nationalgrid
THE POWER OF ACTION

Report to the Gas and Electricity Markets Authority

National Electricity Transmission System Performance Report
2010 - 2011

Report to the Gas and Electricity Markets Authority

National Electricity Transmission System Performance Report
2010 - 2011

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, following implementation of British Electricity Transmission & Trading Arrangements (BETTA). On 24th June 2009, following the 'Go Active' of offshore transmission, National Grid became the National Electricity Transmission System Operator (NETSO) which extended its GBSO operation to include the Offshore Transmission System.

The Offshore Transmission Licence for Robin Rigg went live during March 2011 and further Offshore Transmission Owners will commence operating in 2011. National Grid will provide figures relating to the Offshore Transmission System within the 2011/12 report.

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 Transmission System broadly comprises circuits operating at 400kV, 275kV and also includes 132kV within the Scottish 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 the Scottish Power Transmission Limited and Scottish Hydro Electric Transmission Limited transmission networks has 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 the Netherlands. The Northern Ireland Interconnector is regulated by the Northern Ireland Regulator (NIAUR) and falls outside the scope of this report.

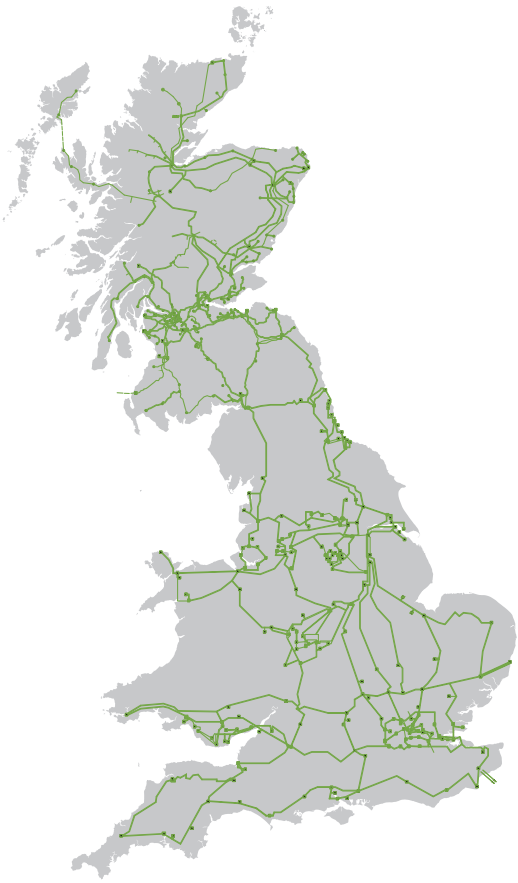
Information relating to the Interconnexion France – Angleterre (IFA) has been provided by National Grid Interconnectors Limited (NGIL) in accordance with Licence Condition D5 (Transmission System Security Standard and Quality of Service) of the NGIL Transmission Licence.

BritNed, the interconnector between England and the Netherlands is jointly owned and operated by National Grid and TenneT will be included in the report for 2011/12.

Section One

National Electricity **Transmission**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.

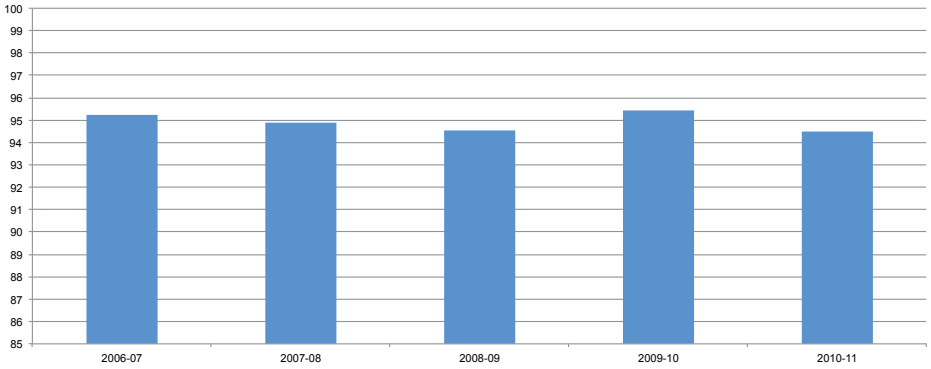
National Electricity Transmission System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability.

Annual System Availability

Annual System Availability of the National Electricity Transmission System for 2010-2011 was

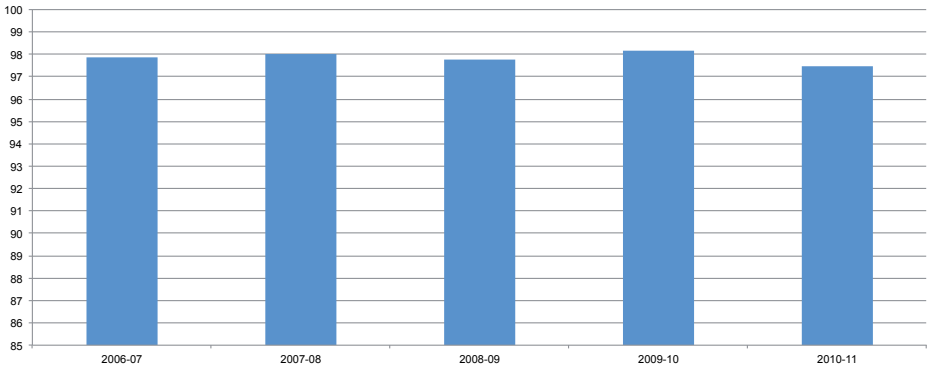
94.47%

% Annual System Availability



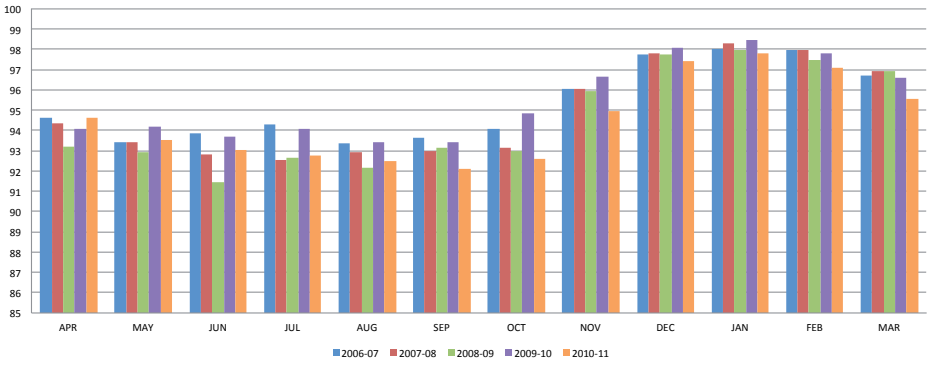
2006-07	2007-08	2008-09	2009-10	2010-11
95.25	94.91	94.55	95.44	94.47

% Winter Peak System Availability



2006-07	2007-08	2008-09	2009-10	2010-11
97.87	98.02	97.75	98.15	97.45

% Monthly System Availability



	2006-07	2007-08	2008-09	2009-10	2010-11
APR	94.63	94.33	93.20	94.07	94.65
MAY	93.45	93.41	92.94	94.17	93.55
JUN	93.88	92.80	91.48	93.70	93.04
JUL	94.30	92.53	92.64	94.07	92.79
AUG	93.38	92.91	92.14	93.45	92.50
SEP	93.62	92.96	93.15	93.42	92.12
OCT	94.11	93.16	92.98	94.85	92.60
NOV	96.07	96.04	95.93	96.67	94.97
DEC	97.73	97.78	97.77	98.11	97.40
JAN	98.05	98.31	97.96	98.48	97.82
FEB	97.98	98.00	97.51	97.82	97.12
MAR	96.69	96.96	96.93	96.59	95.55

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 2010-11 there were 658 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 30 resulting in loss of supplies to customers.

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the National Electricity Transmission System during 2010-11 was:

983.64MWh

Reliability of Supply

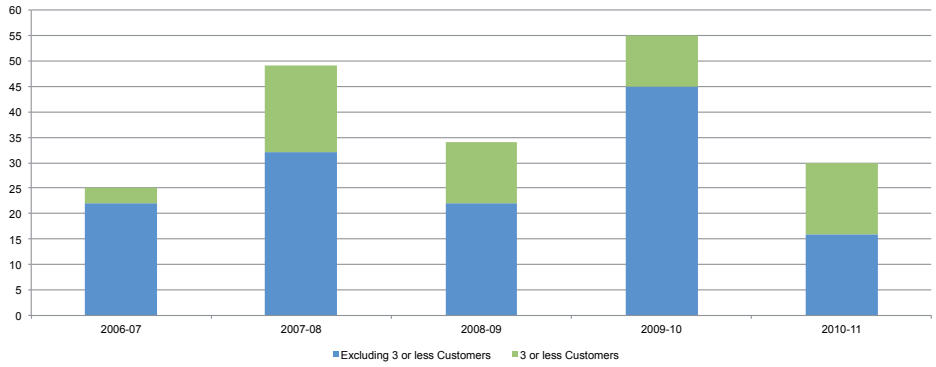
The Overall Reliability of Supply for the National Electricity Transmission System during 2010-11 was:

99.99969%

compared with 99.99979% in 2009-10 and 99.99974% in 2008-09.

