

# Forecast TNUoS tariffs from 2017/18 to 2020/21

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This information paper provides a forecast of Transmission Network Use of System (TNUoS) tariffs from 2017/18 to 2020/21. These tariffs apply to generators and suppliers.

Together with the final tariffs for 2016/17 this publication shows how tariffs may evolve over the next five years. Forecast tariffs for 2017/18 will be refined throughout the year.

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**Any Questions?**

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#### Disclaimer

This report is published without prejudice and whilst every effort has been made to ensure the accuracy of the information, it is subject to several estimations and forecasts and may not bear relation to either the indicative or actual tariffs National Grid will publish at later dates.

## 1. Executive Summary

This document contains forecast Transmission Network Use of System (TNUoS) tariffs between 2017/18 and 2020/21. Together with the tariffs for 2016/17 published on 29 January 2016<sup>1</sup>, this provides our view of how TNUoS tariff may change over the next five years. This document is aimed at readers with an understanding of how TNUoS tariffs are applied to generators and suppliers for use of the GB electricity transmission networks. If you would like further explanation of how to apply these tariffs then please contact us using the contact details on page 2. We will update Tariffs for 2017/18 over the year.

Our forecast takes into account changes in Generation and Demand connected to the transmission system; investments in the transmission network by transmission owners; and allowed revenues for onshore and offshore Transmission Owners (TOs). Allowed revenues are forecast to increase from £2.7bn in 2016/17 to £3.8bn by 2020/21. Over £600m of this increase is due to offshore transmission networks and depends upon the associated offshore generation projects proceeding as forecast.

An EU regulation limits average annual use of system charges paid by generators to €2.50/MWh. Between 2016/17 and 2020/21 the annual energy supplied from the transmission system is forecast to reduce by over 50TWh. This reduces the transmission revenue that can be recovered from generation from £453.4m in 2016/17 to £380.6m in 2020/21. Offshore local charges are included in this revenue, yet are forecast to increase from £200.6m in 2016/17 to £673.7m in 2020/21, due to the forecast growth in offshore. Therefore revenue from wider generation tariffs will reduce and the generation residual is forecast to reduce by nearly £9/kW over the period.

To recover increasing allowed revenues whilst revenue from generation and system peak demands are declining, the demand residual is forecast to increase by nearly £27/kW over the period.

There are locational changes in Generation and Demand tariffs in 2017/18 due to the Western HVDC link. This link between Hunterston in Western Scotland and Deeside in North Wales is being built to facilitate the delivery of renewable energy between Scotland and England & Wales. The HVDC link generally increases Generation tariffs in Scotland and the North whilst decreasing Generation tariffs in North Wales. The opposite effect applies to Demand tariffs.

The Caithness-Moray HVDC link is expected to commission during 2018/19. This will have a similar effect on tariffs as the Western HVDC link but more localised to northern Scotland zones.

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<sup>1</sup><http://www2.nationalgrid.com/UK/Industry-information/System-charges/Electricity-transmission/Approval-conditions/Condition-5/>

## 2. Tariff Forecast Tables

This section contains forecast Generation and Demand Tariffs from 2016/17 to 2020/21. Tariffs for 2016/17 were also published on our website on 29 January 2016<sup>2</sup>. Information can be found in later sections on the assumptions behind these forecasts.

### 2.1 Generator Wider Tariffs

Please refer to section 3.6.3 for a description of how generator wider tariffs are calculated. Generator wider tariffs are now specific to each generator based upon the System Peak, Year Round Shared, Year Round Not-Shared and Residual Tariffs for the zone in which the generator is situated as well as its technology and Annual Load Factor (ALF). ALFs for 2016/17 have been published on National Grid's website<sup>3</sup> and these have been used for all years in this forecast.

In previous years we have used ALFs of 70% for conventional generation and 30% for intermittent generation to illustrate tariffs for typical generator types. In this forecast we use 80% for conventional and 40% for intermittent to reflect the ALFs for 2016/17. Please note these values are only for illustration and the published ALFs for 2016/17 should be used by generators calculating their wider tariff.

We have assumed that the small generation discount will apply up to and including the 2018/19 charging year and is discontinued after that.

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<sup>2</sup><http://www2.nationalgrid.com/UK/Industry-information/System-charges/Electricity-transmission/Approval-conditions/Condition-5/>

<sup>3</sup><http://www2.nationalgrid.com/UK/Industry-information/System-charges/Electricity-transmission/Approval-conditions/Condition-5/>

**Table 1- 2016/17 Generator Wider Tariffs**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	-1.99	10.51	7.77	0.51	14.70	12.48
2	East Aberdeenshire	-0.95	4.16	7.77	0.51	10.65	9.94
3	Western Highlands	-2.07	8.30	7.49	0.51	12.57	11.32
4	Skye and Lochalsh	-6.07	8.30	8.96	0.51	10.04	12.79
5	Eastern Grampian and Tayside	-2.11	7.47	7.20	0.51	11.57	10.70
6	Central Grampian	0.63	7.73	7.35	0.51	14.67	10.95
7	Argyll	-0.47	5.34	15.89	0.51	20.20	18.53
8	The Trossachs	0.11	5.34	5.86	0.51	10.74	8.50
9	Stirlingshire and Fife	-2.13	2.77	5.08	0.51	5.68	6.70
10	South West Scotland	-0.30	4.22	5.41	0.51	8.99	7.60
11	Lothian and Borders	0.69	4.22	3.24	0.51	7.80	5.43
12	Solway and Cheviot	-0.74	2.74	2.97	0.51	4.93	4.57
13	North East England	0.91	2.10	-0.11	0.51	2.98	1.23
14	North Lancashire and The Lakes	1.10	2.10	1.85	0.51	5.14	3.20
15	South Lancashire, Yorkshire and Humber	4.01	1.44	0.10	0.51	5.76	1.18
16	North Midlands and North Wales	3.88	0.46		0.51	4.75	0.69
17	South Lincolnshire and North Norfolk	2.24	0.60		0.51	3.23	0.75
18	Mid Wales and The Midlands	1.61	0.33		0.51	2.38	0.64
19	Anglesey and Snowdon	4.96	1.03		0.51	6.29	0.92
20	Pembrokeshire	9.11	-2.68		0.51	7.48	-0.57
21	South Wales & Gloucester	6.25	-2.65		0.51	4.63	-0.55
22	Cotswold	3.19	3.11	-5.75	0.51	0.44	-3.99
23	Central London	-2.76	3.11	-6.32	0.51	-6.09	-4.57
24	Essex and Kent	-3.50	3.11		0.51	-0.50	1.75
25	Oxfordshire, Surrey and Sussex	-0.99	-1.52		0.51	-1.70	-0.10
26	Somerset and Wessex	-1.01	-2.65		0.51	-2.62	-0.55
27	West Devon and Cornwall	0.25	-3.95		0.51	-2.40	-1.07

**Table 2 - 2017/18 Generator Wider Tariffs**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	-1.55	13.77	16.07	-0.92	24.62	20.66
2	East Aberdeenshire	-0.39	7.02	16.07	-0.92	20.38	17.96
3	Western Highlands	-1.68	11.71	15.81	-0.92	22.59	19.58
4	Skye and Lochalsh	-5.69	11.71	17.22	-0.92	19.98	20.98
5	Eastern Grampian and Tayside	-1.92	10.79	15.35	-0.92	21.15	18.75
6	Central Grampian	-0.10	11.56	15.96	-0.92	24.18	19.66
7	Argyll	-1.38	9.31	24.50	-0.92	29.64	27.31
8	The Trossachs	-0.76	9.31	14.08	-0.92	19.84	16.88
9	Stirlingshire and Fife	-1.44	5.06	12.25	-0.92	13.94	13.36
10	South West Scotland	-0.33	8.12	13.33	-0.92	18.58	15.66
11	Lothian and Borders	1.64	8.12	8.01	-0.92	15.23	10.34
12	Solway and Cheviot	0.25	4.67	7.39	-0.92	10.45	8.34
13	North East England	2.61	2.88	4.14	-0.92	8.13	4.37
14	North Lancashire and The Lakes	1.20	2.88	2.45	-0.92	5.04	2.68
15	South Lancashire, Yorkshire and Humber	3.82	1.09	0.18	-0.92	3.95	-0.31
16	North Midlands and North Wales	3.54	-0.72		-0.92	2.04	-1.21
17	South Lincolnshire and North Norfolk	0.97	0.65		-0.92	0.57	-0.66
18	Mid Wales and The Midlands	1.20	-0.19		-0.92	0.14	-0.99
19	Anglesey and Snowdon	5.21	-1.59		-0.92	3.01	-1.56
20	Pembrokeshire	9.02	-4.73		-0.92	4.31	-2.81
21	South Wales & Gloucester	6.28	-4.67		-0.92	1.63	-2.79
22	Cotswold	3.33	1.43	-6.08	-0.92	-2.52	-6.42
23	Central London	-2.71	1.43	-6.31	-0.92	-8.79	-6.66
24	Essex and Kent	-3.35	1.43		-0.92	-3.13	-0.35
25	Oxfordshire, Surrey and Sussex	-0.92	-3.27		-0.92	-4.46	-2.23
26	Somerset and Wessex	-0.94	-4.54		-0.92	-5.49	-2.73
27	West Devon and Cornwall	0.49	-5.91		-0.92	-5.16	-3.28

**Table 3 - 2018/19 Generator Wider Tariffs**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	0.33	13.48	19.30	-3.38	27.03	21.31
2	East Aberdeenshire	0.66	4.78	19.30	-3.38	20.40	17.83
3	Western Highlands	-0.40	11.85	18.61	-3.38	24.31	19.97
4	Skye and Lochalsh	-4.53	11.85	19.84	-3.38	21.41	21.20
5	Eastern Grampian and Tayside	-0.19	10.22	17.32	-3.38	21.92	18.03
6	Central Grampian	1.63	10.91	18.11	-3.38	25.09	19.10
7	Argyll	0.47	9.00	26.77	-3.38	31.06	26.99
8	The Trossachs	0.82	9.00	15.85	-3.38	20.49	16.07
9	Stirlingshire and Fife	-0.25	5.01	13.29	-3.38	13.66	11.91
10	South West Scotland	1.39	8.15	15.00	-3.38	19.53	14.88
11	Lothian and Borders	2.33	8.15	8.84	-3.38	14.31	8.72
12	Solway and Cheviot	0.95	4.79	8.07	-3.38	9.46	6.60
13	North East England	2.79	3.01	4.24	-3.38	6.05	2.06
14	North Lancashire and The Lakes	1.50	3.01	3.11	-3.38	3.64	0.94
15	South Lancashire, Yorkshire and Humber	3.62	1.18	0.21	-3.38	1.40	-2.70
16	North Midlands and North Wales	3.06	-0.29		-3.38	-0.55	-3.50
17	South Lincolnshire and North Norfolk	0.71	0.63		-3.38	-2.17	-3.13
18	Mid Wales and The Midlands	1.02	-0.11		-3.38	-2.44	-3.42
19	Anglesey and Snowdon	4.05	-0.13	0.00	-3.38	0.57	-3.43
20	Pembrokeshire	9.01	-4.99		-3.38	1.64	-5.38
21	South Wales & Gloucester	6.15	-4.98		-3.38	-1.21	-5.37
22	Cotswold	3.09	1.43	-6.42	-3.38	-5.57	-9.23
23	Central London	-5.26	1.43	-6.80	-3.38	-14.30	-9.61
24	Essex and Kent	-3.57	1.43		-3.38	-5.81	-2.81
25	Oxfordshire, Surrey and Sussex	-1.10	-3.44		-3.38	-7.23	-4.76
26	Somerset and Wessex	-1.22	-4.86		-3.38	-8.49	-5.33
27	West Devon and Cornwall	0.22	-6.28		-3.38	-8.19	-5.89



**Table 4 - 2019/20 Generator Wider Tariffs**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	2.38	11.09	22.30	-5.37	28.17	21.36
2	East Aberdeenshire	2.78	3.93	22.30	-5.37	22.85	18.50
3	Western Highlands	2.06	10.23	21.53	-5.37	26.41	20.25
4	Skye and Lochalsh	-2.19	10.23	22.77	-5.37	23.40	21.50
5	Eastern Grampian and Tayside	4.03	9.99	21.23	-5.37	27.88	19.85
6	Central Grampian	3.58	9.03	19.61	-5.37	25.04	17.86
7	Argyll	2.60	7.66	28.01	-5.37	31.36	25.70
8	The Trossachs	2.82	7.66	17.26	-5.37	20.84	14.96
9	Stirlingshire and Fife	1.85	7.10	16.72	-5.37	18.89	14.19
10	South West Scotland	2.42	6.69	16.20	-5.37	18.60	13.51
11	Lothian and Borders	3.46	6.69	10.46	-5.37	13.90	7.77
12	Solway and Cheviot	1.71	3.99	9.13	-5.37	8.66	5.35
13	North East England	3.37	2.38	4.72	-5.37	4.63	0.30
14	North Lancashire and The Lakes	1.76	2.38	3.37	-5.37	1.66	-1.05
15	South Lancashire, Yorkshire and Humber	4.14	0.63	0.26	-5.37	-0.48	-4.86
16	North Midlands and North Wales	3.21	-0.45		-5.37	-2.51	-5.55
17	South Lincolnshire and North Norfolk	1.74	-0.10		-5.37	-3.71	-5.41
18	Mid Wales and The Midlands	0.93	0.19		-5.37	-4.29	-5.29
19	Anglesey and Snowdon	3.95	0.02	0.00	-5.37	-1.41	-5.36
20	Pembrokeshire	8.58	-5.39		-5.37	-1.10	-7.53
21	South Wales & Gloucester	5.53	-5.46		-5.37	-4.20	-7.55
22	Cotswold	2.34	1.97	-7.52	-5.37	-8.97	-12.10
23	Central London	-5.47	1.97	-7.18	-5.37	-16.45	-11.77
24	Essex and Kent	-3.73	1.97		-5.37	-7.53	-4.58
25	Oxfordshire, Surrey and Sussex	-1.12	-3.09		-5.37	-8.96	-6.61
26	Somerset and Wessex	-2.01	-5.53		-5.37	-11.80	-7.58
27	West Devon and Cornwall	-2.08	-8.41		-5.37	-14.18	-8.73

**Table 5 - 2020/21 Generator Wider Tariffs**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	2.58	11.82	22.83	-9.69	25.18	17.87
2	East Aberdeenshire	3.04	4.46	22.83	-9.69	19.75	14.92
3	Western Highlands	2.22	12.43	23.38	-9.69	25.86	18.66
4	Skye and Lochalsh	2.22	12.43	26.22	-9.69	28.70	21.50
5	Eastern Grampian and Tayside	4.21	11.06	21.48	-9.69	24.85	16.21
6	Central Grampian	3.54	10.03	19.65	-9.69	21.52	13.96
7	Argyll	2.61	8.58	27.69	-9.69	27.47	21.43
8	The Trossachs	2.70	8.58	17.01	-9.69	16.89	10.75
9	Stirlingshire and Fife	2.12	8.25	16.67	-9.69	15.70	10.28
10	South West Scotland	2.54	7.66	15.89	-9.69	14.87	9.27
11	Lothian and Borders	3.65	7.66	10.25	-9.69	10.34	3.62
12	Solway and Cheviot	1.75	5.01	8.52	-9.69	4.58	0.83
13	North East England	3.74	3.96	5.53	-9.69	2.75	-2.58
14	North Lancashire and The Lakes	1.77	3.96	2.00	-9.69	-2.75	-6.11
15	South Lancashire, Yorkshire and Humber	4.15	0.52	0.22	-9.69	-4.90	-9.27
16	North Midlands and North Wales	3.18	-0.44		-9.69	-6.87	-9.87
17	South Lincolnshire and North Norfolk	1.66	-0.15		-9.69	-8.16	-9.75
18	Mid Wales and The Midlands	0.83	0.47		-9.69	-8.49	-9.51
19	Anglesey and Snowdon	2.71	1.32		-9.69	-5.93	-9.17
20	Pembrokeshire	8.65	-5.50		-9.69	-5.45	-11.89
21	South Wales & Gloucester	5.69	-5.69		-9.69	-8.55	-11.97
22	Cotswold	2.28	2.09	-7.83	-9.69	-13.57	-16.69
23	Central London	-5.65	2.09	-7.62	-9.69	-21.30	-16.48
24	Essex and Kent	-3.75	2.09		-9.69	-11.77	-8.86
25	Oxfordshire, Surrey and Sussex	-1.26	-3.06		-9.69	-13.40	-10.92
26	Somerset and Wessex	-1.86	-3.62		-9.69	-14.45	-11.14
27	West Devon and Cornwall	-2.04	-7.89		-9.69	-18.04	-12.85

## 2.2 Summary of generator wider tariffs from 2016/17 to 2020/21

Figure 1 – Wider tariffs for a conventional 80% generator

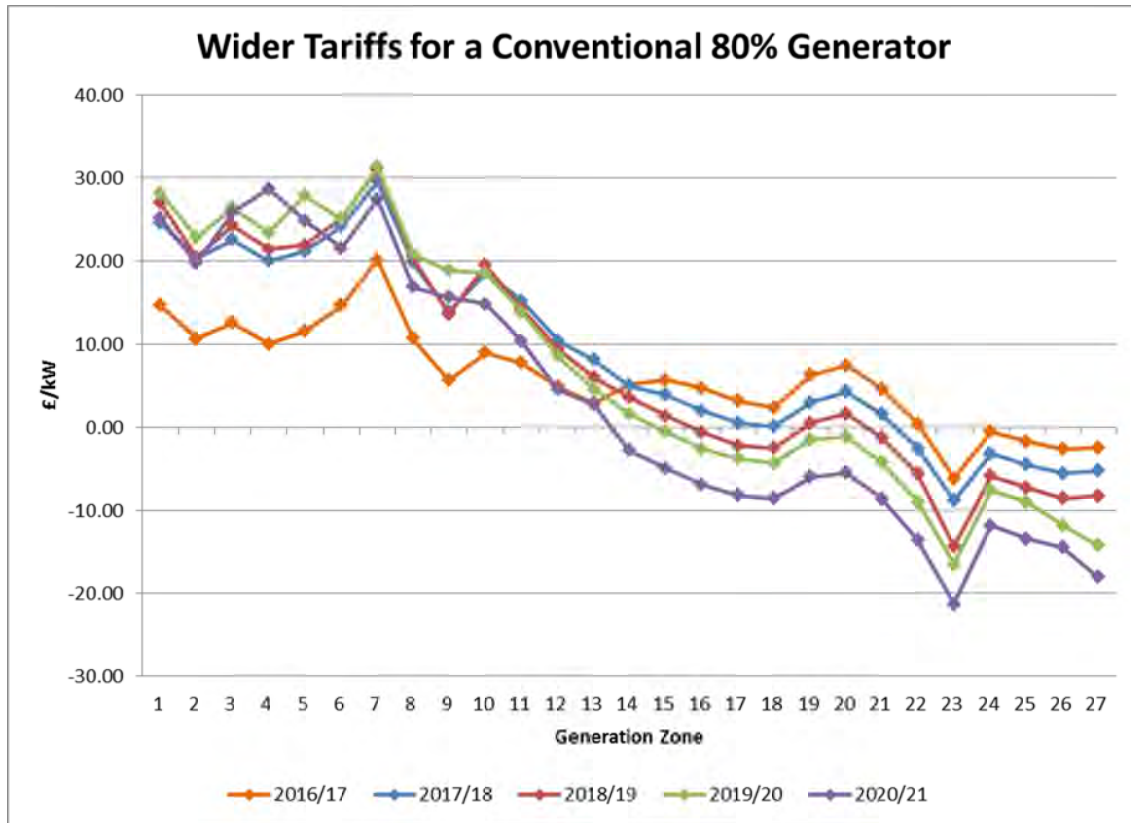
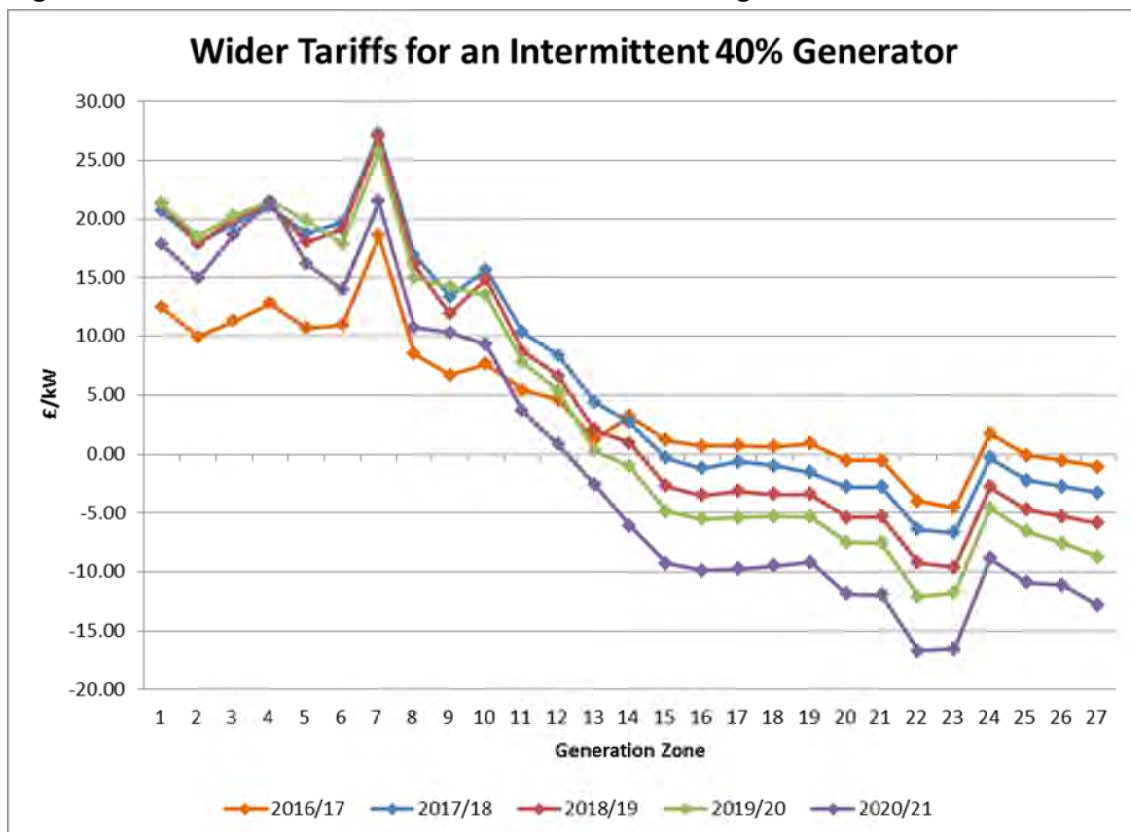


Figure 2 - Wider tariffs for an intermittent 40% load factor generator



## 2.3 Onshore Local Circuit Tariffs

Onshore Local Circuit tariffs are applicable to generators not directly connected to the Main Interconnected Transmission System (MITS). Each generator paying this charge has a tariff specific to its location. Forecast Onshore Local Circuit Tariffs are listed in Table 6 and can change from year to year due to local circuit reconfiguration or variations in the flow on local circuits, particularly where flow reverses direction. Such variations in flow are usually influenced by changes in generation patterns or network developments. For new generators connecting in later years, the connection may not yet have been designed and therefore an Onshore Local Circuit tariff may not be listed here. Please contact us to discuss the likely tariff for these generators.

