

# Gas Transmission Charging Review Impact of Entry options project

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# Overview of terms of reference

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CEPA and TPA have been hired to:

**Help Ofgem be in a position to provide a steer to the industry in Q4 2014 on the most appropriate set of charging arrangements for the future**

**Ofgem's three core policy options are:**

- **Change the structure of discounts applied to short-term capacity products**
- **Adjust the payable price on long-term capacity to take account of the inflation effect**
- **Move to floating tariffs across all NTS points**

**The options are being considered in the wider context of ENTSO-G Network Code on tariffs and ACER's guidelines on harmonised tariff structures**

# Overview of terms of reference

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For each option, the following impacts must be considered quantitatively:

## First-order impacts:

### **Aggregate impacts:**

- Impact on the proportion of NGG's Transmission Owner (TO) allowed revenue recovered through capacity charges
- Impact on the proportion of NGG's TO allowed revenue recovered through commodity charges
- Impact on the level of cross-subsidy in allowed revenue recovery between CAM and non-CAM points
- Impact on the average level of tariffs for entry capacity at CAM and Non-CAM points

### **Distributional impacts:**

- Impact on different categories of NTS users
- Locational impacts – impacts at individual ASEPs/categories of ASEPs

## Second-order impacts:

- Impact on cross-border trade

# Quantitative analysis is expected to consider:

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Static and dynamic impacts of the policy changes

**We propose to consider the following:**

**Static – assume that flows, bookings etc are unchanged by the change in entry charges**

**Dynamic – assume that flows and/or structure of bookings will respond to changes in entry charges and consequently we need to understand the price responsiveness of demand**

# Price responsiveness of demand for entry capacity

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Issues to consider include:

## Key drivers

We expect these to include:

- Wholesale gas market structure
- Degree of scarcity of NTS capacity at each entry point
- Importation flows (cross-border, LNG etc)

Really need to understand:

- Degree of discretionary flows for each source of gas
- Where gas is being delivered – NBP or a specific entry point
- Implications of changes in flows for the marginal source of gas and marginal entry point and so changes in NBP

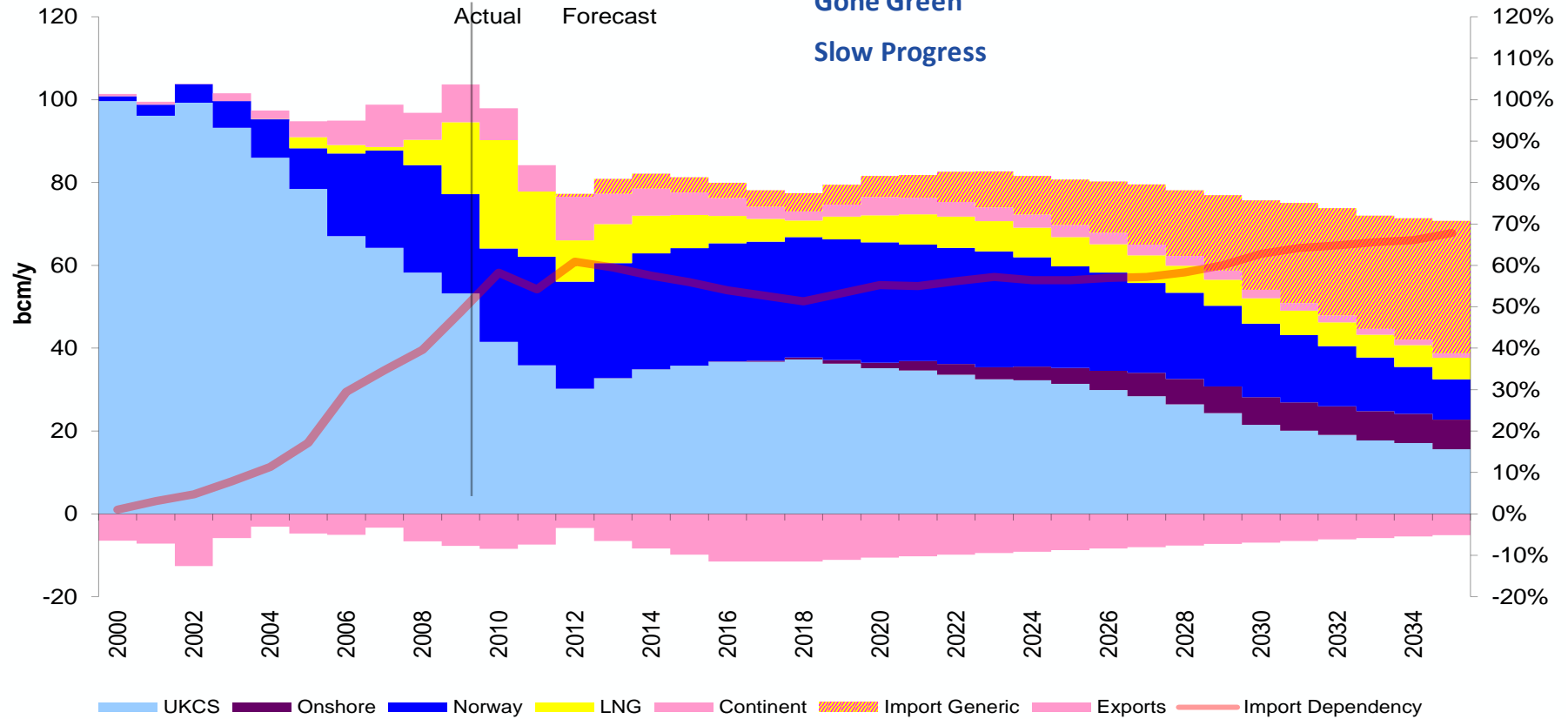
# Market structure (1)