Number of Loss of Supply Incidents

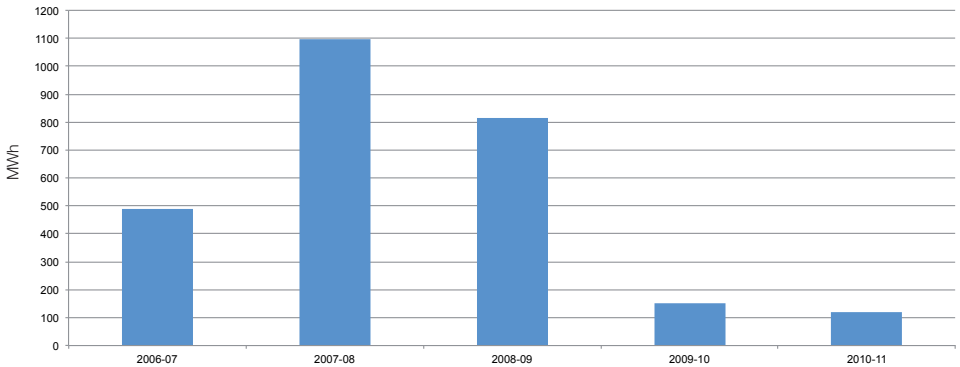
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the National Electricity Transmission System.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	22	32	22	45	16
3 or less Customers	3	17	12	10	14

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.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	490.50	1095.44	814.48	150.55	120.54
3 or less Customers	20.41	579.50	33.80	520.85	863.10

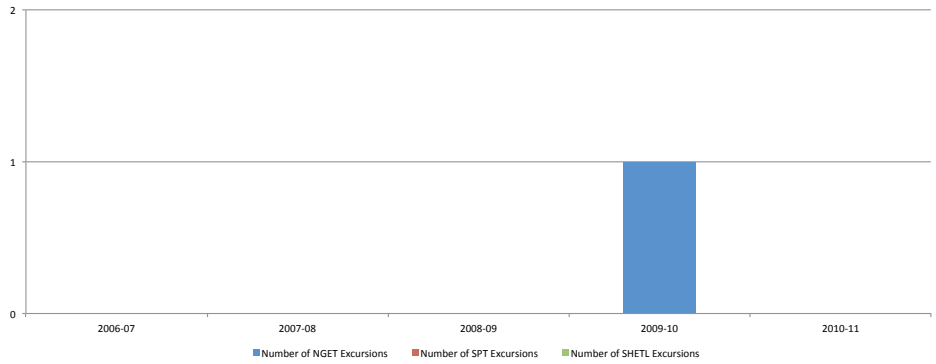
Quality of Service

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 2010-11 no reportable Voltage Excursion occurred within the National Electricity Transmission System.

The chart below shows the annual comparison of the reportable Voltage Excursions that occurred within the National Electricity Transmission System separated into the individual Transmission Owner areas.

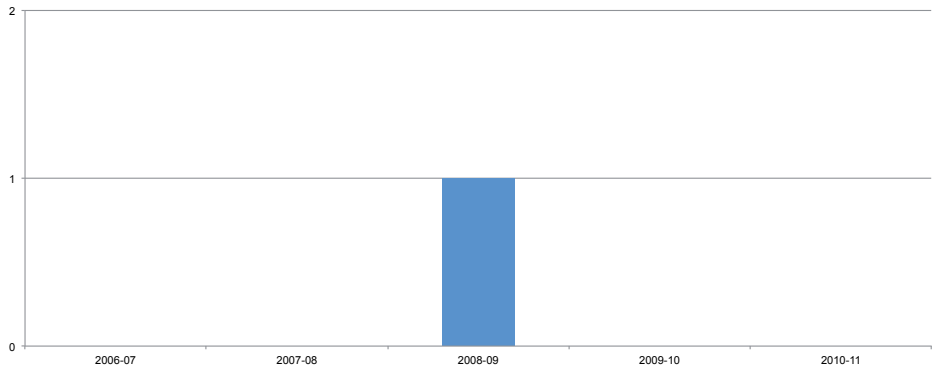


	2006-07	2007-08	2008-09	2009-10	2010-11
Number of NGET Excursions	0	0	0	1	0
Number of SPTL Excursions	0	0	0	0	0
Number of SHETL Excursions	0	0	0	0	0

Frequency Excursions

During 2010-11 there have been no reportable Frequency Excursions.

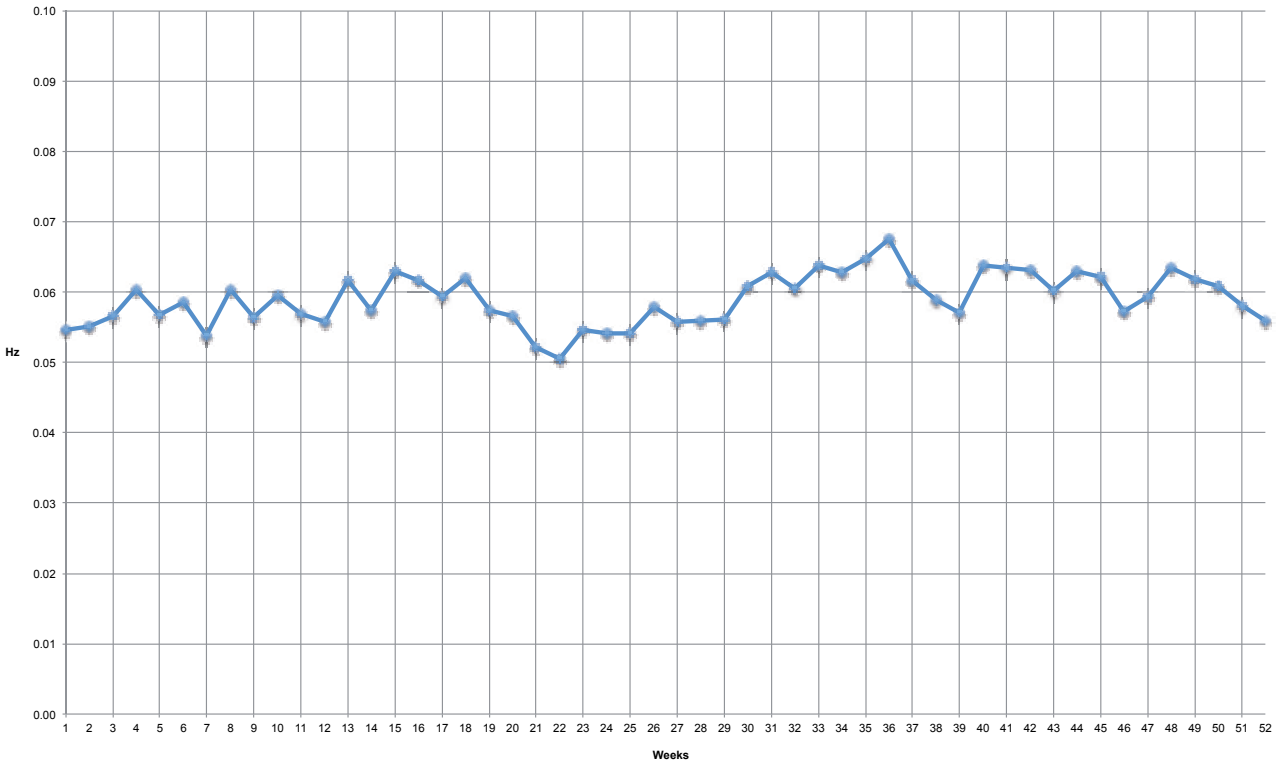
The chart below shows the annual comparison of the reportable Frequency Excursions that occurred within the National Electricity Transmission System.



	2006-07	2007-08	2008-09	2009-10	2010-11
Number of Excursions	0	0	1	0	0

Frequency Standard Deviation

The chart below displays the recorded Frequency Standard Deviation from 50Hz on a weekly basis for the year 2010-11.




nationalgrid
BX11 GDA
nationalgrid
nationalgrid

Section Two

NGETSystem

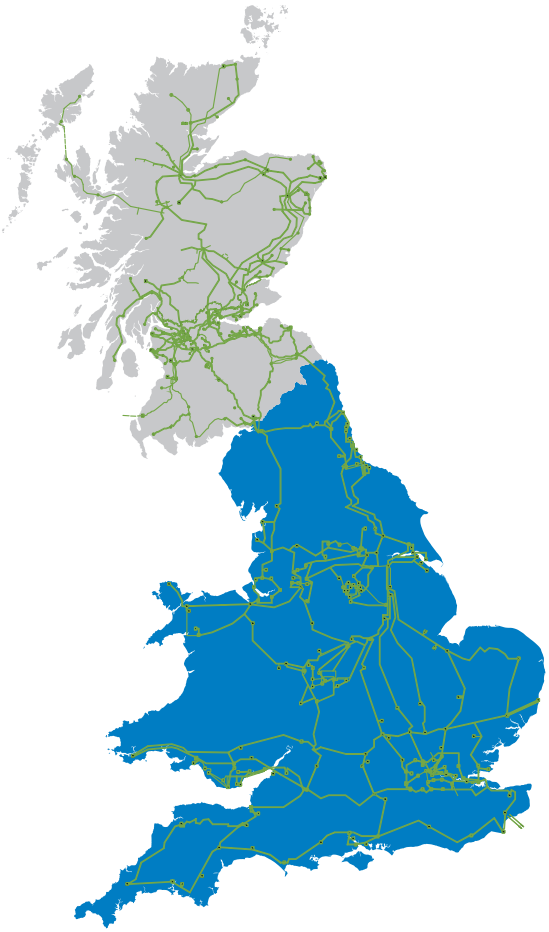
England and Wales Network

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 High Voltage Direct Current (HVDC) interconnectors to France and the Netherlands.

There are 69 large power stations connected to the England and Wales transmission system comprised of 167 Balancing Mechanism Units (BMU) which supply electricity to 12 distribution networks and a small number of directly connected customers such as steelworks.

The Transmission System consists of 14,096 circuit kilometres of overhead line and 650 circuit kilometres of underground transmission cables interconnecting over 300 substations.