**Table 6 - Onshore Local Circuit Tariffs**

Connection Point	2016/17 (£/kW)	2017/18 (£/kW)	2018/19 (£/kW)	2019/20 (£/kW)	2020/21 (£/kW)
Achruach	3.88	3.94	4.06	4.18	4.30
Aigas	0.59	0.60	0.62	0.64	0.66
An Suidhe	0.85	0.86	2.89	-0.91	-0.94
Arecleoch	1.88	1.91	1.96	2.02	2.08
Baglan Bay	0.63	0.64	0.66	0.68	0.70
Beauly	-	-	-	1.17	1.20
Beinneun Wind Farm	1.36	1.38	1.42	1.46	1.51
Bhlaraidh Wind Farm	-0.58	0.59	0.61	0.63	0.65
Black Hill	-	1.19	1.22	1.26	1.30
BlackCraig Wind Farm	-	3.59	3.69	3.81	3.92
Black Law	1.58	1.60	1.65	1.70	1.75
BlackLaw Extension	3.35	3.40	3.50	3.61	3.72
Bodelwyddan	0.10	0.10	0.11	0.11	0.11
Carrington	-0.04	-0.04	-0.04	-0.04	-0.04
Clyde (North)	0.10	0.10	0.10	0.11	0.11
Clyde (South)	0.11	0.12	0.12	0.12	0.13
Corriegarth	3.41	3.46	3.56	3.67	3.78
Corriemoillie	1.50	1.53	1.57	1.62	1.67
Coryton	0.31	0.05	0.05	0.06	0.06
Cruachan	1.65	1.68	1.75	1.81	1.86
Crystal Rig	0.33	0.33	0.34	0.03	0.03
Culligran	1.57	1.59	1.64	1.69	1.74
Deanie	2.57	2.61	-	-	-
Dersalloch	2.18	2.21	2.28	2.35	2.42
Didcot	0.47	0.47	0.49	0.50	0.52
Dinorwig	2.17	2.21	2.27	2.34	2.41
Dorenell	-	-	1.44	1.49	1.53
Dunlaw Extension	5.37	5.45	1.37	1.41	1.45
Brochlock	-	1.97	1.97	2.03	2.09
Dumnaglass	1.68	1.70	-	-	-
Edinbane	6.19	6.28	6.47	6.67	6.87
Earlshaugh Wind Farm	-	3.46	-	-	-
Ewe Hill	1.24	1.26	1.30	1.34	1.38
Farr Windfarm	2.04	2.04	4.74	4.88	5.03
Fallago	0.90	0.90	-	-	-

<b>Connection Point</b>	<b>2016/17 (£/kW)</b>	<b>2017/18 (£/kW)</b>	<b>2018/19 (£/kW)</b>	<b>2019/20 (£/kW)</b>	<b>2020/21 (£/kW)</b>
Carraig Gheal	3.97	4.04	4.16	4.28	4.41
Ffestiniog	0.23	0.23	0.24	0.25	0.25
Finlarig	0.29	0.29	0.30	0.31	0.32
Foyers	0.68	0.69	-	-	-
Galawhistle	0.76	0.78	0.80	0.82	0.85
Glendoe	1.66	1.69	1.74	3.22	3.32
Ulzside	-	9.62	-	-	-
Gordonbush	1.17	0.17	0.12	0.12	0.12
Griffin Wind	-0.85	-0.87	-0.90	9.42	9.71
Hadyard Hill	2.50	2.54	2.62	2.70	2.78
Harestanes	2.28	2.30	2.37	2.44	2.51
Hartlepool	0.54	0.55	0.57	0.32	0.04
Hedon	0.16	0.17	0.17	0.18	0.18
Hornsea	-	-	-	0.25	0.25
Invergarry	1.28	1.30	1.34	1.38	-0.69
Kilgallioch	0.95	0.97	-	-	-
Killingholme	-	-	0.68	-	-
Kilmorack	0.18	0.18	-	-	-
Langage	0.59	0.60	0.62	0.64	-0.34
Lochay	0.33	0.34	0.35	0.36	0.37
Luichart	0.52	0.53	-	-	-
Mark Hill	0.79	0.80	-	-	-
Margree	-	3.33	-	-	-
Marchwood	0.35	0.35	0.36	0.37	0.38
Millennium Wind	-	1.68	-	-	-
Moffat	0.17	0.15	-	-	-
Mossford	2.60	2.64	-	-	-
Nant	-1.11	-1.13	-1.16	-1.20	-1.23
Necton	-0.34	-0.34	-0.35	1.09	1.13
Rhigos	0.07	0.07	0.07	0.07	0.07
Rocksavage	0.02	0.02	0.02	0.02	0.02
Sallachy	-	-	0.87	-0.89	-0.92
Saltend	0.31	0.31	-	-	-
South Humber Bank	0.86	0.88	0.90	0.40	0.41
Spalding	0.25	0.25	0.26	-	-
Spalding North	-	-	-	0.67	0.27
Kilbraur	1.04	0.05	-	-	-
Stannah	-	-	0.06	-	-
Stannah A	-	-	-	0.08	0.09
Stannah B	-	-	-	0.05	0.05
Stronelairg	-	3.35	3.44	-	-
Strathy Wind	2.44	2.40	2.36	2.41	2.48
Ton Na Clach	-	-	2.31	-1.48	-1.53
West of Duddon	-	0.65	0.67	0.36	0.37
Whitelee	0.10	0.10	0.10	0.10	0.11

Connection Point	2016/17 (£/kW)	2017/18 (£/kW)	2018/19 (£/kW)	2019/20 (£/kW)	2020/21 (£/kW)
Whitelee Extension	0.27	0.27	0.28	0.29	0.30

## 2.4 Onshore Local Substation Tariffs

Onshore Local substation tariffs for 2017/18 are shown in Table 7. These tariffs are inflated annually so for later years please increase by RPI (assume 3% p.a.).

**Table 7 - 2017/18 Local Substation Tariffs**

Substation Rating	Connection Type	Local Substation Tariff (£/kW)		
		132kV	275kV	400kV
<1320 MW	No redundancy	0.184333	0.10545	0.075979
<1320 MW	Redundancy	0.406071	0.251238	0.182721
>=1320 MW	No redundancy	0	0.330633	0.239115
>=1320 MW	Redundancy	0	0.542815	0.39621

## 2.5 Offshore Local Tariffs

Offshore Local tariffs for 2017/18 are shown in Table 8. These tariffs are inflated annually so for later years please increase by RPI (assume 3% p.a.) We will discuss tariffs for new offshore networks with the affected generation prior to the Offshore Transmission Owner being appointed.

**Table 8 - 2017/18 Offshore Local Tariffs**

Offshore Generator	Tariff Component (£/kW)		
	Substation	Circuit	ETUoS
Robin Rigg East	-0.42	28.14	8.72
Robin Rigg West	-0.42	28.14	8.72
Gunfleet Sands 1 & 2	16.08	14.76	2.76
Barrow	7.43	38.86	0.97
Ormonde	22.96	42.78	0.34
Walney 1	19.82	39.47	0.00
Walney 2	19.67	39.82	0.00
Thanet	16.90	31.48	0.76
Sheringham Shoal	22.19	26.02	0.57
Greater Gabbard	13.93	32.00	0.00
London Array	9.45	32.19	0.00
Lincs	13.88	54.35	0.00
Humber Gateway	59.64		0.00
West of Duddon Sands	7.65	37.74	0.00
Westermorost Rough	45.15		0.00
Gwynt Y Mor	16.96	16.71	0.00

## 2.6 Small Generator Discount

National Grid's licence condition to apply a discount to generators less than 100MW connected at 132kV has been extended to March 2019. The resulting tariff changes are shown in Table 9.

**Table 9 - Small Generator Discount**

	2016/17	2017/18	2018/19	2019/20	2020/21
Small Generator Discount (£/kW)	- 11.46	- 11.36	- 12.38	Discontinued	
Included in HH Tariffs below (£/kW)	0.53	0.61	0.74		
Included in NHH Tariffs below (p/kWh)	0.07	0.09	0.11		

## 2.7 Demand Tariffs

Table 10 and Table 11 show demand tariffs for Half-Hour metered and Non-Half-Hour metered demand. These include the effect of the small generator discount up to and including 2018/19 and BSC modification P272.

**Table 10 - Half Hour Demand Tariffs**

Zone	Zone Name	16/17 (£/kW)	17/18 (£/kW)	18/19 (£/kW)	19/20 (£/kW)	20/21 (£/kW)
1	Northern Scotland	40.97	29.73	35.59	35.84	51.32
2	Southern Scotland	40.24	30.45	34.64	36.55	49.53
3	Northern	42.93	38.16	44.38	47.98	60.86
4	North West	42.83	43.59	49.66	54.12	67.87
5	Yorkshire	42.49	44.13	50.88	55.42	69.28
6	N Wales & Mersey	42.68	45.50	51.73	56.33	70.21
7	East Midlands	44.72	47.01	53.94	58.54	72.66
8	Midlands	45.74	48.26	54.90	59.81	73.90
9	Eastern	46.54	49.02	56.09	60.42	74.54
10	South Wales	42.31	45.44	52.55	58.06	72.10
11	South East	49.20	51.83	58.58	62.85	76.70
12	London	51.87	54.37	61.23	65.78	79.94
13	Southern	50.08	52.83	60.14	64.84	78.61
14	South Western	48.58	51.43	58.77	66.05	79.66

**Table 11 - Non Half Hour Demand Tariffs**

Zone	Zone Name	16/17 (p/kWh)	17/18 (p/kWh)	18/19 (p/kWh)	19/20 (p/kWh)	20/21 (p/kWh)
1	Northern Scotland	5.77	4.33	5.34	5.56	8.20
2	Southern Scotland	6.21	4.87	5.64	6.12	8.51
3	Northern	6.77	6.22	7.31	8.02	10.33
4	North West	5.69	5.85	6.71	7.39	9.39
5	Yorkshire	6.54	6.96	8.08	8.92	11.31
6	N Wales & Mersey	6.48	7.09	8.11	8.97	11.35
7	East Midlands	6.38	6.81	7.85	8.62	10.85
8	Midlands	6.35	6.81	7.78	8.57	10.73
9	Eastern	6.35	6.79	7.82	8.52	10.65
10	South Wales	6.40	6.99	8.06	8.95	11.21
11	South East	6.65	7.07	8.02	8.67	10.68
12	London	6.51	6.78	7.59	8.14	9.94
13	Southern	6.49	6.87	7.82	8.47	10.37
14	South Western	6.88	7.41	8.52	9.69	11.83

## 2.8 Summary of Demand Tariffs

Figure 3 – Half Hour Demand Tariffs

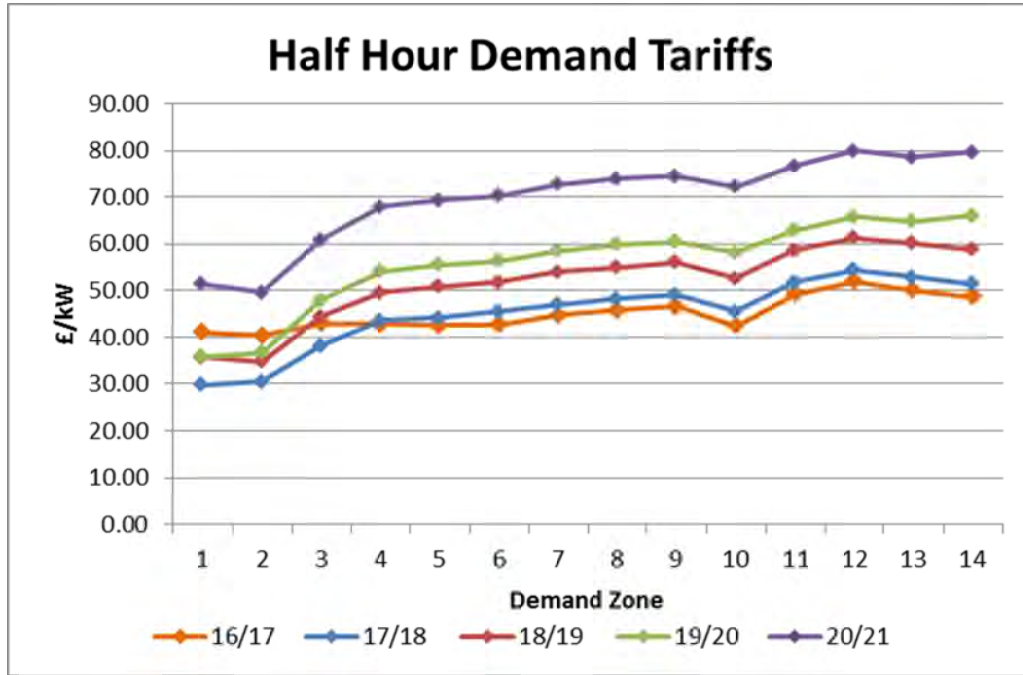
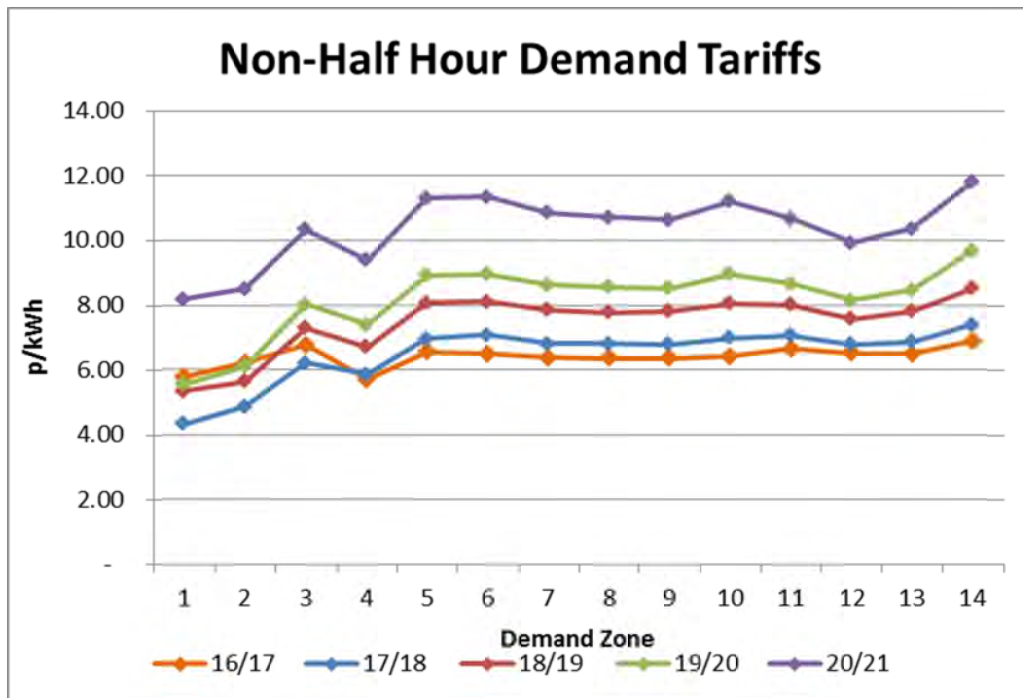


Figure 4 – Non-Half Hour Demand Tariffs





### 3. Key Drivers for Tariff Changes

Factors which affect tariffs include methodology, changes to the Transport model used to calculate the locational element and changes to the Tariff model used to calculate the residual element of tariffs. The main drivers behind tariff changes over the next five years are:

- HVDC circuits
- Contracted Generation
- Generation/Demand revenue proportions
- Transmission Owner revenues
- Net demand supplied from the transmission network

#### 3.1 HVDC Circuits

##### 3.1.1 Western HVDC Link

The Western HVDC link is expected to commission during 2017/18 and its effect is included from that year. Appendix A contains a study of 2017/18 tariffs without the Western HVDC link showing its impact. Figure 5 to Figure 8 compare generation and demand tariffs in 2017/18 with and without the link.

Figure 5 – Effect of Western HVDC link on Conventional 80% Generator Wider Tariffs

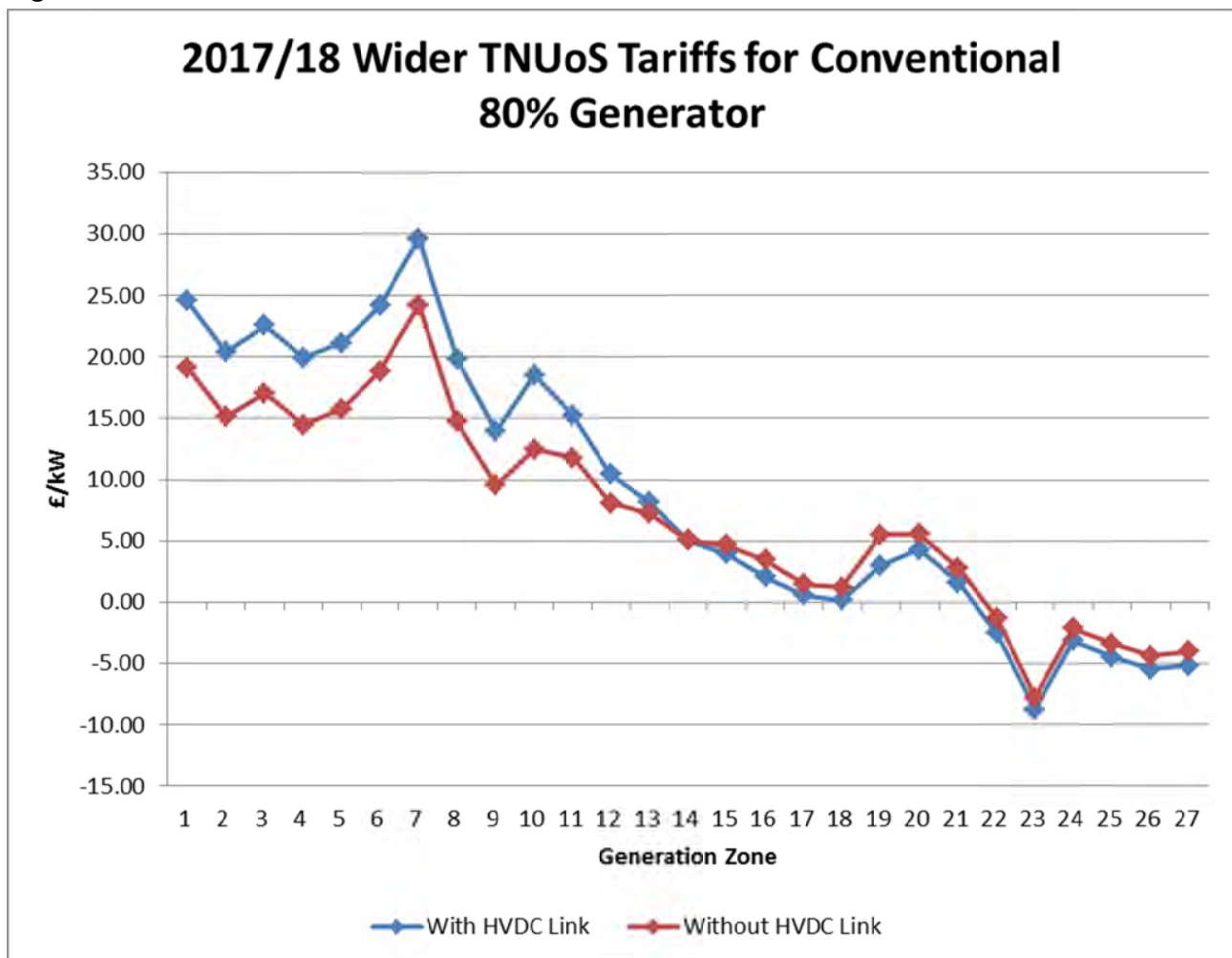


Figure 6 – Effect of Western HVDC link on Intermittent 40% Generator Wider Tariffs

