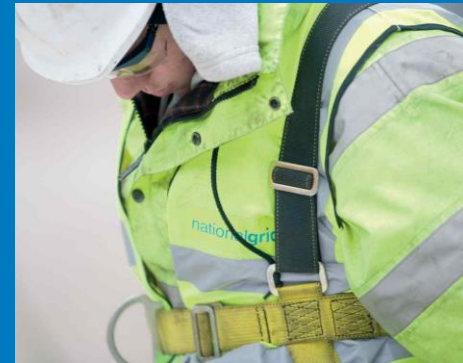


Gas Charging Review



NTSCMF – 02 August 2017

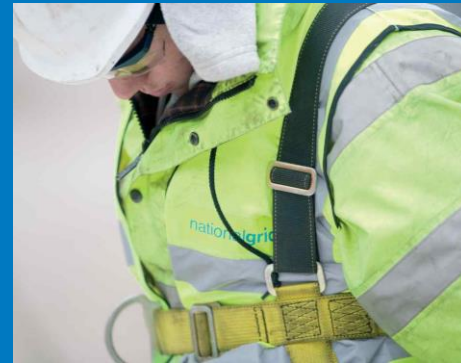
Final slide pack – Update provided on 1 August. All slides added or updated are marked with a blue star



Agenda

Area	Detail
Sub-workgroups	<ul style="list-style-type: none">• Output / summary of recent sub groups<ul style="list-style-type: none">• Multipliers
Avoiding inefficient bypass of the NTS	<ul style="list-style-type: none">• Reminder of the outcomes from recent discussions• Discussion on progress and development of options
Action 0602	<ul style="list-style-type: none">• Removal of sites from the CWD Model (Action 0602) - Theddlethorpe
Action 0603	<ul style="list-style-type: none">• Current revenues from commodity and capacity charges from different types of point for 2015/16 as an example
Action 0707	<ul style="list-style-type: none">• Understanding how Existing Contracts are included in the CWD calculations
Plan and change process	<ul style="list-style-type: none">• Overall timeline• Overview of the future sub groups and NTSCMF meetings and their focus
UNC Modification	<ul style="list-style-type: none">• Any updates related to UNC 0621
Next Steps	<ul style="list-style-type: none">• Next Steps

Gas Charging Review



Output from sub workgroups

Gas Charging Review:

Output from sub workgroup

- One sub group since 17 July NTSCMF
 - 25 July – Multipliers
- All documentation and outputs, when updated from the meetings will be available on the NTSCMF pages as part of the meeting material:

<http://www.gasgovernance.co.uk/ntscmf> and

<http://www.gasgovernance.co.uk/ntscmf/subg>

- And will also be updating the summary documents in the document library

Gas Charging Review:

Sub workgroups – Joining and Contributions

- Inputs in advance of the meetings are welcome
 - Questions or comments or any position papers, for example
 - The one-pager documents can also be used to frame the discussions

<http://www.gasgovernance.co.uk/ntscmf/subg1page>

- To receive joining instructions for the meetings (or to join a specific sub group on a particular topic) please contact National Grid

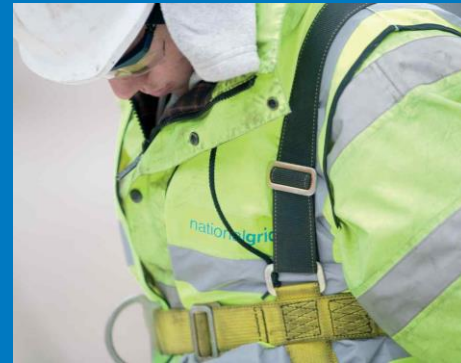
box.transmissioncapacityandcharging@nationalgrid.com

Gas Charging Review:

Sub-group output summary

- From each of the sub-groups we have produced a set of summary slides which give an overview of what was discussed at the meeting
- These are presented in the relevant parts of the NTSCMF material

Gas Charging Review



Multipliers (25 July) summary



Objectives – Key questions to address

Suggested questions / areas to address

Discussed
on 26 June

- What are multipliers for?
 - E.g. Trade – NBP liquidity – ST flex – SoS
 - Revenue recovery – encourage booking behaviour ST vs LT ?
 - Should pricing facilitate any of these / can pricing be detrimental?
- Short term relative to Long term multipliers – should they incentivise a certain behaviour?
- Should multipliers facilitate access? – How to consider when combined with the revenue recovery options – do certain combinations work more effectively in this regard?
- Measurement against Relevant Objectives, GTCR and Stakeholder Objectives and EU (Multipliers at IPs need to be consulted on each year)
- Levels of Multipliers
 - Can be a number between 0 and 1, not just these values (and could be higher than 1, subject to the questions above).
 - TAR NC Consultation obligation
- Capacity access – views on the charge independent of the amount flowed? Is this an issue?
- Which aspects work under the current regime? Views and discussion (including output from this discussion)