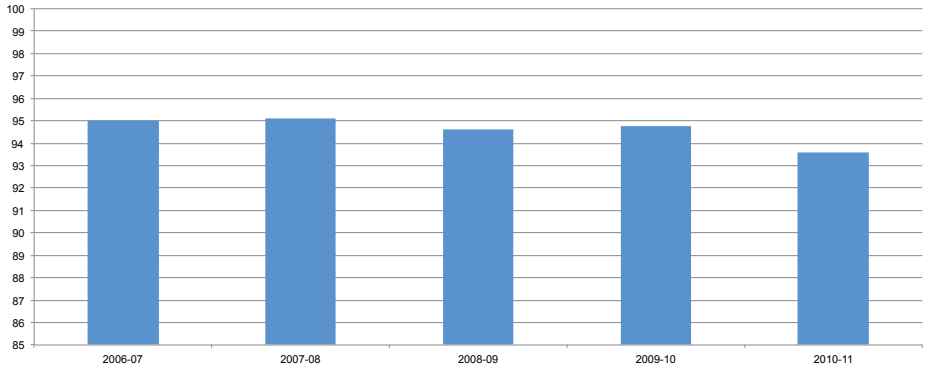


Availability

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

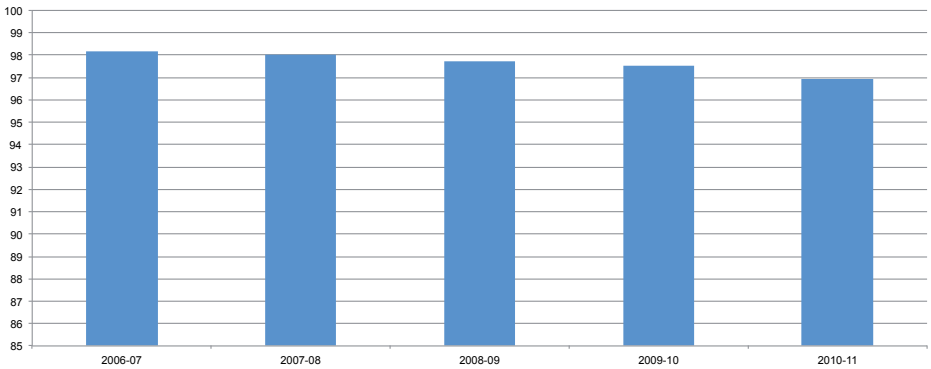
System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability.

% Annual System Availability



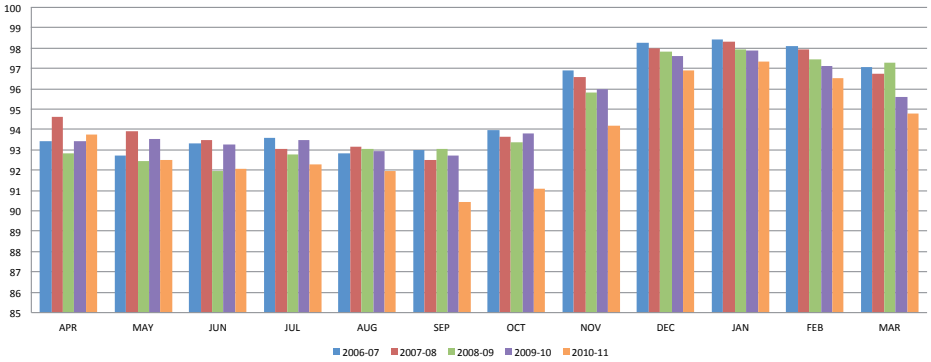
2006-07	2007-08	2008-09	2009-10	2010-11
95.02	95.09	94.64	94.76	93.60

% Winter Peak System Availability



2006-07	2007-08	2008-09	2009-10	2010-11
98.19	98.02	97.73	97.55	96.95

% Monthly System Availability

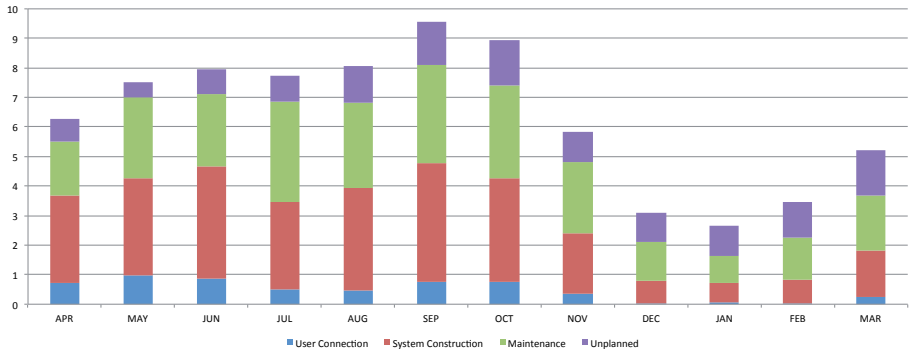


	2006-07	2007-08	2008-09	2009-10	2010-11
APR	93.41	94.63	92.81	93.44	93.74
MAY	92.73	93.89	92.47	93.55	92.48
JUN	93.30	93.49	91.94	93.27	92.05
JUL	93.61	93.07	92.75	93.47	92.28
AUG	92.80	93.15	93.06	92.95	91.94
SEP	92.99	92.48	93.05	92.69	90.42
OCT	93.96	93.64	93.35	93.80	91.08
NOV	96.91	96.55	95.80	95.95	94.18
DEC	98.28	97.98	97.83	97.61	96.92
JAN	98.41	98.31	97.92	97.88	97.36
FEB	98.10	97.94	97.44	97.11	96.53
MAR	97.04	96.72	97.29	95.61	94.79

Planned and Unplanned System Unavailability

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

Unavailability is defined as (100 - Availability) %



	User Connection	System Construction	Maintenance	Unplanned	Total
APR	0.73	2.94	1.82	0.77	6.27
MAY	0.99	3.27	2.74	0.52	7.52
JUN	0.85	3.80	2.47	0.83	7.95
JUL	0.48	2.96	3.41	0.87	7.72
AUG	0.48	3.44	2.89	1.24	8.06
SEP	0.76	3.99	3.34	1.48	9.58
OCT	0.77	3.48	3.16	1.52	8.92
NOV	0.37	2.03	2.42	1.00	5.82
DEC	0.04	0.77	1.31	0.96	3.08
JAN	0.05	0.66	0.95	0.99	2.64
FEB	0.04	0.78	1.43	1.22	3.47
MAR	0.25	1.58	1.85	1.53	5.21

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 2010-11 there were 407 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 8 resulting in loss of supplies to customers.

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the NGET Transmission System during 2010-11 was:

62.5MWh

Reliability of Supply

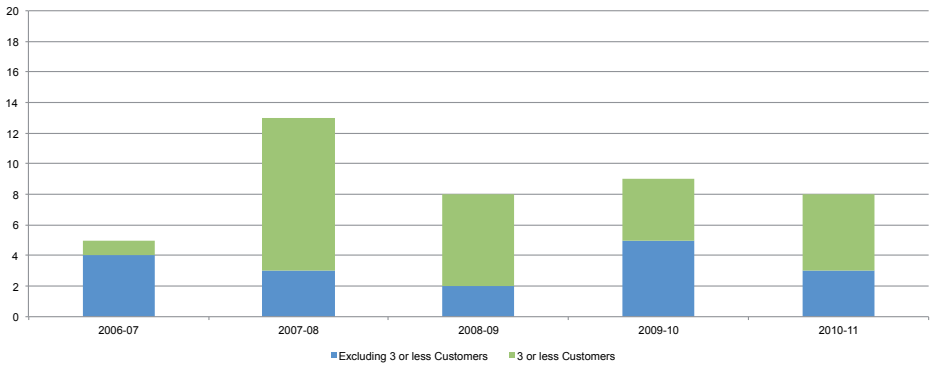
The Overall Reliability of Supply for the NGET Transmission System during 2010-11 was:

99.99998%

compared with 99.99983% in 2009-10 and 99.99989% in 2008-09.

Number of Loss of Supply Incidents

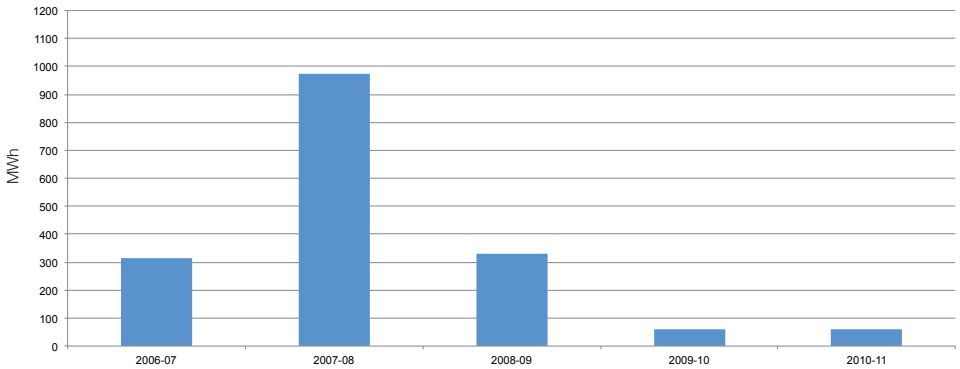
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the NGET Transmission System.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	4	3	2	5	3
3 or less Customers	1	10	6	4	5

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.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	312.79	974.5	329.5	61	59.5
3 or less Customers	0.73	538.5	6	426	3

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
20 July 2010, 17:05 hrs at Lackenby 275 kV substation A protection operation caused the trip of supergrid transformer 2B which, due to other planned maintenance, resulted in a loss of supply of 35.25MW. There were reports of lightning activity in the area at the time of the trip. The supergrid transformer was re-energised and the supply restored by telecommand switching at 18:04.	35.25	59	34.5
17 September 2010, 11:33 hrs at Elstree 275 kV substation A protection operation caused the trip of supergrid transformer 3A, resulting in a loss of supply on the distribution network of 42MW. National Grid continued to offer supplies to the distribution network from supergrid transformer 1B. The distribution network was unable to use the alternative supplies due to a combination of planned and unplanned outages. As supplies were available to the distribution network throughout the event, the unsupplied energy estimation methodology agreed with Ofgem gives MWh unsupplied as the default minimum value of 0.5MWh with a duration of 0 minutes.	42	0	0.5
30 November 2010, 09:43 hrs at Hartmoor 275 kV substation A protection operation caused the trip of supergrid transformer 2 and mesh corners 1 and 2, which due to other planned maintenance, resulted in a loss of supply of 70MW. The MWh unsupplied reflects the fact that demand was restored in stages by the distribution network with full supplies being restored at 10:28.	70	45	24.5
		Total	59.5

