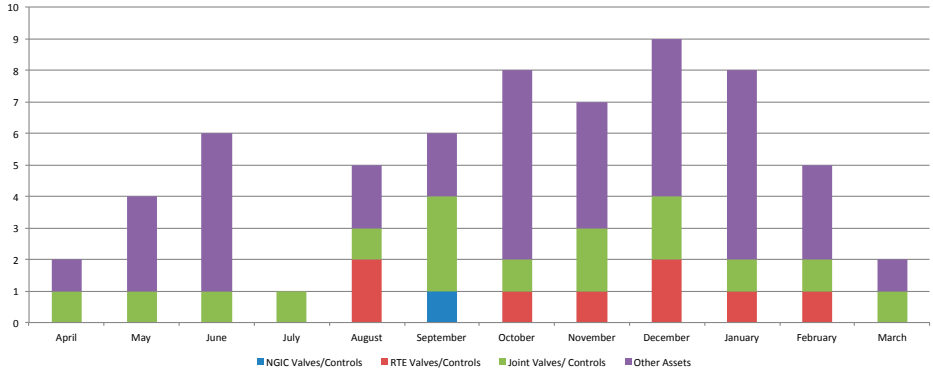


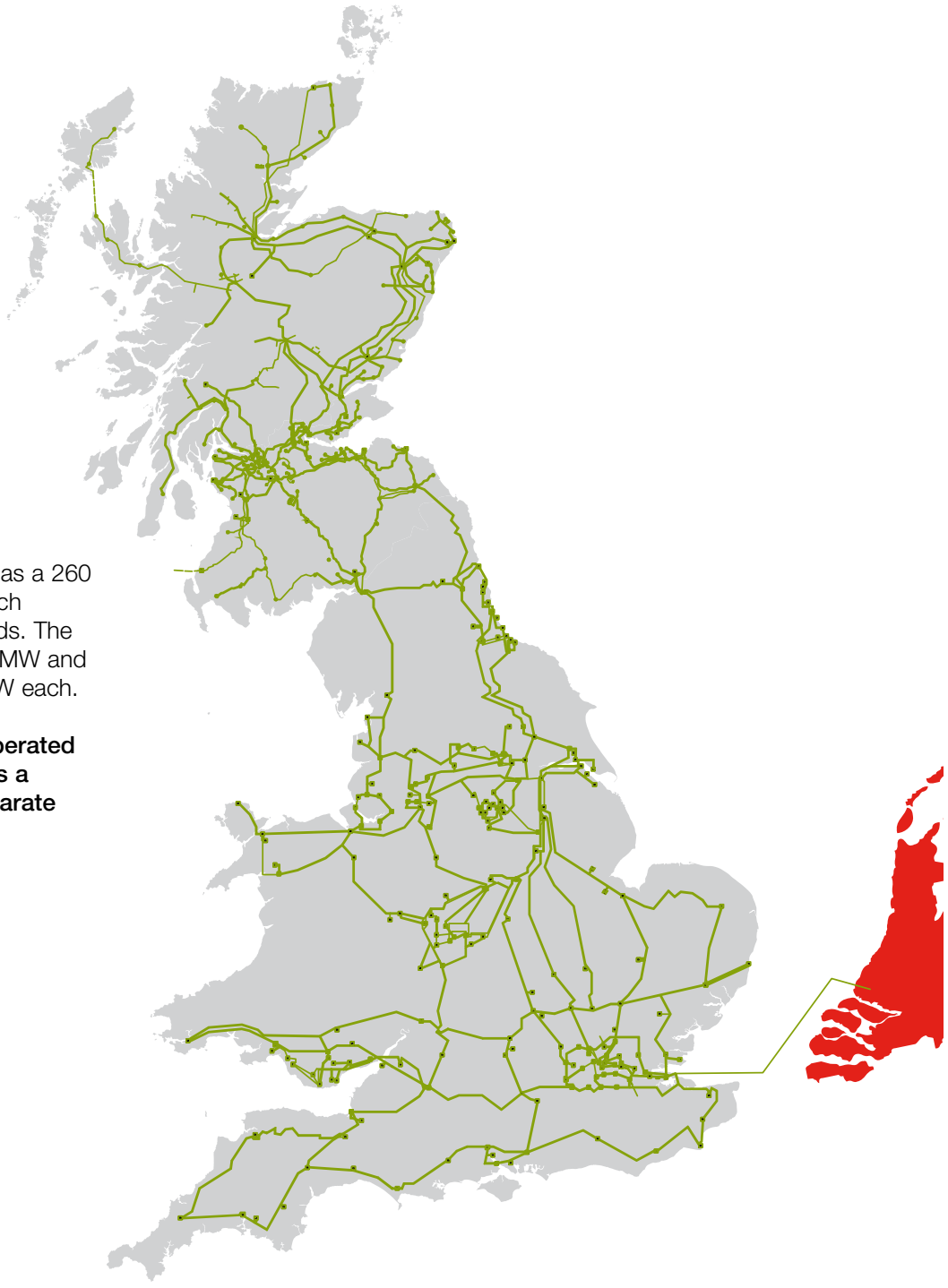
Chart 3

	NGIC Values/ Controls	RTE Values/ Controls	Joint Values/ Controls	Other Assets
April	0	0	1	1
May	0	0	1	3
June	0	0	1	5
July	0	0	1	0
August	0	2	1	2
September	1	0	3	2
October	0	1	1	6
November	0	1	2	4
December	0	2	2	5
January	0	1	1	6
February	0	1	1	3
March	0	0	1	1
Total	1	8	16	38

Section Five

Interconnectors

England - Netherlands Interconnector



System Description

The NGET transmission system has a 260 km long interconnection with Dutch operator TenneT in the Netherlands. The total capability of BritNed is 1000MW and is made up of two 'poles', 500MW each.

BritNed is jointly owned and operated by National Grid and TenneT, as a commercial interconnector separate from their regulated activities.