Gas Charging Review: Multipliers – Entry

Question	Some of the views expressed for each question
Short term (ST) relative to Long term (LT) multipliers – should they incentivise a certain behaviour?	<ul style="list-style-type: none">• For any LT Capacity there are user commitments and the obligation of booking capacity. For ST there is less and arrangements with a very low multiplier could move cost burden onto LT over ST.• The relative balance between LT and ST was raised by some as a concern – if multipliers in ST are too low then would this apportion adjustments on the LT thereby subsidising ST. There are links to the revenue adjustment mechanisms that could drive the relativity of this amount.• Recognise different world than when current method designed, and implemented. Multipliers and their adjustments may not be as relevant or delivering what was originally intended.• In an unconstrained network very low or zero multipliers increases under recovery thereby increasing the amount to be recovered through the revenue recovery adjustments.
Should multipliers facilitate access? – How to consider when combined with the revenue recovery options – do certain combinations work more effectively in this regard?	<ul style="list-style-type: none">• Is a market more liquid with multipliers less than 1?• There is a range of Users on the NTS and different users value different products (will be influenced by time, duration and price) and there is a value to having a range of products to reflect this.• Risk profile of different products re availability / constraint• Cross subsidy / cost recovery may influence capacity purchasing choices• Choice of capacity – some gas has more of a choice about coming to GB• Competition with North West Europe could be an issue for some• Level of multiplier – if too high then some users may not buy capacity
Measurement against Relevant Objectives, GTCR and Stakeholder Objectives and EU (Multipliers at IPs need to be consulted on each year)	<ul style="list-style-type: none">• Some expressed views that justification should be away from a “norm” (e.g. either away from zero or away from 1).• Any decision will take into account the reasoning behind any proposal put forward in the Modification (which will not just be multipliers, but reflect the overall methodology).• Cost reflectivity under TAR NC – TAR NC is about cost allocation process• There is a challenge about what an appropriate multiplier might be without being too arbitrary• Key question to address, for any proposed multiplier, not assuming the current arrangements are the most appropriate;<ul style="list-style-type: none">• What is an appropriate multiplier for Entry / Exit Capacity justified against the required objectives?• This could be different at IPs and Non Ips. No obligation under TAR NC to amend Non IP however there will be required objectives to consider (cross subsidy, etc)



Gas Charging Review: Multipliers – Exit

nationalgrid

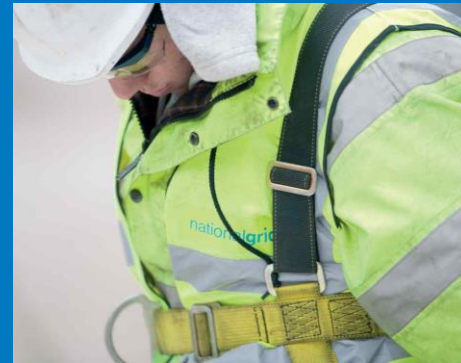
Question	Some of the views expressed for each question
Short term (ST) relative to Long term (LT) multipliers – should they incentivise a certain behaviour?	<ul style="list-style-type: none">• The relative balance between LT and ST was raised by some as a concern – if multipliers in ST are too low then would this apportion adjustments on the LT subsidising ST. There are links to the revenue adjustment mechanisms that could drive the relativity of this amount.• Recognise different world than when current method designed, and implemented• Unconstrained network – is Exit different to Entry in terms of level?• Some favour security and therefore book capacity more LT
Should multipliers facilitate access? – How to consider when combined with the revenue recovery options – do certain combinations work more effectively in this regard?	<ul style="list-style-type: none">• Comparing NTS to DNs – DN's recovery 95% from capacity, NTS is similar as a network however does have a different range of users.• There is a range of Users on the NTS and different users value different products (will be influenced by time, duration and price) and there is a value to having a range of products to reflect this.• Risk profile of different products re availability / constraint – different risk profile between Entry and Exit.• Cross subsidy / cost recovery is a concern to some• If Daily firm multiplier was less than 1 then would users book this over off-peak (interruptible)?• Link to interruptible (to be discussed on 8 August sub-group) – how to determine the likelihood of interruption and the challenge of this being forward looking.• Is there less choice for Exit over Entry – linked to available products / likelihood of interruption or availability of capacity?• Case for different arrangements on Entry and Exit given all the above?
Measurement against Relevant Objectives, GTCR and Stakeholder Objectives and EU (Multipliers at IPs need to be consulted on each year)	<ul style="list-style-type: none">• Exit has a different starting point to Entry – impact of zero price is less than Entry• Some expressed views that justification should be away from a “norm” (e.g. either away from zero or away from 1).• Any decision will take into account the reasoning behind any proposal put forward in the Modification (which will not just be multipliers, but reflect the overall methodology).• Cost reflectivity under TAR NC – TAR NC is about cost allocation process• Key question to address, for any proposed multiplier, not assuming the current arrangements are the most appropriate;<ul style="list-style-type: none">• What is an appropriate multiplier for Entry / Exit Capacity justified against the required objectives?• This can be different at IPs and Non IPs. No obligation under TAR NC to amend Non IP however there will be required objectives to consider (cross subsidy, etc)



Gas Charging Review: Multipliers – General themes

- General themes:
 - Any multiplier arrangement should recognise diverse range of NTS Users and the range of capacity products can suit varied requirements
 - Cross subsidy between long term and short term users is a concern for some
 - Entry and Exit can be treated separately re multipliers
 - Can have IP and Non IP treatment
- Question to address for both Entry and Exit:
 - What is an appropriate multiplier for Entry / Exit Capacity justified against the required objectives?