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

Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
20 September 2010, 08:08 hrs at Wymondley 400 kV substation A protection operation caused the trip on supergrid transformer 4, resulting in a loss of supply to Network Rail Corey's Mill feeder station. Within 4-minutes, supplies were restored by local switching at the Network Rail site.	0	4	0.5
31 October 2010, 12:05 hrs at Aberthaw 132 kV substation During switching at Aberthaw 132 kV substation, the supply to Aberthaw power station was interrupted. Within 2-minutes, supplies were restored by telecommand switching.	6	2	0.5
12 November 2010, 18:13 hrs at Hutton 400 kV substation A protection operation caused the trip of the Penwortham – Heysham - Hutton double circuit and supergrid transformer 2 supplying the Network Rail Hutton feeder, resulting in a loss of supply. Within 29-minutes supplies were returned by local switching at the Network Rail site.	4	29	1.5
26 November 2010, 18:14 hrs at Kemsley 400 kV substation A protection operation caused the trip of supergrid transformer 3A and the loss of demand to the steelworks. Supplies were restored by manual switching within 98-minutes. The steelworks were not operating at the time of this incident.	0	98	0
13 February 2011, 17:57 hrs at Patford Bridge 400 kV substation A protection operation resulted in the trip of the East Claydon – Patford Bridge – Enderby circuit and the supergrid transformers supplying Network Rail Patford Bridge and Long Buckby feeder stations causing a loss of supply. Supplies were returned within 3-minutes by telecommand switching.	0	3	0.5
		Total	3

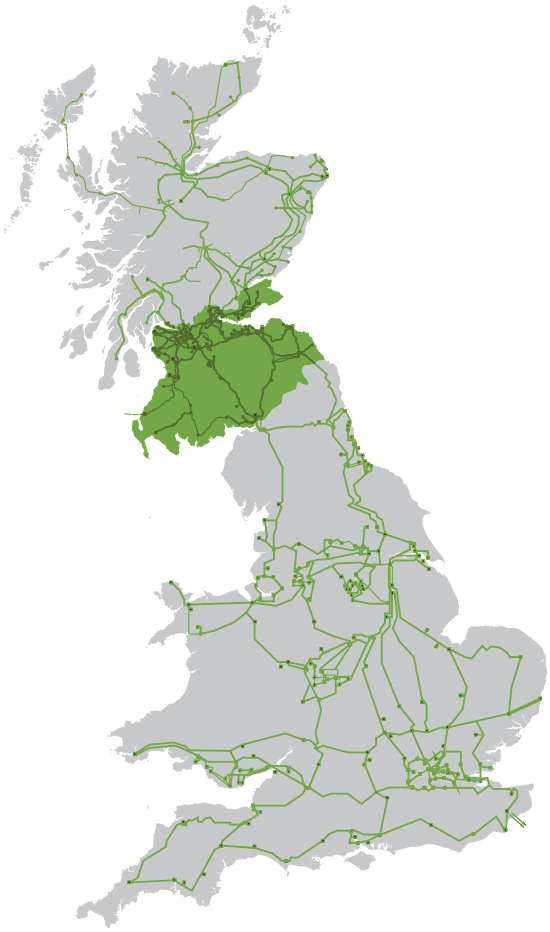
Section Three

SPTL System

System Description

The SPTL Transmission System comprises of 4,345 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 eighteen major customers supplied directly from the Transmission System with the bulk of the load being taken by the Distribution Network within Scottish Power. Fifteen large power stations, totalling over 8.2GW of generation capacity, are connected to the SPTL Transmission System.

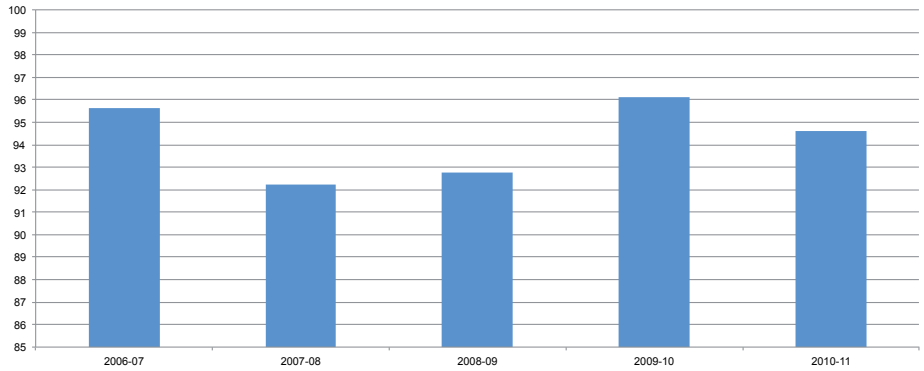


Availability

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

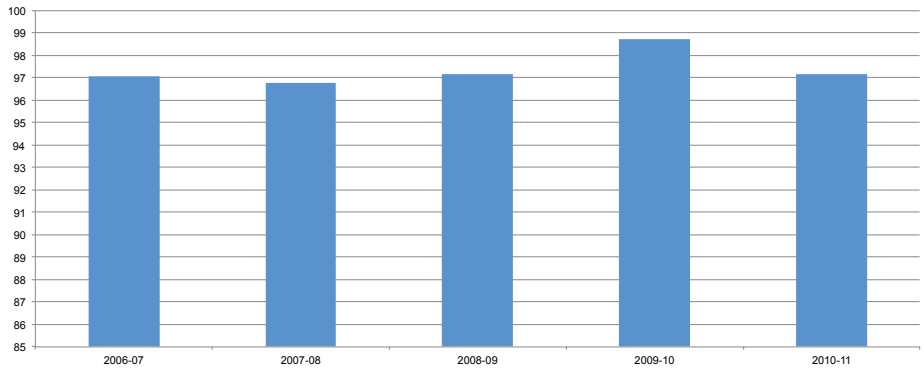
System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability.

% Annual System Availability



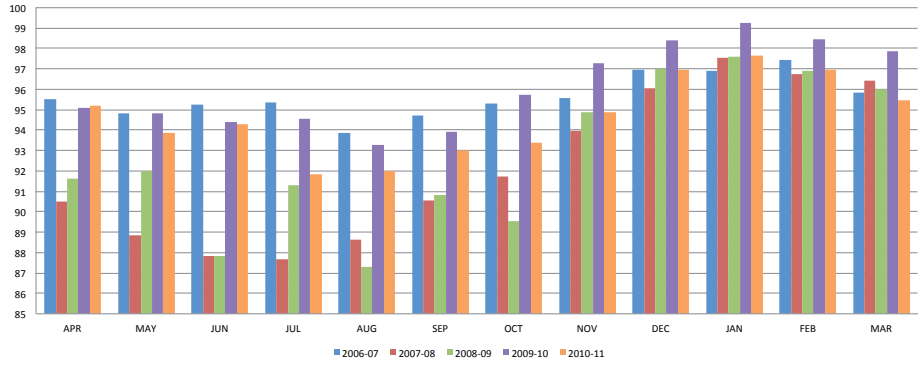
2006-07	2007-08	2008-09	2009-10	2010-11
95.61	92.21	92.74	96.09	94.62

