

Entry Capacity Substitution

Workshop 3

11th June 2008

Substitution Example

Example: Assumptions

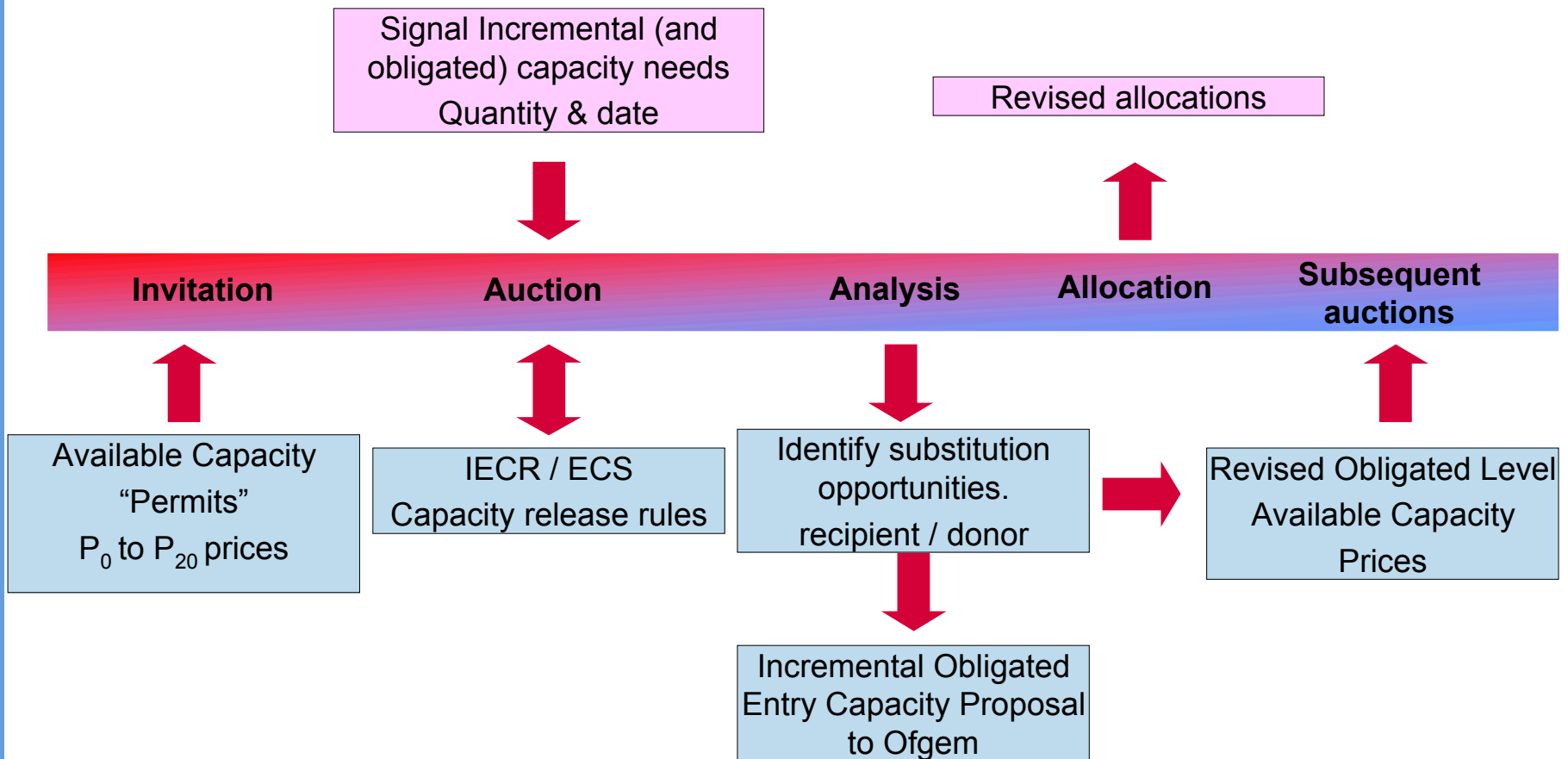
- ◆ How capacity substitution is ultimately developed will define the precise processes to be followed and may add a level of complexity.
- ◆ Hence to illustrate the end-to-end process it is necessary to make a number of assumptions.
 - ◆ A single NPV test applies irrespective of how incremental capacity is made available.
 - ◆ Substitution applies from 42 months after the auction.
 - ◆ Capacity available for substitution as defined in Licence.
 - ◆ There are no existing capacity allocation or QSEC bid “spikes” in future years.