Gas Charging Review



Avoiding inefficient bypass of the NTS



Gas Charging Review: Avoiding inefficient bypass of the NTS - Overview

- To date, through the Sub Group and NTSCMF some general themes have been produced
- Using these, and the general objectives of the charging review, it helps focus the areas of the Avoiding Inefficient bypass product that can be reviewed
- This includes reviewing the aspects of the current arrangements that drive the variability of the discount afforded under the current charge and other aspects of the charging framework



Gas Charging Review:

Avoiding inefficient bypass of the NTS (1)

- Reminder of some general themes from the discussions to date:
 - A product to use NTS and discourage inefficient bypass considered beneficial to keep
 - Generally agreed that in some way it should reflect the cost of pipelines and be a form of discount against these investment costs
 - Preference for the product to be self limiting in design (e.g. through formula) rather than arbitrary parameters



Gas Charging Review:

Avoiding inefficient bypass of the NTS (2)

- Discount to both TO and SO commodity charges
 - Optional Commodity Charge (OCC) was originally designed as a discount to Commodity charges as no incentive to have a bypass product which was a discount to Capacity charges at applicable points (i.e. as the Capacity charge was low a discount would not provide much incentive)
 - Originally a discount to SO Commodity charge (NTS operational costs)
 - Resulted in a discount to TO Entry and Exit commodity charges once they were implemented
 - Is now a discount from both TO and SO Commodity charges
 - Therefore currently a discount from **both** NTS asset costs (investment) and NTS operational charges



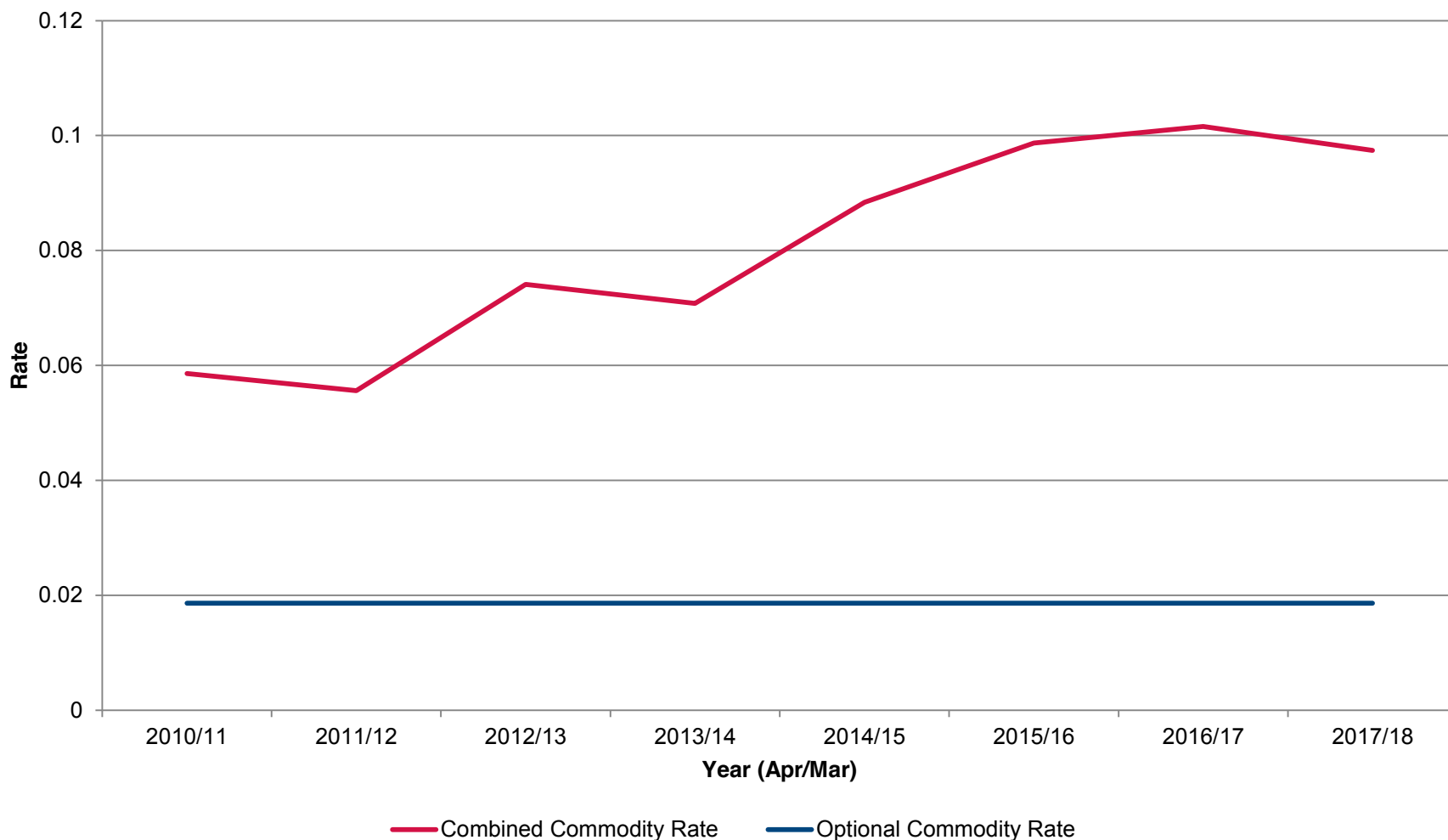
Gas Charging Review:

Avoiding inefficient bypass of the NTS (3)

- Impacts the commodity charging base
 - OCC rate is a replacement to both entry and exit commodity (TO and SO) charges
 - Therefore for every unit put onto OCC means two units are lost from the commodity charging base – disproportionately increasing cross subsidisation
- The cost inputs have remained constant
 - Therefore it is a fixed OCC rate against a variable commodity rate. Other aspects of the charging framework pick up inflationary adjustments.
- The resulting calculation therefore results in a **variable discount** and only self limiting factor is if NTS OCC is less than the combined Commodity Rate