% Winter Peak System Availability

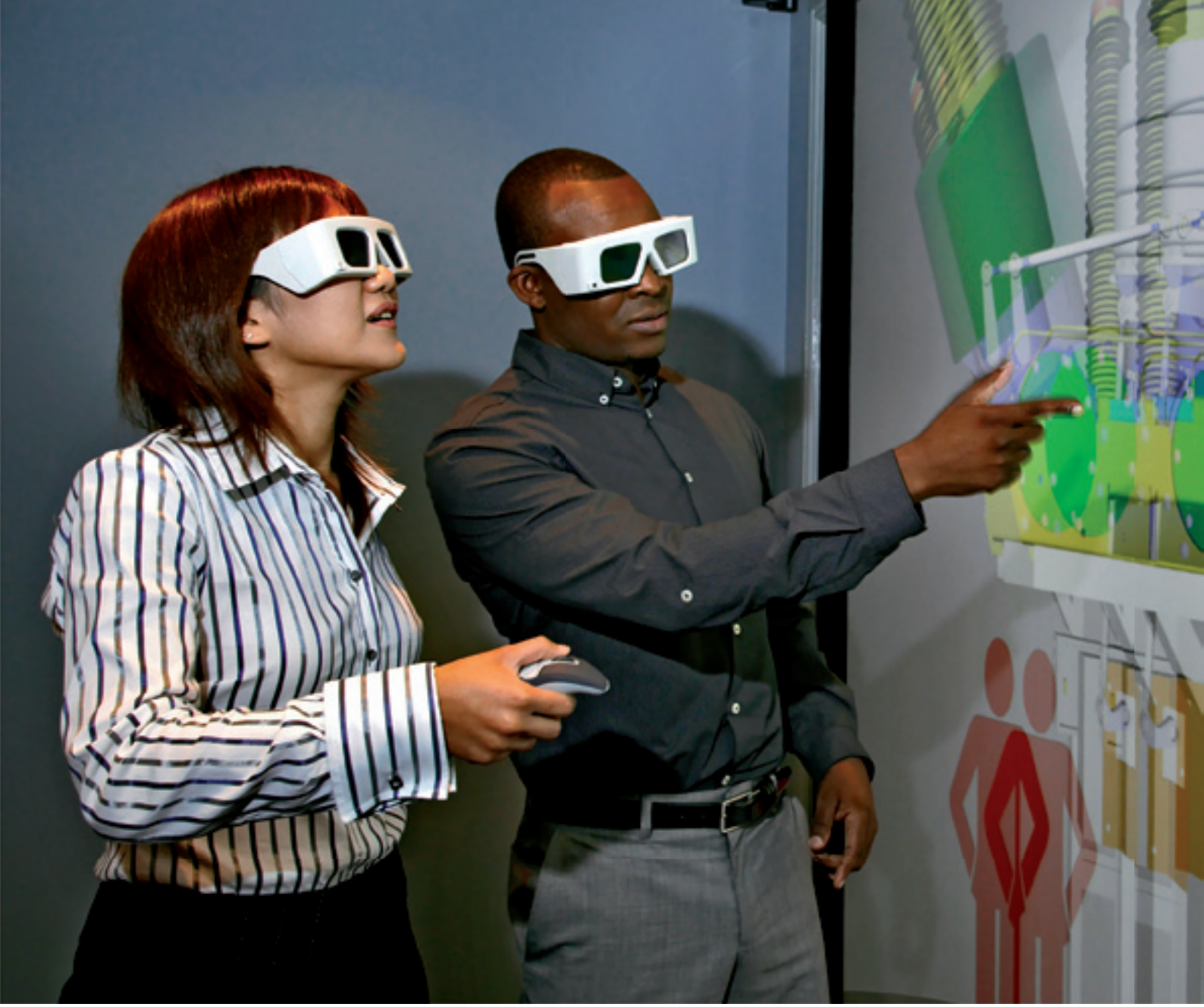


2006-07	2007-08	2008-09	2009-10	2010-11
97.08	96.80	97.19	98.71	97.17

% Monthly System Availability



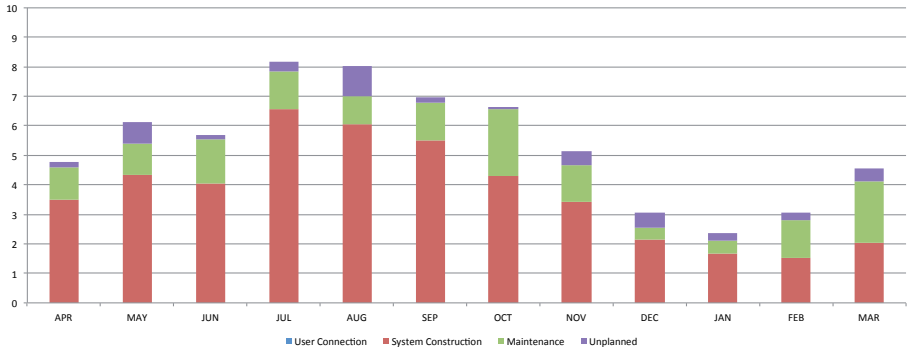
	2006-07	2007-08	2008-09	2009-10	2010-11
APR	95.52	90.49	91.60	95.07	95.22
MAY	94.82	88.86	92.01	94.80	93.87
JUN	95.23	87.82	87.83	94.38	94.31
JUL	95.34	87.67	91.28	94.57	91.82
AUG	93.86	88.63	87.28	93.29	91.97
SEP	94.73	90.54	90.83	93.90	93.02
OCT	95.30	91.70	89.52	95.75	93.37
NOV	95.59	93.96	94.85	97.29	94.87
DEC	96.94	96.06	97.00	98.42	96.94
JAN	96.91	97.56	97.61	99.23	97.63
FEB	97.42	96.77	96.93	98.45	96.94
MAR	95.85	96.42	95.98	97.88	95.46



Planned and Unplanned System Unavailability

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

Unavailability is defined as (100 - Availability) %



	User Connection	System Construction	Maintenance	Unplanned	Total
APR	0.00	3.50	1.10	0.18	4.78
MAY	0.00	4.34	1.06	0.73	6.13
JUN	0.00	4.06	1.47	0.16	5.69
JUL	0.00	6.56	1.28	0.34	8.18
AUG	0.00	6.05	0.94	1.04	8.03
SEP	0.00	5.50	1.30	0.18	6.98
OCT	0.00	4.29	2.26	0.08	6.63
NOV	0.00	3.42	1.26	0.45	5.13
DEC	0.00	2.13	0.40	0.53	3.06
JAN	0.00	1.67	0.45	0.25	2.37
FEB	0.00	1.54	1.27	0.25	3.06
MAR	0.00	2.02	2.11	0.41	4.54

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 2010-11 there were 144 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 10 resulting in loss of supply to customers.

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the SPTL Transmission System during 2010-11 was:

885.8MWh

Reliability of Supply

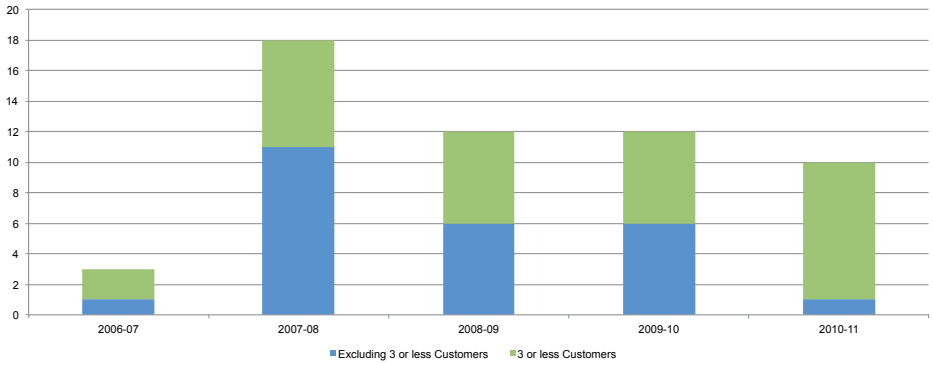
The Overall Reliability of Supply for the SPTL Transmission System during 2010-11 was:

99.99600%

compared with 99.99927% in 2009-10 and 99.99857% in 2008-09.

Number of Loss of Supply Incidents

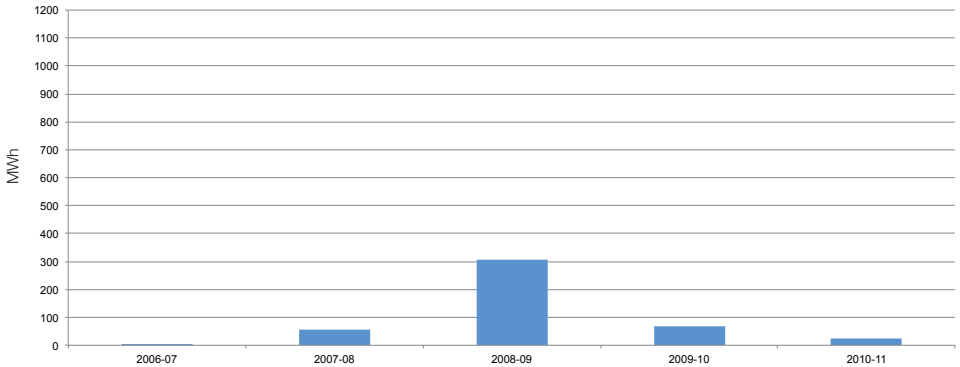
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the SPTL Transmission System.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	1	11	6	6	1
3 or less Customers	2	7	6	6	9

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.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	1.13	56.71	306.4	67.85	25.7
3 or less Customers	19.68	41	27.8	94.85	860.1

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
28 April 2010, 00:42 at Cockenzie Grid Supply Point A 33kV cable sealing end on Cockenzie SGT2 failed causing the transformer to trip. Cockenzie SGT1 was already out of service for planned work. This resulted in the supplies being lost to customers for an average of 57 minutes.	27.2	57	25.7
		Total	25.7

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

Incident Date, Time & Location	MW Lost	Mins	MWh Unsupplied
28 April 2010, 12:42 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 one customer for 48 minutes.	0.0	48	0.0
7 July 2010, 18:04 at Dalmally Grid Supply Point A problem internal to the customer's system resulted in intertrip signals being sent and the loss of the Cruachan-Dalmally 1 and 2 circuits, this caused the loss of supplies to one customer for 11 minutes.	0.0	11	0.0
20 July 2010, 01:54 at Blacklaw Windfarm A 33kV cable sealing end on Blacklaw Grid T1B failed causing the Wishaw-Blacklaw circuit to trip, this caused the loss of supplies to one customer for 85 hours and 11 minutes.	0.0	5111	0.0
25 July 2010, 10:46 at Ravenscraig Grid Supply Point Third party damage to switchgear in Ravenscraig GSP while planned work was being carried out on the other side caused a protection operation which resulted in supplies being lost to one customer for 36 hours and 31 minutes.	19.6	2191	715.8
25 July 2010, 11:37 at Ravenscraig Grid Supply Point Ravenscraig SGT2 was switched out of service following the earlier incidence of third party damage, this resulted in supplies being lost to one customer for 7 hours and 13 minutes.	20.0	433	144.3
8 August 2010, 06:27 at Shrubhill Grid Supply Point A 33kV cable fault on the LV side of Shrubhill SGT1 caused the Smeaton - Portobello - Shrubhill No.1 circuit to trip, this resulted in the loss of supplies at Portobello GSP for 2 minutes.	0.0	2	0.0
25 September 2010, 16:46 at Dalmally Grid Supply Point A problem internal to the customer's system resulted in intertrip signals being sent and the loss of the Cruachan-Dalmally 1 and 2 circuits, this caused the loss of supplies to one customer for 17 minutes.	0.0	17	0.0
27 October 2010, 10:46 at Dalreoch Grid Supply Point Damage to protection circuits on both infeeds to Dalreoch GSP caused both circuits to trip, this resulted in supplies being lost to one customer for 8 hours and 12 minutes.	0.0	492	0.0
1 November 2010, 15:26 at Whitelee Windfarm A major fibre communications system fault caused the loss of all protections on the circuit to Whitelee Windfarm, this resulted in the loss of supplies to one customer for 7 hours and 10 minutes.	0.0	430	0.0
		Total	860.1