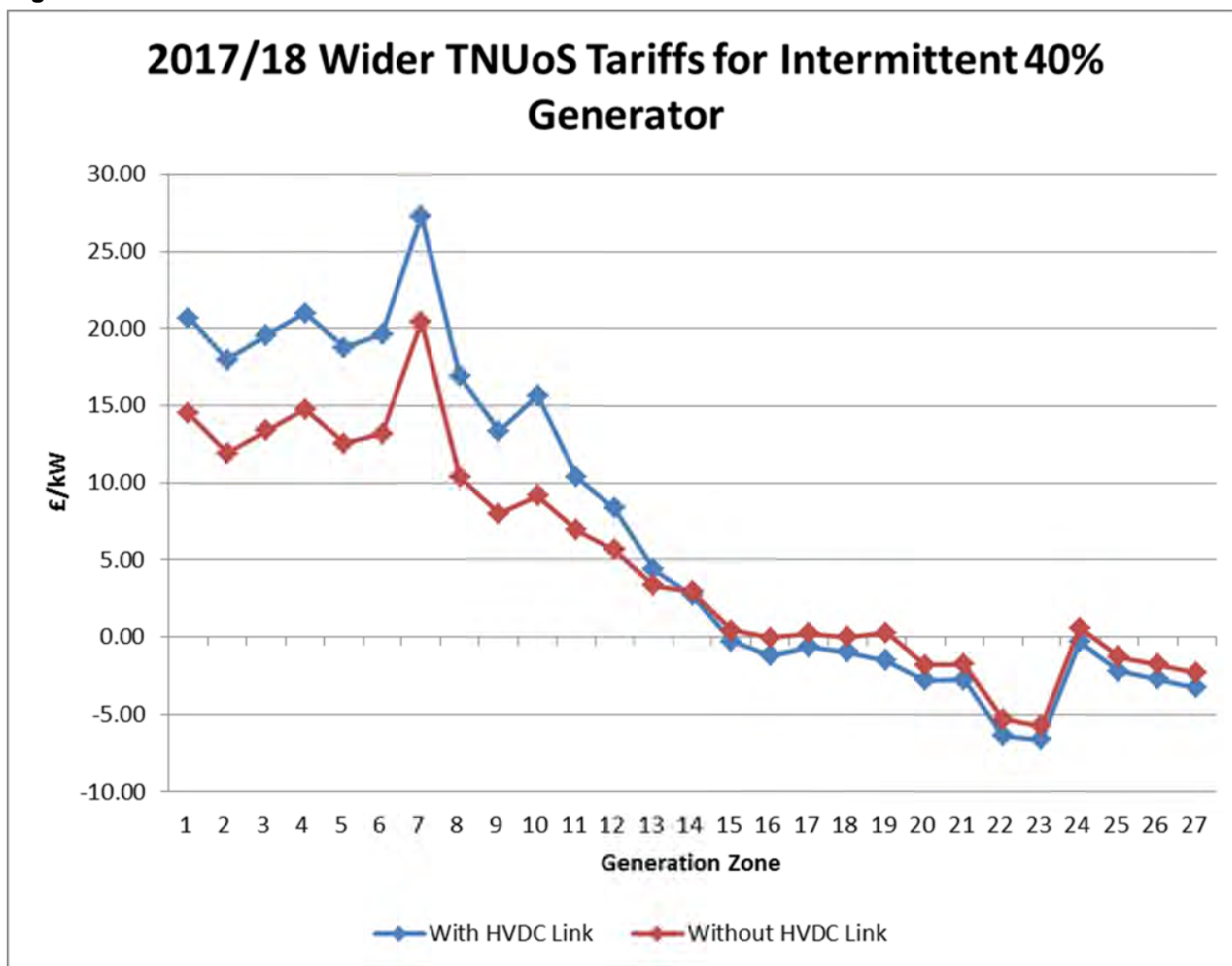
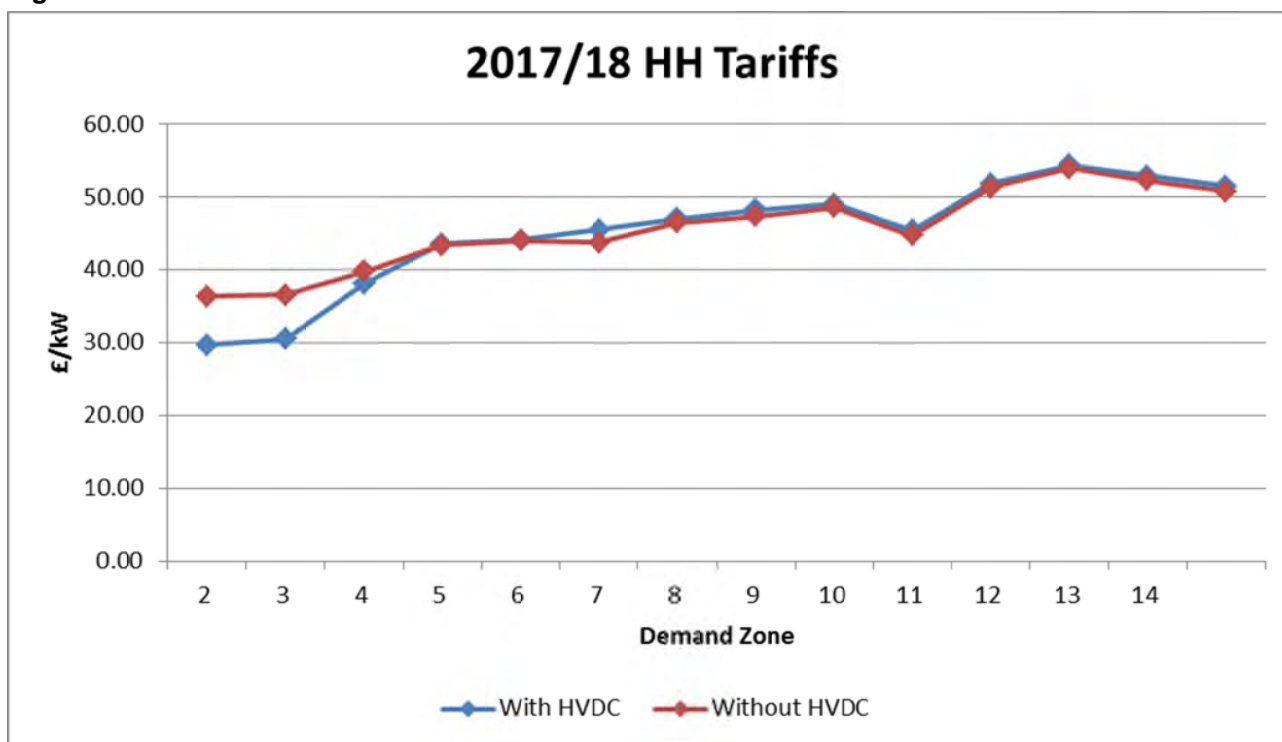
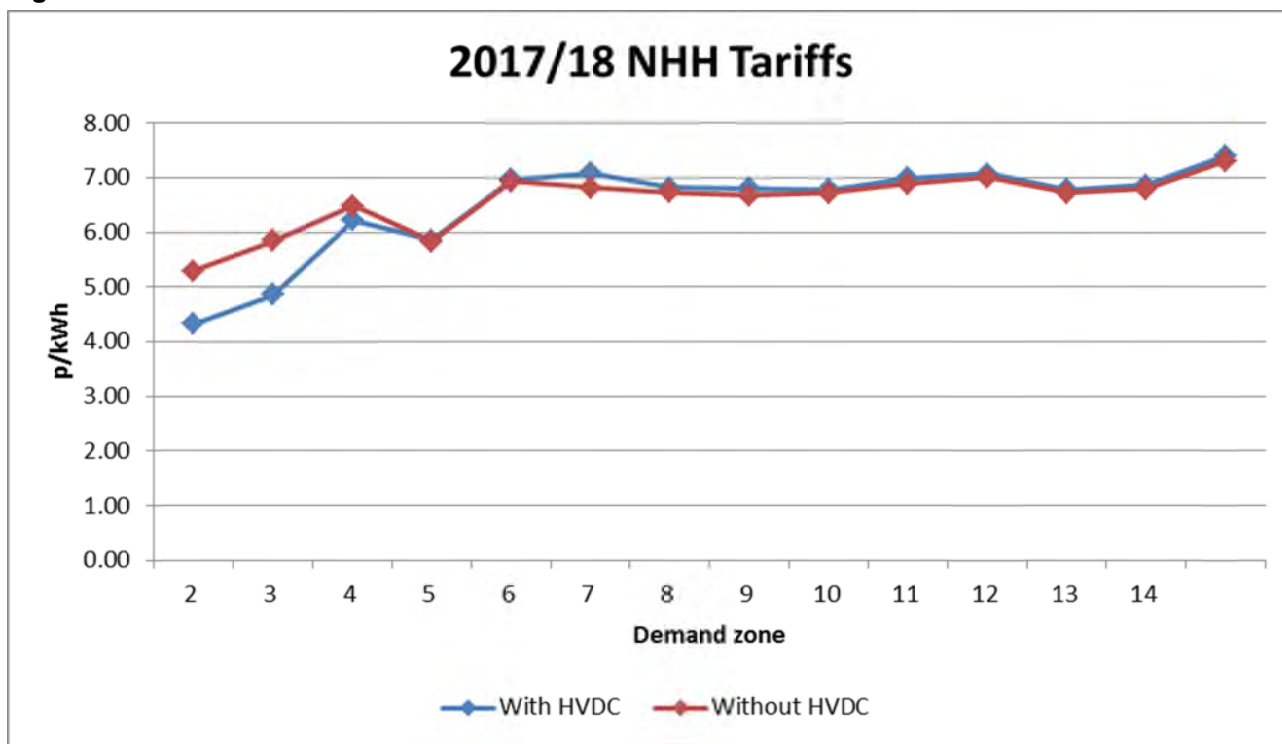


Figure 7 - Effect of Western HVDC Link on HH Tariffs



**Figure 8 - Effect of Western HVDC Link on NHH Tariffs**



### 3.1.2 Western HVDC Link Costs

The locational model used to calculate tariffs includes a specific expansion factor for the Western HVDC link. The expansion factor represents the relative cost of the cable and converters (but not the associated substations) of transporting 1MW over 1km compared to a new 400kV overhead line. The Western HVDC link has a voltage rating of 600kV DC and power rating of 2200MVA. In previous years an expansion factor of eight was used. Following an update of project costs this has now been reduced to seven, i.e. it is seven times more expensive to transport power using the HVDC link than 400kV Overhead line. By comparison 400kV Cable has an expansion factor of ten.

The expansion factor for the Western HVDC is based on the latest estimate of costs. These may change as the project approaches commissioning which will impact both generation and demand tariffs. To illustrate this Appendix B provides an alternative tariff scenario for 2017/18 based on an expansion factor of eight.

### 3.1.3 Caithness – Moray Link

The Caithness - Moray HVDC link is expected to commission in 2018/19 and its effect is included from that year. Appendix C shows 2018/19 tariffs without the Caithness-Moray link and Figure 9 to Figure 12 below compare generation and HH demand tariffs with and without the link to show its impact. An expansion factor of 20 has been assumed for the Caithness-Moray link.

Figure 9 - Impact of Caithness-Moray on Conventional 80% Generation Tariffs

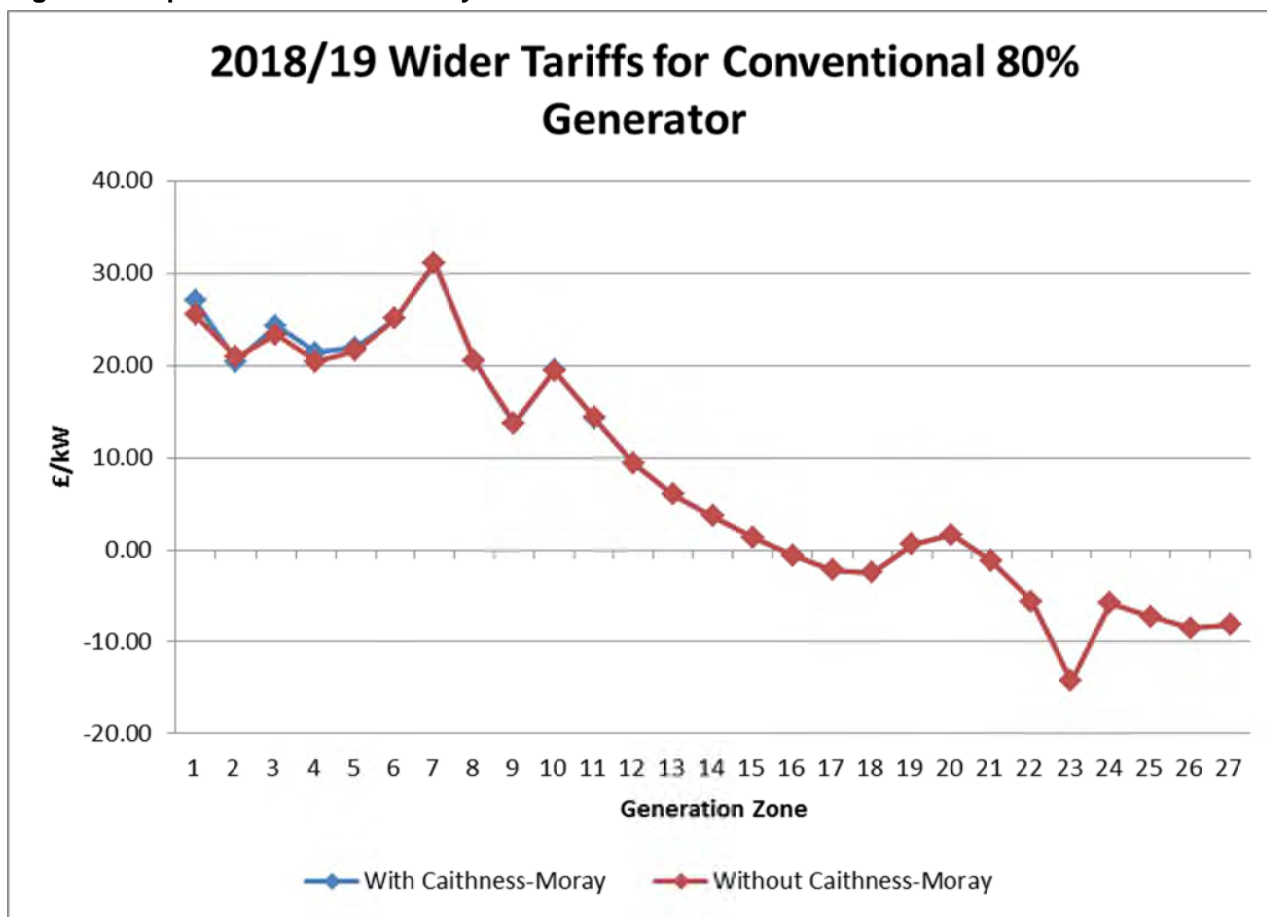


Figure 10 - Impact of Caithness-Moray Link on Intermittent 40% Generation Tariffs

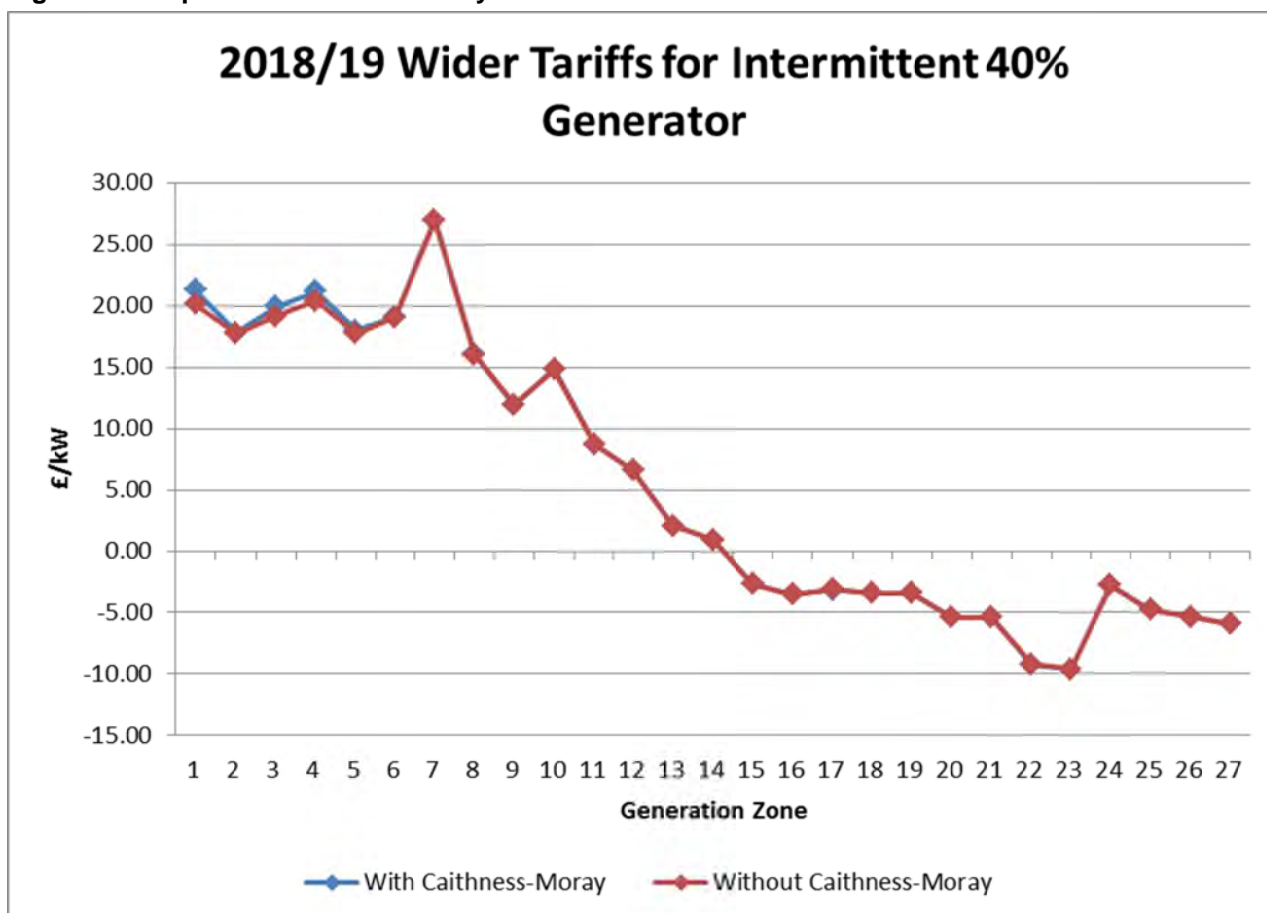


Figure 11 - Impact of Caithness-Moray on HH Demand Tariffs

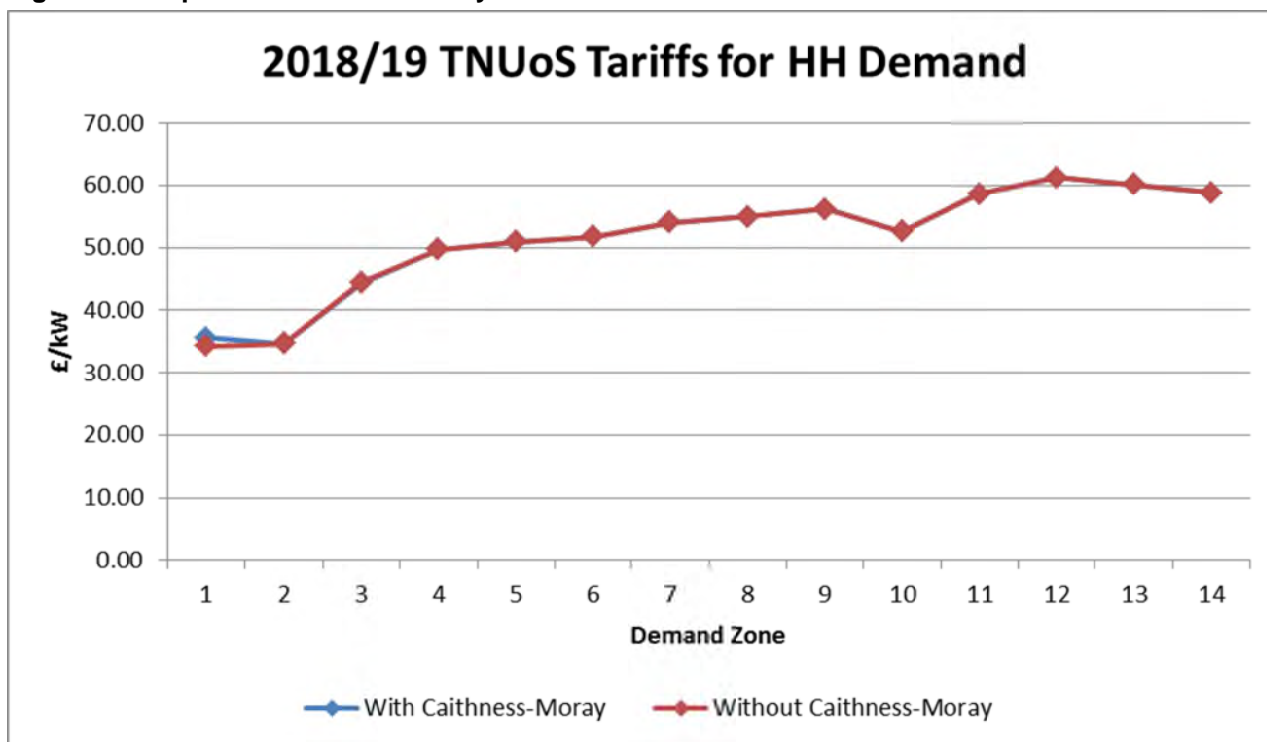
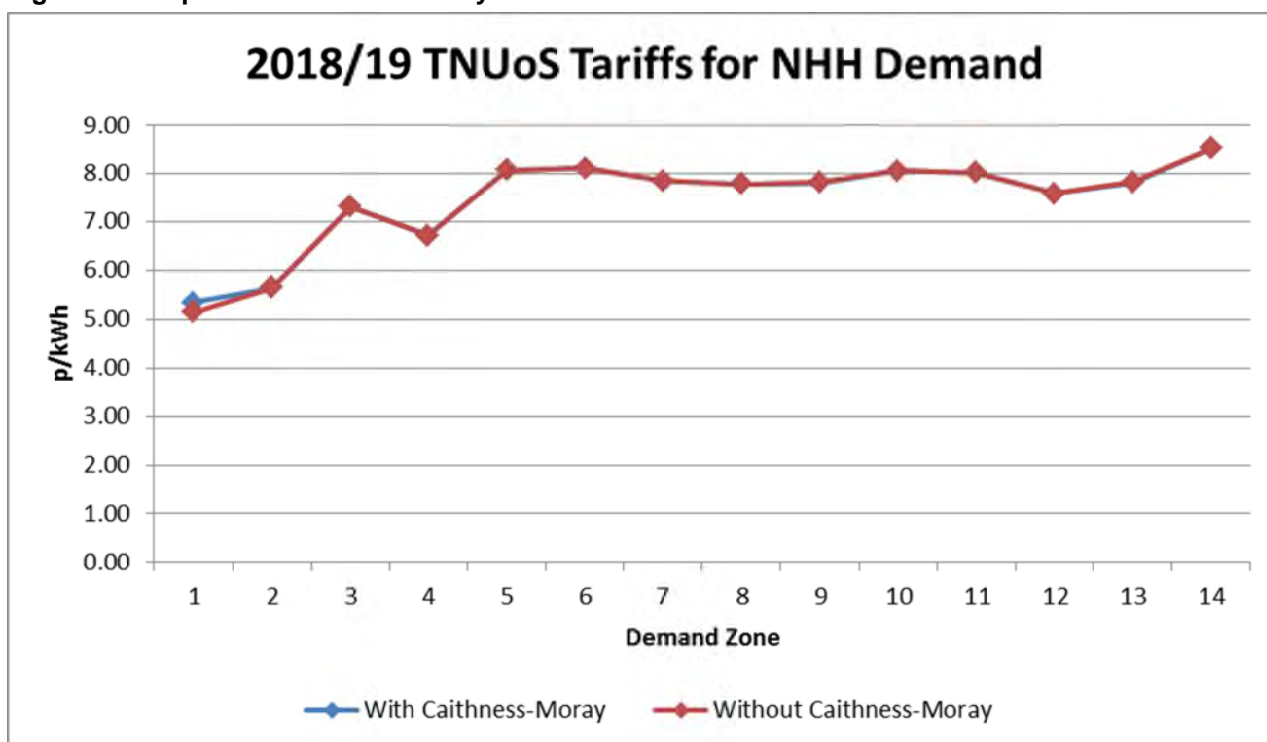


Figure 12 - Impact of Caithness-Moray on NHH Demand Tariffs



### 3.2 Contracted Generation

Table 12 shows that contracted generation increases from 69.9GW in 2016/17 to 117.4GW by 2020/21. For 2016/17 modelled TEC matches contracted TEC at the end of October 2015 as required by the charging methodology. In later years the contracted TEC far exceeds the expected peak demand so we have removed generation from our models that is less likely to progress to the contracted timescale. In assessing which generation projects to remove we take account of a number of factors including whether projects are under construction, whether they have secured consent and success in bidding to provide capacity.

Modelled TEC still exceeds the generation needed to meet demand. The locational model scales modelled TEC back to the demand in the locational model as forecast by distribution networks and directly connected customers. The scaling factors used vary by technology as described in the charging methodology.

To assess the residual element of tariffs we have removed interconnectors which are not chargeable and scaled modelled TEC back to the level of generation anticipated by National Grid. This is higher than forecast demand because generators generally do not achieve full output all year round.