Optional Commodity Charge Rate* nationalgrid vs Combined Commodity Rates



* OCC is based on average MNEPOR and average Distance if requested in 2010



Gas Charging Review: Avoiding Inefficient bypass of the NTS Optioneering (1)

nationalgrid

- To address the variability and how self limiting could be achieved, there are a number of areas to review:
 - Transmission and / or Non Transmission (for discount to or alternative from);
 - Charge as Capacity or Commodity;
 - How demand factors into the calculation (and links to any other charges);
 - Costs and how they are reviewed / updated (including expectations on transparency / ease of understanding)
- These can all be reviewed without fundamentally changing the formula structure if this is the preference but could change the level it is a discount / alternative to

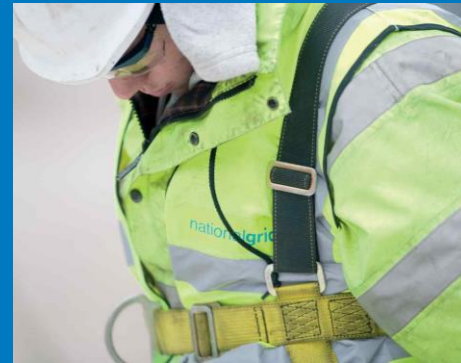


Gas Charging Review: Avoiding Inefficient bypass of the NTS Optioneering (2)

nationalgrid

- Input from industry via NTSCMF, Sub Groups and directly is essential to help shape the development
- Additional meetings will be scheduled as needed
- Views and expectations on costs for example will be key

Gas Charging Review



Removal of sites from the CWD Model (Action 0602)

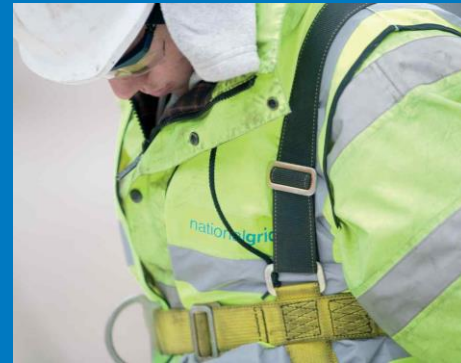
Removal of points from CWD model

- There are a number of steps that need to be completed to remove a point from the CWD model
 - Remove point from all applicable tabs (including hidden tabs)
 - Ensure formulas which pick up applicable tabs have the correct data ranges
- If remove a point that has zero capacity (i.e. Canonbie) for Forecasted Contracted Capacity (FCC)
 - Will not have any impact on the prices produced
- If remove a point that has a low capacity value for FCC (i.e. Dynevor Arms)
 - Will have a minimal impact (0.0001 – 0.0002 p/kWh/d) on the prices produced

Removal of Theddlethorpe Entry point from CWD model

- Theddlethorpe has a Obligated Capacity of 610,700,000 Kwh
 - Removal of Theddlethorpe Entry point from the CWD model
 - Entry prices increase
 - Between 0.0003 to 0.0014
 - Exit Prices reduce
 - Between 0.0000 to 0.0004

Gas Charging Review



Existing Contracts (Action 0707)