Section Four

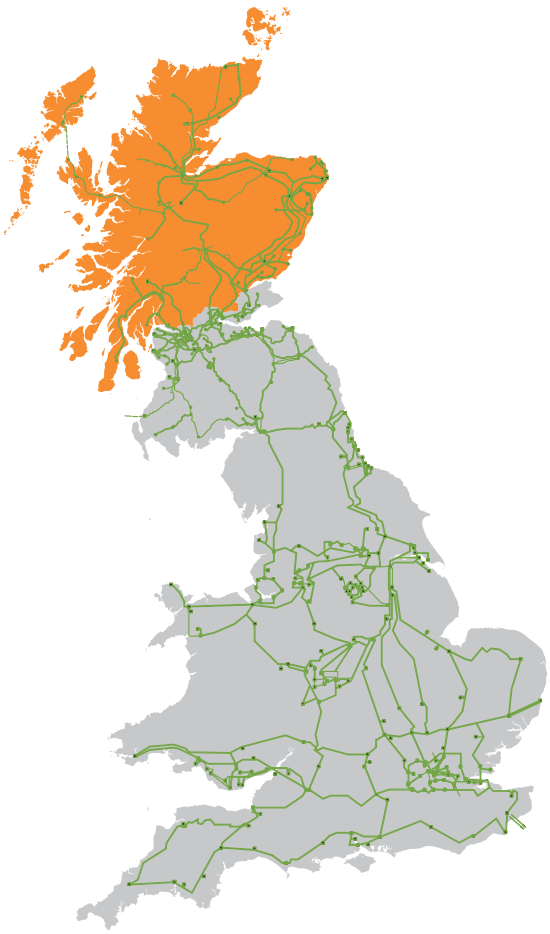
SHETLSystem

System Description

The SHETL Transmission System comprises of 100 substations and 5,293 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.

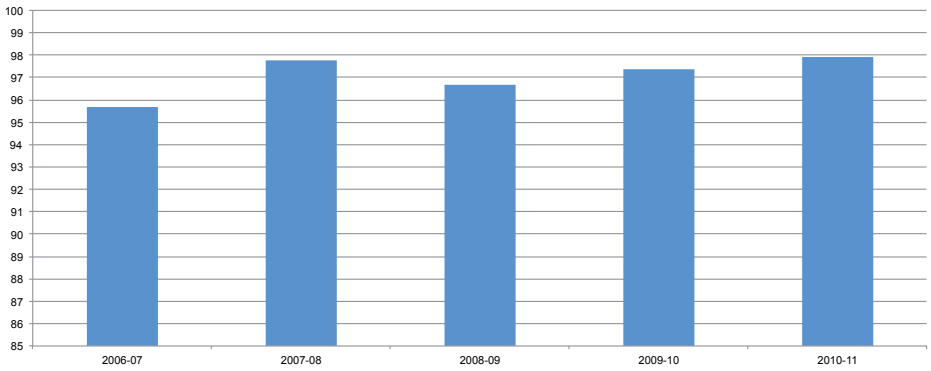


Availability

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

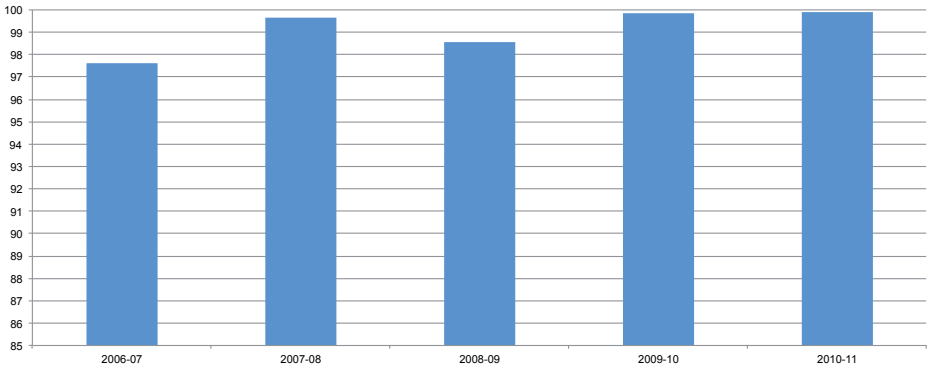
System performance is monitored by reporting variations in Annual System Availability, Winter Peak System Availability and Monthly System Availability.

% Annual System Availability



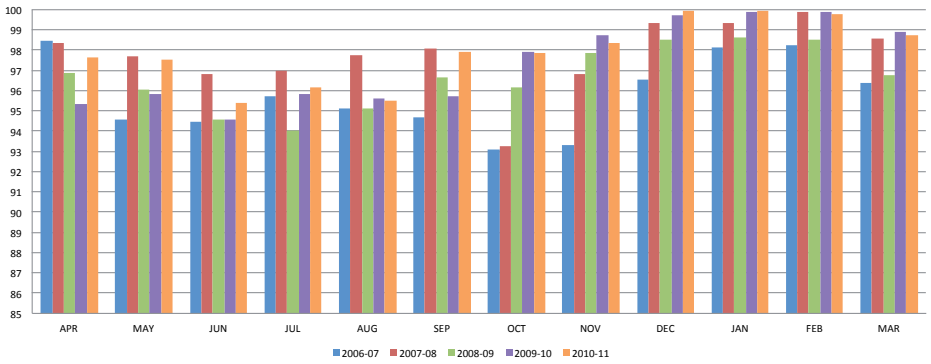
2006-07	2007-08	2008-09	2009-10	2010-11
95.70	97.75	96.66	97.37	97.89

% Winter Peak System Availability



2006-07	2007-08	2008-09	2009-10	2010-11
97.64	99.67	98.56	99.84	99.90

% Monthly System Availability

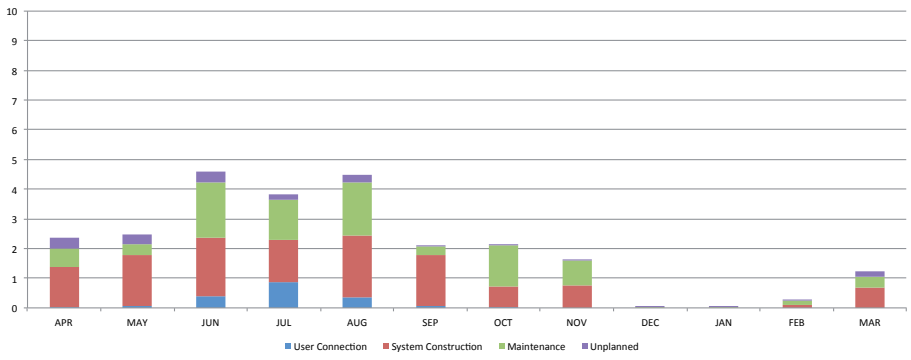


	2006-07	2007-08	2008-09	2009-10	2010-11
APR	98.45	98.36	96.89	95.35	97.64
MAY	94.57	97.68	96.04	95.86	97.53
JUN	94.44	96.84	94.57	94.58	95.40
JUL	95.72	96.97	94.05	95.83	96.19
AUG	95.12	97.77	95.11	95.64	95.50
SEP	94.71	98.08	96.68	95.71	97.91
OCT	93.12	93.25	96.17	97.94	97.85
NOV	93.30	96.84	97.88	98.75	98.37
DEC	96.55	99.35	98.55	99.74	99.97
JAN	98.11	99.35	98.62	99.90	99.95
FEB	98.23	99.88	98.52	99.87	99.76
MAR	96.39	98.59	96.79	98.92	98.76

Planned and Unplanned System Unavailability

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

Unavailability is defined as (100 - Availability) %



	User Connection	System Construction	Maintenance	Unplanned	Total
APR	0.02	1.37	0.60	0.37	2.36
MAY	0.08	1.70	0.37	0.32	2.47
JUN	0.39	1.99	1.86	0.36	4.60
JUL	0.88	1.40	1.37	0.16	3.81
AUG	0.35	2.10	1.76	0.29	4.50
SEP	0.05	1.74	0.29	0.01	2.09
OCT	0.02	0.71	1.39	0.03	2.15
NOV	0.00	0.74	0.84	0.05	1.63
DEC	0.00	0.00	0.02	0.01	0.03
JAN	0.00	0.00	0.04	0.01	0.05
FEB	0.00	0.09	0.14	0.01	0.24
MAR	0.00	0.67	0.37	0.20	1.24

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 2010-11 there were 107 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 12 resulting in loss of supplies to customers.

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the SHETL Transmission System during 2010-11 was:

35.34 MWh

Reliability of Supply

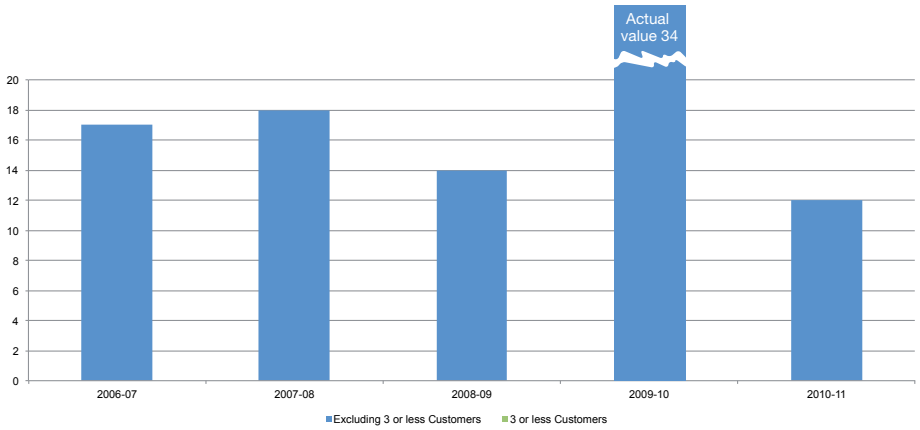
The Overall Reliability of Supply for the SHETL Transmission System during 2010-11 was:

99.99956%

compared with 99.99973% in 2009-10 and 99.99791% in 2008-09.