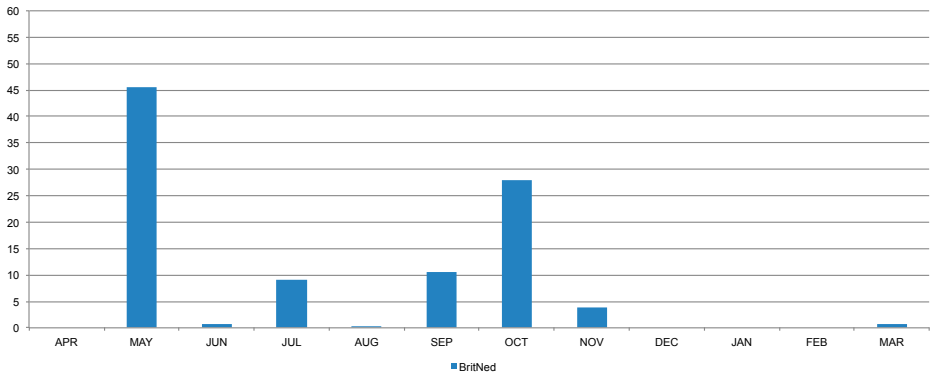
Annual Availability

The table below shows the availability of the England – Netherlands Interconnector.

England - Netherlands Interconnector % Annual Availability
2011-12
91.82

Monthly Unavailability

% England - Netherlands Interconnector Monthly Unavailability



	Brit Ned
April	0.00
May	45.56
June	0.67
July	9.07
August	0.03
September	10.52
October	27.91
November	3.77
December	0.00
January	0.00
February	0.00
March	0.63
Average	8.18

Outages 2011-12 (April - March)

The chart refers to Planned and Unplanned Outages. In this context Planned are notified prior to Day Ahead and Unplanned are notified at Day Ahead or within the Contract Day.

Chart 1 below shows the Interconnector Planned and Unplanned Outages on a per month basis.

