Gas Transmission Charging Learning Workshop







22 March 2016



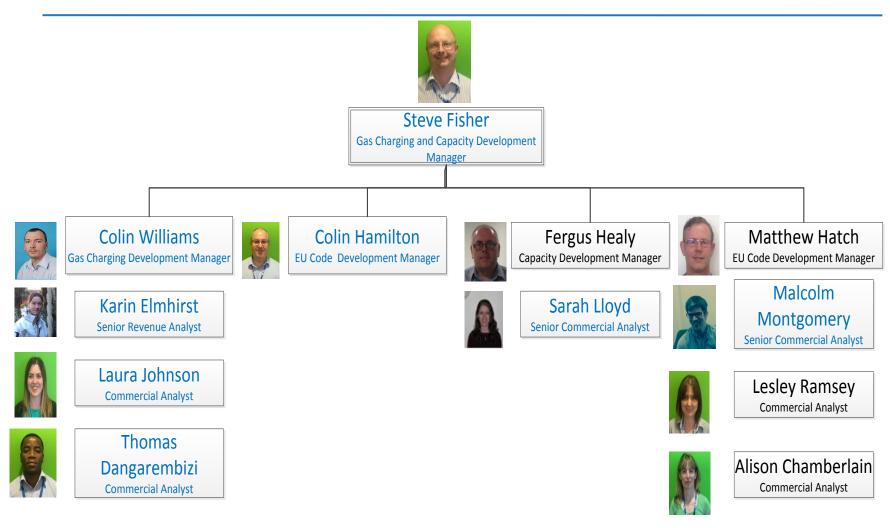
Agenda for the day

Time	Detail
10:00	Introduction and Housekeeping
10:15	Gas Transmission Charging Regime and GB Gas Transmission Charging Review (including break)
12:15	Lunch
13:00	EU Codes (Gas)
14:00	Break
14:15	Engagement activity
15:15	Q&A
15:30	Close

Introduction

Н	Housekeeping	
•	Safety	
•	Breaks	
•	Toilets	
•	Car Parking	
•	Shuttle Bus	

Introductions - Who is Who? - Gas nationalgrid Charging and Capacity Development Team



Current GB Gas Transmission Charging Regime







Colin Williams / Laura Johnson

Current GB Gas Transmission Framework – What we will cover

Subject	Content
Introduction	 Governance - Introducing RIIO, Licence and UNC relative to charging Overview of the charges that recover the revenues
How the current regime works	 Underlying Charging principles Charging Structure Calculation of charges Charging interactions
History and interaction of charges	How balance of charges has changed over time
Summary	Application of charges

Governance

National Grid's Gas Transporter Licence (the "Licence")

- Determines Allowed Revenue
- Subject to RIIO-T1 Price Control
- Sets certain mandatory requirements
 - Timings
 - Principles

Uniform Network Code (the "UNC")

- Charging Methodologies (TPD Section Y)
- Other relevant sections
 - Capacity arrangements (TPD Section B)
 - EID Section B

Published Supporting Material

- Transportation Statement for Transmission charges
- Explanation of changes to charges
- Allowed Revenue forecast

Overview – How each revenue stream is recovered

Transmission Owner (TO)

System
Operator (SO)

TO Entry Charges TO Exit Charges

Other Charges

SO Commodity Charges Other Charges

TO Entry Capacity Charges TO Entry Comm Charges* TO Exit Capacity Charges TO Exit Comm Charges* DN
Pensions
/
Metering

SO Entry Comm Charges* SO Exit Comm Charges* St. Fergus
Compressi
on /
Shorthaul /
Legacy
Capacity

* Storage Exemption

Current GB Gas Transmission Charging Regime

- Capacity charges are determined using two steps
 - Underlying pricing model
 - Secondary adjustments
 - In combination these give the reserve / payable prices for Capacity charges
- Commodity charges, is a single unit price for all, to either;
 - recover revenues that capacity will not recover (TO) or;
 - act as a primary recovery mechanism (SO)

TO Capacity Charges

Transmission Owner (TO)

System Operator (SO)