Example: Introduction

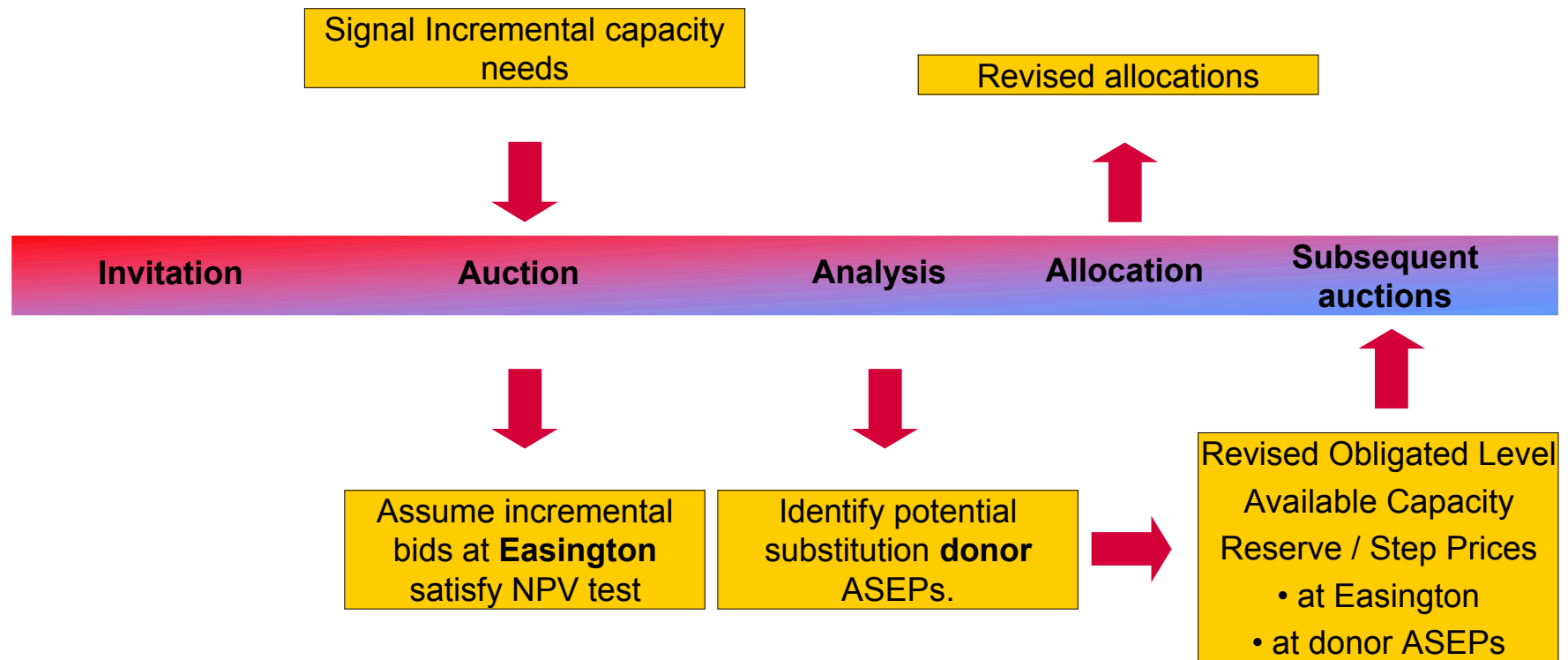
- ◆ The example is illustrative only and should not be taken as guaranteeing specific outcomes when the substitution processes are implemented.
- ◆ Example
 - ◆ Consider the scenario where incremental entry capacity is requested at Easington ASEP in a future QSEC auction.
 - ◆ Intended to show processes involved and likely outcomes without referring to actual projects.
 - ◆ All values used are indicative whilst being a reasonable approximation to actual capacity levels.
 - ◆ This is a theoretical example and could not be delivered through substitution due to physical constraints at the Easington ASEP.