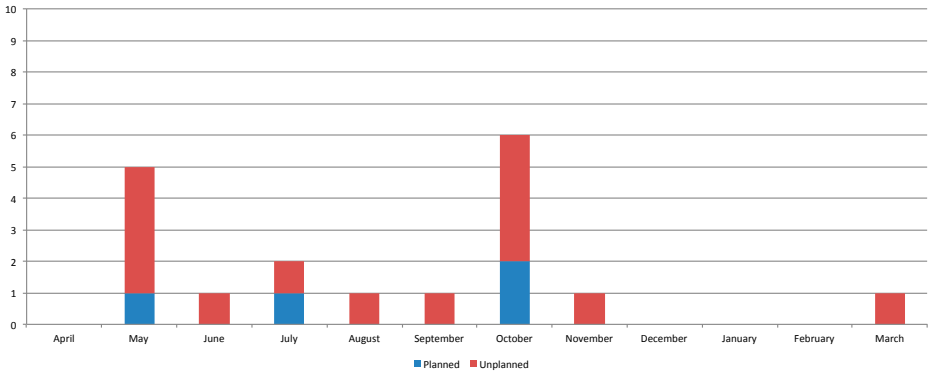


Chart 1

	Planned	Unplanned
April	0	0
May	1	4
June	0	1
July	1	1
August	0	1
September	0	1
October	2	4
November	0	1
December	0	0
January	0	0
February	0	0
March	0	1
Average	4	14

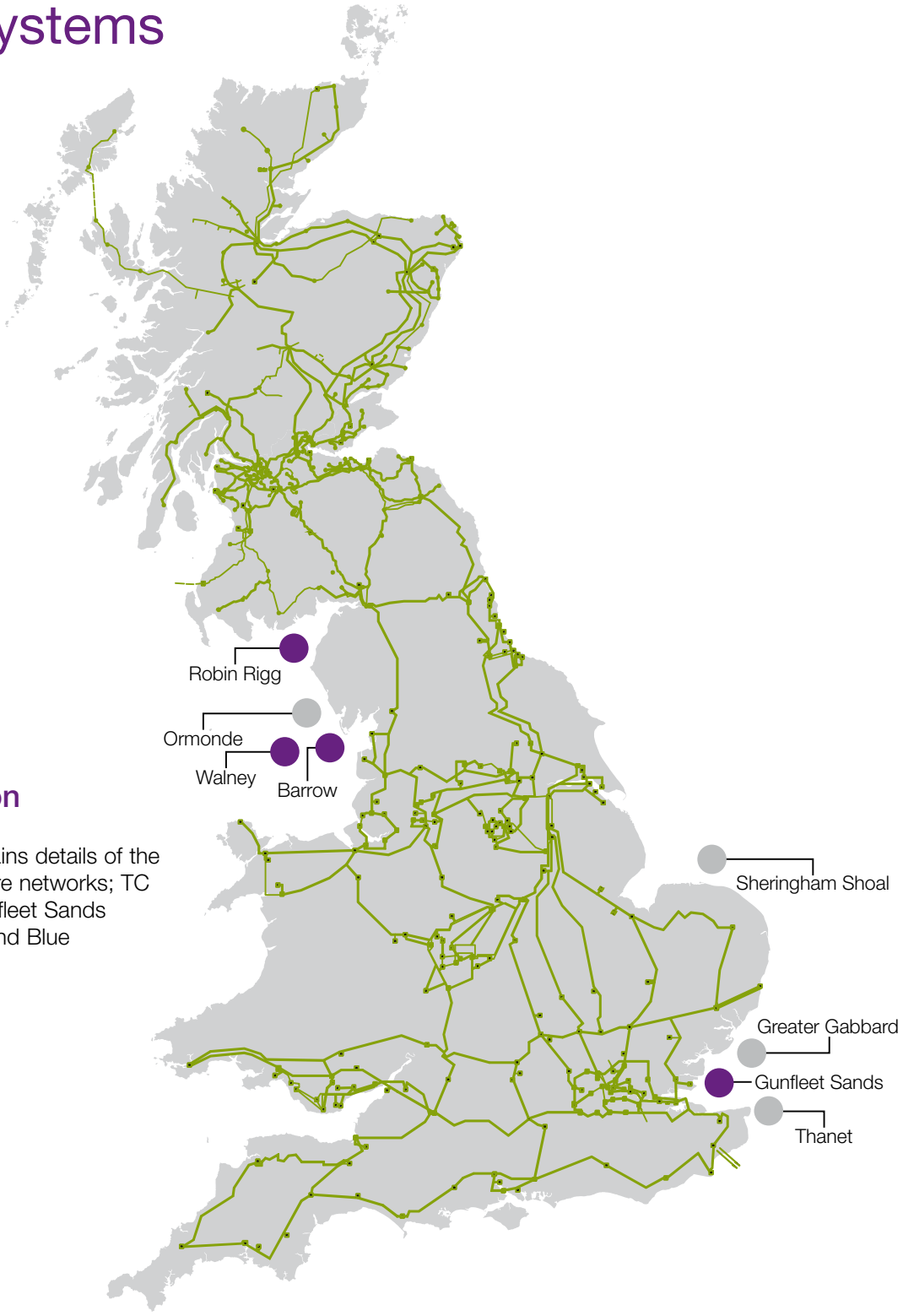
Annual System Availability

Annual Availability of
England – Netherlands Interconnector for
2011-2012 was:

91.82%

Section Six

Offshore Systems



System Description

The following section contains details of the currently connected offshore networks; TC Robin Rigg OFTO, TC Gunfleet Sands OFTO, TC Barrow OFTO and Blue Transmission Walney 1.