TO Entry Charges TO Exit Charges

Other Charges

SO Commodity Charges

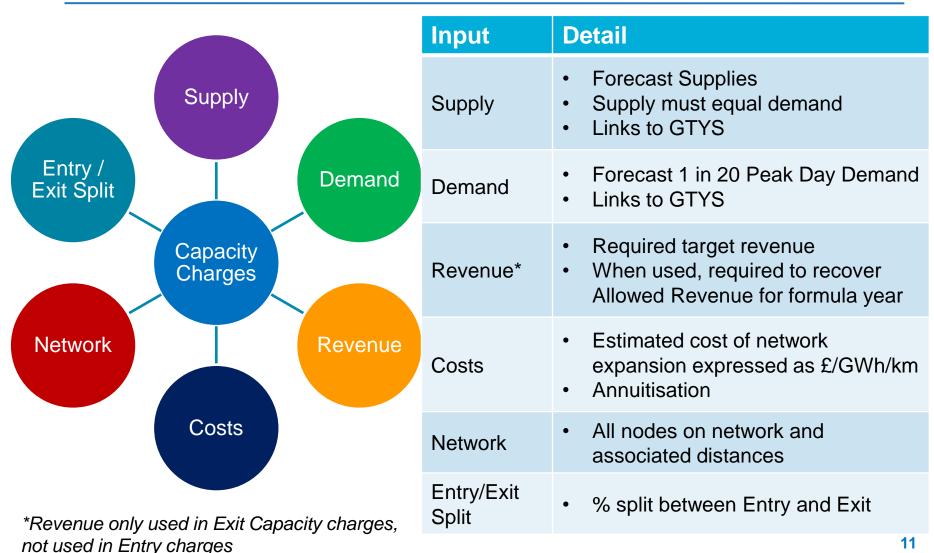
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Compressi
on /
Shorthaul /
Legacy
Capacity



Key inputs to Capacity Charging



¹¹

NTS Transportation Model

- The NTS Transportation Model, is a Microsoft Excel spreadsheet run using Microsoft Excel Solver and Macros.
- The NTS Transport Model that calculates the long run marginal costs (LRMCs) of transporting gas from each Entry Point (for the purposes of setting NTS Entry Capacity Prices) to a "reference node" and from the "reference node" to each relevant offtake point.
- Long Run Marginal Cost
 - Long Run Investment costs
 - Marginal Cost adding an extra unit of supply or demand at a relevant node on the system

Core steps to determining prices Comparing Entry and Exit Capacity

Entry Capacity

Exit Capacity

Marginal Distance

 "Solved" Network using supply a demand provides marginal distances

Marginal Distance

 "Solved" Network using supply and demand provides marginal distances

50/50

 Balance Entry and Exit Average Distances Include cost components

 Distances converted to prices using annuitisation of costs

Include Cost components

 Distances converted to prices using annuitisation of costs

50/50

Revenue based adjustment

· All prices equally uplifted

Price Collar

 Minimum price if calculated reserve is less than 0.0001 p/kW

Price Collar

 Minimum price if calculated adjusted price is less than 0.0001 p/kWh

Payable Price

· Set by auction.

Payable Price

 Calculated and changed each Gas Year (1 Oct)

TO and SO Commodity Charges

Transmission Owner (TO)

System
Operator (SO)

TO Entry Charges TO Exit Charges

Other Charges SO Commodity Charges

Other Charges

TO Entry Capacit y Charges TO Entry Comm Charges

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SO Entry Comm Charges

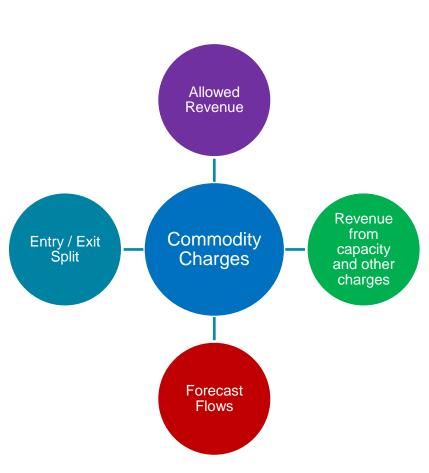
SO Exit Comm Charges St.
Fergus
Compres
sion /
Shorthaul
/ Legacy
Capacity



Commodity Charges

Type of Commodity Charge	Summary	
TO Entry Commodity Charge	 An NTS TO Commodity charge is levied on Entry flows where entry auction revenue is forecast to be under-recovered. 	
TO Exit Commodity Charge	 An NTS TO Commodity charge is levied on Exit flows where revenue from Exit capacity bookings is forecast to be under recovered. 	
SO Entry and Exit Commodity charge	 The NTS SO allowed revenue is collected largely by means of a Commodity charge levied on Entry and Exit flows (same rate is applicable for both SO Entry and SO Exit Commodity charge). 	