QSEC Auction Process

Overview with respect to Substitution



QSEC Auction Process Substitution Example



Substitution Example – Auction Results

- Easington auction bids received for incremental entry capacity.
 - Passes NPV test for quantity 10 mscmd from 42 months.
- Auction bids at other ASEPs do not exceed available level

ASEP	Baseline	Obligated level	Reserved for MSEC	Sold level (i.e. auction result)	Available for substitution (negative = incremental signal at recipient)
Easington	98.1	129.9	9.8	120.1 + 10	-10
Aldbrough	0	38.8	0	38.8	0
Hornsea	16.2	21.5	1.6	19.0	0.9
Hatfield Moor	2.3	2.3	0.2	1.3	0.8
Theddlethorpe	56.4	56.4	5.6	1.6	49.2
Bacton	164.7	164.7	16.5	52.5	95.7
Teesside	44.0	44.0	4.4	13.1	26.5

All units in mscmd

Substitution Example – Recipient ASEP

- Incremental capacity triggered for Easington ASEP
- Recipient ASEPs are considered in order of revenue driver – lowest first
 - Lower revenue driver implies less physical works required for incremental capacity
 - This implies that incremental capacity can be provided at that ASEP with less capacity destruction at the donor ASEP, i.e. at a lower exchange rate.

Substitution Example – Donor ASEPs

Easington as recipient ASEP

- Donors ASEPs selected in order of
 - Within zone first: considered most interactive and hence provide best exchange rates:
 - ASEP shortest pipeline distance from the recipient ASEP first;
 - ASEPs in neighbouring zones:
 - Normally the shortest pipeline distance first, but alternatives may be used if these offer more economic solution.
- Donor ASEPs must have available capacity.

Substitution Example – Donor ASEPs

Easington as recipient ASEP

In respect of Easington ASEP the donor ASEP order is:

- Hornsea
- Hatfield Moor
- Theddlethorpe
- Bacton
- Teesside



Substitution Example – Substitution Analysis

- Substitutions will be determined by network analysis.
- The process shown in this example will be as described in the methodology statement consulted on in 2007.
- Supply scenario will be selected consistent with the Planning Code as applied to investment decisions.
- Demand levels will be selected to assess impact of substitution along the demand curve.
- Further analysis would be undertaken at other demand levels.
- For this example
 - The numbers used are based upon peak demand.
 - Analysis has been undertaken for one year (2012) only.

Note

- This is a theoretical example and could not be delivered through substitution due physical constraints at the Easington ASEP. However, the results demonstrate likely outcomes for the Easington area and the overall process.

Substitution Example – Substitution Analysis

- Recipient ASEP flow increased to obligated + incremental level (i.e. to 139.9 mscmd)
- The obligated capacity at the first identified donor ASEP is decreased to the lower of:
 - The incremental capacity level (10 mscmd); or
 - By the available level (i.e. to the sold level +10% held back)
- As a result of revising the obligated capacity there may be a corresponding reduction in flow at that ASEP.
 - Rebalancing at a remote third ASEP may be required.
- If a constraint exists after this substitution then further substitution(s) will be undertaken at the same, then next, donor ASEP
 - i.e. Donor capacities will be decreased further until the network can accommodate the supply / demand position.
- In other examples it may not be possible to fully accommodate the incremental signal through substitution so residual investment may be necessary.