Please note that we are unable to breakdown the modelled TEC of chargeable TEC as some of the information used to derive it is commercially sensitive.

**Table 12 – Contracted and Modelled TEC**

	2016/17	2017/18	2018/19	2019/20	2020/21
Contracted TEC (GW)	69.9	73.4	82.9	98.1	117.4
Modelled TEC (GW)	69.9	71.1	74.6	83.1	91.1
Chargeable TEC (GW)	62.9	67.3	69.0	68.9	69.3

### 3.3 Generation/Demand Revenue Proportions

EU Regulation ECR 838/2010 limits average annual Generation charges to €2.5/MWh. We are assuming that this regulation remains in force and the cap is unchanged<sup>4</sup>. Table 13 shows how revenue recovered from generation is expected to reduce over time due to declining transmission connected generation output, albeit it partly offset by a forecast strengthening of the Euro.

Declining revenues from generation are compensated by increases in revenue from demand. In addition, changes in allowed revenue also impact the revenue recovered from demand.

**Table 13 – Generation and Demand Revenue Proportions**

		2016/17	2017/18	2018/19	2019/20	2020/21
CAPEC	Limit on generation tariff (€/MWh)	2.50	2.50	2.50	2.50	2.50
y	Error Margin	8.2%	8.2%	8.2%	8.2%	8.2%
ER	Exchange Rate (€/£)	1.36	1.34	1.33	1.31	1.31
MAR	Total Revenue (£m)	2,708.7	2,735.0	2,983.1	3,174.7	3,789.5
GO	Generation Output (TWh)	268.7	262.7	250.5	232.6	217.2
G	% of revenue from generation	16.7%	16.4%	14.5%	12.8%	10.0%
D	% of revenue from demand	83.3%	83.6%	85.5%	87.2%	90.0%
G.MAR	Revenue recovered from generation (£m)	453.4	449.9	432.3	407.5	380.6
D.MAR	Revenue recovered from demand (£m)	2255.2	2285.2	2550.8	2767.2	3408.9

<sup>4</sup> If the cap were to be removed then the proportion of revenue recovered from generation would default to 27% under the current charging methodology. However, the industry is currently considering alternative arrangements were this cap to be removed.

### 3.4 Transmission Owners' Revenue

National Grid recovers revenue on behalf of all onshore and offshore Transmission Owners (TOs & OFTOs) in Great Britain. Table 14 shows the forecast revenues that have been used in calculating tariffs.

**Table 14 – Transmission Owner Revenues**

£m Nominal	2016/17	2017/18	2018/19	2019/20	2020/21
<b>National Grid</b>					
<i>Price controlled revenue</i>	1,828.2	1,806.4	1,867.8	1,939.1	2,189.1
<i>Less income from connections</i>	42.7	46.5	47.9	47.9	47.9
<b>Income from TNUoS</b>	<b>1,785.5</b>	<b>1,760.0</b>	<b>1,819.9</b>	<b>1,891.2</b>	<b>2,141.2</b>
<b>Scottish Power Transmission</b>					
<i>Price controlled revenue</i>	306.4	347.1	415.1	404.8	412.7
<i>Less income from connections</i>	11.8	13.9	14.1	14.4	14.7
<b>Income from TNUoS</b>	<b>294.6</b>	<b>333.1</b>	<b>401.0</b>	<b>390.4</b>	<b>398.0</b>
<b>SHE Transmission</b>					
<i>Price controlled revenue</i>	326.2	328.5	323.8	333.2	338.7
<i>Less income from connections</i>	3.4	3.6	3.7	3.8	3.9
<b>Income from TNUoS</b>	<b>322.8</b>	<b>324.9</b>	<b>320.1</b>	<b>329.4</b>	<b>334.8</b>
<b>Offshore</b>	<b>260.8</b>	<b>276.5</b>	<b>401.6</b>	<b>523.3</b>	<b>875.0</b>
<b>Network Innovation Competition</b>	<b>44.9</b>	<b>40.5</b>	<b>40.5</b>	<b>40.5</b>	<b>40.5</b>
<b>Total to Collect from TNUoS</b>	<b>2,708.7</b>	<b>2,735.0</b>	<b>2,983.1</b>	<b>3,174.7</b>	<b>3,789.5</b>

All figures are in millions of pounds and nominal 'money of the day'. Assumptions have been made on future inflation, consistent with H M Treasury forecasts. Inflation forecasts are shown in Table 15 and are relative to 2009/10. Further information on revenues can be found in Appendix D.

**Table 15 – Inflation Indices**

2009/10	2016/17	2017/18	2018/19	2019/20	2020/21
1.0000	1.2330	1.2680	1.3020	1.3520	1.3840

#### 3.4.1 Onshore Transmission Owners

The revenues of the Onshore Transmission Owners (TOs) are subject to RIIO price controls set by Ofgem in 2012. RIIO stands for Revenue = Incentives + Innovation + Outputs. This means that TO revenues are set at price review, but then adjusted during the price control period depending on performance against incentives, innovation and delivered output. Revenue adjustments are generally lagged by two years, e.g. revenues in 2017/18 will be adjusted in November 2016 to reflect 2015/16 performance. The revenue forecasts in this document are provided by the TOs on a best endeavours basis and it should be noted that TO business plans and customer requirements which drive the need for investment, can alter over time.

Subject to consultation on need case and cost, Ofgem may award additional funding for Strategic Wider Works projects. Where determinations have been made by Ofgem then the effect of these have been included in the revenue forecasts. Where determinations have yet to be made, the TOs may take a view on whether to include additional funding in their forecasts.

An estimate has been included in 2017/18 revenues for retrospective recovery of 2015/16 revenue. This reflects the lower than anticipated demand seen so far during 2015/16 but the size of the under-recovery will not be known until



after the end of the financial year. There are no adjustments for revenue recovery or variations in inflation in later years.

### **3.4.2 Offshore Transmission Owners**

The revenues of offshore transmission owners (OFTOs) are determined by Ofgem in a competitive tender process. The revenue is confirmed when the network is transferred from the developer to the appointed OFTO. Prior to this there is uncertainty as to the value of the revenue stream and when it will start. Therefore, whilst the revenues for existing OFTOs are relatively predictable, the revenue for future OFTOs is a forecast. Future OFTO asset transfers are expected to occur within eighteen months of the offshore Windfarm commissioning. Revenues have been extrapolated from previous offshore transmission network revenues and capacities.

Offshore revenue increases significantly over the period. However, this increase is dependent upon the progress of associated offshore generation. Where offshore revenues increase then income from Local Offshore Tariffs will also increase so only around 25% of the additional revenue will affect other TNUoS charges.

### **3.4.3 Pan-Company Funding**

National Grid also collects revenue to fund pan-company incentives awarded by Ofgem in the November prior to the charging year. The Network Innovation Competition Fund provides up to £27m each year for electricity transmission owners and £60m for electricity distribution Network owners. In addition, Ofgem may make Environmental Discretionary awards of up to £4m each year with 50% of un-awarded funding carried over to later years. We have assumed 50% of pan-company funding will be awarded each year.

### **3.4.4 Connection Revenues**

Some onshore transmission owner revenues are recovered from pre-vesting connection assets in the case of National Grid, and pre-BETTA connection assets in the case of the Scottish TOs. These revenues are deducted from allowed revenue to calculate the revenue to be recovered from TNUoS charges. Whilst this revenue is diminishing due to depreciation and replacement, it may remain broadly flat in nominal terms due to inflation and the operating cost element.

## **3.5 Demand Forecasts**

Two types of Demand forecast are used to determine the location element and the residual element of the tariffs.

### **3.5.1 Locational Element**

The locational model uses peak demands forecast by Distribution Network Operators and directly connected demand sites such as steelworks and other heavy industry. Appendix F summarises zonal demand in Table 36.

### **3.5.2 Residual Element**

The residual element is calculated using National Grid's forecast of:

- Average system demand during the three 'Triad' half hours. System demand determines the tariffs paid by suppliers with Half-Hourly metered (HH) demand and generators who import over triads;
- Average HH demand during the three 'Triad' half hours. This is net of embedded generation in receipt of embedded benefits. HH demand is used to determine the income from HH demand and therefore the income to be recovered from Non-Half-Hour metered demand (NHH);
- NHH annual energy consumption between 4 and 7pm. This determines the tariffs paid by suppliers with NHH demand.

Forecast demands are shown in Table 16. Demand supplied from the transmission system is forecast to decline due to the growth in distributed generation. Half-hour metered demand at peak is also expected to decline but in 2017/18



there will be a step increase caused by profile classes 5 to 8 migrating from NHH to HH<sup>5</sup>. Whilst the migration is taking place over a couple of years, prior to 1 April 2017 the migrated demand will be treated as if it was still NHH. The migration of profile classes 5 to 8 is also why there is a step decrease in NHH demand in 2017/18.

**Table 16 – Demand Forecasts**

	2016/17	2017/18	2018/19	2019/20	2020/21
Average System Demand at Triad (GW)	49.8	49.3	48.2	47.6	47.3
Average HH Metered Demand at Triad (GW)	13.1	16.3	15.9	15.7	15.6
NHH Annual Energy between 4pm and 7pm (TWh)	26.1	23.1	22.5	22.0	21.6

The demand bases used to forecast tariffs are shown in more detail in Table 37 to Table 39 in Appendix F.

## 3.6 Other factors affecting tariffs

### 3.6.1 Expansion Constant

The charging methodology requires the expansion constant to be updated each year in line with RPI inflation. Table 17 shows the expansion constants used in the forecasts.

**Table 17 – Expansion Constant**

£/MWkm	16/17	17/18	18/19	19/20	20/21
Expansion Constant	13.336061	13.550247	13.956754	14.375457	14.806721

### 3.6.2 Interconnectors

When modelling flows on the transmission system, interconnectors are not included in the peak model but are included in the year round model. Interconnectors are not liable for Generation or Demand TNUoS charges so are not included in the generation or demand charging bases, see Table 18.

**Table 18 – Interconnector Adjustments**

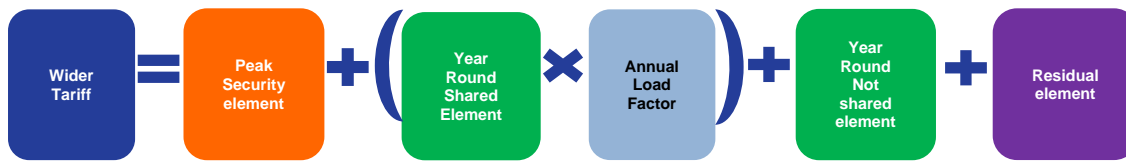
Interconnector	Zone	Adjustment (MW)
Auchencrosh (interconnector CCT)	10	375
Belgium Interconnector (Nemo)	24	1000 from 2018/19
Britned	24	1200
East West Interconnector	16	505
Eleclink	24	1000
FAB Link Interconnector	26	1400 from 2020/21
IFA Interconnector	24	2000
IFA2 Interconnector	26	1000 from 2019/20
NSN Link	13	1400 from 2019/20
Viking Link Denmark Interconnector	17	1500 from 2020/21

<sup>5</sup> BSC modification P272 makes it mandatory that Non-Half-Hour (NHH) profile classes 5 to 8 move to metering classes E, F and G. The subsequent amendment P322 revised the completion date to 1 April 2017. Connection and Use of System Code Modification Proposals 241 and 247 amend the treatment of these profile classes so they are charged based on profiled consumption between 4 and 7pm prior to migration and metered consumption between 4 and 7pm after migration until 31 March 2017.

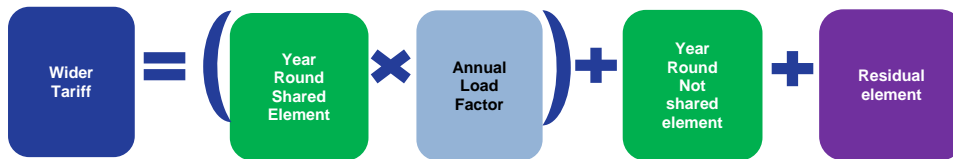
### 3.6.3 Annual Load Factors (ALFs)

A Generator's liability is dependent upon its type of generation. Coal, Nuclear, Gas, Pumped Storage, Oil, Hydro, Biomass and CHP are classed as conventional whereas wind, tidal and wave are intermittent. Liability for each tariff component is shown below:

#### Conventional Generator



#### Intermittent Generator



Each generator has a specific annual load factor based on its performance over the last five years. Where new plant does not have at least three complete charging year's history then generic load factors specific to the technology are also used. We have used the Final 2016/17 ALF for this forecast.

## 4. Commentary on Forecast Generation Tariffs

### 4.1 Wider Zonal Generation Tariffs

#### 4.1.1 Key Assumptions

- Western HVDC link completed in 2017/18
- Caithness Moray completed in 2018/19
- EU Regulation ECR 838/2010 limits generation to €2.5/MWh

#### 4.1.2 Conventional Generator Tariffs

Table 19 illustrates changes in forecast Generation TNUoS tariffs from 2016/17 onwards for a conventional generator with an 80% load factor. Note that each generator has its own load factor and 80% has only been used here for illustration.

**Table 19 – Wider tariffs for a conventional 80% generator**

Wider Tariffs for a Conventional 80% Generator		2016/17	2017/18	2018/19	2019/20	2020/21
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	14.70	24.62	27.03	28.17	25.18
2	East Aberdeenshire	10.65	20.38	20.40	22.85	19.75
3	Western Highlands	12.57	22.59	24.31	26.41	25.86
4	Skye and Lochalsh	10.04	19.98	21.41	23.40	28.70
5	Eastern Grampian and Tayside	11.57	21.15	21.92	27.88	24.85
6	Central Grampian	14.67	24.18	25.09	25.04	21.52
7	Argyll	20.20	29.64	31.06	31.36	27.47
8	The Trossachs	10.74	19.84	20.49	20.84	16.89
9	Stirlingshire and Fife	5.68	13.94	13.66	18.89	15.70
10	South West Scotland	8.99	18.58	19.53	18.60	14.87
11	Lothian and Borders	7.80	15.23	14.31	13.90	10.34
12	Solway and Cheviot	4.93	10.45	9.46	8.66	4.58
13	North East England	2.98	8.13	6.05	4.63	2.75
14	North Lancashire and The Lakes	5.14	5.04	3.64	1.66	-2.75
15	South Lancashire, Yorkshire and Humber	5.76	3.95	1.40	-0.48	-4.90
16	North Midlands and North Wales	4.75	2.04	-0.55	-2.51	-6.87
17	South Lincolnshire and North Norfolk	3.23	0.57	-2.17	-3.71	-8.16
18	Mid Wales and The Midlands	2.38	0.14	-2.44	-4.29	-8.49
19	Anglesey and Snowdon	6.29	3.01	0.57	-1.41	-5.93
20	Pembrokeshire	7.48	4.31	1.64	-1.10	-5.45
21	South Wales & Gloucester	4.63	1.63	-1.21	-4.20	-8.55
22	Cotswold	0.44	-2.52	-5.57	-8.97	-13.57
23	Central London	-6.09	-8.79	-14.30	-16.45	-21.30
24	Essex and Kent	-0.50	-3.13	-5.81	-7.53	-11.77
25	Oxfordshire, Surrey and Sussex	-1.70	-4.46	-7.23	-8.96	-13.40
26	Somerset and Wessex	-2.62	-5.49	-8.49	-11.80	-14.45
27	West Devon and Cornwall	-2.40	-5.16	-8.19	-14.18	-18.04

### 4.1.3 Intermittent Generator Tariffs

Table 20 illustrates changes in forecast Generation TNUoS tariffs from 2016/17 onwards for an intermittent generator with a 40% load factor. Note that each generator has its own load factor and 40% has only been used here for illustration.

**Table 20 - Wider tariffs for an intermittent 40% load factor generator**

Wider Tariffs for an Intermittent 40% Generator		2016/17	2017/18	2018/19	2019/20	2020/21
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	12.48	20.66	21.31	21.36	17.87
2	East Aberdeenshire	9.94	17.96	17.83	18.50	14.92
3	Western Highlands	11.32	19.58	19.97	20.25	18.66
4	Skye and Lochalsh	12.79	20.98	21.20	21.50	21.50
5	Eastern Grampian and Tayside	10.70	18.75	18.03	19.85	16.21
6	Central Grampian	10.95	19.66	19.10	17.86	13.96
7	Argyll	18.53	27.31	26.99	25.70	21.43
8	The Trossachs	8.50	16.88	16.07	14.96	10.75
9	Stirlingshire and Fife	6.70	13.36	11.91	14.19	10.28
10	South West Scotland	7.60	15.66	14.88	13.51	9.27
11	Lothian and Borders	5.43	10.34	8.72	7.77	3.62
12	Solway and Cheviot	4.57	8.34	6.60	5.35	0.83
13	North East England	1.23	4.37	2.06	0.30	-2.58
14	North Lancashire and The Lakes	3.20	2.68	0.94	-1.05	-6.11
15	South Lancashire, Yorkshire and Humber	1.18	-0.31	-2.70	-4.86	-9.27
16	North Midlands and North Wales	0.69	-1.21	-3.50	-5.55	-9.87
17	South Lincolnshire and North Norfolk	0.75	-0.66	-3.13	-5.41	-9.75
18	Mid Wales and The Midlands	0.64	-0.99	-3.42	-5.29	-9.51
19	Anglesey and Snowdon	0.92	-1.56	-3.43	-5.36	-9.17
20	Pembrokeshire	-0.57	-2.81	-5.38	-7.53	-11.89
21	South Wales & Gloucester	-0.55	-2.79	-5.37	-7.55	-11.97
22	Cotswold	-3.99	-6.42	-9.23	-12.10	-16.69
23	Central London	-4.57	-6.66	-9.61	-11.77	-16.48
24	Essex and Kent	1.75	-0.35	-2.81	-4.58	-8.86
25	Oxfordshire, Surrey and Sussex	-0.10	-2.23	-4.76	-6.61	-10.92
26	Somerset and Wessex	-0.55	-2.73	-5.33	-7.58	-11.14
27	West Devon and Cornwall	-1.07	-3.28	-5.89	-8.73	-12.85

#### 4.1.4 2016/17

These tariffs were published on 29 January 2016 and are discussed in the accompanying tariff information report.

#### 4.1.5 2017/18

Tariffs increase by £9/kW to £10/kW for most conventional generators in most Scottish zones as flows south are diverted down the subsea HVDC link which has a higher cost than onshore routes. As income from generation is broadly the same as in 2016/17 this results in a decrease in the residual and therefore a reduction in England and Wales tariffs to offset the additional income from Scottish generation. A similar change can be seen in intermittent generator tariffs but slightly muted as these generators are not exposed to the peak tariff element.

#### **4.1.6 2018/19**

Generally generator tariffs reduce because of the cap on average annual generator charges. However, tariffs in the North of Scotland rise due to the commissioning of the additional generation in this area and the Caithness-Moray HVDC link.

#### **4.1.7 2019/20**

Generally generation tariffs continue to reduce due to the cap on average annual generator charges and the residual is forecast to turn negative this year. However, tariffs in the north of Scotland are forecast to increase due to new generation commissioning in those zones.

#### **4.1.8 2020/21**

Generally generator tariffs continue to reduce due to the cap on average annual generator charges. The reduction is particularly marked this year due the forecast increase in offshore revenue. However, tariffs in zone 4 are not forecast to reduce due to generation increases in this zone.

### **4.2 Onshore Local Circuit Tariffs**

A forecast of onshore local circuit tariffs from 2017/18 to 2020/21 is shown in Table 6 in Section 2. These have been calculated using contracted generation from 2017/18 onwards. The Onshore Local Circuit charge for a Generation is dependent on the length and type of circuit (s) connecting to it to the nearest MITS substation and on the flows on those circuits. For new generators connecting in later years there may be limited information on the connection design so Local Circuit Tariffs may not be provided or are subject to change. If you are unsure about your local circuit tariff or whether one will be applied please contact your Connection Account Manager or alternatively use the contact details in Section 8.

### **4.3 Onshore Local Substation Tariffs**

Table 7 in Section 2 shows the onshore local substation tariffs that are forecasted to apply during 2017/18. These tariffs only apply to transmission connected generators. The tariffs will be indexed by RPI for each year of the price control. For future year we assume tariffs inflate by 3% each year.

If no significant work is planned at a substation that changes whether or not there is redundancy, the tariff will only alter by RPI. If the sum of the TEC of the generators at a substation changes such that the 1320MW threshold is crossed, this will change the tariff applied to all generators at that location. If you are unsure about what tariff may apply please contact National Grid for further information.

### **4.4 Small Generators Discount**

Under Condition C13 of National Grid's electricity transmission licence a discount is applied to small generators connected to 132kV transmission systems who, but for the fact they are connected to a transmission system, would not otherwise be liable for TNUoS charges. The discount shown in Table 9 in Section 2 reduces the tariff paid by eligible generation and is paid for by suppliers through an increase in HH and NHH tariffs. The discount lapses on 31 March 2019 so is not included in 2019/20 or 2020/21 tariffs.

## 5. Commentary on Forecast Demand Tariffs

### 5.1.1 Key Assumptions

- Western HVDC link completed in 2017/18
- Caithness Moray completed in 2018/19
- EU Regulation ECR 838/2010 limits generation to €2.5/MWh
- P272 Implemented 1 April 2017

The above assumptions are the major drivers of demand tariff changes over the next 5 years other than changes in the generation background.

### 5.2 Half-Hourly Demand Tariffs (£/kW)

Table 21 illustrates the change in forecast TNUoS tariffs set out in Section 2.7 for Half-Hour (HH) metered demand from 2017/18 to 2020/21.

**Table 21 – Changes in Half-Hourly Metered Tariffs**

Zone	Zone Name	Difference 16/17 to 17/18 (£/kW)	Difference 17/18 to 18/19 (£/kW)	Difference 18/19 to 19/20 (£/kW)	Difference 19/20 to 20/21 (£/kW)
1	Northern Scotland	-11.23	5.86	0.25	15.48
2	Southern Scotland	-9.80	4.20	1.90	12.98
3	Northern	-4.77	6.22	3.59	12.88
4	North West	0.76	6.06	4.46	13.75
5	Yorkshire	1.63	6.75	4.54	13.86
6	N Wales & Mersey	2.82	6.23	4.60	13.88
7	East Midlands	2.28	6.93	4.60	14.12
8	Midlands	2.52	6.64	4.91	14.09
9	Eastern	2.48	7.07	4.33	14.12
10	South Wales	3.13	7.11	5.52	14.04
11	South East	2.63	6.75	4.27	13.85
12	London	2.50	6.86	4.55	14.16
13	Southern	2.75	7.31	4.70	13.77
14	South Western	2.85	7.35	7.28	13.61

### 5.3 Non Half-Hourly Demand Tariffs (p/kWh)

Table 22 illustrates the change in forecast TNUoS tariffs set out in Section 3 for Non Half-Hour (NHH) metered demand between 2017/18 and 2020/21.