Key inputs to Commodity Charging



Input	Detail
Allowed Revenue	 Allowed Revenue for Formula year as calculated through the Licence
Revenue from Capacity and other charges	 Forecast of Capacity revenue for the period Revenue from NTS Optional Commodity Charge, St. Fergus Compression, DN Pensions. Revenue from Commodity charges (applicable for mid formula year changes – i.e. from 1 October)
Forecast Flows	 Forecast of Entry and Exit flows over which the commodity charge is to applied
Entry/Exit Split	 % split between Entry and Exit



TO and SO Other Charges

Transmission Owner (TO)

System
Operator (SO)

TO Entry Charges

TO Exit Charges

Other Charges

SO Commodity Charges Other Charges

TO Entry Capacity Charges TO Entry Commodity Charges* TO Exit Capacity Charges

TO Exit Commodity Charges*

DN Pensions / Metering

SO Entry Commodity Charges* SO Exit Commodity Charges* St. Fergus Compression / Shorthaul / Legacy Capacity

* Storage Exemption



Other TO Charges

Charge	Detail
DN Pensions charge	 Charge levied directly to DNs that were sold for which National Grid retains certain pension responsibilities. Value incorporated into NTS TO Allowed Revenue. Amount is collected directly from respective DNs.
NTS Meter Maintenance charges	 Unit charges for the NTS meter maintenance under National Grid NTS's ownership.

The overall TO Allowed Revenue less these two items provides the target revenue to be collected through the remaining TO charges.



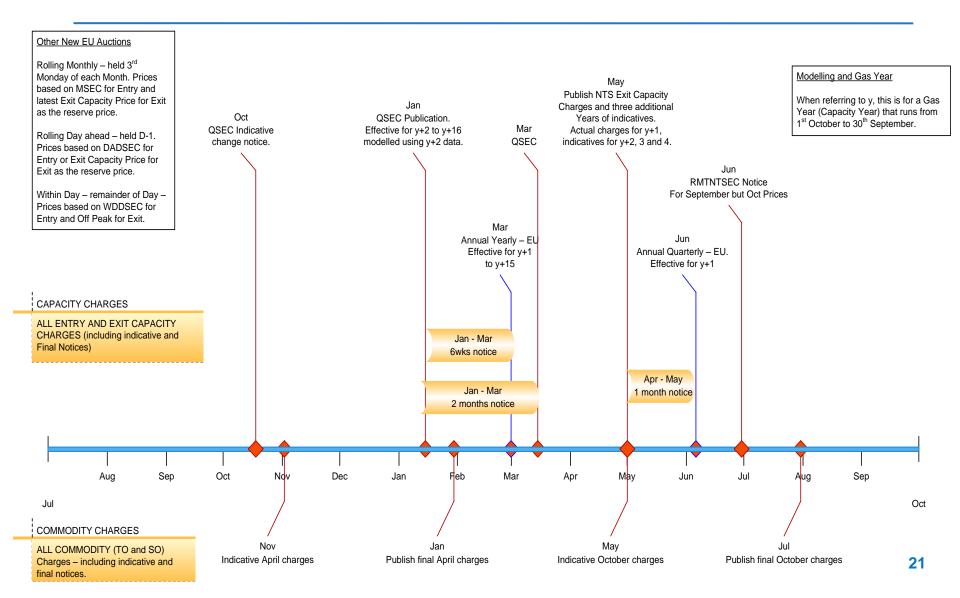
Other SO Charges

Charge	Detail	
NTS Optional Commodity charge ("Shorthaul")	Users can elect to pay the NTS Optional Commodity Rate as an alternative to both the NTS Entry and Exit (SO & TO) Commodity Charges.	
St. Fergus Compression charge	Applicable where gas is delivered at lower than normally expected pressures. Charge is cost of additional fuel per unit throughput (applies at Total entry point only).	
Legacy Capacity Revenue	Revenue associated to incremental capacity triggered before April 2013 treated as SO for a period then transfers to TO. Timescales given in the Licence for when this transfer occurs.	

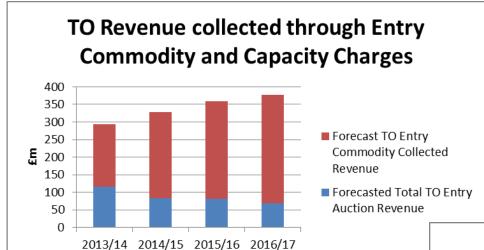
Capacity Allocation Mechanism (CAM)

- In November 2015 the Capacity Allocation Mechanism (CAM) was implemented
 - Charges calculated in same way as in current regime
 - Different bidding/auctions for Entry and Exit Capacity for Interconnection Points (IPs) and Non Interconnection Points (Non IPs)