Substitution Example – Allocations and Obligated Levels

- **Revised allocations**
 - Users at Easington: 130.1 mscmd (120.1 + 10 incremental)
 - Users at Donor ASEPs: No change from pre-auction level.
- **Revised obligated levels**
 - Easington: 139.9 mscmd (previous obligated + 10)
 - Donor ASEPs: Reduced where capacity substituted away
 - Aldbrough 38.8 mscmd (no change)
 - Hornsea 20.6 mscmd (minus 0.9)
 - Hatfield Moor 1.5 mscmd (minus 0.8)
 - Theddlethorpe 7.3 mscmd (minus 49.2)
 - Bacton 123 mscmd (minus 41.7)
 - Teesside 44 mscmd (no change)
 - Revised obligated levels apply from the first date of substitution, i.e. 42 months, and will be available in the next QSEC and relevant MSEC auctions in due course.

Substitution Example

Incremental Obligated Entry Capacity Proposal.

- National Grid will submit to Ofgem its Incremental Obligated Entry Capacity Proposal.
- In the example the quantity of Incremental Obligated Entry Capacity at Easington will be 10 mscmd and;
 - All capacity will be met from substitution; with
 - Obligation at donor ASEPs reduced as in previous slides.
- National Grid receives no additional revenue in respect of incremental entry capacity met by substitution (“non-incremental obligated entry capacity”).

Substitution Example – Prices

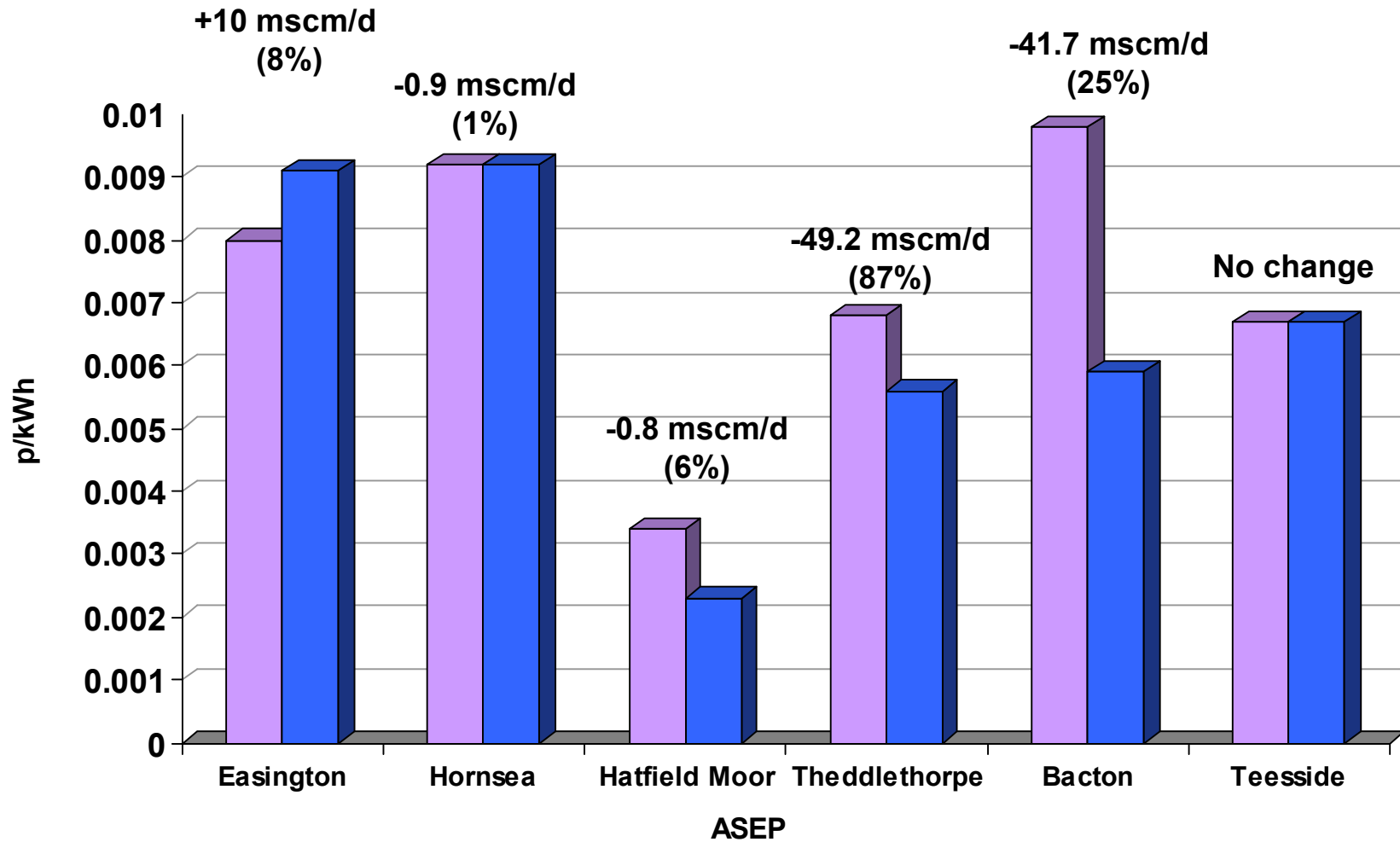
- Reserve Prices (and step prices for incremental entry capacity) are a function of the obligated capacity level.
- Hence, substitution will generally decrease the P_0 price at donor ASEPs; and
- Release of incremental entry capacity will generally increase the P_0 price at recipient ASEPs.
- Revised obligated levels / prices apply from the applicable quarter/month, i.e. from month 42.
- The assessment undertaken is highly simplistic and ignores all other effects, e.g.
 - substitution may impact supply / demand scenarios which could in turn affect prices,
 - other, non-substitution, issues may cancel out the effects shown,
 - similar substitutions at different ASEPs may have different outcomes.