**Table 22 – Changes in Non-Half-Hour Metered Tariffs**

Zone	Zone Name	Difference 16/17 to 17/18	Difference 17/18 to 18/19	Difference 18/19 to 19/20	Difference 19/20 to 20/21
		(p/kWh)	(p/kWh)	(p/kWh)	(p/kWh)
1	Northern Scotland	-1.44	1.01	0.22	2.64
2	Southern Scotland	-1.34	0.78	0.47	2.39
3	Northern	-0.54	1.09	0.72	2.31
4	North West	0.17	0.86	0.68	2.00
5	Yorkshire	0.42	1.12	0.84	2.39
6	N Wales & Mersey	0.61	1.03	0.85	2.38
7	East Midlands	0.44	1.04	0.77	2.23
8	Midlands	0.45	0.98	0.79	2.16
9	Eastern	0.43	1.03	0.70	2.13
10	South Wales	0.59	1.07	0.90	2.26
11	South East	0.42	0.95	0.65	2.01
12	London	0.27	0.81	0.56	1.79
13	Southern	0.38	0.95	0.66	1.90
14	South Western	0.53	1.12	1.17	2.14

### 5.4 Commentary

#### 5.4.1 2016/17

These tariffs were published on 29 January 2016 and are discussed in the accompanying tariff information report.

#### 5.4.2 2017/18

HH demand tariffs in Scotland decrease by up to £11.23/kW and in northern decrease by £4.77/kW following the commissioning of the Western HVDC link. Elsewhere the HH tariffs increase by up to £3.13/kW to offset the reduction in income from Scotland.

The HVDC link has a similar effect on NHH tariffs with Scottish tariffs decreasing by up to 1.44p/kWh, Northern tariffs decreasing by 0.54p/kWh and other tariffs increasing by up to 0.61p/kWh.

#### 5.4.3 2018/19

Generally HH and NHH tariffs increase due to increased revenues and declining revenue from generation. Increases in the north are smaller due to increases in northern generation.

#### 5.4.4 2019/20

Generally HH and NHH tariffs increase due to increased revenues and declining revenue from generation. Increases in the north are smaller due to increases in northern generation.

#### 5.4.5 2020/21

HH tariffs increase by £13/kW to £15/kW and NHH tariffs by 2-3p/kWh. These increases are driven by allowed revenue increases, particularly for offshore transmission networks.

## 6. Generation and Demand Residuals

The residual elements of the Generator and Demand TNUoS tariffs are given by the formulas below. These can be used to assess the impact of changing assumptions in our tariff forecasts without the need to run the transport and tariff model.

$$R_G = \frac{G.R - Z_G - O - L_c - L_S}{B_G}$$

$$R_D = \frac{D.R - Z_D}{B_D}$$

Where:

- $R_G$  is the Generation residual tariff (£/kW)
- $R_D$  is the Demand residual tariff (£/kW)
- $G$  is the proportion of TNUoS revenue recovered from Generation
- $D$  is the proportion of TNUoS revenue recovered from Demand
- $R$  is the total TNUoS revenue to be recovered (£m)
- $Z_G$  is the TNUoS revenue recovered from Generation locational zonal tariffs (£m)
- $Z_D$  is the TNUoS revenue recovered from Demand locational zonal tariffs (£m)
- $O$  is the TNUoS revenue recovered from offshore local tariffs (£m)
- $L_c$  is the TNUoS revenue recovered from onshore local circuit tariffs (£m)
- $L_S$  is the TNUoS revenue recovered from onshore local substation tariffs (£m)
- $B_G$  is the generator charging base (GW)
- $B_D$  is the Demand charging base (Half-hour equivalent GW)

$Z_G$ ,  $Z_D$  and  $L_c$  are determined by the locational tariffs/elements of tariffs.

Typically 75% of offshore revenues are recovered from offshore local tariffs. Therefore if revenue ( $R$ ) is reduced / increased due to offshore revenue changes then  $O$  must also be adjusted by 75%. E.g., if offshore revenues reduce by £10m, reduce  $R$  by £10m and  $O$  by £7.5m. Table 23 shows the residual calculation for each charging year.



**Table 23 – Calculation of Residuals**

	2016/17	2017/18	2018/19	2019/20	2020/21
<b>R<sub>G</sub> (£/kW)</b>	0.51	-0.92	-3.38	-5.37	-9.69
<b>R<sub>D</sub> (£/kW)</b>	45.33	46.34	52.91	58.13	72.03
<b>G</b>	0.167	0.164	0.145	0.128	0.100
<b>D</b>	0.833	0.836	0.855	0.872	0.900
<b>R (£m)</b>	2,708.7	2,735.0	2,983.1	3,174.7	3,789.5
<b>Z<sub>G</sub> (£m)</b>	191.9	266.3	305.1	325.9	329.0
<b>Z<sub>D</sub> (£m)</b>	-2.4	0.6	-0.9	-0.1	2.0
<b>O (£m)</b>	200.6	212.9	309.2	402.9	673.7
<b>L<sub>c</sub> (£m)</b>	13.3	15.6	27.6	23.0	21.2
<b>L<sub>s</sub> (£m)</b>	15.9	17.0	23.6	26.0	28.1
<b>B<sub>G</sub> (£m)</b>	62.9	67.3	69.0	68.9	69.3
<b>B<sub>D</sub> (£m)</b>	49.8	49.3	48.2	47.6	47.3

## 7. Tools and Supporting Information

### 7.1 Discussing Tariff Changes

National Grid is keen to ensure that customers understand the current charging arrangements and the reasons why charges have changed from year to year. Therefore, we expect to hold a webinar on these forecasts in the near future.

### 7.2 Future Updates to Tariff Forecasts

National Grid will update the forecast of 2017/18 tariffs throughout 2016 and the timetable for these has been published on our website. These forecasts are intended to allow customers to gauge the impact of key changes to the inputs to the charging model such as TEC reductions and allowed revenue ahead of the publication of draft and final TNUoS tariffs.

### 7.3 Charging Models

We will make copies of National Grid's charging models available to customers to conduct their own analysis of generation and demand tariffs. These models will be based on the contracted generation background rather than the generation background used to calculate the tariffs in this forecast. We are unable to provide a breakdown of National Grid's view of generation as it may be based on commercially sensitive information.

If you would like a copy of any of the models please contact us. Please note that, while the model is available free of charge, it is provided under licence to restrict, among other things, its distribution and commercial use.

### 7.4 Tools and Other Data

Also available on our website are:

- Final Annual Load Factors for 2016/17 on the TNUoS forecast page
- Generation tariff calculator on the Tools and Data page

## 8. Comments & Feedback

As part of our commitment to customers, National Grid welcomes comments and feedback on the information contained in this document. In particular, to ensure that information is provided and presented in a way that is of most use to customers, we would welcome specific feedback on:

- the level of numeric detail provided to explain tariff changes;
- the quality of the explanation given to describe and explain tariff changes;
- information that is not useful and could be omitted; and
- information that is missing that could be added.

Please send comments to:

Mary Owen [mary.owen@nationalgrid.com](mailto:mary.owen@nationalgrid.com) or Stuart boyle [stuart.boyle@nationalgrid.com](mailto:stuart.boyle@nationalgrid.com)

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Appendix A: 2017/18 TNUoS tariffs excluding Western HVDC

Appendix B: 2017/18 TNUoS tariffs with higher cost Western HVDC

Appendix C: 2018/19 TNUoS tariffs excluding Caithness-Moray

Appendix D: Revenue Analysis

Appendix E : Contracted Generation at Peak

Appendix F : Zonal Demand Summaries

Appendix G : Generation Zone Map

Appendix H : Demand Zone Map

## Appendix A: 2017/18 TNUoS tariffs excluding Western HVDC

Table 24 and Table 25 show 2017/18 Generation and Demand tariffs omitting the Western HVDC link from the locational model and the difference from the tariffs in Section 2.

**Table 24 - 2017/18 Generation Tariffs without the Western HVDC Link**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor	Impact of Link on Conventional 80% Generation 17/18 Tariffs	Impact of Link on Intermittent 40% Generation 17/18 Tariffs
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	0.07	11.51	10.20	-0.30	19.18	14.51	5.44	6.15
2	East Aberdeenshire	1.23	4.97	10.20	-0.30	15.11	11.89	5.27	6.07
3	Western Highlands	-0.06	9.36	9.93	-0.30	17.07	13.38	5.52	6.20
4	Skye and Lochalsh	-4.08	9.36	11.33	-0.30	14.45	14.78	5.53	6.20
5	Eastern Grampian and Tayside	-0.12	8.42	9.46	-0.30	15.78	12.54	5.36	6.21
6	Central Grampian	2.13	8.95	9.88	-0.30	18.88	13.16	5.30	6.50
7	Argyll	1.16	6.68	18.05	-0.30	24.26	20.42	5.39	6.88
8	The Trossachs	1.69	6.68	7.99	-0.30	14.73	10.36	5.12	6.52
9	Stirlingshire and Fife	0.04	3.80	6.75	-0.30	9.53	7.97	4.41	5.38
10	South West Scotland	1.17	5.36	7.30	-0.30	12.46	9.14	6.12	6.51
11	Lothian and Borders	2.70	5.36	5.09	-0.30	11.77	6.93	3.46	3.41
12	Solway and Cheviot	0.97	3.70	4.44	-0.30	8.08	5.63	2.37	2.71
13	North East England	2.83	2.67	2.57	-0.30	7.24	3.34	0.89	1.03
14	North Lancashire and The Lakes	1.06	2.67	2.17	-0.30	5.07	2.94	-0.03	-0.26
15	South Lancashire, Yorkshire and Humberside	3.61	1.55	0.09	-0.30	4.65	0.42	-0.70	-0.73
16	North Midlands and North Wales	3.27	0.59		-0.30	3.44	-0.06	-1.40	-1.15
17	South Lincolnshire and North Norfolk	0.75	1.24		-0.30	1.45	0.20	-0.88	-0.86
18	Mid Wales and The Midlands	0.96	0.66		-0.30	1.19	-0.03	-1.06	-0.96
19	Anglesey and Snowdon	4.72	1.36		-0.30	5.52	0.25	-2.50	-1.81
20	Pembrokeshire	8.86	-3.80		-0.30	5.52	-1.82	-1.21	-0.99
21	South Wales & Gloucester	6.13	-3.76		-0.30	2.82	-1.80	-1.19	-0.99
22	Cotswold	3.18	2.14	-5.89	-0.30	-1.30	-5.33	-1.22	-1.09
23	Central London	-2.87	2.14	-6.32	-0.30	-7.77	-5.76	-1.03	-0.90
24	Essex and Kent	-3.53	2.14		-0.30	-2.12	0.56	-1.01	-0.91
25	Oxfordshire, Surrey and Sussex	-1.07	-2.50		-0.30	-3.36	-1.29	-1.10	-0.93
26	Somerset and Wessex	-1.09	-3.71		-0.30	-4.36	-1.78	-1.13	-0.95
27	West Devon and Cornwall	0.34	-5.07		-0.30	-4.01	-2.32	-1.14	-0.96

**Table 25 - 2017/18 Demand Tariffs without Western HVDC Link**

<b>Zone</b>	<b>Zone Name</b>	<b>HH Tariff</b>	<b>NHH Tariff</b>	<b>Impact of HVDC Link on HH Tariffs</b>	<b>Impact of HVDC Link on NHH Tariffs</b>
		<b>(£/kW)</b>	<b>(p/kWh)</b>	<b>(£/kW)</b>	<b>(p/kWh)</b>
1	Northern Scotland	36.41	5.30	-6.67	-0.97
2	Southern Scotland	36.58	5.85	-6.14	-0.98
3	Northern	39.76	6.48	-1.60	-0.26
4	North West	43.41	5.83	0.18	0.02
5	Yorkshire	43.97	6.94	0.15	0.02
6	N Wales & Mersey	43.72	6.81	1.78	0.28
7	East Midlands	46.45	6.73	0.55	0.08
8	Midlands	47.30	6.67	0.96	0.14
9	Eastern	48.60	6.73	0.42	0.06
10	South Wales	44.74	6.88	0.69	0.11
11	South East	51.32	7.00	0.51	0.07
12	London	53.90	6.72	0.47	0.06
13	Southern	52.26	6.79	0.57	0.07
14	South Western	50.79	7.31	0.64	0.09

## Appendix B: 2017/18 TNUoS tariffs with higher cost Western HVDC

Table 26 and Table 27 and Figure 13 to Figure 16 show the effect on 2017/18 tariffs of increasing the specific expansion factors for the Western HVDC link from seven to eight due to higher project costs.

**Table 26 - 2017/18 Generation Tariffs with increased Western HVDC Link costs**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor	Impact of Increased Costs on Conventional 80% Tariff	Impact of Increased Costs on Intermittent 40% Tariff
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	-1.55	14.12	17.11	-1.03	25.84	21.74	1.22	1.08
2	East Aberdeenshire	-0.39	7.36	17.11	-1.03	21.59	19.03	1.20	1.07
3	Western Highlands	-1.68	12.08	16.86	-1.03	23.82	20.66	1.23	1.08
4	Skye and Lochalsh	-5.69	12.08	18.26	-1.03	21.21	22.07	1.23	1.08
5	Eastern Grampian and Tayside	-1.92	11.17	16.40	-1.03	22.39	19.84	1.24	1.09
6	Central Grampian	-0.10	11.98	17.04	-1.03	25.50	20.81	1.32	1.15
7	Argyll	-1.38	9.75	25.71	-1.03	31.10	28.59	1.46	1.28
8	The Trossachs	-0.76	9.75	15.18	-1.03	21.19	18.05	1.35	1.17
9	Stirlingshire and Fife	-1.44	5.27	13.25	-1.03	15.01	14.34	1.06	0.98
10	South West Scotland	-0.33	8.66	14.44	-1.03	20.02	16.88	1.44	1.23
11	Lothian and Borders	1.64	8.66	8.53	-1.03	16.08	10.97	0.84	0.63
12	Solway and Cheviot	0.25	4.88	7.95	-1.03	11.07	8.87	0.62	0.53
13	North East England	2.61	2.96	4.44	-1.03	8.39	4.60	0.26	0.23
14	North Lancashire and The Lakes	1.20	2.96	2.45	-1.03	4.99	2.60	-0.05	-0.07
15	South Lancashire, Yorkshire and Humberside	3.82	1.04	0.19	-1.03	3.82	-0.42	-0.13	-0.11
16	North Midlands and North Wales	3.54	-0.94		-1.03	1.75	-1.40	-0.29	-0.20
17	South Lincolnshire and North Norfolk	0.97	0.56		-1.03	0.39	-0.80	-0.18	-0.14
18	Mid Wales and The Midlands	1.20	-0.33		-1.03	-0.09	-1.16	-0.22	-0.16
19	Anglesey and Snowdon	5.21	-2.14		-1.03	2.47	-1.88	-0.54	-0.32
20	Pembrokeshire	9.02	-4.90		-1.03	4.07	-2.99	-0.25	-0.18
21	South Wales & Gloucester	6.28	-4.84		-1.03	1.38	-2.96	-0.25	-0.18
22	Cotswold	3.33	1.30	-6.12	-1.03	-2.77	-6.62	-0.25	-0.20
23	Central London	-2.71	1.30	-6.31	-1.03	-9.00	-6.81	-0.21	-0.16
24	Essex and Kent	-3.35	1.30		-1.03	-3.34	-0.50	-0.21	-0.16
25	Oxfordshire, Surrey and Sussex	-0.92	-3.42		-1.03	-4.68	-2.39	-0.22	-0.16
26	Somerset and Wessex	-0.94	-4.69		-1.03	-5.72	-2.90	-0.23	-0.17
27	West Devon and Cornwall	0.49	-6.07		-1.03	-5.39	-3.45	-0.23	-0.17

Figure 13 – Impact of increased Western HVDC costs on conventional generator wider tariffs

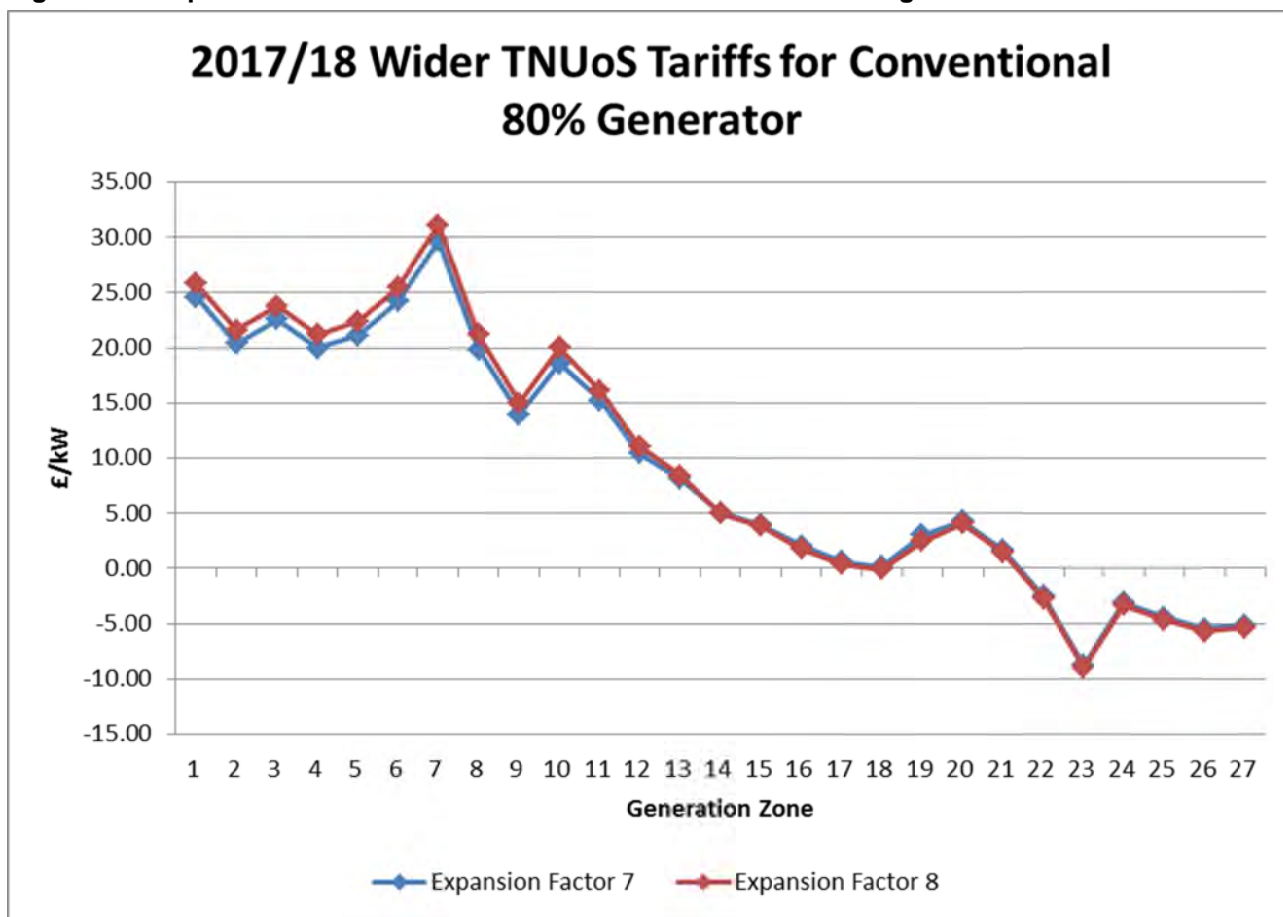
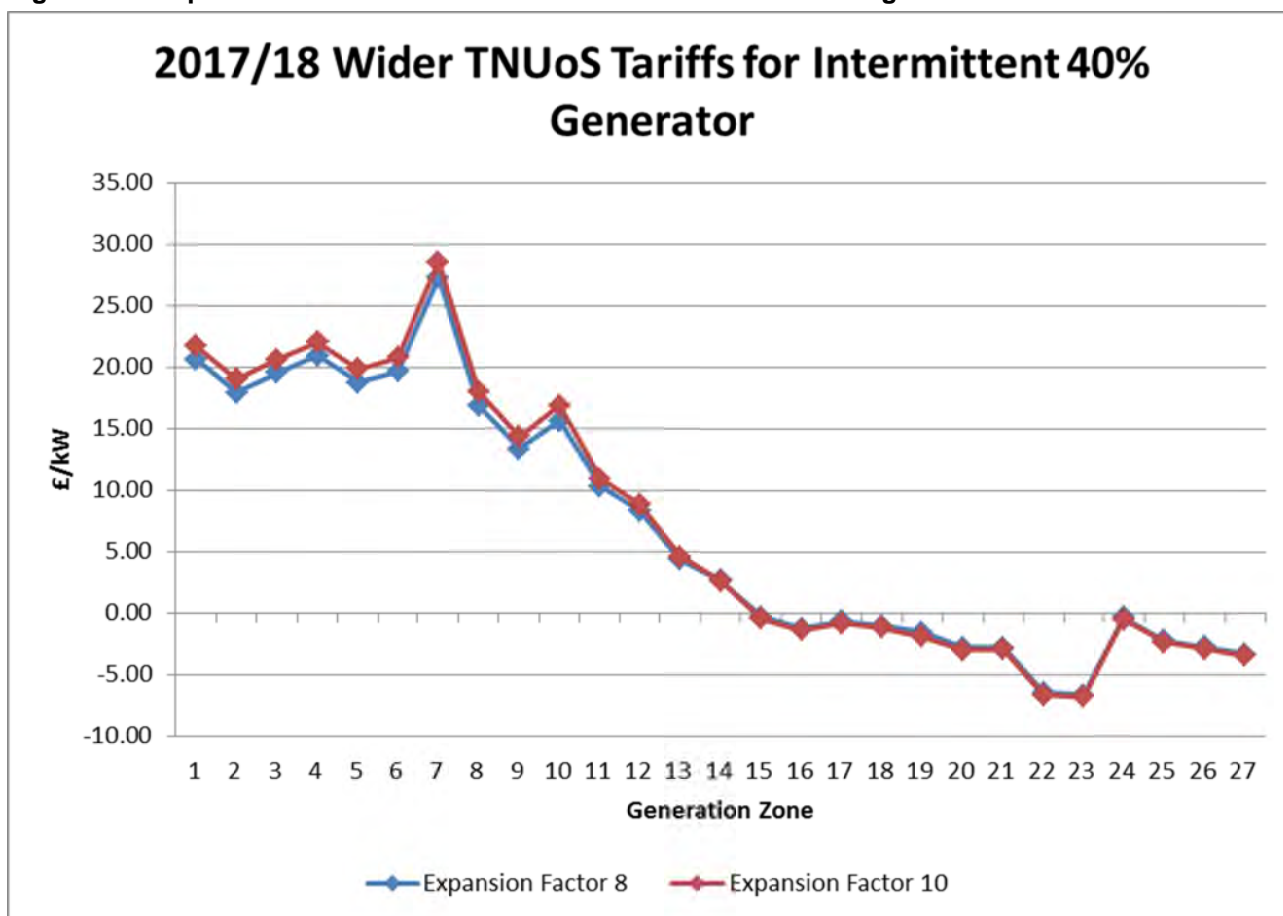