## Current and future market structure matter

Key question – which scenario should form the base?

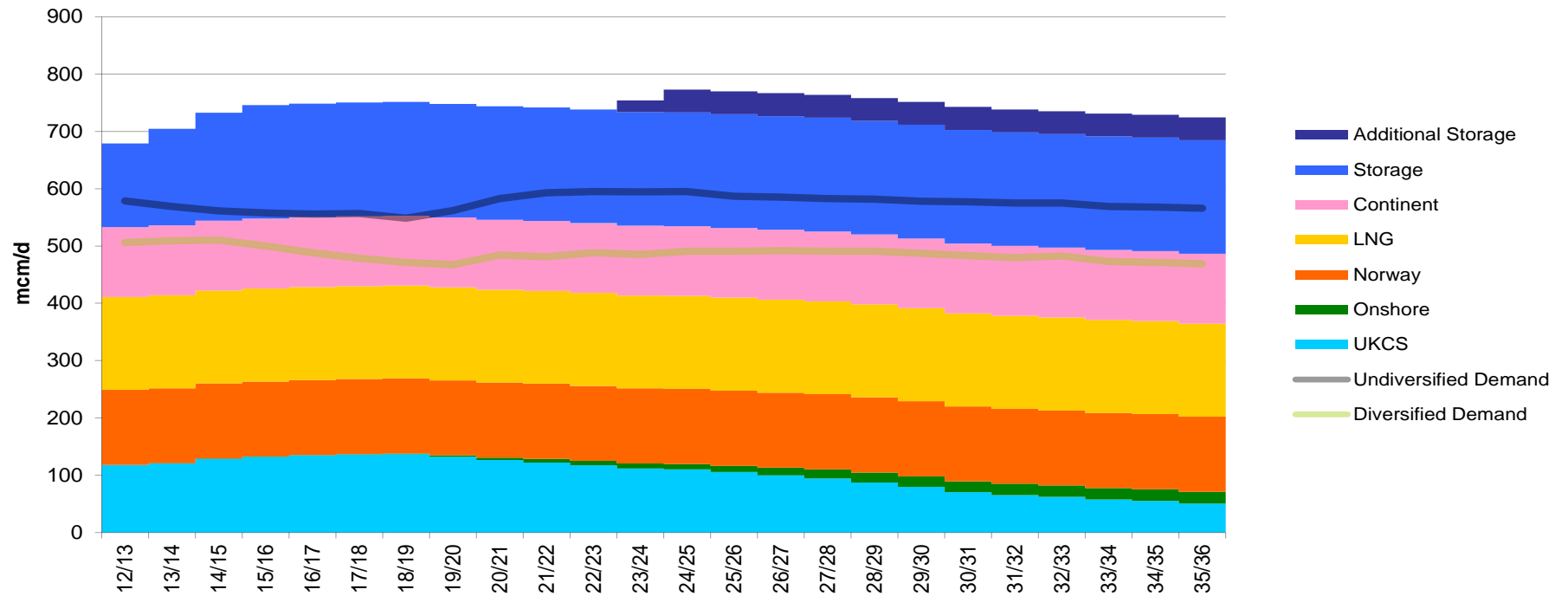
Gone Green

Slow Progress



# Market structure (2)

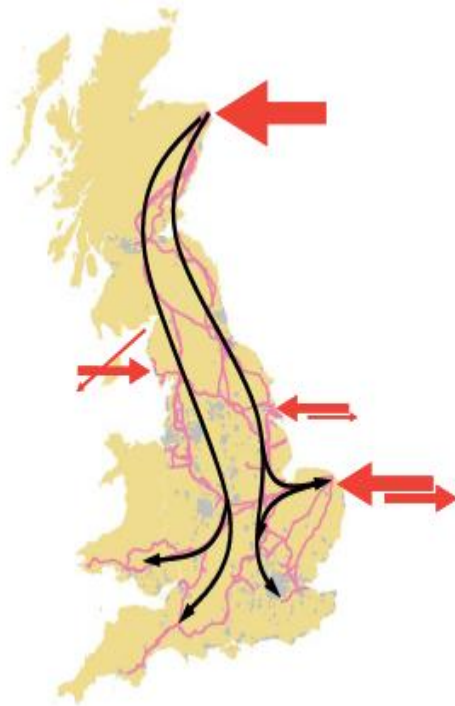