Licence / UNC Timescales

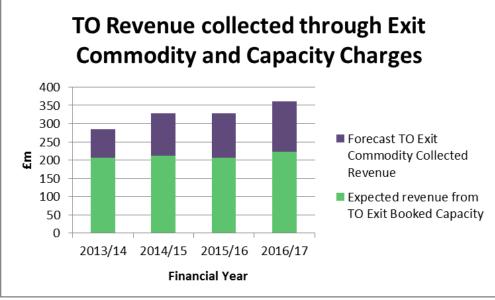


TO Revenue collected through different charges

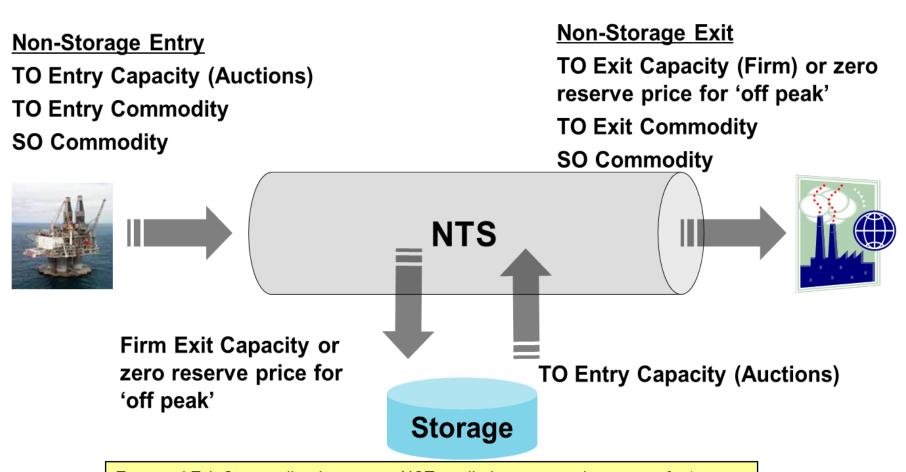


Produced from charge setting information used to produce October charges in the respective years (except for 16/17 for which April is used).

Financial Year



NTS Entry/Exit Charge Application



Entry and Exit Commodity charges are NOT applied to storage sites except for 'own use gas'. Commoditised costs are only recovered from 'new' gas entering the system and from gas that permanently leaves the system to avoid double counting.

Break







GB Gas Charging Review







Colin Williams



Overview

Area	Summary
Obligations	Licence obligationsRelevant Objectivess
Overview	GTCRPost GTCR
Developing change	Plan for analysis / involvement
Discussion areas	Potential areas for discussion

Charging Obligations / Relevant Objectives

Licence Obligations	Detail
 Licence Standard Special Conditions A4 - Charging General A5 - Charging Methodology 	 Keep charging methodology under review Use reasonable endeavours regarding methodology and charge changes: Not to make changes more frequently than twice a year (on 1 April and 1 October) In relation to exit capacity once a year on 1 October

Relevant Objectives

- Cost reflectivity
- Promote efficiency
- Avoid undue preference in the supply of transportation services
- Best promotes competition between gas suppliers and gas shippers

- Take account of developments in the transportation business
- Compliance with Regulation and decisions from the EC and ACER
- Follow any alternative arrangement determined by the Secretary of State

GTCR and GB Charging Review

Gas Transmission Charging Review (GTCR)

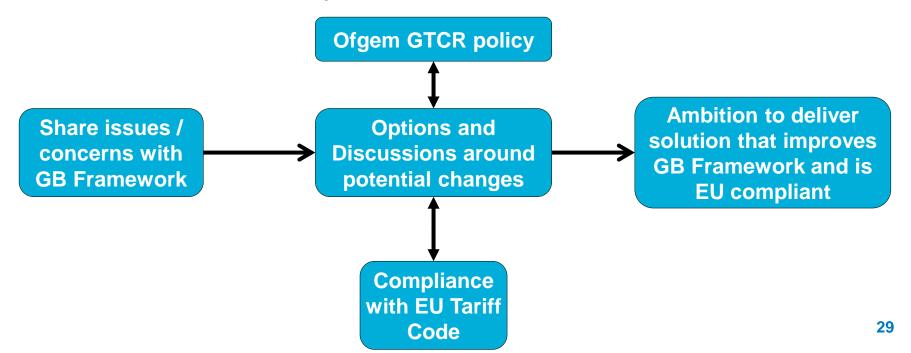
- Ofgem started in June 2013
- Prompted by changes to the GB gas market and emerging EU legislation
- To consider what changes to the charging regime, if any, might further the interests of current and future customers
- Scope focused on TO Entry charging
- Concluded in November 2015 with policy to:
 - Review Entry capacity discounts
 - Consider adjusted entry prices (but not yet)