Substitution Example – Prices

ASEP	Initial Prices p/kWh/day			Change in obligated level mscmd	New “post- substitution” Prices p/kWh/day		
	P ₀	P ₁₀	P ₂₀		P ₀	P ₁₀	P ₂₀
Easington	0.0080	0.0099	0.0119	+ 10	0.0091	0.0113	0.0125
Hornsea	0.0092	0.0102 at P ₈		- 0.9	0.0092	0.0101 at P ₈	
Hatfield Moor	0.0034	0.0047 at P ₅		- 0.8	0.0023	0.0028 at P ₈	
Theddlethorpe	0.0068	0.0088	0.0098	- 49.2	0.0056	0.0066	0.0076
Bacton	0.0098	0.0120	0.0137	- 41.7	0.0059	0.0087	0.0106
Teesside	0.0067	0.0088	0.0098	Zero	0.0067	0.0088	0.0098

NB – P₁₀ and P₂₀ step prices relate to an incremental capacity of 25% and 50% of the obligated level. Hence, with the exception of Easington, the “new” prices relate to a smaller incremental quantity.

Substitution Example – Prices



■ Initial P0 Prices ■ P0 Prices Post-Substitution

Substitution Example – Prices

Where capacity has been substituted away from a donor ASEP, such that the obligated capacity level is reduced, Users can only be allocated capacity to the initial obligated level by triggering, in a subsequent QSEC auction, the release of incremental entry capacity. This may be subject to a 42 month lead-time.

In general the step price is driven by the obligated level. Hence, following substitution we would expect the prices at equivalent capacity levels to be the same pre and post substitution for any particular ASEP.

However, the IECR methodology requires a minimum increment at each step so the step price required to return to the initial obligated value may, for some ASEPs, be above the initial P_0 price as in the given example.

