Entry Capacity Baseline Reserve Prices

Gas TCMF

25th May 2006

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Aims

- To outline our initial thoughts for entry capacity baseline reserve prices from 1 April 2007 (assuming pricing is decoupled from revenue drivers)
  - Charging principles
  - Base network model
  - Supply and demand assumptions
  - Discount factors

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Why Are Reserve Prices Used?

- Protect against inefficiencies arising from market power
- Protect against inefficiencies arising from points with limited competition
- Ensure revenue collection from capacity users
- Generate locational signals for capacity across entry points

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Key assumptions

- Supply/demand scenarios
  - Model peak conditions
  - Reflect practical max physical baselines for entry
  - Use supply merit order to balance supply and demand
- Network model
  - Includes only approved investment projects
  - Reflects network in year of capacity allocation

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Initial Thoughts: Entry Capacity Baseline Reserve Price

TPCR	Decouple Entry Capacity Baseline Reserve Prices and Licence UCAs	
Charging Principles	**LRMC-based price**	◆ Single year costs ◆ Peak central case supply/demand scenario adjusted for **practical max physical baseline capacity level for each entry point** (i.e. 20 entry points = 20 LRMC analyses) ◆ Networks as planned for relevant years (sanctioned projects) ◆ Adjusted for 50:50 Entry:Exit split ◆ Non-negative nodal price for each entry point ◆ TO Commodity Charge for under/over-recovery
LTSEC (Firm)	**Single price for all years**	◆ Network and adjusted peak supply/demand scenarios for Y+2
AMSEC (Firm)	**Price for each year**	◆ Network and adjusted peak supply/demand scenarios for Y+1 and Y+2
RMSEC (Firm) **DSEC (Firm)**	**Price within year**	◆ Network and adjusted peak supply/demand scenarios for Y

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Illustrative Entry Capacity Baseline Reserve Price (Current Prices v Years 1 and Ten Year Average)

Entry Point	MSEC (UCA)*	Model F1 Y1*	Model F1 Ave*
Bacton	0.0061	0.0044	0.0055
Barrow	0.0005	0.0069	0.0018
Easington/Rough	0.0011	0.0063	0.0072
Isle Of Grain	0.0062	0.0001	0.0001
Milford Haven	0.0086	0.0001	0.0078
St Fergus	0.0215	0.0299	0.0241
Teesside	0.0020	0.0093	0.0038
Theddlethorpe	0.0010	0.0042	0.0052
Burton Point	0.0001	0.0001	0.0001
Hatfield Moor	0.0014	0.0012	0.0007
Hole House Farm	0.0001	0.0001	0.0001
Wytch Farm	0.0000	0.0001	0.0001

*p/pk-day kWh/day

Y1 prices would apply to year Y AMSEC, RMSEC, DSEC. These figures based on central case and not practical max physical assumption

Milford Haven Capacity not available in year Y

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Illustrative Entry Capacity Baseline Reserve Price (Current Prices v Years 1 and Ten Year Average)

Entry Point	MSEC (UCA)*	Model F1 Y1*	Model F1 Ave*
Barton Stacey	0.0000	0.0001	0.0001
Cheshire	0.0001	0.0001	0.0001
Garton	0.0013	0.0051	0.0061
Glenmavis	0.0179	0.0148	0.0089
Hornsea	0.0051	0.0068	0.0064
Partington	0.0003	0.0001	0.0001
Avonmouth	0.0021	0.0001	0.0001
Dynevor Arms	0.0000	0.0001	0.0022

*p/pk-day kWh/day

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Relevant Gas Licence (GL) Obligations

Standard Special Condition A5, 5(aa)

Where prices are established by auction and where reserve prices are applied, that these are set at a level best calculated:

- **GL4**: to promote efficiency and avoid undue preference in the supply of transportation services; and
- **GL5**: to promote competition between gas suppliers and between gas shippers.