GB Gas Charging Review (post GTCR)

- In November 2015, through NTS CMF, a number of issues were raised that GTCR, on its own, would not address
- Discussions proposed a broader review than scope of GTCR
- Give opportunities to:
 - Review the overall GB charging framework
 - Develop improvements through collaborative working with stakeholders
 - Bring EU compliance as an input

Transmission Charging Review – Developing change

- Opportunity to improve GB Framework as a key driver
 - Consider EU compliance in any development and how options fit with GTCR policy
 - Chance to drive improvements with industry not just deliver EU Compliance





Terms of Reference, Scope and Program

Item	Detail
Terms of Reference	 Discussed at NTS CMF in February 2016 Provided background, high level objectives and proposed meeting structure Objectives include listing issues with GB charging framework, developing improvements, reviewing relevant objectives and assessing EU compliance
Scope	Should be subject to change and continually reviewed.
Program	 Monthly NTS CMF meetings scheduled from April 2016 to February 2017 Hosted by Joint Office of Gas Transporters Website: http://www.gasgovernance.co.uk/ntscmf Ad hoc workshops may be held These provide an opportunity to participate or to follow the developments

GB Gas Charging Review – Potential areas for discussion

Discussion Area*	Comments on discussion / development
Volatility / Predictability / Stability	 Prices can and do change sometimes with large variances
Underlying capacity charging methodology	Should review if alternate methodology may be more appropriate than current approach
Understanding all the elements of framework	Currently complex interactions between chargesSensitivity to changes from inputs on charges
Alternative charging arrangements / products	 Benefit of alternative charges and arrangements as part of the GB charging framework
Relevant Objectives	 Review relevant objectives and consider if changes improve / benefit charging regime
Cost reflectivity	Consider definition and benefits offered
Complexity	Current interactivity and calculations are complex
Modelling assumptions	 Review and consider assumptions and inputs

³¹

Just before lunch - Morning Feedback

We would be grateful if you could spend 2 minutes providing some feedback on this morning's content

Lunch







Please be back by 13:00

EU Tariff and Incremental Codes Briefing







Colin Hamilton

Europe – How does it work? Institutions of the European Union







Council (of Ministers)

- Represents the EU

 Member States
- Summit meeting of Heads of State is called a European Council

Court of

Justice

(law)

 The EU's main decision making body Commission

- More than the Civil Service of the EU
- Drafts legislation
- Can withdraw legislation
- Independent of National Governments

Parliament

- Represents and elected by EU citizens
- Directly elected
- Examines draft legislation

Court of Auditors (Budget)

Every action taken by the EU is founded on <u>treaties</u> that have been approved voluntarily and democratically by all EU member countries.

Legislation

Directive

- Binding on all member states
- Implementation open to interpretation, transposed by Member State

Regulation

- Directly applicable and binding in all member states
- Breach infraction proceedings ECJ
- Implementation mechanisms at state level

Decision

Binding: addressed to specific members states, enterprises, individuals

Third Energy Package

- Aim: open, integrated and competitive Energy market
- Two Directives, three Regulations on gas and electricity
 - Regulations became law on 3rd March 2011
 - Member States transposed Directives into national law

Third Legislative Package – Key Provisions

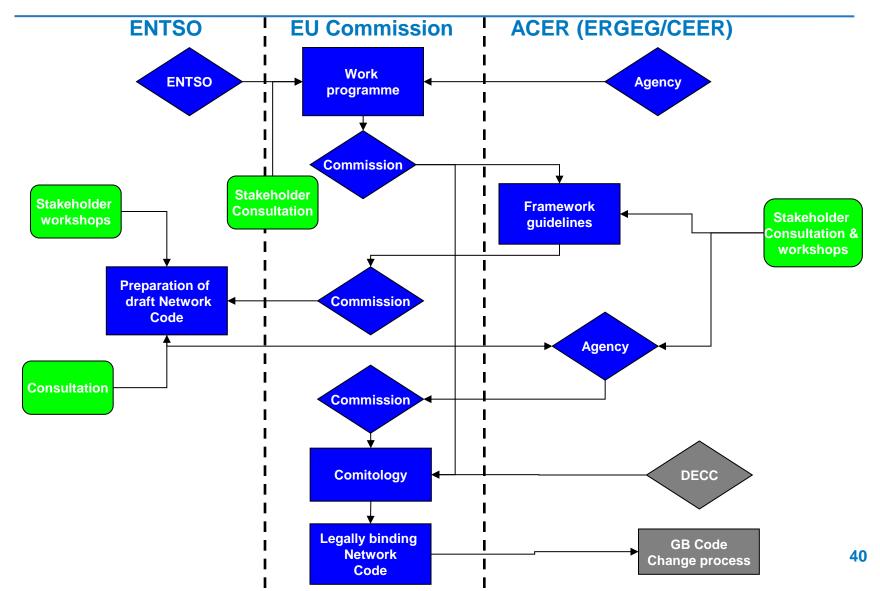
- Transmission Network Unbundling
 - Vertical integration no longer allowed
- ACER: The creation of Agency for the Cooperation of European Regulators
- The formation of ENTSOG and ENTSO-E
- Publication requirements:
 - Ten-Year Network Development Plans (TYNDP)
 - Summer/Winter Supply Outlooks
 - Available on both ENTSOG & ENTSO-E websites
- Development of legally binding Network Codes
 - Commission, ENTSOs and ACER all involved in code development

