

Impact of changing demand on NTS Charges

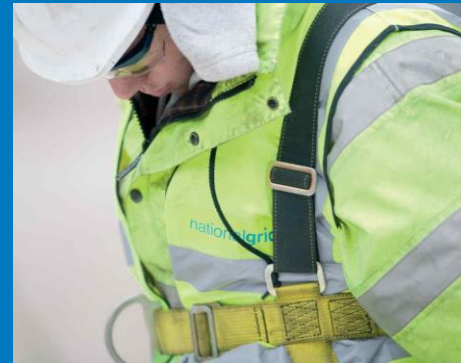


NTS Charging Methodology Forum (NTSCMF)
29 September 2015

Overview

- How demand is used in charging
- Reduction in demand forecast
- Impact of reduced demand on 2016 Indicative NTS Exit Capacity charges
- Interaction with other charges

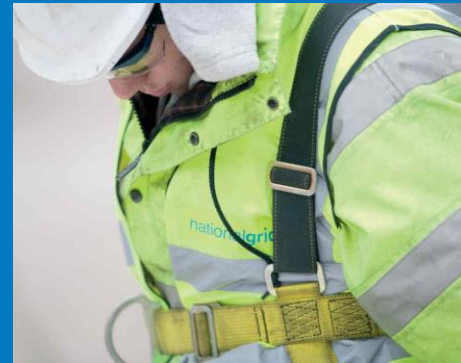
How Demand is used in Charging



Demand and charging

- To produce charges we need forecast peak and annual demands
- National Grid (NG) produce forecasts once a year in May/June
 - The forecast feed into the Future Energy Scenarios (FES) and Ten Year Statement (TYS)
 - This years forecasts have changed significantly from those published last year