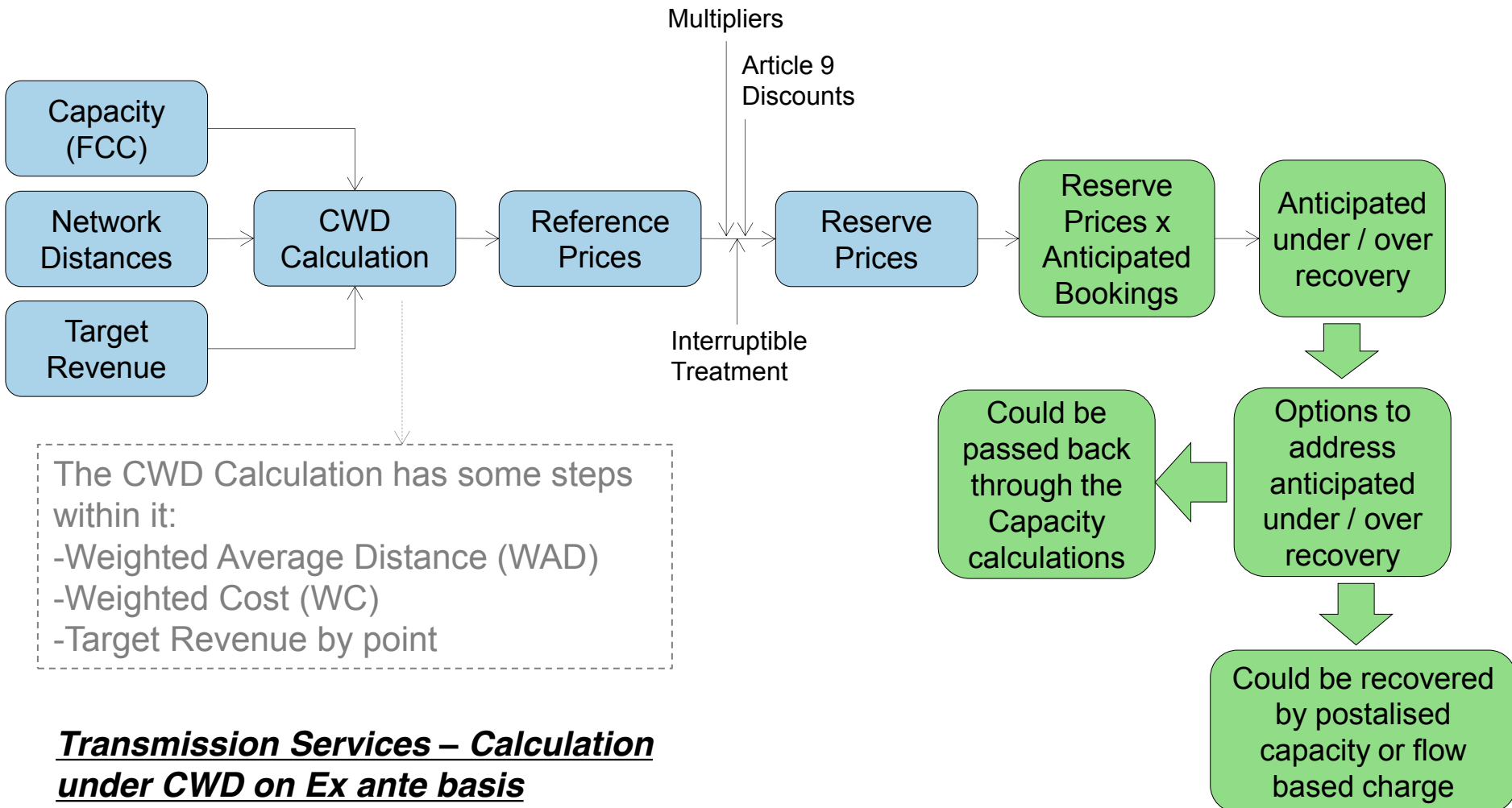


Gas Charging Review: Interactions within CWD

- Action 0707 specifically on Existing Contracts
- In order to address it is useful to see how capacity for Entry capacity may influence Exit Capacity charge calculations and vice versa
- In the following slides we highlight how the models for CWD Transmission Charges have been produced for information and discussion
 - How and where Existing Contracts are considered; and
 - How Entry influences Exit and vice versa



Gas Charging Review: CWD Calculation - simplified





Gas Charging Review:

Some key steps in CWD Calculations

	Entry Capacity Calculation	Exit Capacity Calculation
Weighted Average Distance (WAD)	$\frac{(\text{Sumproduct Exit Point FCC} \times \text{Distance to Entry Point})}{\text{Sum Exit Point FCC}}$	$\frac{(\text{Sumproduct Entry Point FCC}^{\#} \times \text{Distance to Exit Point})}{\text{Sum Entry Point FCC}^{\#}}$
Weighted Cost (WC)	$\frac{\text{Entry Point FCC}^* \times \text{WAD}}{(\text{Sumproduct Entry Point FCC}^* \times \text{WAD})}$	$\frac{\text{Exit Point FCC} \times \text{WAD}}{(\text{Sumproduct Exit Point FCC} \times \text{WAD})}$
Target Revenue by point (TRP)	Entry Target Revenue x WC	Exit Target Revenue x WC
Reference Price (RefP)	Entry TRP / Entry Point FCC*	Exit TRP / Exit Point FCC

Entry Point FCC: How the current CWD Model is designed:

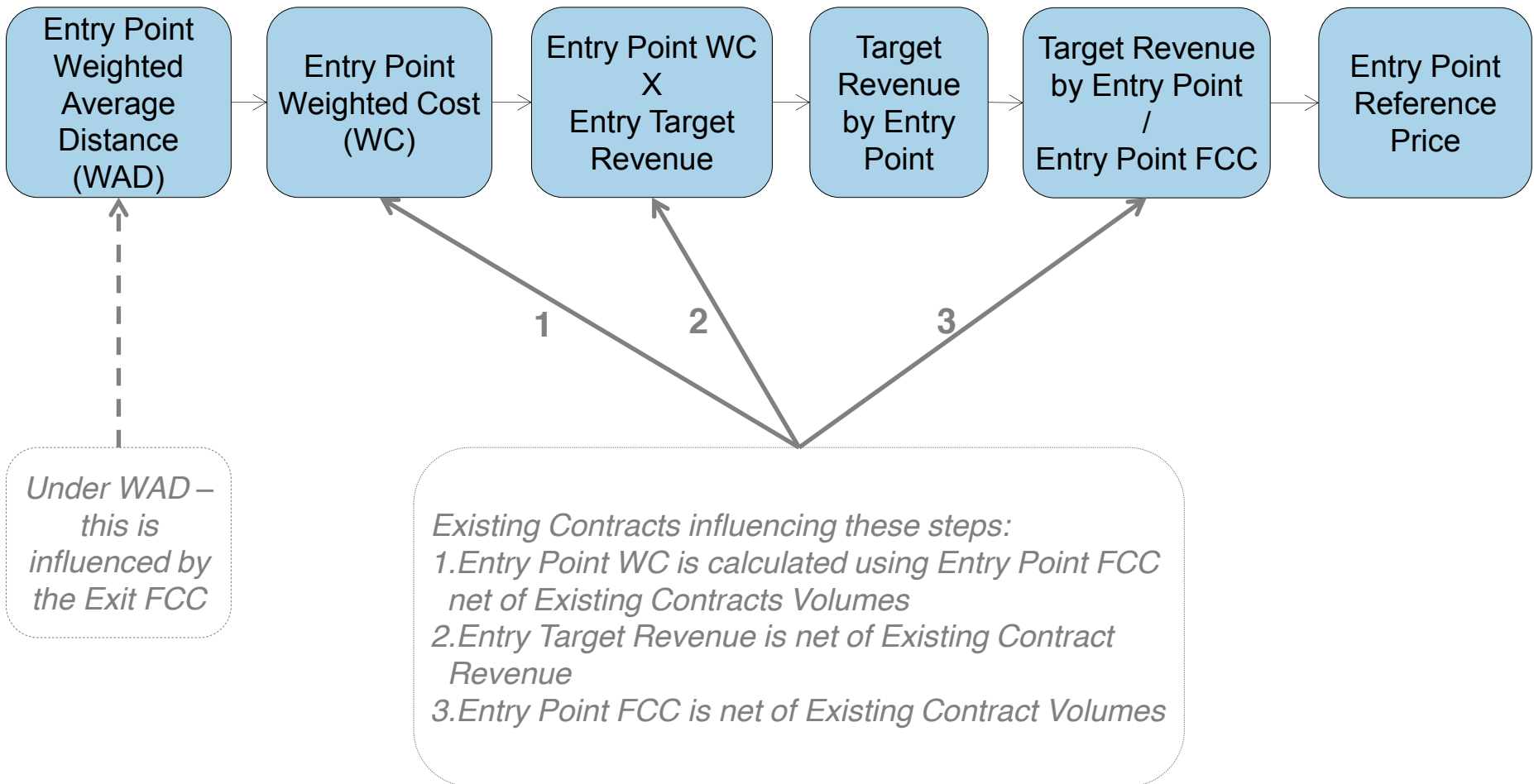
#Entry Point FCC – this is Gross Entry Point FCC (not reduced by Existing Contracts)