Third Legislative Package – Key Code Areas for Gas

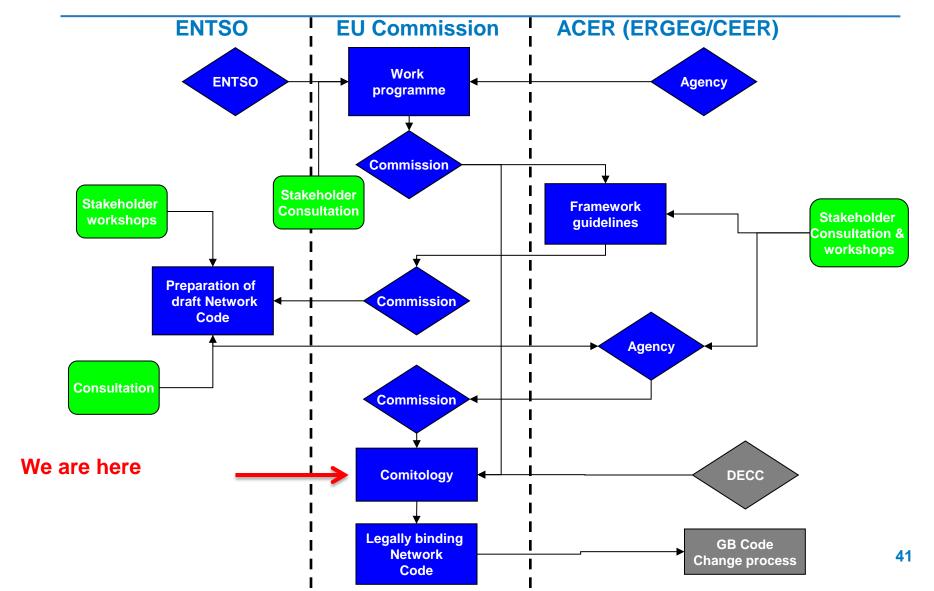
- Obligation on ENTSO and ACER to develop EU wide potentially binding codes in 12 different areas
 - network security and reliability rules;
 - network connection rules;
 - third party access rules;
 - data exchange and settlement rules;
 - interoperability rules;
 - operational procedures in an emergency;
 - energy efficiency

- capacity allocation and congestion management rules;
- rules for trading related to provision of network access services and system balancing;
- transparency rules;
- balancing rules including noms procedure, imbalance charges and op. balancing
- rules regarding harmonised tariff structures;

European Network Code Development Process



European Network Code Development Process



Code Status Update

Code	Current Status	Implementation date
Congestion Management (CMP)	Implemented	1 st October 2013
Capacity Allocation Mechanism (CAM)	Approved for implementation at EU IPs	1 st November 2015
Gas Balancing (BAL)	Approved for implementation 26 th March 2014	1 st October 2015
Interoperability & Data Exchange (INT)	Code entered EU Law on 30 th April now Commission Regulation (EU) N0 703/2015	Some deliverable planned for 1 st October 2015, others by 1 st May 2016
Tariffs (TAR)	Under development	Applicable from January 2018?
Incremental Capacity	Under development	Applicable from January 2017?