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Assessment against Licence Obligations

Licence Obligation	LRMC based reserve prices…
GL4: **"Promote Efficiency, Avoid Undue Preference"**	◆ Generate locational signals for capacity ◆ Continue to reflect baseline capacity costs over the entire formula period when compared to a UCA based price ◆ Use the best available network data for the constrained period
GL5: **"Promote Competition"**	◆ Generate locational signal for capacity for entry points with limited competition

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Entry Capacity Baseline Reserve Price Comparison - Proposed analysis

- Comparison of price schedules generated from Transportation Model with current UCAs
  - Supply absorption approach used with merit order in Transportation Model to generate scenarios based on practical max physical baselines
- Results available late June/early July

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Discounted Reserve Prices - Auction Analysis

- 6 major beach terminals analysed for capacity bookings effective from April 2002 to present

- Expected outcome…
  - "Competitive" terminals with high proportion of long-term capacity sales, priced above zero
  - "Non-competitive" terminals with high proportion of within-day capacity sales, at near zero prices

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Discounted Reserve Prices - Results of Analysis

Terminal	*Volume of Long-term sales*	*Volume of Short-term sales*	*Average number of shippers*	*Comments*
St. Fergus	High	Low	22	As expected - competitive and capacity can be constrained at times
Barrow	High	Low	3	Long-term procurement despite low number of market participants
Bacton	Low	High	16	Competitive, but uncertainty of IUK source flows and effect of European markets devalues long-term capacity?
Easington	Low	High	8-13	Competitive but perceived to be unconstrained
Teesside				
Theddlethorpe				

Clearing auctions have allowed participants to buy capacity at a price reflecting the short run marginal cost at competitive terminals where capacity is perceived to be unconstrained

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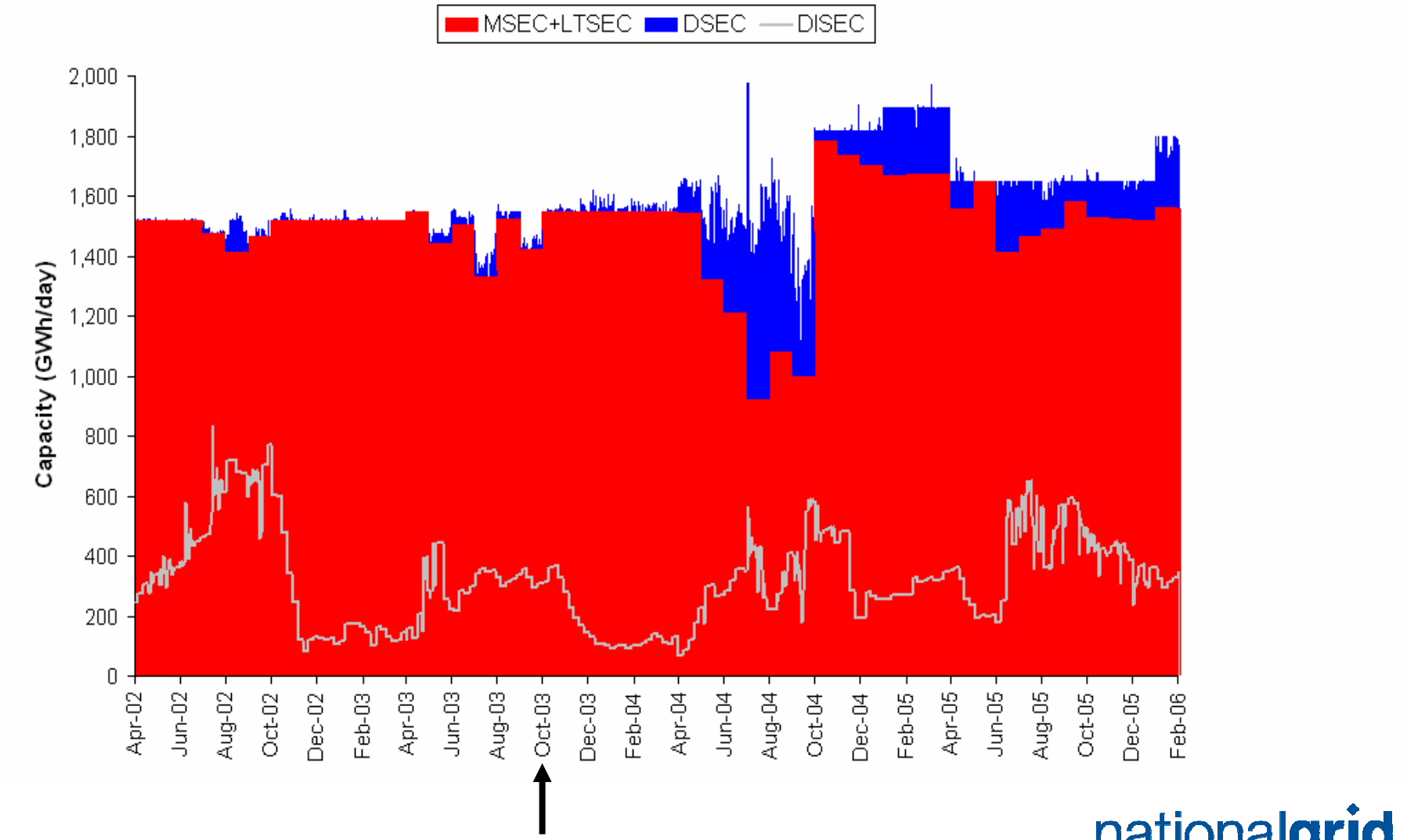
St. Fergus Capacity Sales