Figure 14 – Impact of increased Western HVDC costs on Intermittent generator wider tariffs





**Table 27 - Impact of increased HVDC costs on demand tariffs**

Zone	Zone Name	HH Tariff	NHH Tariff	Impact of Increased costs on HH Tariffs	Impact of Increased costs on NHH Tariffs
		(£/kW)	(p/kWh)	(£/kW)	(£/kW)
1	Northern Scotland	28.27	4.11	-1.46	-0.21
2	Southern Scotland	29.04	4.64	-1.40	-0.22
3	Northern	37.77	6.16	-0.39	-0.06
4	North West	43.63	5.86	0.04	0.00
5	Yorkshire	44.17	6.97	0.05	0.01
6	N Wales & Mersey	45.84	7.14	0.35	0.05
7	East Midlands	47.14	6.83	0.13	0.02
8	Midlands	48.48	6.84	0.22	0.03
9	Eastern	49.13	6.80	0.10	0.01
10	South Wales	45.60	7.01	0.16	0.03
11	South East	51.95	7.09	0.12	0.02
12	London	54.48	6.79	0.11	0.01
13	Southern	52.97	6.88	0.14	0.02
14	South Western	51.58	7.43	0.15	0.02

**Figure 15 – Impact of increased Western HVDC costs on HH Tariffs**

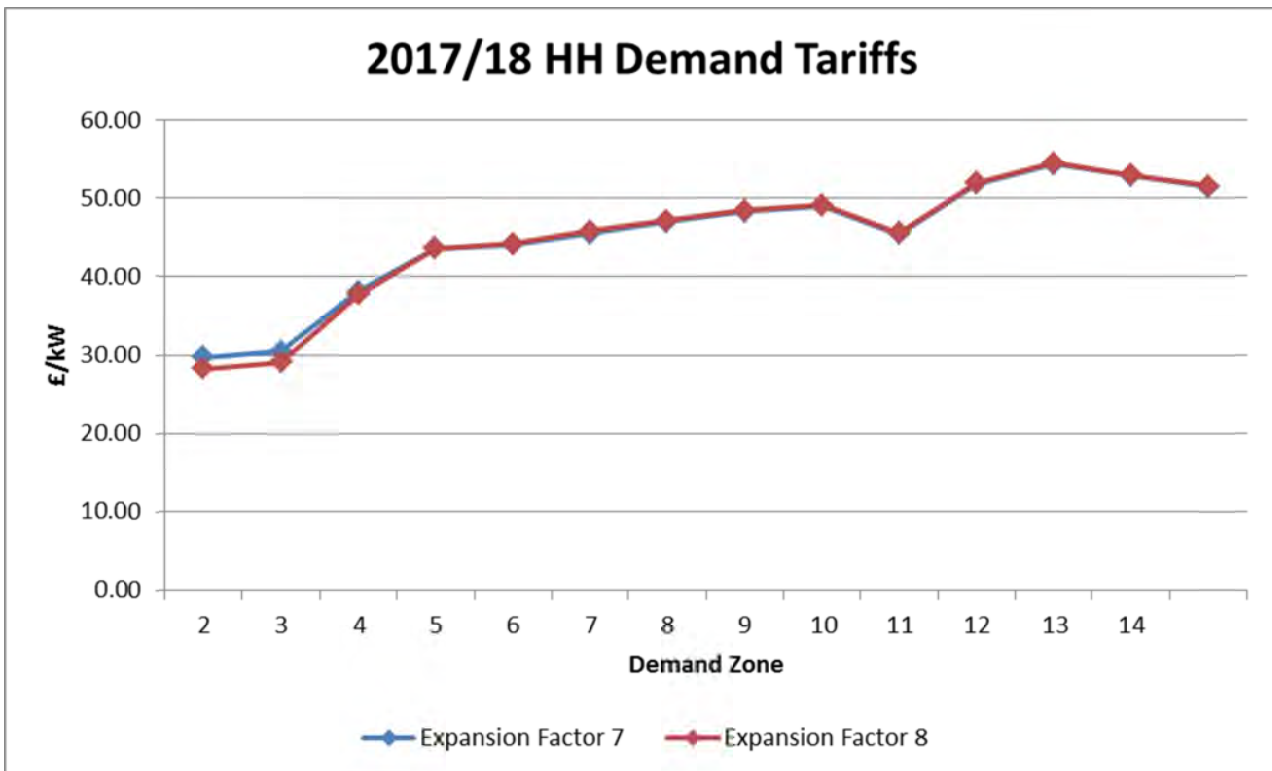
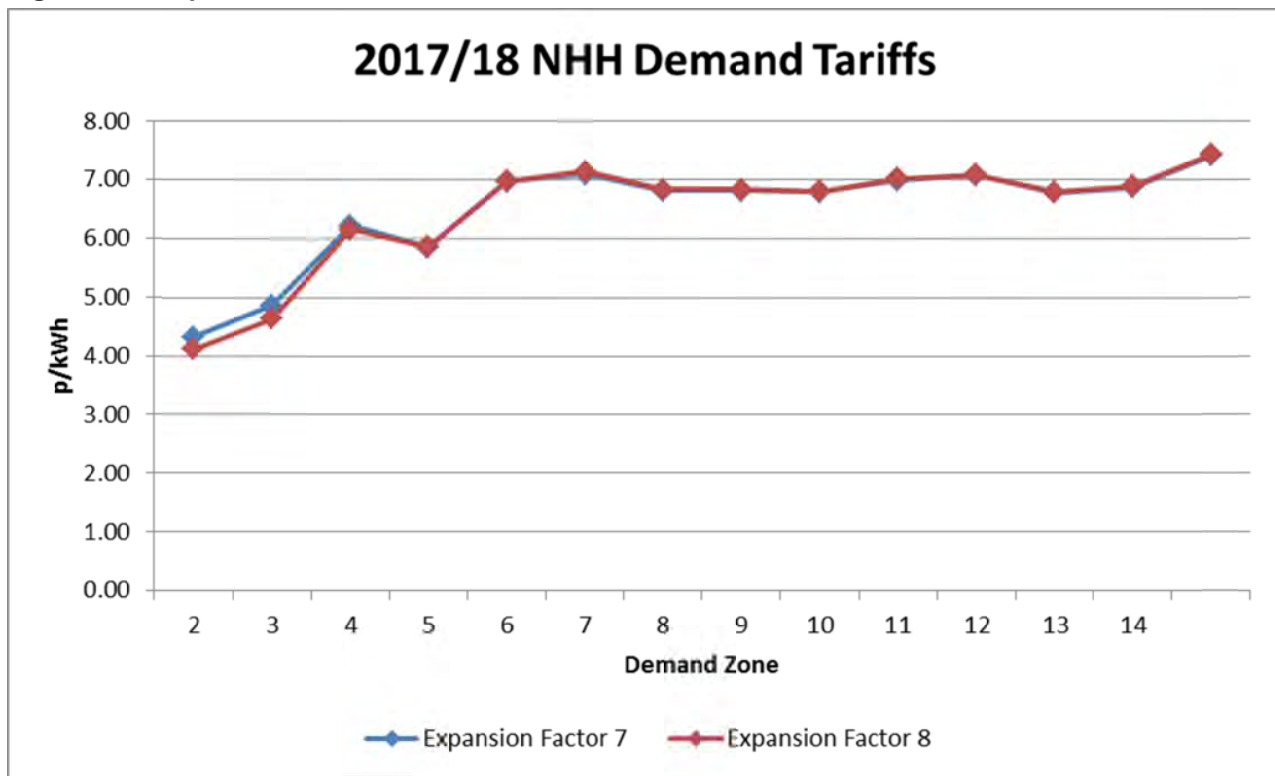


Figure 16 - Impact of increased Western HVDC costs on NHH Tariffs



## Appendix C: 2018/19 TNUoS tariffs excluding Caithness-Moray

Table 28 and Table 29 show tariffs for 2018/19 without the Caithness-Moray HVDC link.

**Table 28 - 2018/19 Generation Tariffs without the Caithness-Moray Link**

Generation Tariffs		System Peak Tariff	Shared Year Round Tariff	Not Shared Year Round Tariff	Residual Tariff	Conventional 80% Load Factor	Intermittent 40% Load Factor	Impact of Link on Conventional 80% Generation	Impact of Link on Intermittent 40% Generation
Zone	Zone Name	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)	(£/kW)
1	North Scotland	0.36	12.44	18.57	-3.37	25.51	20.18	1.52	1.13
2	East Aberdeenshire	0.65	6.35	18.57	-3.37	20.93	17.74	-0.53	0.09
3	Western Highlands	-0.37	11.24	18.07	-3.37	23.33	19.20	0.99	0.78
4	Skye and Lochalsh	-4.50	11.24	19.31	-3.37	20.44	20.44	0.97	0.76
5	Eastern Grampian and Tayside	-0.16	10.03	17.10	-3.37	21.59	17.74	0.33	0.28
6	Central Grampian	1.69	10.89	18.08	-3.37	25.11	19.06	-0.02	0.03
7	Argyll	0.63	8.98	26.72	-3.37	31.16	26.94	-0.10	0.05
8	The Trossachs	0.87	8.98	15.83	-3.37	20.51	16.05	-0.02	0.02
9	Stirlingshire and Fife	-0.25	5.05	13.31	-3.37	13.73	11.96	-0.07	-0.05
10	South West Scotland	1.36	8.13	14.98	-3.37	19.48	14.86	0.05	0.02
11	Lothian and Borders	2.32	8.13	8.88	-3.37	14.34	8.76	-0.03	-0.04
12	Solway and Cheviot	0.94	4.77	8.06	-3.37	9.45	6.60	0.01	0.00
13	North East England	2.79	3.00	4.24	-3.37	6.05	2.07	0.00	-0.01
14	North Lancashire and The Lakes	1.50	3.00	3.11	-3.37	3.63	0.94	0.01	0.00
15	South Lancashire, Yorkshire and Humberside	3.62	1.17	0.21	-3.37	1.40	-2.69	0.00	0.00
16	North Midlands and North Wales	3.06	-0.30		-3.37	-0.55	-3.49	0.00	0.00
17	South Lincolnshire and North Norfolk	0.71	0.62		-3.37	-2.17	-3.12	0.00	0.00
18	Mid Wales and The Midlands	1.02	-0.12		-3.37	-2.45	-3.42	0.00	0.00
19	Anglesey and Snowdon	4.05	-0.15		-3.37	0.56	-3.43	0.00	0.00
20	Pembrokeshire	9.01	-5.00		-3.37	1.63	-5.37	0.00	0.00
21	South Wales & Gloucester	6.15	-4.99		-3.37	-1.21	-5.37	0.00	0.00
22	Cotswold	3.09	1.41	-6.42	-3.37	-5.57	-9.22	0.00	0.00
23	Central London	-5.26	1.41	-6.80	-3.37	-14.30	-9.60	0.00	0.00
24	Essex and Kent	-3.57	1.41		-3.37	-5.82	-2.81	0.00	0.00
25	Oxfordshire, Surrey and Sussex	-1.10	-3.45		-3.37	-7.24	-4.75	0.00	0.00
26	Somerset and Wessex	-1.22	-4.88		-3.37	-8.49	-5.32	0.00	0.00
27	West Devon and Cornwall	0.21	-6.29		-3.37	-8.19	-5.89	0.00	0.00

**Table 29 - 2018/19 Demand Tariffs without the Caithness-Moray HVDC Link**

<b>Zone</b>	<b>Zone Name</b>	<b>HH Tariff</b>	<b>NHH Tariff</b>	<b>Impact of HVDC Link on HH Tariffs</b>	<b>Impact of HVDC Link on NHH Tariffs</b>
		<b>(£/kW)</b>	<b>(p/kWh)</b>	<b>(£/kW)</b>	<b>(p/kWh)</b>
1	Northern Scotland	34.26	5.14	1.33	0.20
2	Southern Scotland	34.66	5.65	-0.01	0.00
3	Northern	44.40	7.31	-0.01	0.00
4	North West	49.67	6.71	-0.02	0.00
5	Yorkshire	50.89	8.08	-0.01	0.00
6	N Wales & Mersey	51.75	8.12	-0.02	0.00
7	East Midlands	53.96	7.86	-0.01	0.00
8	Midlands	54.91	7.78	-0.02	0.00
9	Eastern	56.11	7.82	-0.01	0.00
10	South Wales	52.56	8.06	-0.01	0.00
11	South East	58.60	8.02	-0.01	0.00
12	London	61.24	7.59	-0.01	0.00
13	Southern	60.16	7.82	-0.01	0.00
14	South Western	58.79	8.52	-0.01	0.00

## Appendix D: Revenue Analysis

These pages provide more detail on the price control forecasts for National Grid, Scottish Power Transmission and SHE Transmission. Forecasts are also provided for offshore networks with forecasts by National Grid where these have yet to be transferred to the Offshore Transmission Owner or are still to be constructed.

### *Notes:*

All monies are quoted in millions of pounds, accurate to one decimal place and are in nominal 'money of the day' prices unless stated otherwise.

Licensee forecasts and budgets are subject to change especially where they are influenced by external stakeholders.

Greyed out cells are either calculated, not applicable in the year concerned due to the way the licence formula are constructed or not yet available.

Network Innovation Competition Funding is included in the National Grid price control but is additional to the price controls of other Transmission Owners who receive funding. NIC funding is therefore only shown in the National Grid table.

All reasonable care has been taken in the preparation of these illustrative tables and the data therein. National Grid and other TOs offer this data without prejudice and cannot be held responsible for any loss that might be attributed to the use of this data. Neither National Grid nor other TOs accept or assume responsibility for the use of this information by any person or any person to whom this information is shown or any person to whom this information otherwise becomes available.

The base revenue forecasts reflect the figures authorised by Ofgem in the RIIO-T1 or offshore price controls.

Within the bounds of commercial confidentiality these forecasts provide as much information as possible. Generally allowances determined by Ofgem are shown, whilst those still to be determined are not. This respects commercial confidentiality and disclosure considerations and actual revenues may vary for these forecasts.

It is assumed that there is only one set of price changes each year on 1 April.

Table 30 – National Grid Revenue Forecast

National Grid Revenue Forecast			25/01/2016							Notes
Description	Licence Term	Yr t-1	Yr t	Yr t+1	Yr t+2	Yr t+3	Yr t+4	Yr t+5		
Regulatory Year		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21		
Actual RPI		256.67							April to March average	
RPI Actual	RPIAt	1.190							Office of National Statistics	
Assumed Interest Rate	It	0.50%	0.70%	0.95%	1.58%	2.23%	2.60%	2.60%	Bank of England Base Rate	
Opening Base Revenue Allowance (2009/10 prices)	A1 PUt	1,443.8	1,475.6	1,571.4	1,554.9	1,587.6	1,585.2	1,571.6	From Licence	
Price Control Financial Model Iteration Adjustment	A2 MODt	-5.5	-114.4	-185.4	-210.0	-170.0	-180.0	-20.0	Determined by Ofgem/Licensee forecast	
RPI True Up	A3 TRUt	-0.5	4.7	-19.9	-31.4	-12.2	0.0	0.0	Licensee Actual/Forecast	
Prior Calendar Year RPI Forecast	GRPIFc-1	3.1%	2.5%	1.0%	2.1%	3.0%	3.3%	3.3%	HM Treasury Forecast then 2.8%	
Current Calendar Year RPI Forecast	GRPIFc	3.1%	2.4%	2.1%	3.0%	3.3%	3.3%	3.0%	HM Treasury Forecast then 2.8%	
Next Calendar Year RPI forecast	GRPIFc+1	3.0%	3.2%	3.0%	3.3%	3.3%	3.0%	3.0%	HM Treasury Forecast then 2.8%	
RPI Forecast	A4 RPIFt	1.2051	1.2267	1.2330	1.2680	1.3020	1.3520	1.3840	Using HM Treasury Forecast	
<b>Base Revenue [A=(A1+A2+A3)*A4]</b>	<b>A BRt</b>	<b>1732.7</b>	<b>1675.5</b>	<b>1684.4</b>	<b>1665.6</b>	<b>1829.8</b>	<b>1899.9</b>	<b>2147.4</b>		
Pass-Through Business Rates	B1 RBt		1.2	1.5	3.2	4.2	4.5	4.3	Licensee Actual/Forecast	
Temporary Physical Disconnection	B2 TPDt	0.1	0.0	0.1	0.0	0.0	0.0	0.0	Licensee Actual/Forecast	
Licence Fee	B3 LFt		2.0	2.7	3.1	3.4	3.6	3.6	Licensee Actual/Forecast	
Inter TSO Compensation	B4 ITCt		3.8	2.7	0.6	0.7	0.8	0.8	Licensee Actual/Forecast	
Termination of Bilateral Connection Agreements	B5 TERMt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Does not affect TNUoS	
SP Transmission Pass-Through	B6 TSpt	312.2	295.7	294.6	333.1	401.0	390.4	398.0	14/15 & 15/16 Charge setting. Later from TSP Calculation.	
SHE Transmission Pass-Through	B7 TSHt	214.0	338.2	322.8	324.9	320.1	329.4	334.8	14/15 & 15/16 Charge setting. Later from TSH Calculation.	
Offshore Transmission Pass-Through	B8 TOFTOt	218.4	248.4	260.8	276.5	401.6	523.3	875.0	14/15 & 15/16 Charge setting. Later from OFTO Calculation.	
Embedded Offshore Pass-Through	B9 OFETt	0.4	0.6	0.7	0.7	0.7	0.7	0.7	Licensee Actual/Forecast	
<b>Pass-Through Items [B=B1+B2+B3+B4+B5+B6+B7+B8+B9]</b>	<b>B PTt</b>	<b>745.1</b>	<b>890.0</b>	<b>885.9</b>	<b>942.2</b>	<b>1131.7</b>	<b>1252.6</b>	<b>1617.2</b>		
Reliability Incentive Adjustment	C1 Rit		2.4	3.9	4.0	4.1	4.2	4.3	Licensee Actual/Forecast/Budget	
Stakeholder Satisfaction Adjustment	C2 SSOt		8.7	10.1	8.3	8.3	8.3	9.3	Licensee Actual/Forecast/Budget	
Sulphur Hexafluoride (SF6) Gas Emissions Adjustment	C3 SFIt		2.8	2.7	2.9	3.0	3.1	3.3	Licensee Actual/Forecast/Budget	
Awarded Environmental Discretionary Rewards	C4 EDRT		0.0	2.0	0.0	0.0	0.0	0.0	Only includes EDR awarded to licensee to date	
<b>Outputs Incentive Revenue [C=C1+C2+C3+C4]</b>	<b>C OIPt</b>	<b>0.0</b>	<b>13.9</b>	<b>18.7</b>	<b>15.1</b>	<b>15.4</b>	<b>15.7</b>	<b>16.8</b>		
Network Innovation Allowance	D NIAt	10.9	10.6	10.6	10.5	11.5	12.0	13.5	Licensee Actual/Forecast/Budget	
Network Innovation Competition	E NICFt	17.8	18.8	44.9	40.5	40.5	40.5	40.5	Sum of NICF awards determined by Ofgem/Forecast by National Grid	
Future Environmental Discretionary Rewards	F EDRT			0.0	2.0	2.0	2.0	2.0	Sum of future EDR awards forecast by National Grid	
Transmission Investment for Renewable Generation	G TIRGt	16.0	15.7	0.0	0.0	0.0	0.0	0.0	Licensee Actual/Forecast	
Scottish Site Specific Adjustment	H DISt	2.0	0.8	2.9	0.0	0.0	0.0	0.0	Licensee Actual/Forecast	
Scottish Terminations Adjustment	I TSt	-0.3	0.1	0.1	0.0	0.0	0.0	0.0	Licensee Actual/Forecast	
Correction Factor	K -Kt		56.4	104.0	105.6	0.0	0.0	0.0	Calculated by Licensee	
<b>Maximum Revenue [M= A+B+C+D+E+F+G+H+I+K]</b>	<b>M TOT</b>	<b>2524.3</b>	<b>2681.6</b>	<b>2751.3</b>	<b>2781.5</b>	<b>3031.0</b>	<b>3222.6</b>	<b>3837.4</b>		
Termination Charges	B5	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Pre-vesting connection charges	P	47.0	45.0	42.7	46.5	47.9	47.9	47.9	Licensee Actual/Forecast	
<b>TNUoS Collected Revenue [T=M-B5-P]</b>	<b>T</b>	<b>2477.3</b>	<b>2636.7</b>	<b>2708.7</b>	<b>2735.0</b>	<b>2983.1</b>	<b>3174.7</b>	<b>3789.5</b>		
Final Collected Revenue	U TNrt	2375.9							Licensee Actual/Forecast	
<b>Forecast percentage change to Maximum Revenue M</b>			<b>6.2%</b>	<b>2.6%</b>	<b>1.1%</b>	<b>9.0%</b>	<b>6.3%</b>	<b>19.1%</b>		
<b>Forecast percentage change to TNUoS Collected Revenue T</b>			<b>6.4%</b>	<b>2.7%</b>	<b>1.0%</b>	<b>9.1%</b>	<b>6.4%</b>	<b>19.4%</b>		