## Peak day flows



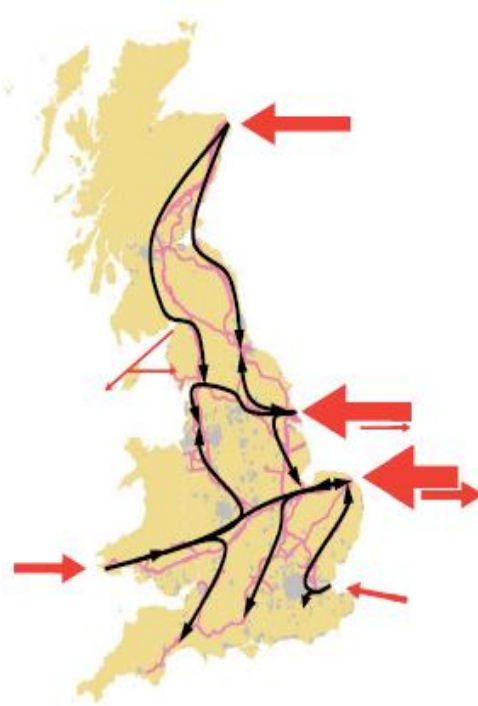


# Market structure (3): Expected changes in flows

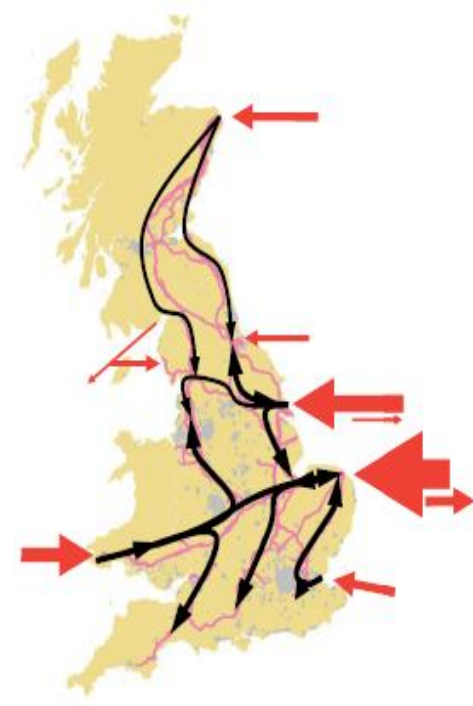
Gas flows.....