Number of Loss of Supply Incidents

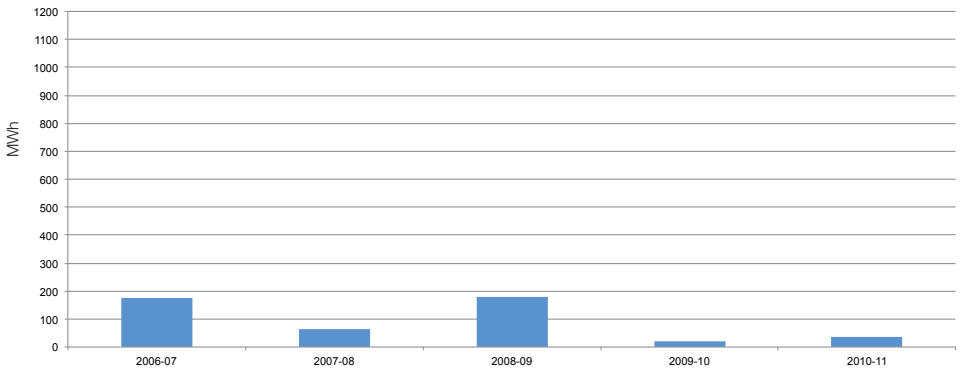
The chart shows the annual comparison of the numbers of Loss of Supply Incidents that occurred within the SHETL Transmission System.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	17	18	14	34	12
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.



	2006-07	2007-08	2008-09	2009-10	2010-11
Excluding 3 or less Customers	176.58	64.23	178.58	21.7	35.34
3 or less Customers	0	0	0	0	0

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 2010, 09:11 hours at Inverary 132kV Substation Inverary to Port Ann/ Carradale 132kV double circuit tripped on back up protection due to an unknown transient fault	15.65	4	1.04
24 May 2010, 20:06 hours at Fort Augustus 132kV Substation Fort Augustus to Fort William 132kV circuit teed Kinlochleven supergrid transformer 1 tripped due to a faulty protection relay	2.5	28	1.17
27 May 2010, 09:53 hours at Inverary 132kV Substation Inverary to Port Ann/ Carradale 132kV East Circuit tripped due to an unknown transient fault whilst the West circuit was out of service at the time	22	7	2.57
27 July 2010, 07:31 hours at Ardmore 132kV Substation Ardmore 132/33kV supergrid transformer tripped after flashover caused by a bird. The MWh unsupplied reflects the fact that the demand was restored in stages	18.75	268	19.07
30 July 2010, 07:36 hours at Shin 132kV Substation Shin to Dounreay teed Dunbeath and Brora 132kV circuit tripped and auto-reclosed due to an unknown transient fault	18	0.5	0.15
1 August 2010, 05:18 hours at Charleston 132kV Substation Charleston - Burghmuir 132kV circuit, tripped and auto-reclosed due to unknown transient fault during planned maintenance of the other circuit	14	0.5	0.12
19 August 2010, 11:07 hours at Shin 132kV Substation Shin to Dounreay teed Dunbeath and Brora 132kV circuit tripped and auto-reclosed due to an unknown transient fault	10.7	0.75	0.13
27 August 2010, 15:48 hours at Carradale 132kV Substation 132/33kV supergrid transformer 1 tripped whilst supergrid transformer 2 was out of service, no cause identified	11.8	44	8.65
7 September 2010, 14:33 hours at Carradale 132kV Substation 132/33kV supergrid transformer 1 tripped whilst supergrid transformer 2 was out of service, due to a secondary wiring defect	12.4	11	2.27
7 September 2010, 16:43 hours at Errochty 132kV Substation Errochty - Bonnybridge - Teed Braco 132kV double circuit tripped and auto-reclosed during lightning	23.87	0.3	0.12
29 September 2010, 00:10 hours at Fort Augustus 132kV Substation Fort Augustus - Fort William East teed Kinlochleven 132kV circuit tripped and auto-reclosed in high winds	1.6	0.5	0.01
13 March 2011, 08:34 hours at Fort Augustus 132kV Substation Fort Augustus to Fasnakyle 132kV circuit teed Fort Augustus supergrid transformer 1 tripped and auto-reclosed in blizzard conditions	4	0.5	0.03
		Total	35.34

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

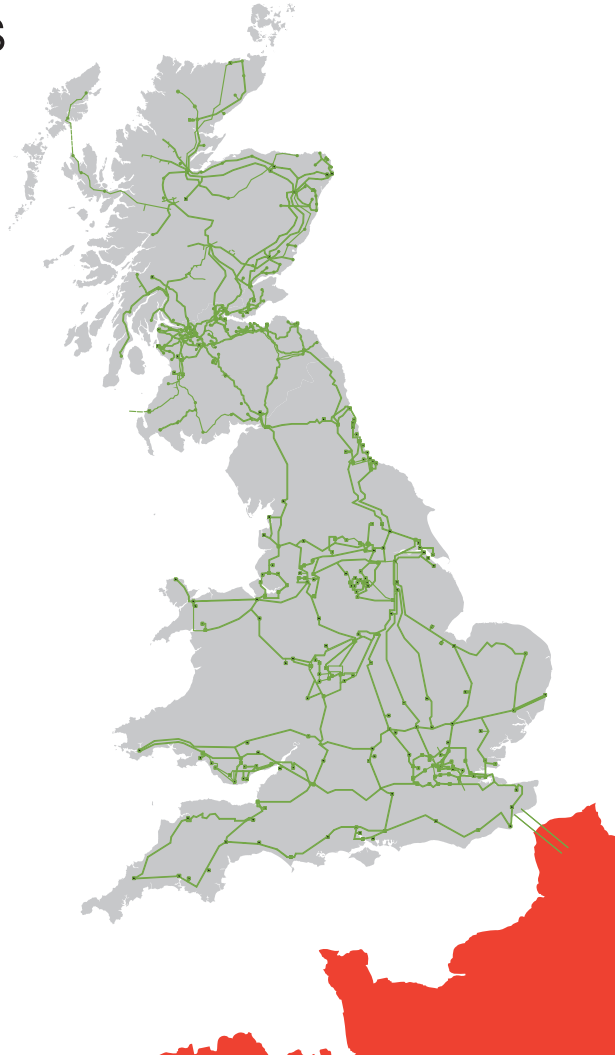
England - France Interconnectors

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 (NGIL). The information in this report has been provided by NGIL, the Interconnector Licence holder.

Outages are co-ordinated, as far as practical, between NGIL 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.



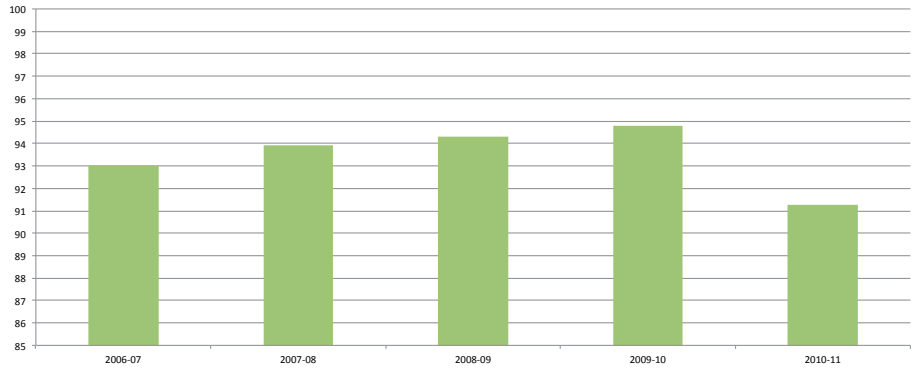
Annual System Availability

Annual Availability of England – France Interconnector

91.25%

Annual Availability

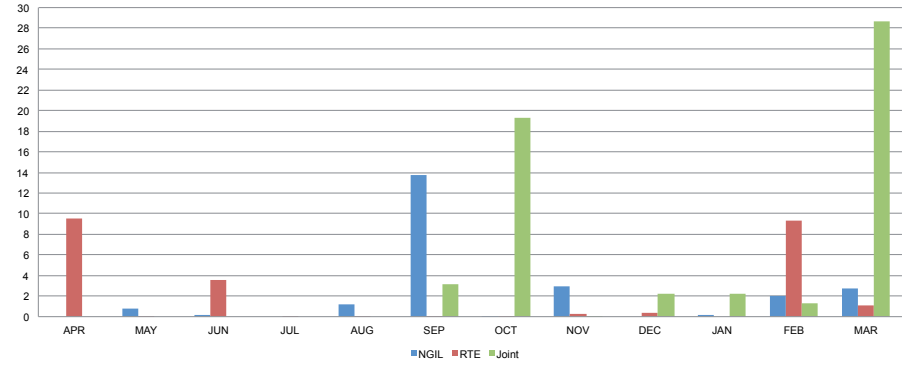
The chart below shows the annual comparison of availability of the England – France Interconnector.



	2006-07	2007-08	2008-09	2009-10	2010-11
Average	93.02	93.92	94.30	94.80	91.25

Monthly Unavailability

% England - France Interconnector Monthly Unavailability



	NGIL	RTE	Joint
APR	0.00	9.57	0.00
MAY	0.73	0.11	0.00
JUN	0.13	3.61	0.00
JUL	0.00	0.11	0.00
AUG	1.24	0.03	0.00
SEP	13.71	0.11	3.19
OCT	0.02	0.02	19.33
NOV	2.95	0.29	0.05
DEC	0.00	0.38	2.25
JAN	0.13	0.00	2.27
FEB	2.04	9.33	1.31
MAR	2.70	1.10	28.67
Average	1.94	1.98	4.83

Outages 2010-11 (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 2010/11 (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.