**Entry Point FCC – this is the Entry Point FCC net of Existing Contract Capacity*

N.B. Exit Capacity has no Existing Contracts (as per article 35 TAR NC definition)

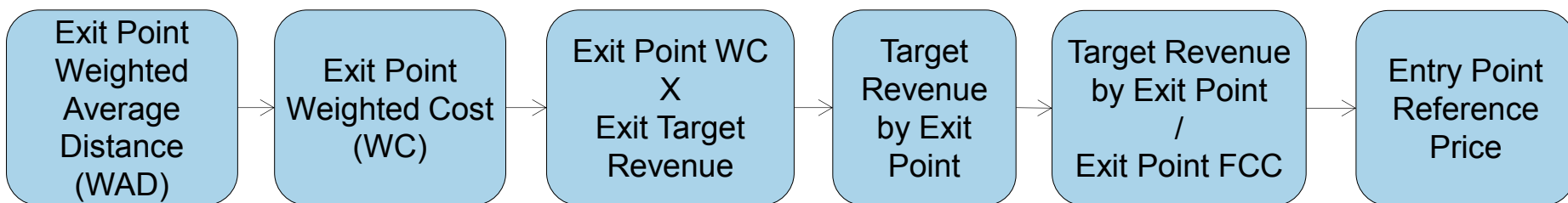


Gas Charging Review: Entry Calculations under CWD





Gas Charging Review: Exit Calculations under CWD



Under WAD – this is influenced by the Entry FCC. The Entry FCC used is the FCC without any Existing Contracts netted off (i.e. the Gross FCC).

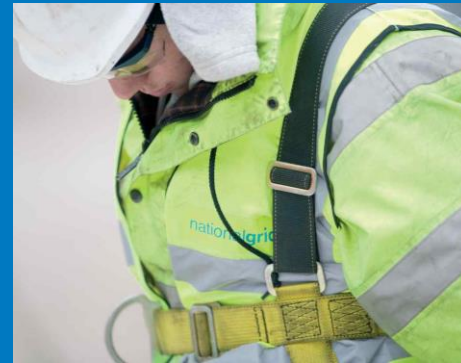
If Existing contracts were netted off at this point then Exit would be impacted by ECs.



Gas Charging Review: CWD Calculation Summary

- Under CWD, Entry does influence Exit and vice versa at the Weighted Average Distance (WAD) stage, linked to the FCC levels
- Existing contracts, if netted off FCC will impact Entry Capacity calculations and may impact Exit
 - Level of impact not driving by overall level of FCC but the profile of capacity across the points, so the relative differences between points.
- Overall the FCC number for each has the most influence on its own charges when spreading the target revenue by point over the FCC per point

Gas Charging Review



Current revenues from commodity and capacity charges from different types of point for 2015/16 as an example (Action 0603)

Current revenues from commodity & capacity charges from different types of point for 2015/16

nationalgrid

- Revenues based on the actual billed data for 2015/16
 - Split down by:
 - Capacity,
 - TO Commodity,
 - SO Commodity
- Example of what can be built into the CWD Model (Capacity and TO Commodity) and Non-Transmission Services Model (SO Commodity)

Current revenues from commodity & capacity charges from different types of point for 2015/16 - Entry

nationalgrid

- Entry Capacity and Commodity Revenue collected in 2015/16

Row Labels	▼	Sum of Capacity	Sum of TO Commodity	Sum of SO Commodity
BEACH TERMINAL	£	58,478,503	£ 229,107,921	£ 89,772,296
INTERCONNECTION POINT	£	5,987,458	£ 11,569,941	£ 3,533,516
LNG IMPORTATION TERMINAL	£	36,997,418	£ 45,324,440	£ 15,267,010
ONSHORE FIELD	£	10,850	£ 1,859,743	£ 638,832
STORAGE SITE	£	12,618,694	£ -	£ -
Grand Total	£	114,092,924	£ 287,862,045	£ 109,211,655

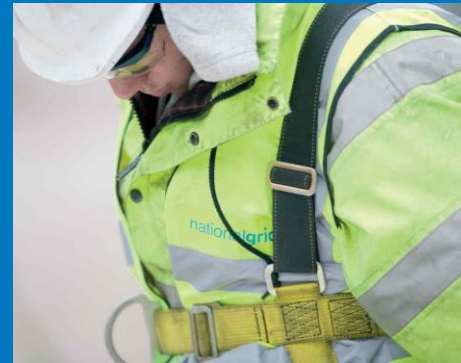
Current revenues from commodity & capacity charges from different types of point for 2015/16 - Exit

nationalgrid

- Exit Capacity and Commodity Revenue collected in 2015/16

Row Labels	Sum of Capacity	Sum of TO Commodity	Sum of SO Commodity
DNO	186,440,410	-	-
Industrial	1,408,112	1,656,328	2,781,477
Interconnector	1,773,041	1,778,969	15,162,680
Power Station	19,489,166	15,785,790	29,479,969
Storage	848,413	-	-
LDZ	-	100,977,332	77,623,898
Grand Total	209,959,142	120,198,419	125,048,024