mid 1990's to 2005



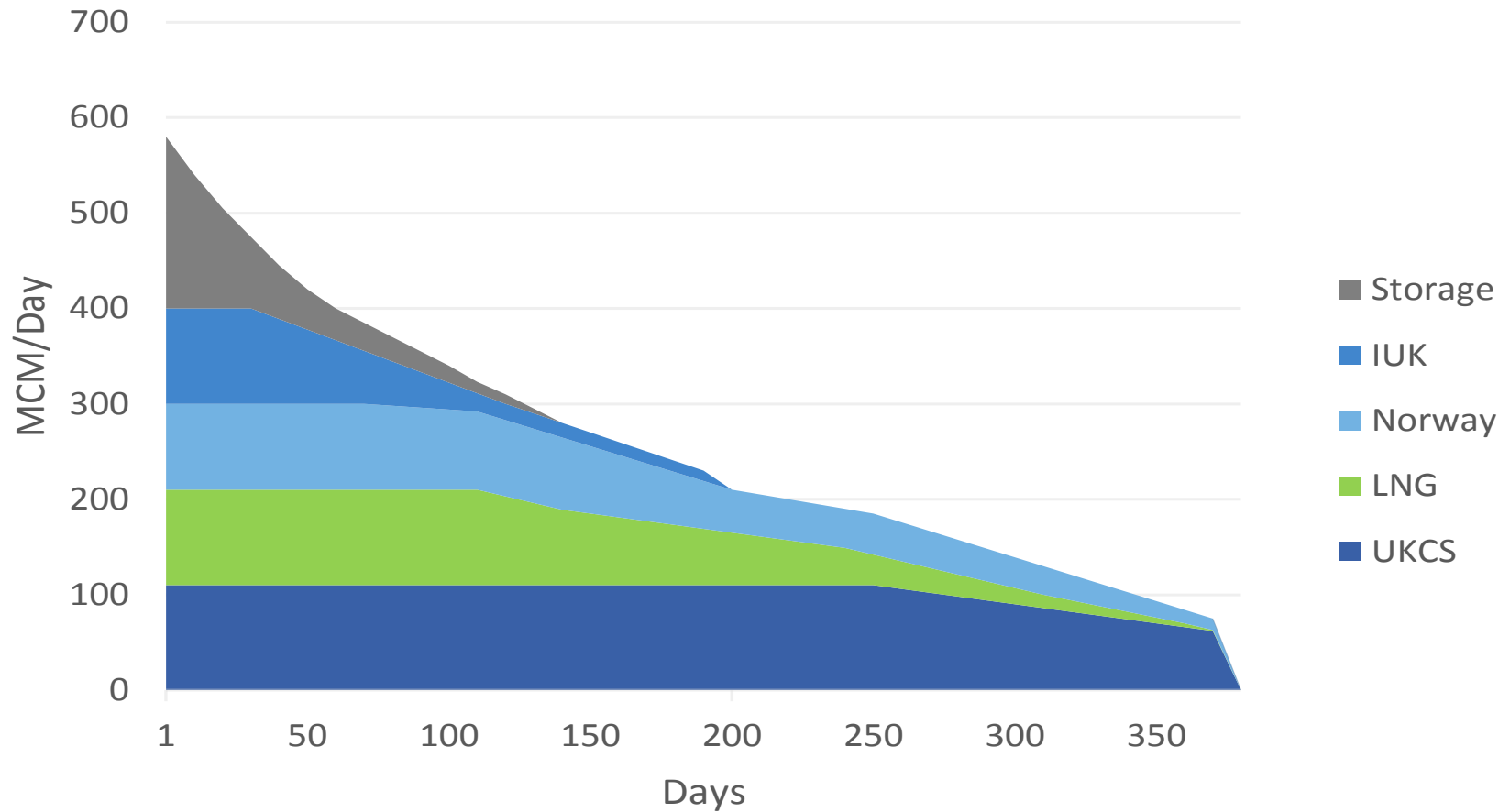
2010



2020

# Market structure (4)

## Illustrative load duration curve over the year



# Understanding the sources of gas

## Supply source characteristics

Supply source	Flow optionality?	Source of swing supply?	Expected flow price responsiveness?	Opportunity cost considerations (both in determining flow and ST vs. LT booking strategies)
Beach suppliers - dry gas field	x	✓ (with limits)	Low - Medium	e.g. costs of the loss of the gas sale in event of constraint; or loss of revenue (whether buyer or owner of gas)
	Dispatch features:			
Beach suppliers - associated gas field	x	x	Low	e.g. costs of not meeting contractual commitment or the loss of valuable oil/liquids production (if production owner)
	Dispatch features:			
LNG importation - contracted or spot	✓	✓	Low - High	e.g. cost of not meeting contractual commitment; relative value of dispatch to GB vs. other markets; value of peak storage facility etc.
	Dispatch features:			
IC/pipeline import flows – committed	?	?	Low	e.g. cost of deferring gas flow from a constrained ASEP and potential to redirect gas to alternative/upstream markets
	Dispatch features:			
Interconnector – arbitrage	✓	✓	Medium - High	e.g. relative merits of import or export in both forward and spot markets, net of differences in transportation costs
	Dispatch features:			
Storage	x	✓	Medium	e.g. storage charges, value of gas retained in storage etc.
	Dispatch features:			

# The merit order for gas sources

## Production/supply curve

1. Continental shelf
  - (i) Associated gas
  - (ii) Dry gas
2. Contracted import
3. Contracted LNG
4. Arbitrage import
5. Arbitrage LNG
6. Storage?