Reduction in Demand Forecast



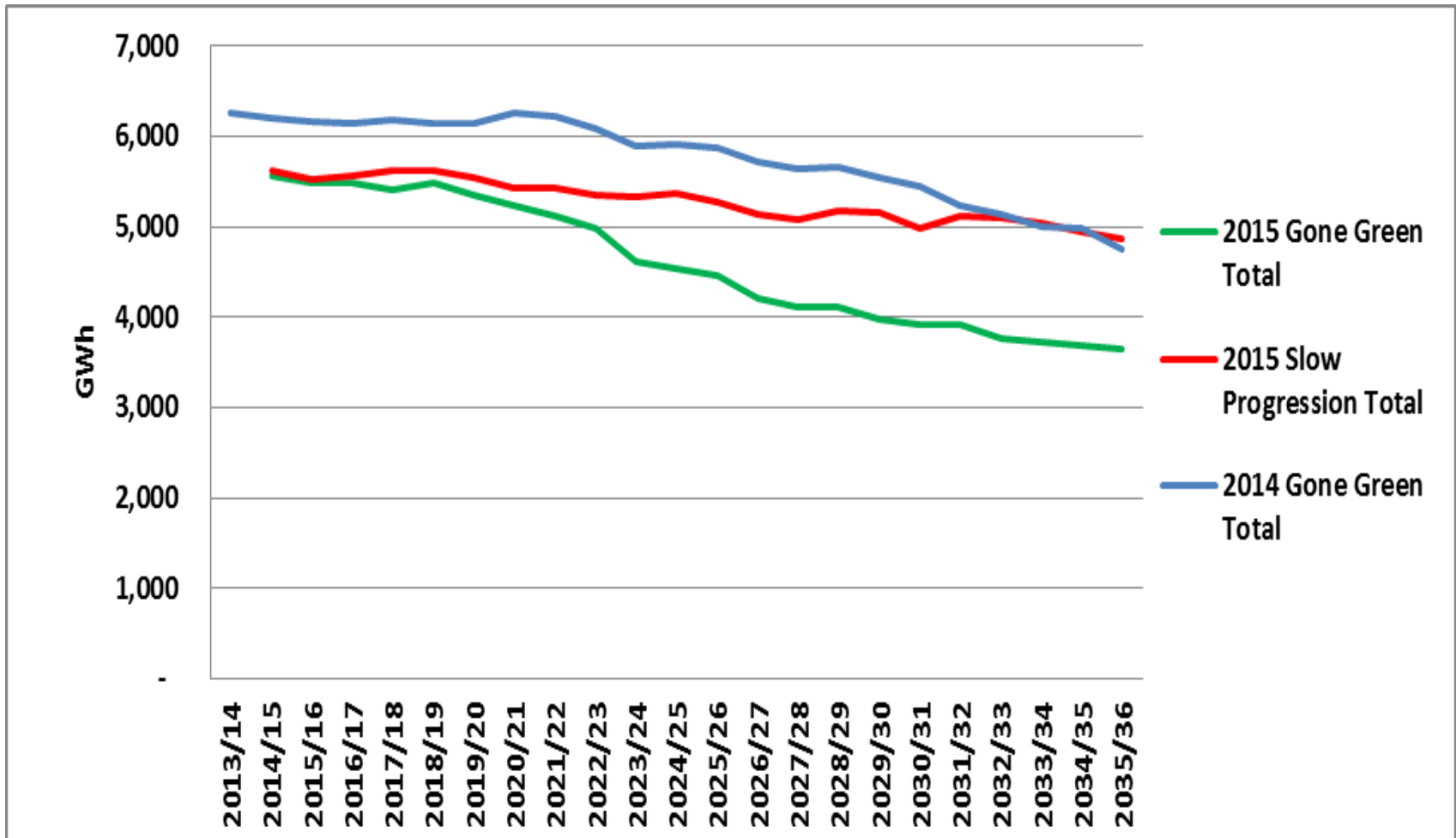
Demand Forecast Changes

- UNC Mod 331 updated the responsibilities for the Demand Estimation Sub Committee
- Periodic review of elements of demand forecasting such as the Composite Weather Variable*
 - Re-optimised every five years
 - Recently updated historical weather data sets
- Impact on the Gone Green demand
 - Undiversified Peak reduces by c.11% that includes other changes that impact demand under FES
- FES available here: <http://fes.nationalgrid.com/>

2015 Demand Forecasts

- Review of the composite weather variable
 - New historic weather dataset
 - A change in the Climate Change Methodology (UNC)
 - The effect of these changes on the 1 in 20 peaks (everything else remaining constant) was to reduce the peaks (gone green) by about 6% (about 4% of which was in the LDZs , rest on NTS).
- Annual demands reduced through FES, which also affects the peaks
 - This has reduced the peaks (Gone Green) by about 5%.
- Total change is about 11% (Gone Green).

2015 Total Peak Demand Forecast



Impact of Reduced Demand on 2016 Indicative NTS Exit Capacity Charges



Overview

- Exit Capacity charges published on 1 May 2015 (Final Notice for October 2015)
- Also published 3 years of indicative rates for the Application Window, July 2015 to cover 2016/17 to 2018/19 inclusive.
- Since then, new Supply / Demand Statements which contain the revised forecast Peak demands have been received
- The following slides show how charges will be affected by this compared to the indicative rates already published

Updates for this analysis

- 2016/17 Model updated to take into account:
- Supply and demand only (TYS14 / May 15 SD Statement forecasts)
- This analysis does not update the network, revenues, supply forecasts or the demands subject to the obligated levels (which is used for the current year final prices)