EU Tariff Code (EU TAR NC)

Rules regarding harmonised transmission tariff structures for gas

Overall aim of EU TAR NC on Tariffs is to lead to gas transmission tariff structures in Europe without discrimination between any type of Network Users and without any detrimental effect on cross-border trade

EU Tariff Code

- Applies to transmission services offered on <u>all</u> entry and exit points
 - Some provisions only for interconnection points
- Cost allocation and determination of reference price
 - Cost allocation test to justify choice of methodology
- Reserve price
 - Use of multipliers and seasonal factors (IPs only)
- Storage section
- Consultation requirements
- Publication requirements
- Incremental (IPs only)
- Revenue Reconciliation

EU Tariff Code

- Code now entering comitology process
- Member States will meet in April for precomitology meeting
- Formal comitology meeting in June
- Once text passed by Member States then governance process between EU Council, EU Parliament and EC
 - May enter into force by January 2017

Draft EU Tariff Code

- Default applicable date is 1 January 2018
- Publication requirements shall apply as of entry into force of Regulation
- Consultation process on Reference Methodology and charging parameters to start between entry into force and end of regulatory period – date depends on number of rules
 - Likely GB deadline is between June October 2019 to start process

EU Tariff Code: Definitions

- Code covers rules for charging "transmission services" and "non-transmission services"
 - Transmission services are for those services caused by the cost drivers of capacity and distance and are related to the regulated asset base.
 - If above criteria not met then may be treated as non-transmission service subject to consultation and National Regulatory Authority (NRA) approval

EU Tariff Code: Reference Price Methodology (RPM)

- Total freedom as to choice of Reference Price Methodology (RPM) but must be compared to Capacity Weighted Distance (CWD) methodology as counterfactual
- Now have two Cost Allocation Tests (one for capacity and one for commodity)
- Proposed RPM to be subject to an industry consultation

Capacity Charging – Alternative Reference price methodology

- Under the charging review one area for discussion is the underlying charging methodology for capacity
 - GB uses LRMC (investment focused)
 - Under EU TAR NC there is a requirement, irrespective of method chosen, to compare it to a pure Capacity Weighted Distance (CWD)

- The CWD approach is quite different to the LRMC approach
- Here we present some initial comparisons

LRMC and CWD comparison: Initial thoughts

LRMC approach

- Bottom up approach to generate prices
- Builds up prices with components
- Capacity expectations different to Entry and Exit
 - Entry auctions
 - Exit Baseline bookings

CWD approach

- Top down approach to generate prices
- Starts with Target
 Revenue then distributes
 this across capacity
 booking expectations
- Capacity expectations require forecast to be as close as possible to actuals

High Level comparison – LRMC vs CWD

Comparison of Methodologies	Long Run Marginal Cost (as used in GB)	Capacity Weighted Distance (EU TAR NC)
Network and Distances	 Uses an overall "Solved network" based on supplies and demand to provide all distances Unconstrained system 	Considers all points to all pointsUnconstrained or constrained
Cost Components	Cost of ExpansionAnnuitisation	Not used
Allowed Revenues	Used for Exit only	Used for Entry and Exit
Supplies and Demand	1 in 20 peak for DemandForecast SuppliesLinked to a flow scenario	Flow scenario may be required if using a constrained network
Capacity	 Uses Licence requirements (obligated levels, baselines) 	Expected to use forecasted contracted capacity
Adjustments	 Price collar as no –ve prices. No zero prices in Model (zero payable does apply for certain auctions where 100% discount applied) 	 No negative prices possible under the pure calculation Zero prices possible but subject to discussion if appropriate.

CWD Initial thoughts: Summary

- Using CWD requires the bookings for capacity to be as close as possible to the actuals
 - Minimises risk of incorrect prices
- Could improve predictability if forecasts are close to actual capacity bookings
- Link to revenue could drive volatility
 - Due to Allowed Revenue changes and / or through the mechanism to adjust for over / under recovery
- Reduced link to Supply / Demand could improve predictability or reduce a current area of volatility
- National Grid will progress analysis through NTS CMF

EU Tariff Code: ACER review & guidance

- Proposed charging regime to be submitted to ACER
 - Up to 4 months to give non-binding opinion
 - ACER can recommend changes
 - NRA to take "utmost account" of recommendations
- ACER to perform study how price controls and allowed revenues set in member states.
 - ACER to then produce guidance document on regulatory accounting principles

EU Tariff Code Update: Storage

- Default discount of 50% of capacity reference price
- Adjustment to 50% discount may be applied subject to considering
 - Net benefits or costs storage provides transmission system
 - Interrelation of storage and investments in transmission
 - Need to minimise effects on cross-border trade

EU Tariff Code: Fixed versus floating prices

- For existing capacity sold at IPs:
 - the floating payable price approach shall be offered;
 - the fixed payable price approach shall not be allowed.
- For incremental capacity and existing capacity offered in the same auction:
 - the floating payable price approach may be offered;
 - the fixed payable price approach may be offered where either of the following conditions is met:
 - an alternative allocation mechanism set out in amended CAM code;
 - a project is included as Project of Common Interest (PCI)