Zero reserve price for WDDSEC effective 1 October 2003

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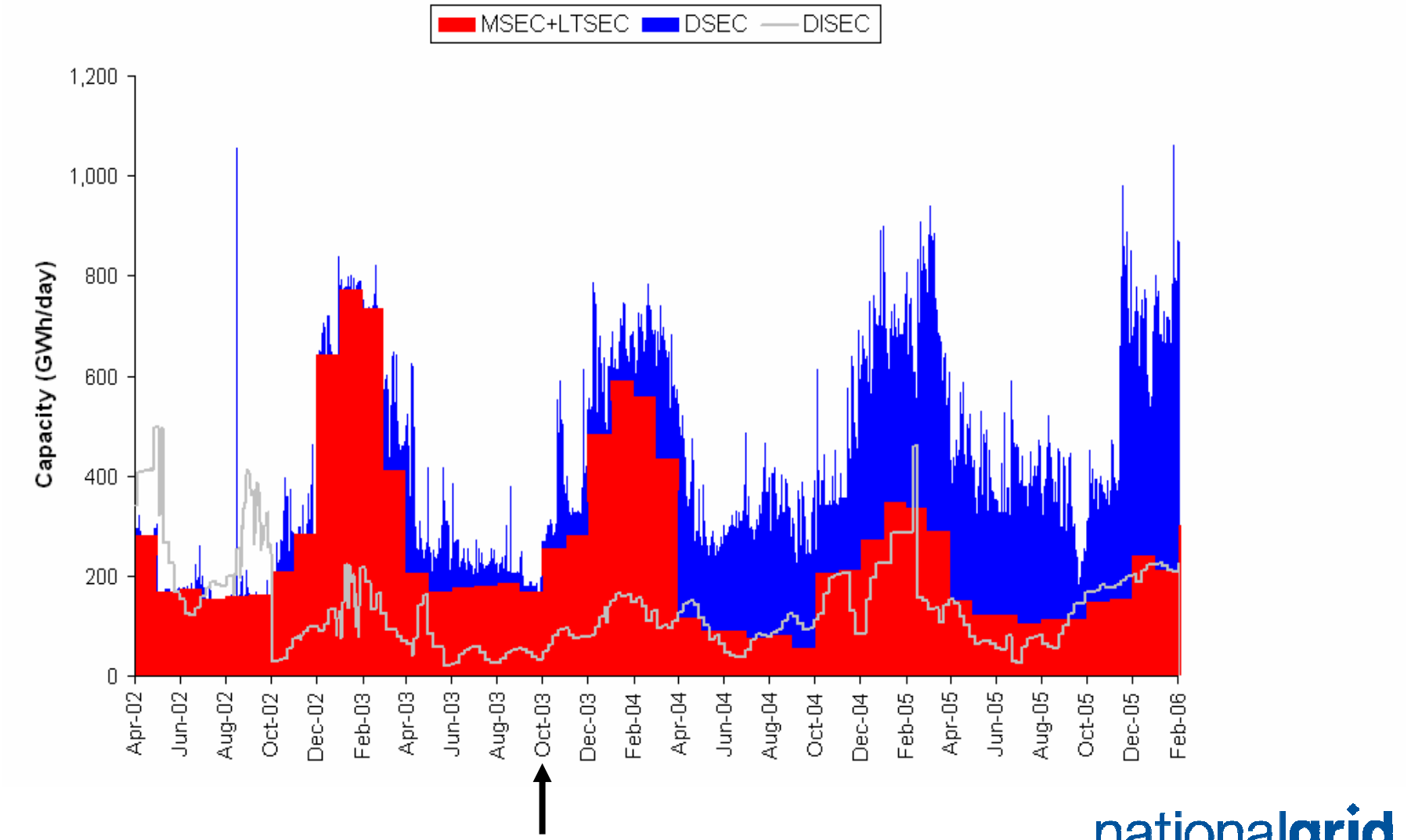
Easington Capacity Sales