Supply and Demand impacts

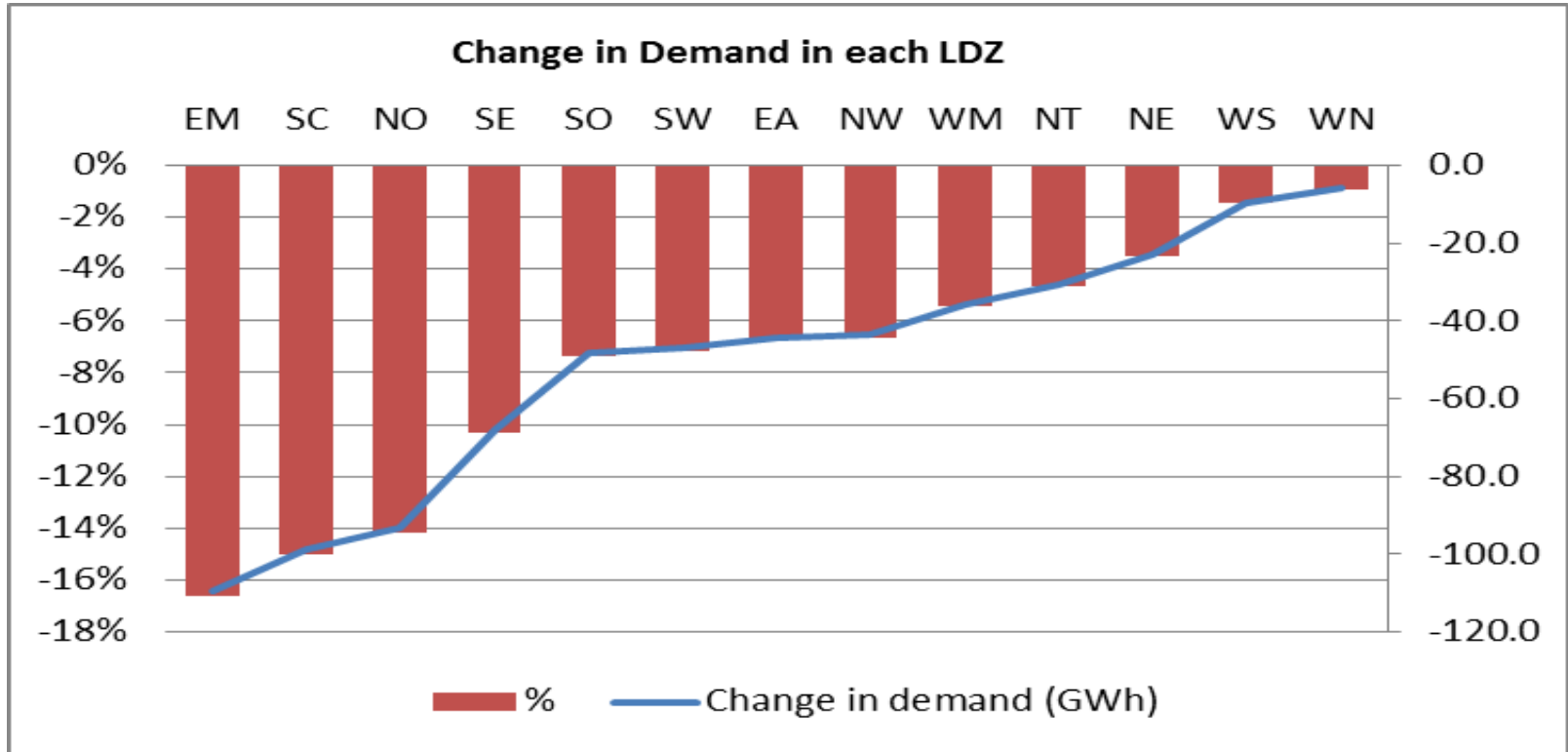
- Peak demand forecasts have fallen from last years level (for 2016/17) from 6,140 to 5,478 GWh i.e. 662 GWh (around 11%)
- Supply decreased to match demand within the model but not uniformly (in line with GCM16 rules)
 - Supply Matching Merit Order is part of UNC Section Y
 - Beach, Interconnector, Long Range Storage supplies all remain the same as TYS14 at this point in time
 - Only LNG supplies are adjusted under the supply and demand matching rules
 - Milford Haven & Isle of Grain supplies decrease

Supply and Demand impacts (continued)

- To match demand and supply changes for the Transportation Model there are decreases in supply at Isle of Grain (IoG) and Milford Haven (MH)
 - IoG reduced by 269 GWh
 - MH reduced by 393 GWh

Total reduction is 662 GWh
- The decrease in flows from IoG relative to changes in demand results in higher charges in the South East, as the gas is required from other areas to meet demand
- There is a similar impact for MH in the South West
- Relative change in supply and demand in other areas has led to smaller changes in those areas

Change in Demands, GWh and % includes DCs in the relevant area



-The drop in demand for WS & SW combined is 62 GWh, however MH supplies reduce by 393 GWh. Therefore the net difference needs to be met from using other supplies from other areas further away than MH giving the reason why there would be price increases in SW area.