Offshore Transmissions Networks

	Go Live	Number of Circuits	Circuit Length KM	Generating Capacity MW	Connection Voltage	Interfacing Party
TC Robin Rigg	02/03/2011	2	14.4	2 x 92	132 kV	DNO
TC Gunfleet Sands	19/07/2011	1	12.76	99 + 64.9	132 kV	DNO
TC Barrow	27/09/2011	1	30.1	90	132 kV	DNO
Blue Walney 1	21/10/2011	1	48.2	183.6	132 kV	Transmission

Availability

The definitions and criteria for system availability can be found in the Glossary of Terms at the end of this report.

System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability. There is also a breakdown of Planned and Unplanned System Unavailability.

% Annual System Availability

	2011-12
TC Robin Rigg	99.88
TC Gunfleet Sands	100
TC Barrow	100
Blue Walney	100

% Winter Peak System Availability

	2011-12
TC Robin Rigg	100
TC Gunfleet Sands	100
TC Barrow	100
Blue Walney	100

% Monthly System Availability

	April	May	June	July	August	September	October	November	December	January	February	March
TC Robin Rigg	100	100	100	100	98.63	100	100	100	100	100	100	100
TC Gunfleet Sands	N/A	N/A	N/A	100	100	100	100	100	100	100	100	100
TC Barrow	N/A	N/A	N/A	N/A	N/A	100	100	100	100	100	100	100
Blue Walney	N/A	N/A	N/A	N/A	N/A	N/A	100	100	100	100	100	100

Monthly Planned and Unplanned Unavailability

The table shows the monthly variation in Planned and Unplanned System Unavailability for the Offshore Transmission Networks.

The unavailability has been classified by network responsibility i.e. OFTO or a result of distribution network faults (DNO).

		April	May	June	July	August	September	October	November	December	January	February	March
TC Robin Rigg	OFTO Planned	0	0	0	0	1.37	0	0	0	0	0	0	0
	DNO Planned	0	0	0	0	0	0	0	0	0	0	0	0
	OFTO Unplanned	0	0	0	0	0	0	0	0	0	0	0	0
	DNO Unplanned	0	0	0	0	0	0	0	0	0	0	0	0
TC Gunfleet Sands	OFTO Planned	N/A	N/A	N/A	0	0	0	0	0	0	0	0	0
	DNO Planned	N/A	N/A	N/A	0	0	0	0.97	0	0	0	0	0
	OFTO Unplanned	N/A	N/A	N/A	0	0	0	0	0	0	0	0	0
	DNO Unplanned	N/A	N/A	N/A	0	0	0	0	0	0	0	0	0
TC Barrow	OFTO Planned	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0	0
	DNO Planned	N/A	N/A	N/A	N/A	N/A	0	0	0.09	0.03	0	0	0.1
	OFTO Unplanned	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0	0
	DNO Unplanned	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0.49	0
Blue Walney 1	OFTO Planned	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0
	DNO Planned	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0
	OFTO Unplanned	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0
	DNO Unplanned	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0

Security

The definitions and criteria for system security can be found in the Glossary of Terms at the end of this report.

System performance is monitored by the estimated unsupplied energy from the Offshore Transmission Systems for each incident.

During 2011-12 there were 0 Offshore Transmission system events where transmission circuits were disconnected either automatically or by urgent manual switching.

Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the Offshore Transmission Systems during 2011-12 was:

0MWh

There were no Estimated Unsupplied Energy, Loss of Supply Incidents that occurred within the Offshore Transmission Systems.

Number of Loss of Supply Incidents

There were no of Loss of Supply Incidents that occurred within the Offshore Transmission Systems.

Glossary of Terms

This glossary provides explanations and definitions for common terms used throughout this report.