Table 31 – Scottish Power Transmission Revenue Forecast

Scottish Power Transmission Revenue Forecast			25/01/2016								
Description		Licence Term	Yr t-1	Yr t	Yr t+1	Yr t+2	Yr t+3	Yr t+4	Yr t+5	Notes	
			2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21		
Actual RPI			256.67							April to March average	
RPI Actual		RPIAt	1.1900							Office of National Statistics	
Assumed Interest Rate		It	0.50%	0.63%	1.13%	1.68%	2.33%	2.70%	2.70%	National Grid forecast	
Opening Base Revenue Allowance (2009/10 prices)	A1	PUt	237.0	258.6		249.4	253.1	256.4	254.2		
Price Control Financial Model Iteration Adjustment	A2	MODt	6.2	-20.3		-4.5	41.3	15.3	17.1		
RPI True Up	A3	TRUt	-0.1	0.9		-4.9	0.0	0.0	0.0		
RPI Forecast	A4	RPIFt	1.2051	1.2267		1.2760	1.3150	1.3620	1.4060	National Grid forecast	
<b>Base Revenue [A=(A1+A2+A3)*A4]</b>	<b>A</b>	<b>BRt</b>	<b>292.9</b>	<b>293.4</b>		<b>306.2</b>	<b>387.1</b>	<b>370.1</b>	<b>381.4</b>		
Pass-Through Business Rates	B1	RBt		-20.2		-4.8	-4.7	0.8	0.9		
Temporary Physical Disconnection	B2	TPDt									
<b>Pass-Through Items [B=B1+B2]</b>	<b>B</b>	<b>PTt</b>	<b>0.0</b>	<b>-20.2</b>		<b>-4.8</b>	<b>-4.7</b>	<b>0.8</b>	<b>0.9</b>		
Reliability Incentive Adjustment	C1	RIt		2.6		1.2	1.2	1.3	1.3		
Stakeholder Satisfaction Adjustment	C2	SSOt		1.7		0.6	0.6	0.6	0.7		
Sulphur Hexafluoride (SF6) Gas Emissions Adjustment	C3	SFIt		-0.2		0.0	0.0	0.0	0.0		
Awarded Environmental Discretionary Rewards	C4	EDRt		0.0		0.7	0.7	0.7	0.7		
Financial Incentive for Timely Connections Output	C5	-CONADJt		0.0		0.0	0.0	0.0	0.0		
<b>Outputs Incentive Revenue [C=C1+C2+C3+C4+C5]</b>	<b>C</b>	<b>OIPt</b>	<b>0.0</b>	<b>4.1</b>		<b>2.5</b>	<b>2.5</b>	<b>2.6</b>	<b>2.7</b>		
Network Innovation Allowance	D	NIAt	0.7	1.3		1.0	1.0	1.0	1.0		
Transmission Investment for Renewable Generation	G	TIRGt	29.3	29.6		33.4	33.3	33.3	33.2		
Correction Factor	K	-Kt	0.0	8.7		10.9	0.0	0.0	0.0		
<b>Maximum Revenue [M= A+B+C+D+G+J+K]</b>	<b>M</b>	<b>TOt</b>	<b>322.9</b>	<b>316.8</b>	<b>306.4</b>	<b>349.2</b>	<b>419.2</b>	<b>407.8</b>	<b>419.2</b>		
Excluded Services	P	EXCt	7.7	8.0	9.4	11.8	12.6	13.4	14.2	Post BETTA Connection Charges	
Site Specific Charges	S	EXSt	18.5	18.8	21.2	25.8	26.8	27.9	29.1	Pre & Post BETTA Connection Charges	
<b>TNUoS Collected Revenue (T=M+P-S)</b>	<b>T</b>	<b>TSPt</b>	<b>312.1</b>	<b>306.0</b>	<b>294.6</b>	<b>335.2</b>	<b>405.0</b>	<b>393.3</b>	<b>404.3</b>	General System Charge	
Final Collected Revenue	U	TNRt	312.2								
<b>Forecast percentage change to TNUoS Collected Revenue T</b>				<b>-1.9%</b>	<b>-3.7%</b>	<b>13.8%</b>	<b>20.8%</b>	<b>-2.9%</b>	<b>2.8%</b>		

Table 32 – SHE Transmisison Revenue Forecast

SHE Transmission Revenue Forecast			25/01/2016							Notes
			Yr t-1	Yr t	Yr t+1	Yr t+2	Yr t+3	Yr t+4	Yr t+5	
Description	Licence Term	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21		
Actual RPI		256.67							April to March average	
RPI Actual	RPIAt	1.1900							Office of National Statistics	
Assumed Interest Rate	It	0.50%	0.63%	1.13%	1.68%	2.33%	2.70%	2.70%	National Grid forecast	
Opening Base Revenue Allowance (2009/10 prices)	A1 PUt	111.5	124.1		119.6	120.0	122.1	122.5	From Licence	
Price Control Financial Model Iteration Adjustment	A2 MODt	8.7	85.2		84.8	69.5	68.5	68.9		
RPI True Up	A3 TRUt	-0.0	0.5		-4.7	1.7	0.8	0.6	Based on NG forecast RPIA. RPIF based on assumed Treasury Forecast of 3%	
RPI Forecast	A4 RPIFt	1.2051	1.2267		1.2760	1.3150	1.3620	1.4060	National Grid forecast	
<b>Base Revenue [A=(A1+A2+A3)*A4]</b>	<b>A BRt</b>	<b>144.9</b>	<b>257.4</b>		<b>254.8</b>	<b>251.4</b>	<b>260.6</b>	<b>270.0</b>		
Pass-Through Business Rates	B1 RBt		-0.7		-8.8	-9.0	-9.3	-9.6	RBt rebate received in 2014/15, pass through in 2016/17	
Temporary Physical Disconnection	B2 TPDt		0.6		0.1	0.1	0.1	0.1		
<b>Pass-Through Items [B=B1+B2]</b>	<b>B PTt</b>	<b>0.0</b>	<b>-0.1</b>		<b>-8.6</b>	<b>-8.9</b>	<b>-9.2</b>	<b>-9.4</b>		
Reliability Incentive Adjustment	C1 RIt		1.2		0.7	0.7	0.8	0.8	Forecast values based on average of previous energy not supplied actuals	
Stakeholder Satisfaction Adjustment	C2 SSOt		1.6		3.2	3.2	3.2	3.2	Forecast values based on average of previous actuals; also reflects step-change to Base Revenue	
Sulphur Hexafluoride (SF6) Gas Emissions Adjustment	C3 SFIt		-0.1		-0.0	-0.0	-0.0	-0.0	Forecast based on latest actual SF6 emissions and baseline targets	
Awarded Environmental Discretionary Rewards	C4 EDRT		0.0		0.0	0.0	0.0	0.0		
Financial Incentive for Timely Connections Output	C5 -CONADJt		0.0		0.0	0.0	0.0	0.0		
<b>Outputs Incentive Revenue [C=C1+C2+C3+C4+C5]</b>	<b>C OIPt</b>	<b>0.0</b>	<b>2.7</b>		<b>3.9</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>		
Network Innovation Allowance	D NIAt	1.3	1.3		1.3	1.4	1.4	1.5	Forecast assumes same level of allowance in nominal values	
Transmission Investment for Renewable Generation	G TIRGt	72.2	81.2		79.7	79.2	78.8	78.1	Based on adjusted licence condition values	
Compensatory Payments Adjustment	J SHCPt	0.0	0.4		0.0	0.0	0.0	0.0		
Correction Factor	K -Kt		-1.7		-0.6	0.0	0.0	0.0		
<b>Maximum Revenue (M= A+B+C+D+G+J+K)</b>	<b>M TOt</b>	<b>218.3</b>	<b>341.1</b>	<b>326.2</b>	<b>330.6</b>	<b>327.0</b>	<b>335.7</b>	<b>344.1</b>		
Excluded Services	P EXCt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Post BETTA Connection Charges	
Site Specific Charges	S EXSt	3.5	3.5	3.4	3.6	3.7	3.9	4.0	Post-Vesting, Pre-BETTA Connection Charges	
<b>TNUoS Collected Revenue (T=M+P-S)</b>	<b>T TSHt</b>	<b>214.8</b>	<b>337.6</b>	<b>322.8</b>	<b>327.0</b>	<b>323.3</b>	<b>331.8</b>	<b>340.1</b>	General System Charge	
Final Collected Revenue	U TNRT									
<b>Forecast percentage change to TNUoS Collected Revenue T</b>			<b>57.2%</b>	<b>-4.4%</b>	<b>1.3%</b>	<b>-1.1%</b>	<b>2.6%</b>	<b>2.5%</b>		



Table 33 – Offshore Transmission Revenue Forecast

Description	25/01/2016							Notes
	Yr t-1	Yr t	Yr t+1	Yr t+2	Yr t+3	Yr t+4	Yr t+5	
Regulatory Year	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
Barrow	5.5	5.6	5.7	5.9	6.0	6.2	6.3	Current revenues plus indexation
Gunfleet	6.9	7.0	7.1	7.5	7.5	7.7	7.9	Current revenues plus indexation
Walney 1	12.5	12.8	12.9	13.1	13.5	13.9	14.3	Current revenues plus indexation
Robin Rigg	7.7	7.9	8.0	8.5	8.4	8.7	8.9	Current revenues plus indexation
Walney 2	12.9	13.2	12.5	13.6	13.9	14.4	14.8	Current revenues plus indexation
Sheringham Shoal	18.9	19.5	19.7	20.0	20.5	21.2	21.8	Current revenues plus indexation
Ormonde	11.6	11.8	12.0	12.3	12.6	13.0	13.4	Current revenues plus indexation
Greater Gabbard	26.0	26.6	26.9	27.3	28.0	28.9	29.8	Current revenues plus indexation
London Array	37.6	39.2	39.5	38.4	39.6	40.8	42.0	Current revenues plus indexation
Thanet	78.9	17.5	15.7	17.9	18.4	18.9	19.5	Current revenues plus indexation
Lincs		25.6	26.7	27.4	26.5	27.3	28.1	Current revenues plus indexation
Gwynt y mor		26.3	23.6	12.5	26.6	27.4	28.2	Current revenues plus indexation
West of Duddon Sands		21.3	21.9	21.6	22.2	22.9	National Grid Forecast	
Humber Gateway		35.3						
Westermost Rough			29.3	28.2	28.5	29.3	30.2	National Grid Forecast
Forecast to commission in 2017/18				21.8	44.8	46.1	47.4	National Grid Forecast
Forecast to commission in 2018/19					85.2	129.4	133.4	National Grid Forecast
Forecast to commission in 2019/20						68.0	125.2	National Grid Forecast
Forecast to commission in 2020/21							280.8	National Grid Forecast
<b>Offshore Transmission Pass-Through (B7)</b>	<b>218.4</b>	<b>248.4</b>	<b>260.8</b>	<b>276.5</b>	<b>401.6</b>	<b>523.3</b>	<b>875.0</b>	

## Appendix E : Contracted Generation at Peak

The tables below lists contracted Generation at peak. This includes directly connected (BCA) and distributed licensable generation (BEGA > 100MW) but not distributed licence exemptable generation (BEGA < 100MW or BELLA). Generation with commissioning dates after 1 February is not included until the following year.

**Table 34 - Contracted TEC at Peak**

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Auchencrosh (interconnector CCT)	Interconnectors	AUCH20	10	295	375	375	375	375
Belgium Interconnector (Nemo)	Interconnectors	CANT40	24	0	0	1000	1000	1000
Britned	Interconnectors	GRAI40	24	1200	1200	1200	1200	1200
East West Interconnector	Interconnectors	CONQ40	16	505	505	505	505	505
ElecLink	Interconnectors	SELL40	24	1000	1000	1000	1000	1000
FAB Link Interconnector	Interconnectors	EXET40	26	0	0	0	0	1400
IFA Interconnector	Interconnectors	SELL40	24	2000	2000	2000	2000	2000
IFA2 Interconnector	Interconnectors	FAWL40	26	0	0	0	1000	1000
NSN Link	Interconnectors	BLYT4A & BLYT4B	13	0	0	0	1400	1400
Viking Link Denmark Interconnector	Interconnectors	BICF4A & BICF4B	17	0	0	0	0	1500
Aberarder Wind Farm	Wind Onshore	FOYE20	1	0	0	0	35.8	35.8
Abergelli Power	OCGT	SWAN40	21	0	0	0	0	299
Aberthaw	Coal	ABTH20	21	1620	1620	1620	1620	1620
A'Chruach Wind Farm	Wind Onshore	ACHR1R	7	49.9	49.9	49.9	49.9	49.9
Afton	Wind Onshore	BLAC10	10	0	68	68	68	68
Aigas	Hydro	AIGA1Q	1	20	20	20	20	20
Aikengall II Windfarm	Wind Onshore	WDOD10	11	140	140	140	140	140
Allt Carach	Wind Onshore	BEAU40	1	0	0	0	0	75.9

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
An Suidhe Wind Farm, Argyll (SRO)	Wind Onshore	ANSU10	7	19.3	19.3	19.3	19.3	19.3
Arecleoch	Wind Onshore	AREC10	10	114	114	114	114	114
Aultmore Wind Farm	Wind Onshore	AULW1S	1	0	0	29.5	29.5	29.5
Bad a Cheo Wind Farm	Wind Onshore	MYBS1Q & MYBS1R	1	0	0	29.9	29.9	29.9
Baglan Bay	CCGT	BAGB20	21	552	552	552	552	552
Barrow Offshore Wind Farm	Wind Offshore	HEYS40	14	90	90	90	90	90
Beatrice Wind Farm	Wind Offshore	BLHI40	1	0	20	400	664	664
Beinn an Tuirc 3	Wind Onshore	CAAD1Q	7	0	0	0	0	50
Beinneun Wind Farm	Wind Onshore	BEIN10	3	0	109	109	109	109
Benbrack & Quantans Hill	Wind Onshore	KEON1Q & KEON1R	1	0	0	72	72	72
Bhlaraidh Wind Farm	Wind Onshore	BHLA10	3	0	108	108	108	108
Blackcraig Wind Farm	Wind Onshore	BLCW10	10	0	57.5	57.5	57.5	57.5
Blacklaw	Wind Onshore	BLKL10	11	118	118	118	118	118
Blacklaw Extension	Wind Onshore	BLKX10	11	69	69	69	69	69
BP Grangemouth	CHP	GRMO20	9	120	120	120	120	120
Burbo Bank Extension Offshore Wind Farm	Wind Offshore	BODE40	16	254	254	254	254	254
C.Gen Killingholme North Power Station	CCGT	KILL40	15	0	0	490	490	490
Cairn Duhie Wind farm	Wind Onshore	BERB20	1	0	0	0	0	59.7
Carnedd Wen Wind Farm	Wind Onshore	CANW40	18	0	0	0	150	150
Carraig Gheal Wind Farm	Wind Onshore	FERO10	7	46	46	46	46	46
Carrington Power Station	CCGT	CARR40	16	910	910	910	910	910
CDCL	CCGT	COTT40	16	395	395	395	395	395
Clunie	Hydro	CLUN1S & CLUN1T	5	61.2	61.2	61.2	61.2	61.2
Clyde North	Wind Onshore	CLYN2Q	11	374.5	374.5	374.5	374.5	374.5
Clyde South	Wind Onshore	CLYS2R	11	128.8	128.8	128.8	128.8	128.8

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Cnoc Morail	Wind Onshore	MYBS1Q & MYBS1R	1	0	0	0	0	18.4
Connahs Quay	CCGT	CONQ40	16	1380	1380	1380	1380	1380
Corby	CCGT	GREN40_EME	18	401	401	401	401	401
Corriegarth	Wind Onshore	COGA10	1	69	69	69	69	69
Corriemoillie Wind Farm	Wind Onshore	CORI10	1	47.5	47.5	47.5	47.5	47.5
Coryton	CCGT	COSO40	24	800	800	704	704	704
Cottam	Coal	COTT40	16	2000	2000	2000	2000	2000
Cour Wind Farm	Wind Onshore	CRSS10	7	20.5	20.5	20.5	20.5	20.5
Creag Riabhach Wind Farm	Wind Onshore	CASS1Q	1	0	0	0	0	72.6
Crookedstane Windfarm	Wind Onshore	CLYS2R	11	0	9.2	9.2	9.2	9.2
Crossburns Wind Farm	Wind Onshore	ERRO10	5	0	0	0	99	99
Crossdykes	Wind Onshore	EWEH1Q	12	0	0	46	46	46
Cruachan	Pump Storage	CRUA20	8	440	440	440	440	440
Crystal Rig 2	Wind Onshore	CRYR40	11	200	200	200	200	200
Culligran	Hydro	CULL1Q	1	19.1	19.1	19.1	19.1	19.1
Cumberhead	Wind Onshore	COAL10	11	0	0	0	50	50
Damhead Creek	CCGT	KINO40	24	805	805	805	805	805
Damhead Creek II	CCGT	KINO40	24	0	0	0	1280	1280
Deanie	Hydro	DEAN1Q	1	38	38	38	38	38
Deeside	CCGT	CONQ40	16	1	1	1	1	1
Dersalloch Wind Farm	Wind Onshore	DERS1Q	10	69	69	69	69	69
Didcot B	CCGT	DIDC40	25	1550	1550	1550	1550	1550
Dinorwig	Pump Storage	DINO40	19	1644	1644	1644	1644	1644
Dogger Bank Platform 1	Wind Offshore	CREB40	15	0	0	0	500	1000
Dogger Bank Platform 2	Wind Offshore	CREB40	15	0	0	0	500	1000

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Dogger Bank Platform 3	Wind Offshore	CREB40	15	0	0	0	0	500
Dogger Bank Platform 4	Wind Offshore	CREB40	15	0	0	0	500	1000
Dorenell Wind Farm	Wind Onshore	DORE10	1	0	0	220	220	220
Drax	Coal	DRAX40	15	3906	3906	3906	3906	3906
Druim Leathann	Wind Onshore	COUA10	5	0	0	0	39	39
Dudgeon Offshore Wind Farm	Wind Offshore	NECT40	17	400	400	400	400	400
Dungeness B	Nuclear	DUNG40	24	1081	1081	1081	1081	1081
Dunlaw Extension	Wind Onshore	DUNE10	11	29.75	29.75	29.75	29.75	29.75
Dunmaglass Wind Farm	Wind Onshore	DUNM10	1	94	94	94	94	94
Earlshaugh Wind Farm	Wind Onshore	EHAU10	11	0	55	55	55	55
East Anglia 1	Wind Offshore	BRFO40	18	0	0	1200	1200	1200
Edinbane Wind, Skye	Wind Onshore	EDIN10	4	41.4	41.4	41.4	41.4	41.4
Enfield	CCGT	BRIM2A_LPN & BRIM2B_LPN	24	408	408	408	408	408
Errochty	Hydro	ERRO10	5	75	75	75	75	75
Ewe Hill	Wind Onshore	EWEH1Q	12	39	39	39	39	39
Fallago Rig Wind Farm	Wind Onshore	FALL40	11	144	144	144	144	144
Farr Wind Farm, Tomatin	Wind Onshore	FAAR1Q & FAAR1R	1	92	92	92	92	92
Fasnakyle G1 & G2	Hydro	FASN20	3	46	46	46	46	46
Fawley CHP	CHP	FAWL40	26	158	158	158	158	158
Ffestiniog	Pump Storage	FFES20	16	360	360	360	360	360
Fiddlers Ferry	Coal	FIDF20_ENW	15	1455	1455	1455	1455	1455
Finlarig	Hydro	FINL1Q	6	16.5	16.5	16.5	16.5	16.5
Firth of Forth Offshore Wind Farm 1A	Wind Offshore	TEAL20	9	0	0	0	545	545
Firth of Forth Offshore Wind Farm 1B	Wind Offshore	TEAL20	9	0	0	0	530	530
Foyers	Pump Storage	FOYE20	1	300	300	300	300	300

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Freasdail	Wind Onshore	CRSS10	7	22.2	22.2	22.2	22.2	22.2
Galawhistle Wind Farm	Wind Onshore	GAWH10	11	55.2	55.2	55.2	55.2	55.2
Galloper Wind Farm	Wind Offshore	LEIS10	18	70	340	340	340	340
Gateway Energy Centre Power Station	CCGT	COSO40	24	0	0	0	1096	1096
Glen App Windfarm	Wind Onshore	AREC10	10	32.2	32.2	32.2	32.2	32.2
Glen Kyllachy Wind Farm	Wind Onshore	FAAR1Q & FAAR1R	1	0	0	48.5	48.5	48.5
Glendoe	Hydro	GLDO1G	3	99.9	99.9	99.9	99.9	99.9
Glenmorie Windfarm	Wind Onshore	FYRI10	3	0	0	0	0	114
Glenmoriston	Hydro	GLEN1Q	3	37	37	37	37	37
Glenmount Wind Farm	Wind Onshore	NECU10	10	0	0	0	73	73
Glenmuckloch Wind Farm	Wind Onshore	GLGL1Q & GLGL1R	10	0	0	0	0	25.6
Gordonbush Wind	Wind Onshore	GORW20	1	70	70	70	70	70
Gordonbush Wind Farm Extension	Wind Onshore	CONN20	1	0	0	0	0	38
Grain	CCGT	GRAI40	24	1517	1517	1517	1517	1517
Great Yarmouth	CCGT	NORM40	18	405	405	405	405	405
Greater Gabbard Offshore Wind Farm	Wind Offshore	LEIS10	18	500	500	500	500	500
Greenwire Wind Farm - Pembroke	Wind Offshore	PEMB40	20	0	0	0	0	2000
Greenwire Wind Farm - Pentir	Wind Offshore	PENT40	19	0	0	0	0	1000
Griffin Wind Farm	Wind Onshore	GRIF1S & GRIF1T	5	188.6	188.6	188.6	188.6	188.6
Gunfleet Sands II Offshore Wind Farm	Wind Offshore	BRFO40	18	64	64	64	64	64
Gunfleet Sands Offshore Wind Farm	Wind Offshore	BRFO40	18	99.9	99.9	99.9	99.9	99.9
Gwynt Y Mor Offshore Wind Farm	Wind Offshore	BODE40	16	574	574	574	574	574
Hadyard Hill	Wind Onshore	HADH10	10	99.9	99.9	99.9	99.9	99.9
Halsary Wind Farm	Wind Onshore	MYBS1Q & MYBS1R	1	0	0	0	28.5	28.5
Harestanes	Wind Onshore	HARE10	12	142.3	142.3	142.3	142.3	142.3

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Harry Burn Wind Farm	Wind Onshore	ELVA20	11	0	0	0	0	110
Harting Rig Wind Farm	Wind Onshore	KYPE10	11	0	0	0	0	61.2
Hartlepool	Nuclear	HATL20	13	1207	1207	1207	1207	1207
Hatfield Power Station	CCGT	THOM40	16	0	0	0	800	800
Heysham Power Station	Nuclear	HEYS40	14	2433	2433	2433	2433	2433
Hinkley Point B	Nuclear	HINP40	26	1261	1061	1061	1061	1061
Hirwaun Power Station	CCGT	UPPB20	21	0	0	0	299	299
Hornsea Power Station 1A	Wind Offshore	HORN40	15	0	0	0	396	396
Hornsea Power Station 1B	Wind Offshore	HORN40	15	0	0	0	0	402
Hornsea Power Station 1C	Wind Offshore	HORN40	15	0	0	0	0	402
Hornsea Power Station 2A	Wind Offshore	HORN40	15	0	0	0	500	500
Hornsea Power Station 2B	Wind Offshore	HORN40	15	0	0	0	0	500
Hornsea Power Station 3A	Wind Offshore	HORN40	15	0	0	0	0	500
Humber Gateway Offshore Wind Farm	Wind Offshore	HEDO20	15	220	220	220	220	220
Hunterston	Nuclear	HUER40	10	1074	1074	1074	1074	1074
Immingham	CHP	HUMR40	15	1218	1218	1218	1218	1218
Inch Cape Offshore Wind Farm Platform 1	Wind Offshore	COCK20	11	0	0	330	330	330
Inch Cape Offshore Wind Farm Platform 2	Wind Offshore	COCK20	11	0	0	0	270	270
Indian Queens	OCGT	INDQ40	27	140	140	140	140	140
Invergarry	Hydro	INGA1Q	3	20	20	20	20	20
J G Pears	CHP	HIGM20	16	0	0	30	30	30
Keadby	CCGT	KEAD40	16	0	735	735	735	735
Keadby II	CCGT	KEAD40	16	710	710	710	710	710
Keith Hill Wind Farm	Wind Onshore	DUNE10	11	4	4	4	4	4
Kennoxhead Wind Farm	Wind Onshore	COAL10	11	0	0	0	59.8	59.8