Zero reserve price for WDDSEC effective 1 October 2003

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Clearing Auctions and Price Instability

Capacity becomes constrained at competitive terminals and short term capacity price spikes occur

High/volatile short term prices persist until investments are triggered and in place. Users may not anticipate price spikes in time to avoid them – may take >3 years to alleviate constraints.

Prices reduce after investment is made, but both long and short term locational pricing signals will be undermined across all terminals

High/volatile short term prices persist.

Users do not signal long term capacity requirement, possibly believing National Grid will invest in any case and that low short term prices can be expected again.

National Grid do not receive market driven signals for investment, but must still comply with its wider obligations as a gas transporter

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Discounted Reserve Prices – Initial View

- Remove discounted reserve prices
  - Short run marginal costs give rise to price spikes
  - Inappropriate for non-competitive entry points
  - Undermines pricing signals
    - short-term and long-term locational signals to Users
    - long-term investment signals to National Grid

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Initial Thoughts: Entry Capacity Baseline Reserve Price Discount

	Current Discount	Proposed Discount
LTSEC (Firm)	0%	0%
AMSEC (Firm)	0%	0%
RMSEC (Firm)	0%	0%
DSEC Day Ahead (Firm)	33.3%	0%
DSEC Within Day (Firm)	100%	0%
DISEC (Interruptible)	100%	100%

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Assessment against Licence Obligations

Licence Obligation	Non-discounted short term firm reserve prices…	Discounted interruptible reserve prices…
GL4: **"Promote Efficiency, Avoid Undue Preference"**	◆ Support long term signals for capacity where there is an obligation to release baseline capacity	◆ Recognise system operator's right to interrupt flows ◆ Allow efficient allocation of unused available capacity
GL5: **"Promote Competition"**	◆ Preserve locational signal for capacity for entry points with limited competition	◆ Enable access to unused available capacity

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Entry Capacity Incremental Prices

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Aims

- To outline our initial thoughts for entry capacity incremental prices from 1 April 2007
  - Charging principles
  - Base network model
  - Supply and demand assumptions

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LRIC v LRMC Process Overview