# Supply sources and entry points

## Entry point allocation

Entry Point	Sources of gas	Position in merit order
St Fergus	Continental Shelf	Low
Milford Haven	Contracted LNG	Low/Medium?
Teesside	Continental Shelf	Low
Barrow	e.g. Morecambe Gas (Dry) - Irish Sea	Low
Theddlethorpe	Continental Shelf	Low
Easington	Continental Shelf	Low
	Contracted import	Low/Medium?
Bacton	BBL – Holland (contracted)	Low/Medium
	IUK – Belgium (arbitrage)	High
	Continental Shelf	Low
Isle of Grain	Contracted and arbitrage LNG	High

# Next steps

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## Future charges group meetings

- **Next meeting**
  - Discuss our overall approach to modelling
  - Discuss model design
  - Identify key assumptions and initial values
- **Later meetings**
  - Review model outputs

**A ANNEX**

# Context Diagram for Modelling for Each Year

## Data Inputs

Supply/ Demand	<ul style="list-style-type: none"> <li>Source: TYS data</li> <li>Forecast level</li> <li>For each entry and exit point in network model</li> </ul>
Obligated/ baseline capacity	<ul style="list-style-type: none"> <li>Source: Licence</li> <li>For each entry and exit point in network model</li> </ul>
Network Definition	<ul style="list-style-type: none"> <li>Source: Transportation model</li> <li>2016/17 network as used in Jan 2014 QSEC</li> </ul>
Allowed Revenue	<ul style="list-style-type: none"> <li>Source: RIIO-T1</li> <li>Split to detail rev to be excluded and the target revenue for:</li> <li>Capacity charges</li> <li>SO Commodity</li> <li>TO Commodity</li> <li>TO Top-up</li> </ul>
Bookings Data	<ul style="list-style-type: none"> <li>Entry - Quantity and price for each ASEP/product/ shipper</li> <li>Exit - Quantity for each exit point/product</li> </ul>
Impact Analysis Assumptions	<ul style="list-style-type: none"> <li>Option A</li> <li>Option B</li> <li>Option C</li> </ul>

Estimation/  
assumptions  
for missing  
data

Exit charges  
needed for  
test - not  
modelling  
impact on  
User Groups  
of exit  
charges

## Modelling

Transportation Model  
Assume no change to "LRMC approach"

Commodity Calculations  
Shorthaul  
Relevance for price  
responsivity?

Price Responsiveness  
Update static booking data to  
dynamic booking data in light  
of charges

Impact Analysis  
description

LRMCs (km)  
50-50 entry-exit  
adjusted

LRMCs (km)  
Revenue adjusted

Annual Product  
(Daily Prices)  
50-50 entry-exit  
adjusted

Annual Product  
(Daily Prices)  
Revenue adjusted

SO Commodity  
Charge  
TO Commodity  
Charge  
TO Top-up  
Charge (Com or Cap?)

Do ASEP  
or exit  
point  
bookings  
change?

Capacity  
Prices  
by ASEP by  
Product

Revenue: Capacity  
and  
Commodity  
• by ASEP and  
by User Groups

Cost Allocation  
Test

Use  
Obligated  
capacity or  
forecast  
capacity?

Revenue  
by ASEP

Revenue by  
CAM/non-  
CAM exit  
point

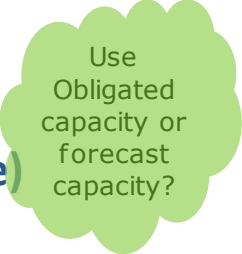
Many interactions and some loops



## A few examples

### 1. Calculation of adjusted entry prices for Allowed Revenue target ( floating price)


- whether to adjust using obligated or forecast capacity levels
- scaling or multiplicative adjustment



Use Obligated capacity or forecast capacity?

### 2. Bacton split


- CAM/IC point and Non-CAM ASEP
- modelling will allow for application of different regime at each of these two points



Allow for same and different regime

### 3. Inflation of capacity prices for purchases in prior years

- RPI or alternatives



RPI or alternatives

There will be many more - your thoughts are welcome ahead of the next meeting

## Need to consider

### Steps:

- 1) For each day of the chosen year, determine the level of demand and supply
- 2) Use this to determine the marginal source of gas for that day and an associated entry point
- 3) Use the marginal source of gas to determine the change in the NBP that has occurred owing to the chosen policy option
- 4) Use the change in NBP to estimate the impact on various categories of NTS user

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