-The drop in demand for NT & SE combined is about 100 GWh, however supplies at IoG reduce by 269 GWh. Similarly supplies need to come from other areas further away to meet demand.

Effect on charges for 'exit zones'

p/pdkwh/d

2016/17 Exit Capacity Charges Indicative

DN Exit Zone	'DN' Exit Price (p/kWh/day)		change on May 15 Published Indicative	
	at May 2015	with SD May 15	p/kWh/day	
			with SD May 15	
NW1	0.0234	0.0215	-0.0019	
NO1	0.0055	0.0036	-0.0019	
NO2	0.0113	0.0094	-0.0019	
NW2	0.0288	0.0272	-0.0016	
NE1	0.0107	0.0092	-0.0015	
EA4	0.0170	0.0162	-0.0008	
WN	0.0309	0.0301	-0.0008	
WM2	0.0222	0.0214	-0.0008	
EA1	0.0104	0.0096	-0.0008	
EM2	0.0092	0.0084	-0.0008	
NE2	0.0044	0.0036	-0.0008	
NE3	0.0021	0.0013	-0.0008	
EA3	0.0058	0.0050	-0.0008	
EA2	0.0107	0.0099	-0.0008	
EM3	0.0214	0.0206	-0.0008	
EM4	0.0162	0.0154	-0.0008	
NT2	0.0180	0.0172	-0.0008	
NT3	0.0174	0.0166	-0.0008	
SO1	0.0213	0.0205	-0.0008	
NT1	0.0273	0.0266	-0.0007	
SE2	0.0273	0.0266	-0.0007	
EM1	0.0031	0.0024	-0.0007	
SC2	0.0010	0.0003	-0.0007	
VM1	0.0259	0.0252	-0.0007	
SC4	0.0005	0.0002	-0.0003	
SC1	0.0001	0.0001	0.0000	
SO2	0.0294	0.0300	0.0006	
SE1	0.0189	0.0202	0.0013	
WM3	0.0175	0.0196	0.0021	
SW1	0.0136	0.0218	0.0082	
SW3	0.0346	0.0430	0.0084	
SW2	0.0225	0.0309	0.0084	
WS	0.0056	0.0140	0.0084	

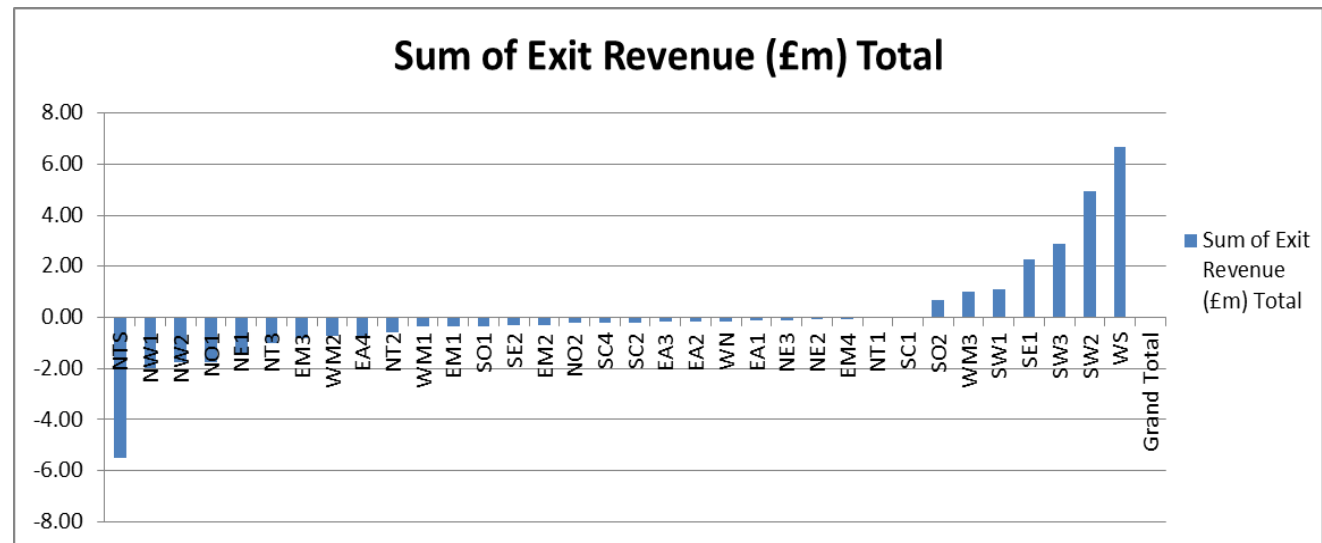
DN Exit Zone	'DN' Exit Price (p/kWh/day)		change on May 15 Published Indicative	
	at May 2015	with SD May 15	p/kWh/day	
			with SD May 15	
SO2	0.0294	0.0300	0.0006	
SE1	0.0189	0.0202	0.0013	
WM3	0.0175	0.0196	0.0021	
SW1	0.0136	0.0218	0.0082	
SW3	0.0346	0.0430	0.0084	
SW2	0.0225	0.0309	0.0084	
WS	0.0056	0.0140	0.0084	