	LRIC Based	LRMC Based	
FALCON	Central Case Supply/Demand and Base Network Model	Central Case Supply/Demand and Base Network Model for Y+2	**Balance sheets and pipe data**
Transcost or FALCON	Optimise base network. Apply increment at each entry/exit pair in turn, and calculate route costs	Augment each entry point to required capacity and balance network using rules. Calculate LRMCs.	**Spreadsheet**
Spreadsheet	Solve matrix of route costs to obtain entry and exit **LRICs**	Adjust LRMCS for 50:50 entry exit split to obtain **prices**	**Spreadsheet**
	Repeat for all increments to obtain a set of **LRICs** for each entry point for each increment	Repeat for all increments to obtain a set of **prices** for each entry point for each increment	**Spreadsheet**
Spreadsheet	Use trend analysis to establish incremental price steps from baseline price and LRICs obtained above	Obtain Price Schedules	
	Obtain Price Schedules		

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Initial Thoughts: Entry Capacity Incremental Prices

TPCR/Ofgem open letter on Charging	**Single model for pricing small and large flow increments**	
Charging Principles	**LRMC-based price**	◆ Same as for baseline prices except… ◆ Supply/demand scenarios for multiple **incremental capacity levels above practical max physical baseline capacity level** for each entry point
LTSEC (Firm)	**Single price for all years**	◆ Same network and supply/demand assumptions as for baseline prices i.e. Y+2 ◆ ***Assume current allocation rules apply e.g. minimal price step of 0.0001p/kWh/day to allow capacity allocation rules to be applied***

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Assessment against Licence Obligations

Licence Obligation	LRMC based Incremental Prices…
GL4: **"Promote Efficiency, Avoid Undue Preference"**	◆ Allow Transporter to make consistent estimates of value of incremental capacity (i.e. use single model for any capacity level)
GL5: **"Promote Competition"**	◆ Transportation Model allows quicker and easier assessment of incremental prices ◆ Allows Users to more easily make own assessment of value of incremental capacity

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Entry Capacity Incremental Price Comparison Proposed analysis

- Comparison of price schedules generated from Transportation Model with latest Transcost/FALCON generated schedules*
  - Supply absorption approach used with merit order in Transportation Model
  - LRIC analysis in Transcost/FALCON

- Results available late June/early July

*Price schedules due to be released 1 July 2006 for September 2006 LTSEC auctions

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Summary of Entry Capacity Prices and Key Charging Questions

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Reserve Prices – Key Charging Principle Questions (Transport Model)

Issue	Gas TCMF WG Consensus	Proposal for Reserve Prices (Entry)
1. S&D Scenarios: 1 Year or multiple Year?	Less than ten years to remove forecasting uncertainty & increase simplicity	Single Year Transportation Model. Publicly available model will allow user to make own forecasts of LRMCs
2. How should incremental costs be modelled?	No opinion, although inclusion of spare capacity would indicate Transcost	LRMCs at each new level of capacity (with rules to balance supply and demand) Minimal price step of 0.0001p/kWh/day between price steps*
3. How would spare capacity be treated?	Include "genuine spare capacity" within the Model	Do not include spare capacity due to stability requirement
4. How would decrement (back flow) costs be treated?	Include within Model	Include backhaul

*Monotonic price schedule required for current allocation rules

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Reserve Prices – Key Charging Principle Questions (Tariff Model)

Issue	Gas TCMF WG Consensus	Proposal for Reserve Prices (Entry)
5. How should entry and exit costs be disaggregated?	Solver with 50: 50 constraint	Marginal Costs will be generated through Transportation Model (does not require Solver)
6. How should negative costs be treated?	Removed as final step (Consider commoditisation of negative prices)	Remove at same stage as 50:50 price adjustment. Non-negative prices.
7. Should capacity charges be adjusted to 50:50 entry:exit and if so how?	Solver constraint	Adjustment by adding/subtracting fixed number to each entry/exit charge, using Solver
8. Are zones required?	Only if capacity is a zone based product	Nodal price for each entry point
9. Are capacity charges adjusted to recover allowed revenue and if so how?	Where possible by adjustment, otherwise cost recovery via commodity based charges	TO Commodity Charge for under and over recovery
10. Should year on year price changes be capped?	Retain: Potential to remove year-on-year capping but have capping based on forecast prices	No

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