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Kilbraur Wind Farm	Wind Onshore	STRB20	1	67	67	67	67	67
Kilgallioch	Wind Onshore	KILG20	10	274	274	274	274	274
Kilmorack	Hydro	KIOR1Q	1	20	20	20	20	20
Kings Lynn A	CCGT	WALP40_EME	17	0	281	281	281	281
Kings Lynn B	CCGT	WALP40_EME	17	0	0	0	0	981
Knottingley Power Station	CCGT	EGGB40	15	0	0	0	0	1500
Kype Muir	Wind Onshore	KYPE10	11	0	0	99.9	99.9	99.9
Lag Na Greine Phase 1	Wave	BEAU40	1	0	0	0	10	10
Lag Na Greine Phase 2	Wave	BEAU10	1	0	0	0	0	10
Langage	CCGT	LAGA40	27	905	905	905	905	905
Lethans Wind Farm	Wind Onshore	GLGL1Q & GLGL1R	10	0	0	0	0	88.4
Limekilns	Wind Onshore	DOUN10	1	0	0	0	0	90
Lincs Offshore Wind Farm	Wind Offshore	WALP40_EME	17	256	256	256	256	256
Lion Hill WindFarm	Wind Onshore	CLYS2R	11	0	9.2	9.2	9.2	9.2
Little Barford	CCGT	EASO40	18	740	740	740	740	740
Loch Hill Wind Farm	Wind Onshore	MARG10	10	0	0	0	27.5	27.5
Loch Urr	Wind Onshore	KEON1Q & KEON1R	1	0	0	0	84	84
Lochay	Hydro	LOCH10	6	47	47	47	47	47
Lochluichart	Wind Onshore	CORI10	1	69	69	69	69	69
London Array Offshore Wind Farm	Wind Offshore	CLEH40	24	630	630	630	630	630
Luichart	Hydro	LUIC1Q & LUIC1R	1	34	34	34	34	34
Lynemouth Power Station	Coal	BLYT20	13	0	0	0	0	0
Marchwood	CCGT	MAWO40	26	920	920	920	920	920
Marex	Pump Storage	CONQ40	16	0	0	1500	1500	1500
Margree	Wind Onshore	MARG10	10	0	42.5	42.5	42.5	42.5



Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Mark Hill Wind Farm	Wind Onshore	MAHI20	10	53	53	53	53	53
Medway Power Station	CCGT	GRAI40	24	700	700	700	700	700
MeyGen Tidal	Tidal	MEYG10	1	0	0	15	71	154
Middle Muir Wind Farm	Wind Onshore	COAL10	11	0	0	51	51	51
Millbrook Power	OCGT	SUND40	18	0	0	0	0	299
Millennium South	Wind Onshore	FAUG10	3	0	0	25	25	25
Millennium Wind (Stage 3), Ceannacroc	Wind Onshore	MILW1Q	3	65	65	65	65	65
Minnycap	Wind Onshore	MOFF10	11	0	25	25	25	25
Moray Firth Offshore Wind Farm	Wind Offshore	PEHE20	2	0	0	0	504	504
Mossford	Hydro	MOSS1S & MOSS1T	1	18.66	18.66	18.66	18.66	18.66
Muaithéal Wind Farm	Wind Onshore	ARMO10	4	0	0	0	0	150
Nant	Hydro	NANT10	7	15	15	15	15	15
Near Na Gaoithe Offshore Wind Farm	Wind Offshore	CRYR40	11	0	0	450	450	450
Oldbury-on-Severn	Nuclear	OLDS10	21	0	0	0	0	1600
Ormonde Offshore Wind Farm	Wind Offshore	HEYS40	14	150	150	150	150	150
Orrin	Hydro	ORRI1S & ORRI1T	1	18	18	18	18	18
Pembroke Power Station	CCGT	PEMB40	20	2199	2199	2199	2199	2199
Pen Y Cymoedd Wind Farm	Wind Onshore	RHIG40	21	228	228	228	228	228
Pencloe Windfarm	Wind Onshore	BLAC10	10	0	63	63	63	63
Peterhead	CCGT	PEHE20	2	400	400	400	400	400
Pogbie Wind Farm	Wind Onshore	DUNE10	11	11.8	11.8	11.8	11.8	11.8
Progress Power Station	CCGT	BRFO40	18	0	0	0	299	299
Race Bank Wind Farm	Wind Offshore	WALP40_EME	17	160	565	565	565	565
Rampion Offshore Wind Farm	Wind Offshore	BOLN40	25	400	400	400	400	400
Ratcliffe on Soar	Coal	RATS40	18	2021	2021	2021	2021	2021

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Robin Rigg East Offshore Wind Farm	Wind Offshore	HARK40	12	92	92	92	92	92
Robin Rigg West Offshore Wind Farm	Wind Offshore	HARK40	12	92	92	92	92	92
Rocksavage	CCGT	ROCK40	16	810	810	810	810	810
Rugeley	Coal	RUGE40	18	980	980	980	980	980
Rye House	CCGT	RYEH40	24	715	715	715	715	715
Sallachy Wind Farm	Wind Onshore	SALA10	1	0	0	66	66	66
Saltend	CCGT	SAES20	15	1100	1100	1100	1100	1100
Sandy Knowe Wind Farm	Wind Onshore	GLGL1Q & GLGL1R	10	0	0	0	0	90
Seabank	CCGT	SEAB40	22	1234	1234	1234	1234	1234
Sellafield	CHP	HUTT40	14	155	155	155	155	155
Severn Power	CCGT	USKM20	21	850	850	850	850	850
Sheringham Shoal Offshore Wind Farm	Wind Offshore	NORM40	18	315	315	315	315	315
Shoreham	CCGT	BOLN40	25	420	420	420	420	420
Sizewell B	Nuclear	SIZE40	18	1216	1216	1216	1216	1216
Sizewell C	Nuclear	SIZE40	18	0	0	0	0	1670
Sloy G2 and G3	Hydro	SLOY10	8	80	80	80	80	80
South Humber Bank	CCGT	SHBA40	15	540	1365	1365	1365	1365
South Kyle	Wind Onshore	NECU10	10	0	0	165	165	165
Spalding	CCGT	SPLN40	17	880	880	880	880	880
Spalding Energy Expansion	CCGT	SPLN40	17	0	0	0	920	920
Staythorpe C	CCGT	STAY40	16	1728	1728	1728	1728	1728
Stornoway Wind Farm	Wind Onshore	BEAU40	1	0	0	0	38.5	38.5
Strathy North and South Wind	Wind Onshore	STRW10	1	200.25	200.25	200.25	200.25	200.25
Strathy Wood	Wind Onshore	GORW20	1	0	0	0	0	84
Stronelaig	Wind Onshore	STRL10	3	0	227.8	227.8	227.8	227.8

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Sutton Bridge	CCGT	WALP40_EME	17	819	819	819	819	819
Taylors Lane	CCGT	WISD20_LPN	23	144	144	144	144	144
Tees Renewable Energy Plant	Biomass	GRST20	13	0	0	285	285	285
Thanet Offshore Wind Farm	Wind Offshore	CANT40	24	300	300	300	300	300
Thorpe Marsh	CCGT	THOM40	16	0	0	0	640	1280
Tidal Lagoon	Tidal	BAGB20	21	0	0	320	320	320
Tilbury C	CCGT	TILB20	24	0	0	0	1800	1800
Toddleburn Wind Farm	Wind Onshore	DUNE10	11	27.6	27.6	27.6	27.6	27.6
Tom Na Clach	Wind Onshore	TOMN10	1	0	0	75	75	75
Torness	Nuclear	TORN40	11	1215	1215	1215	1215	1215
Trafford Power - Stage 1	CCGT	CARR40	16	0	0	1882	1882	1882
Tralorg Wind Farm	Wind Onshore	MAHI20	10	0	0	20	20	20
Triton Knoll Offshore Wind Farm	Wind Offshore	BICF4A & BICF4B	17	0	0	0	360	900
Ulzieside	Wind Onshore	GLGL1Q & GLGL1R	10	0	30	30	30	30
Uskmouth	Coal	USKM20	21	115	115	115	115	115
Viking Wind Farm	Wind Onshore	BLHI20	1	0	0	0	0	0
Walney 3 Offshore Wind Farm	Wind Offshore	HEYS40	14	0	330	330	330	330
Walney 4 Offshore Wind Farm	Wind Offshore	HEYS40	14	0	0	330	330	330
Walney I Offshore Wind Farm	Wind Offshore	HEYS40	14	182	182	182	182	182
Walney II Offshore Wind Farm	Wind Offshore	STAH4A & STAH4B	14	182	182	182	182	182
West Burton A	Coal	WBUR40	16	1987	1987	1987	1987	1987
West Burton B	CCGT	WBUR40	16	1295	1295	1295	1295	1295
West Isle of Wight Power Station 1	Wind Offshore	MANN40	26	0	0	368	368	368
West Isle of Wight Power Station 2	Wind Offshore	MANN40	26	0	0	0	0	368
West of Duddon Sands Offshore Wind Farm	Wind Offshore	HEYS40	14	382	382	382	382	382

Generator	Technology	Nodes	Zone	2016/17 (MW)	2017/18 (MW)	2018/19 (MW)	2019/20 (MW)	2020/21 (MW)
Westermost Rough Offshore Wind Farm	Wind Offshore	HEDO20	15	205	205	205	205	205
White Rose	Biomass	DRAX40	15	0	0	0	0	400
Whitelaw Brae Windfarm	Wind Onshore	CLYS2R	11	0	0	0	50.4	50.4
Whitelee	Wind Onshore	WLEE20	10	305	305	305	305	305
Whitelee Extension	Wind Onshore	WLEX20	10	206	206	206	206	206
Whiteside Hill Wind Farm	Wind Onshore	GLGL1Q & GLGL1R	10	0	27	27	27	27
Willow Wind Farm	Wind Onshore	CRSS10	10	0	0	0	0	45
Wilton	CCGT	GRST20	13	141	141	141	141	141
Windy Standard II (Brockloch Rig 1) Wind Farm	Wind Onshore	DUNH1R & DUNH1Q	10	75	75	75	75	75
Windy Standard III Wind Farm	Wind Onshore	DUNH1Q	10	0	0	43.5	43.5	43.5

**Table 35 - Contracted TEC at Peak by Zone**

<b>Zone</b>	<b>2016/17 (MW)</b>	<b>2017/18 (MW)</b>	<b>2018/19 (MW)</b>	<b>2019/20 (MW)</b>	<b>2020/21 (MW)</b>
1	1,176.5	1,196.5	2,132.4	2,649.2	3,180.8
2	400.0	400.0	400.0	904.0	904.0
3	267.9	712.7	737.7	737.7	851.7
4	41.4	41.4	41.4	41.4	191.4
5	324.8	324.8	324.8	462.8	462.8
6	63.5	63.5	63.5	63.5	63.5
7	172.9	172.9	172.9	172.9	222.9
8	520.0	520.0	520.0	520.0	520.0
9	120.0	120.0	120.0	1,195.0	1,195.0
10	2,597.1	2,965.1	3,193.6	3,294.1	3,543.1
11	2,517.7	2,616.1	3,547.0	3,977.2	4,148.4
12	365.3	365.3	411.3	411.3	411.3
13	1,348.0	1,348.0	1,633.0	3,033.0	3,033.0
14	3,574.0	3,904.0	4,234.0	4,234.0	4,234.0
15	8,644.0	9,469.0	9,959.0	12,355.0	18,059.0
16	12,909.0	13,644.0	17,056.0	18,496.0	19,136.0
17	2,515.0	3,201.0	3,201.0	4,481.0	7,502.0
18	6,811.9	7,081.9	8,281.9	8,730.9	10,699.9
19	1,644.0	1,644.0	1,644.0	1,644.0	2,644.0
20	2,199.0	2,199.0	2,199.0	2,199.0	4,199.0
21	3,365.0	3,365.0	3,685.0	3,984.0	5,883.0
22	1,234.0	1,234.0	1,234.0	1,234.0	1,234.0
23	144.0	144.0	144.0	144.0	144.0
24	11,156.0	11,156.0	12,060.0	16,236.0	16,236.0
25	2,370.0	2,370.0	2,370.0	2,370.0	2,370.0
26	2,339.0	2,139.0	2,507.0	3,507.0	5,275.0
27	1,045.0	1,045.0	1,045.0	1,045.0	1,045.0
<b>Total</b>	<b>69,865.0</b>	<b>73,442.2</b>	<b>82,917.5</b>	<b>98,122.0</b>	<b>117,388.8</b>

## Appendix F : Zonal Demand Summaries

**Table 36 - Zonal Summary of Modelled Demand (MW)**

Demand Zone	2016/17	2017/18	2018/19	2019/20	2020/21
	MW	MW	MW	MW	MW
1	623.2	607.4	584.9	597.1	531.4
2	3,226.1	3,214.9	3,195.9	3,196.4	3,193.1
3	2,608.5	2,590.2	2,608.3	2,621.7	2,634.2
4	4,005.4	4,032.1	4,056.7	4,087.6	4,110.6
5	4,558.7	4,582.9	4,606.0	4,629.9	4,652.6
6	2,092.1	1,887.1	1,928.6	1,987.2	2,037.5
7	4,966.7	5,077.3	5,051.3	5,133.5	5,173.0
8	4,414.4	4,422.2	4,437.2	4,459.3	4,502.8
9	5,580.5	5,650.5	5,702.0	5,746.2	5,793.2
10	1,920.5	1,921.4	1,922.2	1,930.5	1,943.0
11	3,609.4	3,618.4	3,628.6	3,641.7	3,655.8
12	4,729.8	4,863.5	5,089.8	5,163.1	5,255.9
13	5,813.9	5,905.5	5,976.7	6,033.3	6,057.4
14	2,698.9	2,711.4	2,724.0	2,745.1	2,773.8
<b>Total</b>	<b>50,848.1</b>	<b>51,084.8</b>	<b>51,512.1</b>	<b>51,972.5</b>	<b>52,314.1</b>

**Table 37 - Zonal Summary of Chargeable System Demand**

Demand Zone	2016/17	2017/18	2018/19	2019/20	2020/21
	MW	MW	MW	MW	MW
1	573.6	551.5	527.8	506.9	469.2
2	3,186.8	3,113.9	3,007.2	2,930.4	2,837.0
3	2,216.2	2,152.1	2,069.6	2,005.2	1,911.0
4	3,682.0	3,664.2	3,600.6	3,571.1	3,586.6
5	3,897.3	3,838.6	3,737.1	3,670.6	3,611.0
6	2,980.9	2,988.2	2,960.6	2,957.2	3,005.2
7	4,797.0	4,745.4	4,637.5	4,573.9	4,540.7
8	4,224.5	4,192.6	4,111.0	4,067.2	4,061.7
9	6,045.7	6,015.6	5,915.7	5,867.8	5,885.8
10	2,251.8	2,221.1	2,167.0	2,131.9	2,101.6
11	3,631.5	3,599.4	3,527.8	3,486.7	3,470.3
12	4,435.5	4,406.2	4,315.1	4,270.6	4,282.9
13	5,595.0	5,547.5	5,435.9	5,373.6	5,355.3
14	2,282.3	2,261.6	2,216.4	2,190.2	2,178.6
<b>Total</b>	<b>49,800.0</b>	<b>49,297.7</b>	<b>48,229.3</b>	<b>47,603.3</b>	<b>47,296.9</b>

**Table 38 - Zonal Summary of Chargeable HH Demand**

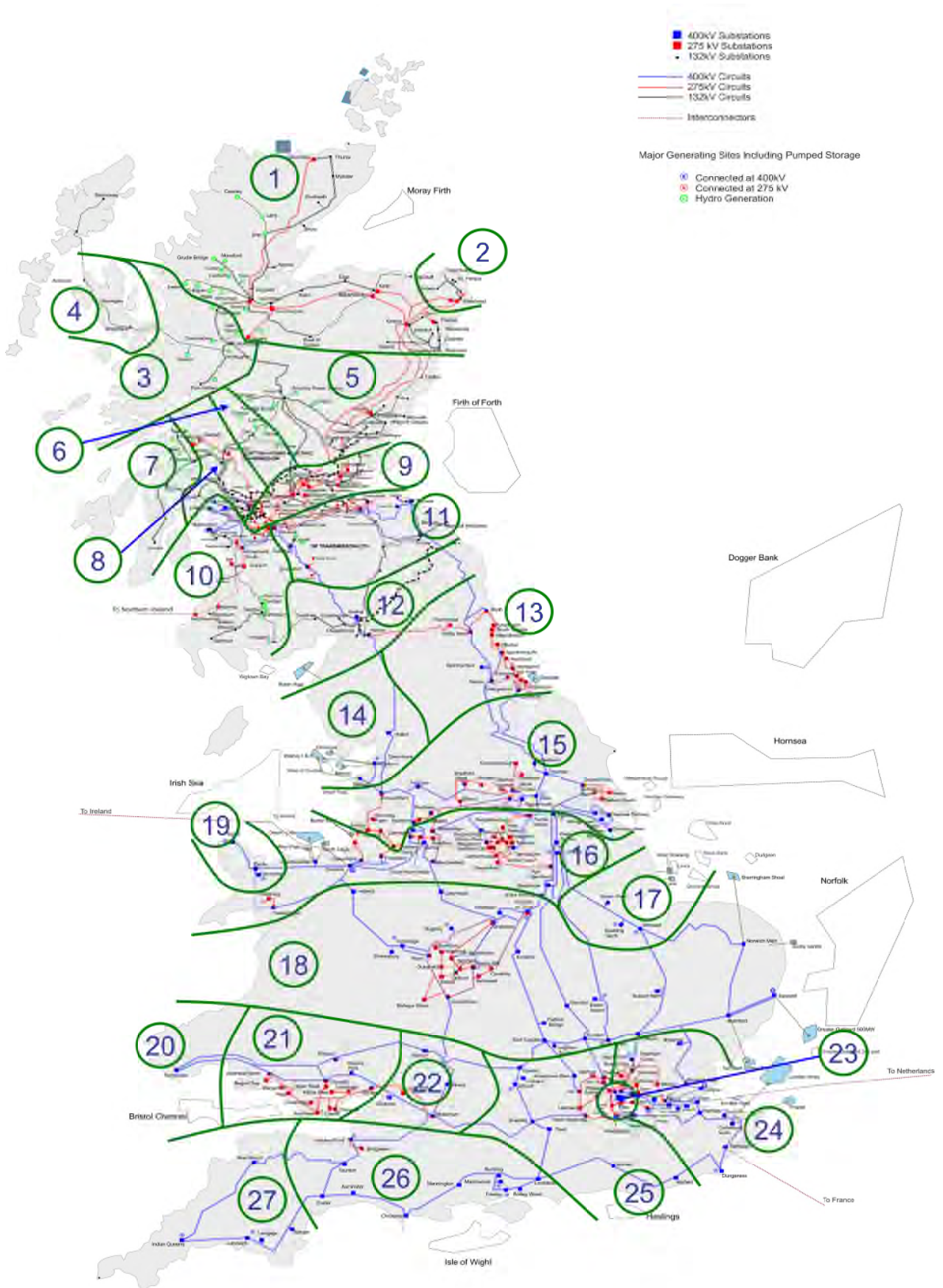
Demand Zone	Pre P272						Post P272			
	2016/17	2017/18	2018/19	2019/20	2020/21		2017/18	2018/19	2019/20	2020/21
	MW	MW	MW	MW	MW		MW	MW	MW	MW
1	- 460.7	- 478.9	- 494.3	- 510.9	- 547.5		- 379.54	- 397.04	- 414.81	- 452.07
2	474.1	423.8	364.0	313.7	231.0		643.44	579.13	526.07	442.03
3	136.5	88.0	37.8	- 8.8	- 96.9		331.64	276.36	226.75	137.26
4	909.2	917.9	911.0	915.2	948.6		1,182.77	1,170.39	1,171.32	1,203.11
5	972.2	941.1	898.2	865.6	821.5		1,172.97	1,125.20	1,089.72	1,044.24
6	990.1	1,018.9	1,038.2	1,063.2	1,127.4		1,170.24	1,186.36	1,209.46	1,272.74
7	1,536.8	1,519.4	1,484.4	1,463.3	1,451.1		1,717.84	1,678.71	1,655.17	1,641.72
8	1,225.8	1,224.2	1,207.2	1,201.6	1,215.7		1,559.51	1,535.57	1,525.88	1,537.90
9	1,455.1	1,468.4	1,461.8	1,469.3	1,516.4		1,852.89	1,838.24	1,841.00	1,885.78
10	925.3	910.6	890.5	875.2	854.1		1,012.90	990.69	974.06	952.35
11	818.6	812.5	796.4	788.0	787.8		1,070.97	1,049.48	1,037.89	1,036.21
12	1,762.7	1,765.2	1,741.9	1,737.5	1,771.0		2,060.90	2,031.47	2,023.48	2,055.20
13	1,976.9	1,969.5	1,943.4	1,931.5	1,938.5		2,323.61	2,290.19	2,273.90	2,278.83
14	377.8	373.4	363.0	357.3	355.9		579.73	565.09	556.84	554.22
<b>Total</b>	<b>13,100.5</b>	<b>12,954.0</b>	<b>12,643.8</b>	<b>12,461.5</b>	<b>12,374.5</b>		<b>16,299.87</b>	<b>15,919.84</b>	<b>15,696.74</b>	<b>15,589.52</b>

**Table 39 - Zonal Summary of Chargeable NHH Demand**

Demand Zone	Pre P272						Post P272			
	2016/17	2017/18	2018/19	2019/20	2020/21		2017/18	2018/19	2019/20	2020/21
	TWh	TWh	TWh	TWh	TWh		TWh	TWh	TWh	TWh
1	0.735	0.710	0.685	0.662	0.643		0.639	0.616	0.595	0.577
2	1.757	1.700	1.639	1.586	1.540		1.543	1.487	1.436	1.394
3	1.318	1.289	1.257	1.229	1.207		1.114	1.087	1.063	1.044
4	2.089	2.039	1.985	1.937	1.898		1.850	1.800	1.757	1.722
5	1.898	1.853	1.804	1.762	1.727		1.687	1.643	1.604	1.573
6	1.310	1.274	1.235	1.201	1.172		1.166	1.130	1.098	1.072
7	2.287	2.231	2.170	2.116	2.073		2.089	2.032	1.981	1.941
8	2.159	2.107	2.051	2.002	1.962		1.867	1.817	1.774	1.739
9	3.364	3.283	3.195	3.118	3.056		3.009	2.928	2.857	2.800
10	0.876	0.858	0.838	0.821	0.807		0.785	0.767	0.751	0.739
11	2.081	2.039	1.992	1.952	1.921		1.855	1.812	1.776	1.748
12	2.133	2.096	2.053	2.016	1.989		1.884	1.847	1.815	1.792
13	2.796	2.737	2.670	2.613	2.568		2.483	2.424	2.372	2.332
14	1.345	1.315	1.282	1.254	1.231		1.168	1.139	1.113	1.094
<b>Total</b>	<b>26.147</b>	<b>25.530</b>	<b>24.855</b>	<b>24.267</b>	<b>23.795</b>		<b>23.138</b>	<b>22.526</b>	<b>21.994</b>	<b>21.566</b>



# Appendix G : Generation Zone Map



# Appendix H : Demand Zone Map