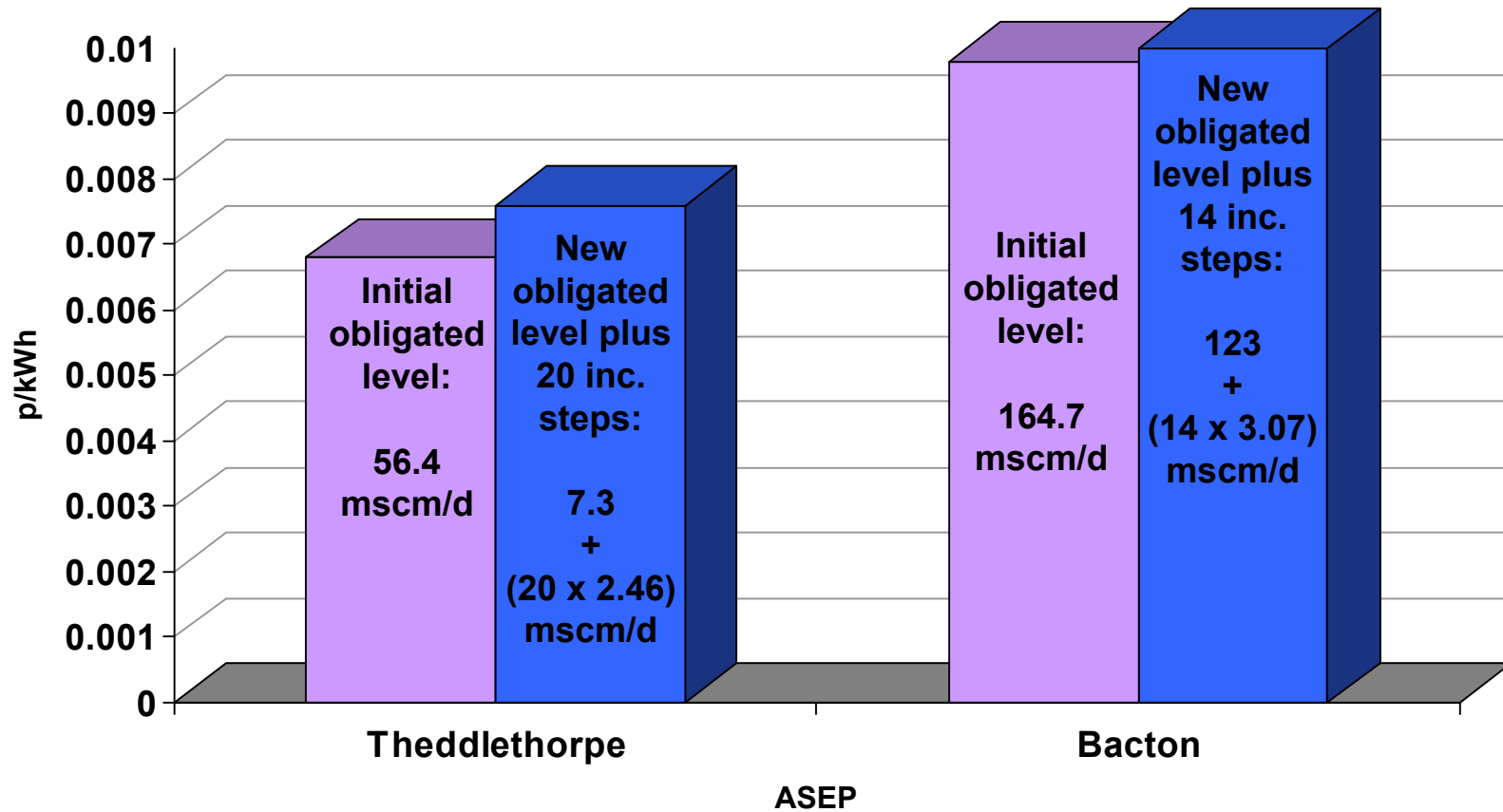
Substitution Example – Prices

In the example the obligated capacity at Theddlethorpe and Bacton are reduced significantly.

The step price to return to the initial level is higher than the initial P_0 level.