EU Tariff Code: Multipliers at IPs

- Multipliers for quarterly and monthly capacity to be between 1 and 1.5
- Multipliers daily and within day capacity products to be between 1 and 3.
 - Defaults to 1 to 1.5 after 4 years
- Multipliers to be reviewed after 2 years and code may be amended to new ranges if need for change identified

EU Tariff Code: Interruptible Capacity at IPs

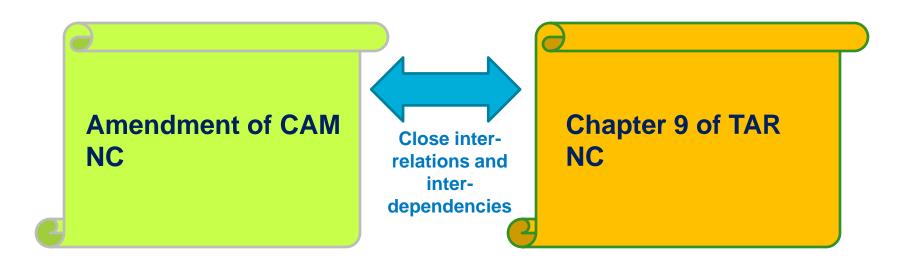
- By default interruptible capacity price to be based on probability of interruption
 - Discount shall be ex-ante
 - Shall also apply to back-haul at unidirectional IPs
- NRA may allow ex-post discounts where
 - No conditional firm is offered
 - Likelihood of interruption is very low
 - Oversubscription and buyback mechanism is implemented
 - Compensation paid equal to 3 times firm price

EU Tariff Code: Existing contracts

- Code protects fixed price element of existing long-term capacity contracts where,
 - Booked before 29 November 2013
 - Incremental booked after 29 November 2013 and before the code enters into force.

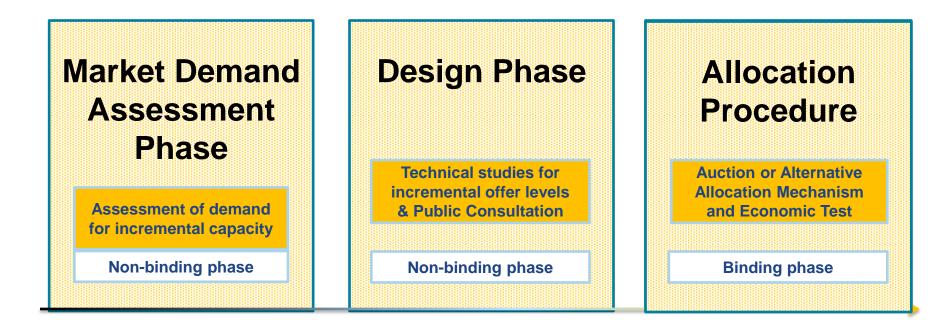
Incremental Capacity: Background

- Aim: To provide harmonised rules for triggering Incremental within the CAM framework.
- CAM amendment text adopted by ACER board of Regulators on 13th October. Formal comitology aligned with TAR NC.





Process for Offering Incremental Capacity



Ongoing co-ordination among TSOs and NRAs involved along the process

Break







GB Charging Review – your input







- □ An opportunity for discussions on areas of development for the GB charging review
- ☐ To contribute to the development of the GB review

Interactive Exercise – nationalgrid GB Gas Transmission Charging Review

Considering the current framework, the GB charging review, EU developments and your thoughts on Gas Transmission charges we'd like your help to contribute to the development of the GB charging review.

This could include thoughts on Transmission Charges or charges downstream from Transmission that could be impacted.

If there are any areas that you prefer to comment confidentially please submit in the post box marked "Feedback".

Time	Detail
30 mins	 On your tables please consider: What are your top three concerns of a GB review. What are your top three opportunities / improvements a GB review could address
3 mins per table	Each table to feed back, please nominate a speaker.

Interactive Exercise – GB Gas Charging Review

What will we do with the output of this session

 We will collate all the comments and areas discussed and feed them into the ongoing discussions at the NTS Charging Methodology Forum regarding the development of the GB charging review.

 This input is valuable to ensure the engagement is broad and we capture as much as possible.

 We will add areas for development to the list of topics to discuss as part of the review's progression.

Q&A







Just before you go – Afternoon Feedback

We would be grateful if you could spend 2 minutes providing some feedback on this afternoon's content

Thank you and safe journey home