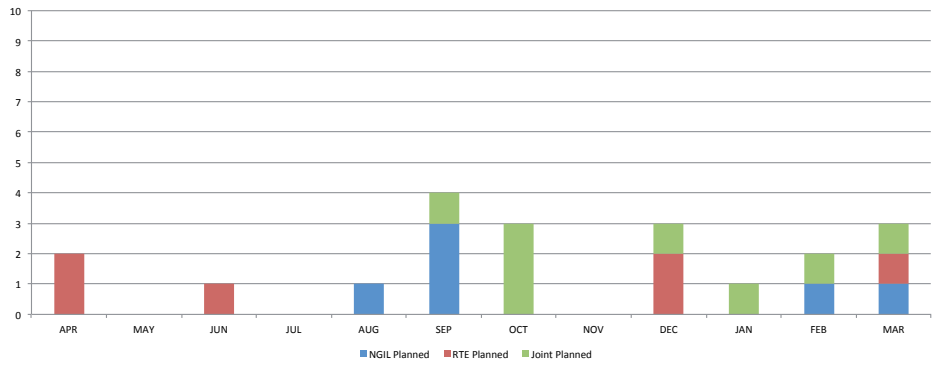


Chart 1

	NGIL	RTE	Joint
APR	0	2	0
MAY	0	0	0
JUN	0	1	0
JUL	0	0	0
AUG	1	0	0
SEP	3	0	1
OCT	0	0	3
NOV	0	0	0
DEC	0	2	1
JAN	0	0	1
FEB	1	0	1
MAR	1	1	1
Total	6	6	8

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

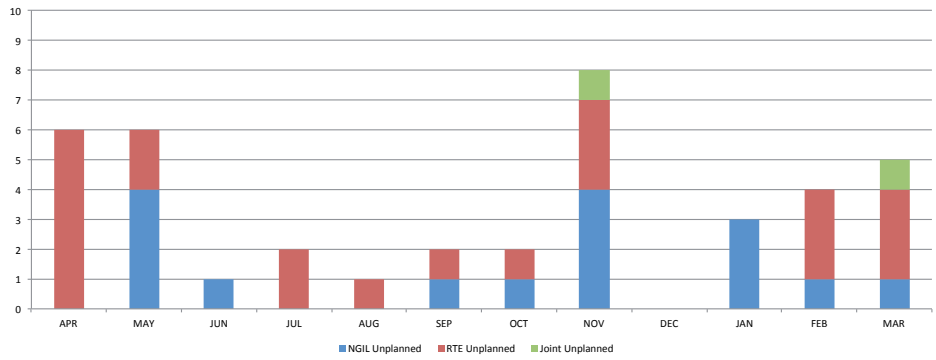


Chart 2

	NGIL	RTE	Joint
APR	0	6	0
MAY	4	2	0
JUN	1	0	0
JUL	0	2	0
AUG	0	1	0
SEP	1	1	0
OCT	1	1	0
NOV	4	3	1
DEC	0	0	0
JAN	3	0	0
FEB	1	3	0
MAR	1	3	1
Total	16	22	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.

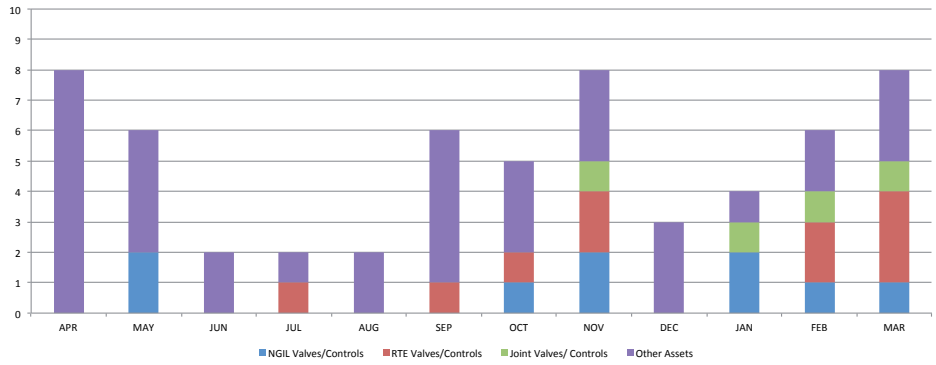


Chart 3

	NGIL Valves/ Controls	RTE Valves/ Controls	Joint Valves/ Controls	Other Assets
APR	0	0	0	8
MAY	2	0	0	4
JUN	0	0	0	2
JUL	0	1	0	1
AUG	0	0	0	2
SEP	0	1	0	5
OCT	1	1	0	3
NOV	2	2	1	3
DEC	0	0	0	3
JAN	2	0	1	1
FEB	1	2	1	2
MAR	1	3	1	3
Total	9	10	4	37

Interconnectors

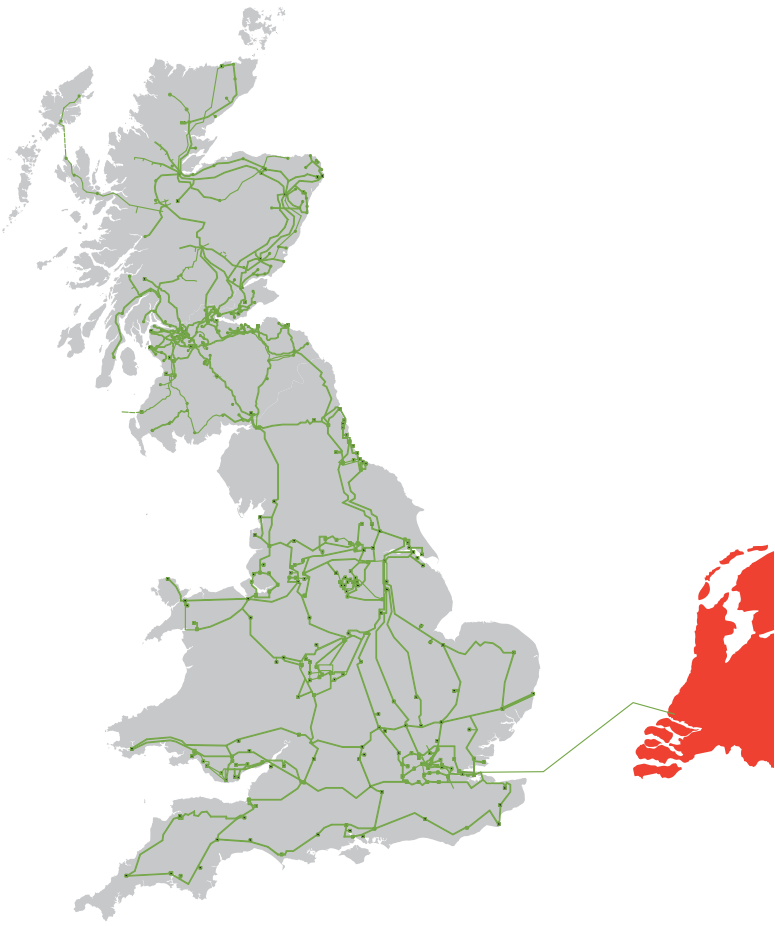
England – Netherlands Interconnector

System Description

The NGET transmission system has an interconnection with Dutch operator TenneT in the Netherlands. The total capability of BritNed is 1000MW and is made up of two 'circuits', 500MW each. In the same way as the England to France interconnector there is no redundancy of the major components making up the circuit. Therefore, all outages have a real time effect on its capability.

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

BritNed commercial operation began at 23:00 BST on the 31st March 2011, availability data will be included in the report for 2011/12.



Section Six

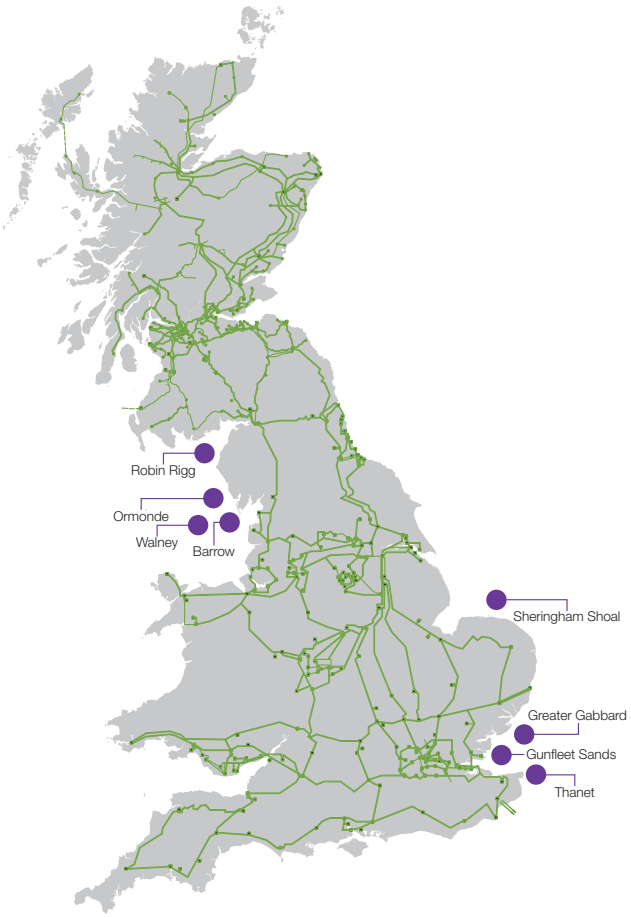
OffshoreSystems

Robin Rigg

System Description

The Offshore Transmission Owner assets consists of the onshore substation and subsea cables connecting the 180MW capacity offshore Robin Rigg wind farms located in the Solway Firth, 12km off the coast of Cumbria with ENW's onshore distribution network. The OFTO Licence is held by TC Robin Rigg OFTO Ltd, who acquired the transmission assets on 2nd March 2011.

Availability data will be included in the report for 2011/12.



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.

Registered Office:

National Grid
1-3 Strand
London
WC2N 5EH

Registered in England & Wales no. 2366977

This report has been printed on 50% recycled paper