Effects of decrease supplies at MH & IOG on the SW and SE

Change in Exit Revenue distribution

Sum of Exit Revenue (£m)	
	Total
NTS	-5.51
NW1	-2.00
NW2	-1.76
NO1	-1.76
NE1	-1.41
NT3	-0.99
EM3	-0.83
WM2	-0.74
EA4	-0.73
NT2	-0.60
WM1	-0.36
EM1	-0.34
SO1	-0.34
SE2	-0.30
EM2	-0.29
NO2	-0.23
SC4	-0.22
SC2	-0.19
EA3	-0.18
EA2	-0.17
WN	-0.16
EA1	-0.13
NE3	-0.11
NE2	-0.09
EM4	-0.06
NT1	-0.05
SC1	0.00
SO2	0.67
WM3	1.00
SW1	1.12
SE1	2.25
SW3	2.86
SW2	4.96
WS	6.69
Grand Total	0.00

There is no change to the overall target revenue in setting the charges



Comparison to actual 2015/16 rates to show impact of demand / revenue

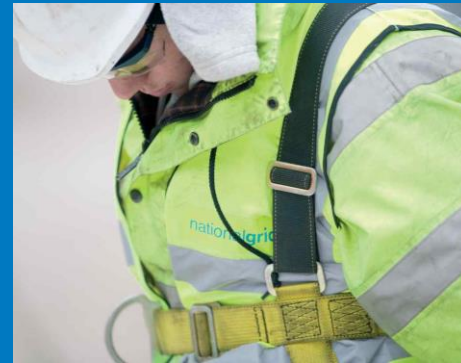
Step 1. Revised Indicatives for 2016/17 (using May 2015 SDs)