System Availability

System availability is reduced whenever a circuit is taken out of operation for either planned purposes or as a result of a fault.

Planned outages are required for system construction and new user connections in addition to the maintenance necessary to retain a high level of system reliability to ensure that licence standards of security are met.

System Availability is calculated by the formula:

$$\left(\frac{\text{The sum for all circuits of hours available}}{\text{(No. of circuits) x (No. of hours in period)}}\right) \text{x} 100\%$$

A circuit is defined as equipment on the transmission system, e.g. overhead line, transformer or cable which either connects two bussing points or connects two or more circuit breakers/disconnectors, excluding busbars.

Winter Peak System Availability is defined as the average System Availability over the three months of December, January and February.

System Unavailability

System Unavailability is calculated by the formula:

(100 - Availability) %

Unavailability falls into 4 categories, 3 of which are planned and the other is unplanned:

Maintenance Outages are planned outages required for maintenance;

System Construction Outages are planned outages required to construct or modify assets which are not provided for the exclusive benefit of specific users;

User Connection Outages are planned outages required to construct or modify assets which are provided to facilitate connection for the exclusive benefit of specific system users; and

Unplanned Unavailability is due to outages occurring as a result of plant or equipment failure, i.e. outages required and taken at less than 24 hours' notice.

NETS Grid Code and NETS Security and Quality of Supply Standard

The NETS Grid Code and NETS Security and Quality of Supply Standard (NETS SQSS) define the required security level to which the system is planned. The required security level at a substation increases with the amount of demand connected to the substation and so the planned level of demand security is normally higher for 400kV and 275kV transmission voltages than for 132kV. Additionally, the 132kV network is, in parts, less interconnected than the higher voltage systems and so losses of 132kV transmission circuits (for instance due to weather related transient faults) are more likely to lead to temporary losses of supply.

Loss of Supply Incidents

A loss of supply incident is defined as any incident on the transmission system that results in an actual unsupplied energy incident to a customer or customers including pumped storage units operating in pump mode.

All transmission system incidents that resulted in a loss of supplies are reported individually giving information about the cause of the incident, its location, duration and an estimate of unsupplied energy.

Loss of Supply Incidents at '3 or less customers' Sites

The '3 or less customers' category covers locations where major industrial customers are directly connected to the transmission system. The customer could be a steelworks, refinery or other large industrial processing site. Connection arrangements are chosen by the customer and often have a level of design and operational security below that normally required to satisfy the NETS SQSS. This may be reflected in a reduced cost of the connection. In some cases, customers have also chosen to secure their supplies using their own generation to compensate for this reduced level of transmission system security. Distribution Network Operators and domestic customers do not come within this category.

Overall Reliability of Supply

The Overall Reliability of Supply for a transmission system is calculated using the formula:

$$\left[1-\left(\frac{\text{Estimated Unsupplied Energy}}{\text{Total energy that would have been supplied by the transmission system}}\right)\right] \times 100\%$$

Voltage Excursions

The Electricity Safety, Quality and Continuity Regulations 2002 permit variations of voltage not exceeding 10% above and below the nominal at voltages of 132kV and above and not exceeding 6% at lower voltages. Any Voltage Excursions in excess of 15 minutes will be reported.

The NETS Grid Code reflects these limits, and imposes a further constraint for the 400kV system in that voltages can only exceed +5% for a maximum of 15 minutes.

Consumers may expect the voltage to remain within these limits, except under abnormal conditions e.g. a system fault outside of the limits specified in the NETS SQSS.

Normal operational limits are agreed and monitored individually at connection points with customers to ensure that voltage limits are not exceeded following the specified credible fault events described in NETS SQSS.

Frequency Excursions

The Electricity Safety, Quality and Continuity Regulations 2002 permit variations in frequency not exceeding 1% above and below 50Hz: a range of 49.5 to 50.5Hz. Any frequency excursions outside these limits for 60 seconds or more will be reported.

The system is normally managed such that frequency is maintained within operational limits of 49.8 and 50.2Hz.

Frequency may, however, move outside these limits under fault conditions or when abnormal changes to operating conditions occur. Losses of generation between 1000 and 1320MW are considered abnormal and a maximum frequency change of 0.8Hz may occur, although operation is managed so that the frequency should return within the lower statutory limit of 49.5Hz within 60 seconds.

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