Gas Charging Review



Plan and change process

Gas Charging Review: Topic Development

- The discussion topic timeline was put together to ensure all topics had time against them
 - Discussing at least twice
 - Additional meetings will be added in as needed
- Some changes are proposed to the timetable
- Additional Sub Groups have been added to the timetable – within the existing dates

Gas Charging Review:

Topic Development – Discussion timeline (1/2)

Date	Meeting	Key topic to discuss [#]
30 May 13:00 – 15:00 (complete)	Sub Group	<ul style="list-style-type: none"> Forecasted Contracted Capacity
5 June (complete)	NTSCMF	<ul style="list-style-type: none"> Forecasted Contracted Capacity*
14 June 10:00 – 12:00 (complete)	Sub Group	<ul style="list-style-type: none"> Revenue Reconciliation / Recovery (may also include some views on Multipliers)
29 June 10:00 – 12:00 (complete)	Sub Group	<ul style="list-style-type: none"> Avoiding inefficient bypass of the NTS
7 July (complete)	NTSCMF	<ul style="list-style-type: none"> CWD Updated Model Revenue Reconciliation / Recovery* Avoiding inefficient bypass of the NTS*
11 July 13:00 – 15:00 (complete)	Sub Group	<ul style="list-style-type: none"> Specific Capacity Discounts
17 July (complete)	NTSCMF	<ul style="list-style-type: none"> Specific Capacity Discounts* Non-Transmission Services Model*
25 July 13:00 – 15:00 (complete)	Sub group	<ul style="list-style-type: none"> Multipliers

[#]There may be some occasions where the topic runs over a few meetings, we will revisit the sub-group / NTSCMF meeting topic if this happens.

* These topics will be relaying outputs from the sub-group in addition to further discussion at NTSCMFs

Gas Charging Review:

Topic Development – Discussion timeline (2/2)

Date	Meeting	Key topic to discuss [#]
2 August	NTSCMF	<ul style="list-style-type: none"> • Multipliers* • Avoiding inefficient bypass of the NTS
8 August 13:00 – 15:00	Sub Group	<ul style="list-style-type: none"> • Interruptible
23 August	NTSCMF	<ul style="list-style-type: none"> • Interruptible* • Specific Capacity Discounts • Non-Tx Services
24 August 10:00 – 12:00	Sub Group	<ul style="list-style-type: none"> • Existing Contracts
31 August 10:00 – 12:00	Sub Group	<ul style="list-style-type: none"> • Revenue Reconciliation/Recovery Mechanisms
5 September	NTSCMF	<ul style="list-style-type: none"> • Existing Contracts*
8 September 10:00 – 12:00	Sub Group	<ul style="list-style-type: none"> • Forecasted Contracted Capacity
12 September 10:00 – 12:00	Sub Group	<ul style="list-style-type: none"> • Avoiding inefficient bypass of the NTS
19 September 13:00 – 15:00	Sub Group	<ul style="list-style-type: none"> • Multipliers / Interruptible
26 September	NTSCMF	<ul style="list-style-type: none"> • Forecasted Contracted Capacity • Avoiding inefficient bypass of the NTS • Multipliers / Interruptible
28 September 10:00 – 12:00	Sub Group	<ul style="list-style-type: none"> • To be confirmed