Revenue used, £m		288	464			288
		2016 16/17			no change in revenue	
		2015 15/16	Ind		2016 16/17 Ind	difference
DN Prices						
DN Exit Zone	DN Exit Price (p/kWh/day)		change			
EA1	0.0045	0.0096	0.0051		0.0029	-0.0016
EA2	0.0045	0.0099	0.0054		0.0027	-0.0018
EA3	0.0001	0.0050	0.0049		0.0001	0.0000
EA4	0.0107	0.0162	0.0055		0.0090	-0.0017
EM1	0.0001	0.0024	0.0023		0.0001	0.0000
EM2	0.0031	0.0084	0.0053		0.0012	-0.0019
EM3	0.0149	0.0206	0.0057		0.0133	-0.0016
EM4	0.0099	0.0154	0.0055		0.0082	-0.0017
NE1	0.0045	0.0092	0.0047		0.0020	-0.0025
NE2	0.0007	0.0036	0.0029		0.0001	-0.0006
NE3	0.0001	0.0013	0.0012		0.0001	0.0000
NO1	0.0002	0.0036	0.0034		0.0001	-0.0001
NO2	0.0051	0.0094	0.0043		0.0022	-0.0029
NT1	0.0208	0.0266	0.0058		0.0193	-0.0015
NT2	0.0111	0.0172	0.0061		0.0099	-0.0012
NT3	0.0110	0.0166	0.0056		0.0093	-0.0017
NW1	0.0169	0.0215	0.0046		0.0143	-0.0026
NW2	0.0221	0.0272	0.0051		0.0200	-0.0021
SC1	0.0001	0.0001	0.0000		0.0001	0.0000
SC2	0.0001	0.0003	0.0002		0.0001	0.0000
SC4	0.0001	0.0002	0.0001		0.0001	0.0000
SE1	0.0100	0.0202	0.0102		0.0129	0.0029
SE2	0.0208	0.0266	0.0058		0.0193	-0.0015
SO1	0.0149	0.0205	0.0056		0.0133	-0.0016
SO2	0.0226	0.0300	0.0074		0.0227	0.0001
SW1	0.0063	0.0218	0.0155		0.0146	0.0083
SW2	0.0149	0.0309	0.0160		0.0236	0.0087
SW3	0.0266	0.0430	0.0164		0.0357	0.0091
WN	0.0242	0.0301	0.0059		0.0228	-0.0014
WS	0.0001	0.0140	0.0139		0.0068	0.0067
WM1	0.0194	0.0252	0.0058		0.0179	-0.0015
WM2	0.0158	0.0214	0.0056		0.0142	-0.0016
WM3	0.0101	0.0196	0.0095		0.0123	0.0022

Step 2. Using the same model and using the 2015/16 revenue (as in 2015/16 model) for the rate calculation enables the revenue change impact to be shown

Result:
Comparing the difference between Step 1 and Step 2 shows the adjustment due to revenue only, at minimum rates, is approximately 0.0072 p/kWh

Interaction with other Charges



Demand changes and impact on charges

- As demands change they impact the Long Run Marginal Distances used in the Transportation Model
- These distances are the values used in determining how the network is optimised to match supplies to demand minimising distances for the Gas to move
- These distances play a key role in determining the Entry reserve prices and Exit Capacity charges
- There is a locational distribution for these Entry reserve prices and Exit Capacity charges

Impact on Capacity

- Entry Capacity
 - Distance and Adjustment produces Entry Reserve Price
 - Adjustment is to achieve 50/50 Average Distance between Entry and Exit
- Exit Capacity
 - Distance and Adjustment (Revenue based) produces Exit Capacity Charge
 - Adjustment is aim to Collect 50% of the TO target revenue
- Different approaches, so demand changes can have varied impact on the charges

Impact on Commodity

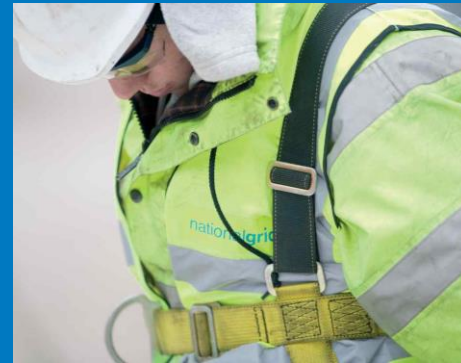
■ TO Entry Commodity

- Entry Capacity is pay as bid payable price
- Low levels of capacity that attracts new unit rates as most revenue is QSEC
- Could impact commodity over time

■ TO Exit Commodity

- As Exit Capacity payable price is adjusted year to year any changes to prices will impact commodity
- As prices rise, providing there is capacity booked then commodity may come down
- As prices reduce, providing there is capacity booked then commodity may increase

Contact Details



Contact details

- Charging Team:
 - Colin Williams
 - Karin Elmhirst
 - Laura Butterfield
 - Thomas Dangarembizi
- Any queries can be sent to:

box.transmissioncapacityandcharging@nationalgrid.com