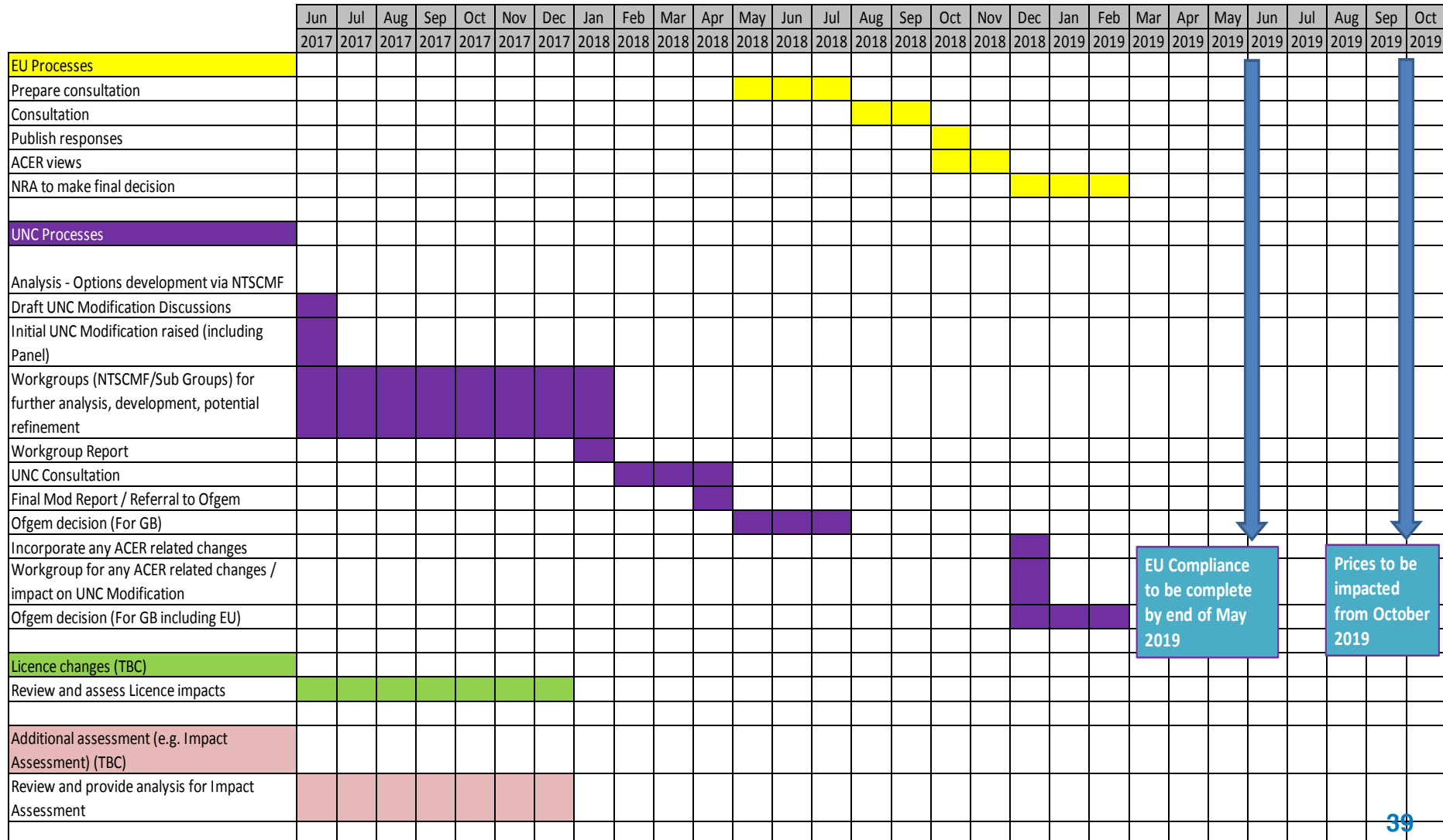
Gas Charging Review:

Topic Development – Additional Meetings

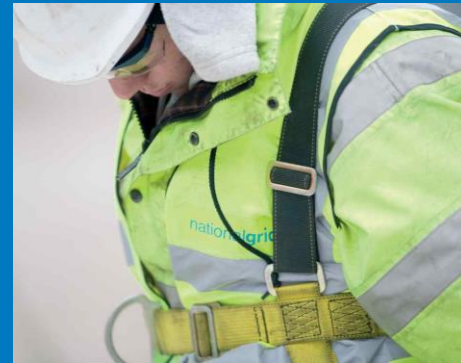
- As required there may be additional Sub Group meetings scheduled. All outputs will be shared with NTSCMF
- These will be used to help keep to the timeline and to further the discussions on the necessary topics
- As we move into the second round of discussions on topics starting in September – sub group/NTSCMF discussions, positions, views, industry opinions to be taken into consideration for National Grid's next update to Mod 0621

Plan and Change process

Timeline (simplified) for discussion



Gas Charging Review



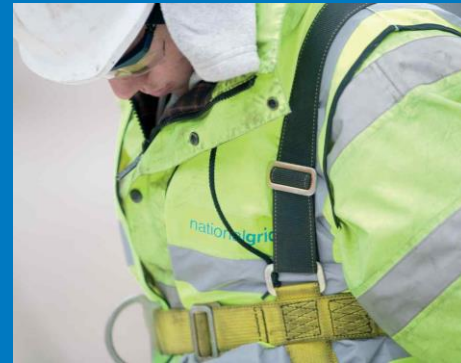
UNC Modification



Gas Charging Review: UNC 0621 Modification – relevant updates

- UNC 0621 Modification was sent to Panel on 2 June
- Voted to go to workgroup for development and back to Panel for January 2018
 - Twice monthly NTSCMFs, twice monthly Sub Groups
- As progress is made through the workgroups and sub groups UNC 0621 will be updated accordingly at the appropriate time
- IUK approved as a “materially affected party” for Mod 0621 so can raise an alternate if wishes to.

Gas Charging Review



Next Steps

Next Steps

- Sub Groups as per timetable
- Next NTSCMF on 23 August

Contact us:

box.transmissioncapacityandcharging@nationalgrid.com



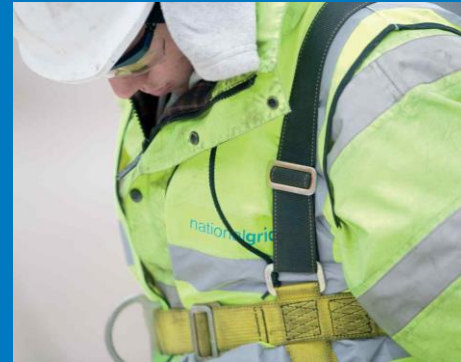
Colin Williams
Charging Development Manager
Tel: +44 (0)1926 65 5916
Mob: +44 (0)7785 451776
Email: colin.williams@nationalgrid.com

Jenny Phillips
Gas Capacity and Charging
Development Manager
Tel: +44 (0)1926 65 3977
Mob: +44 (0) 7776 318646
Email: jenny.phillips@nationalgrid.com



Laura Johnson
Senior Commercial Analyst
Tel: +44 (0)1926 65 6160
Email: laura.johnson@nationalgrid.com

Colin Hamilton
EU Code Development Manager
Tel: +44 (0)1926 65 3423
Mob: +44 (0) 7971 760360
Email: colin.j.hamilton@nationalgrid.com



Adam Bates
Commercial Analyst
Tel: +44 (0)1926 65 4338
Email: adam.bates@nationalgrid.com