ASEP	Initial obligated level mscmd (GWh/d)	New obligated level mscmd (GWh/d)	Step Price to trigger release of incremental capacity needed to return to initial obligated level p/kWh/day
Theddlethorpe	56.4 (610)	7.3 (78.7)	0.0076
Bacton	164.7 (1783.4)	123 (1332.5)	0.0100

Substitution Example – Prices



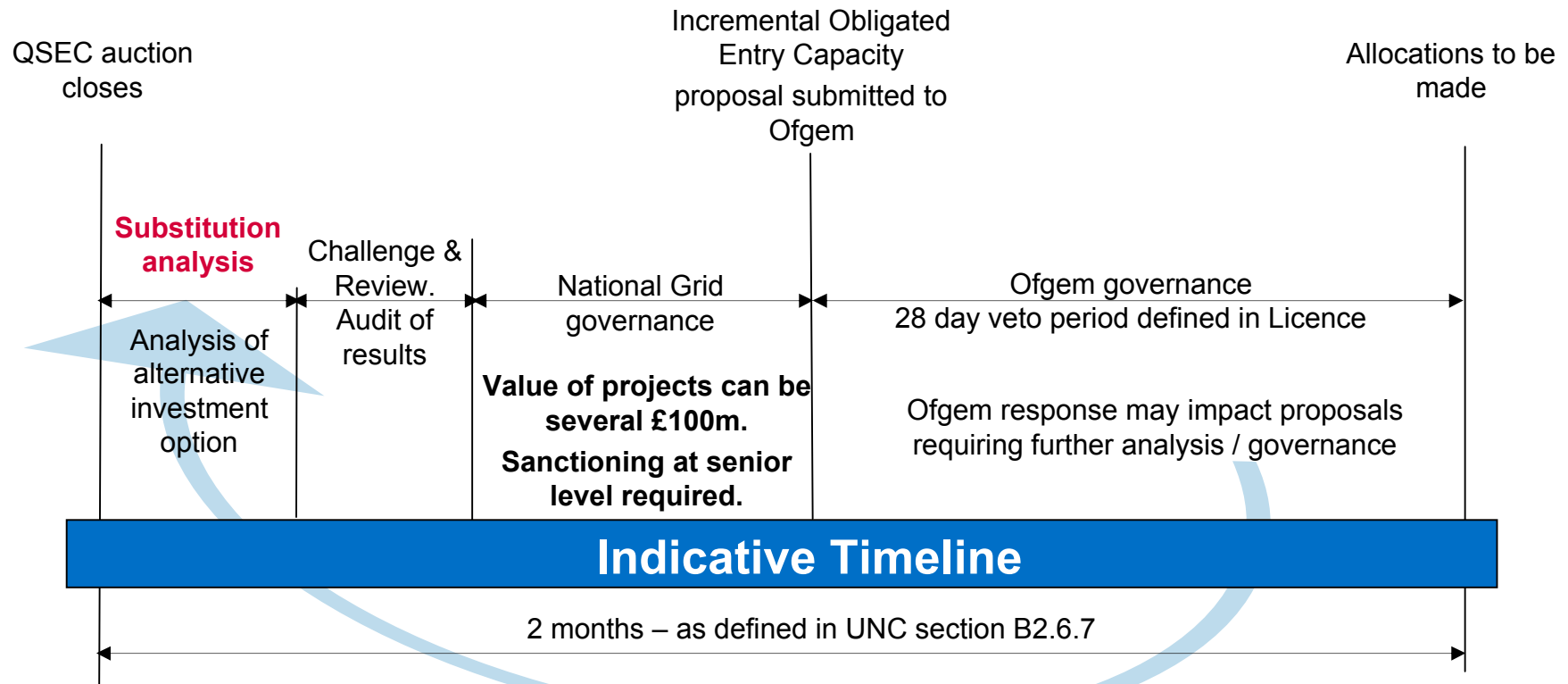
■ Initial P0 Price
 ■ Step Price to trigger release of incremental capacity needed to return to initial obligated level

Substitution Example

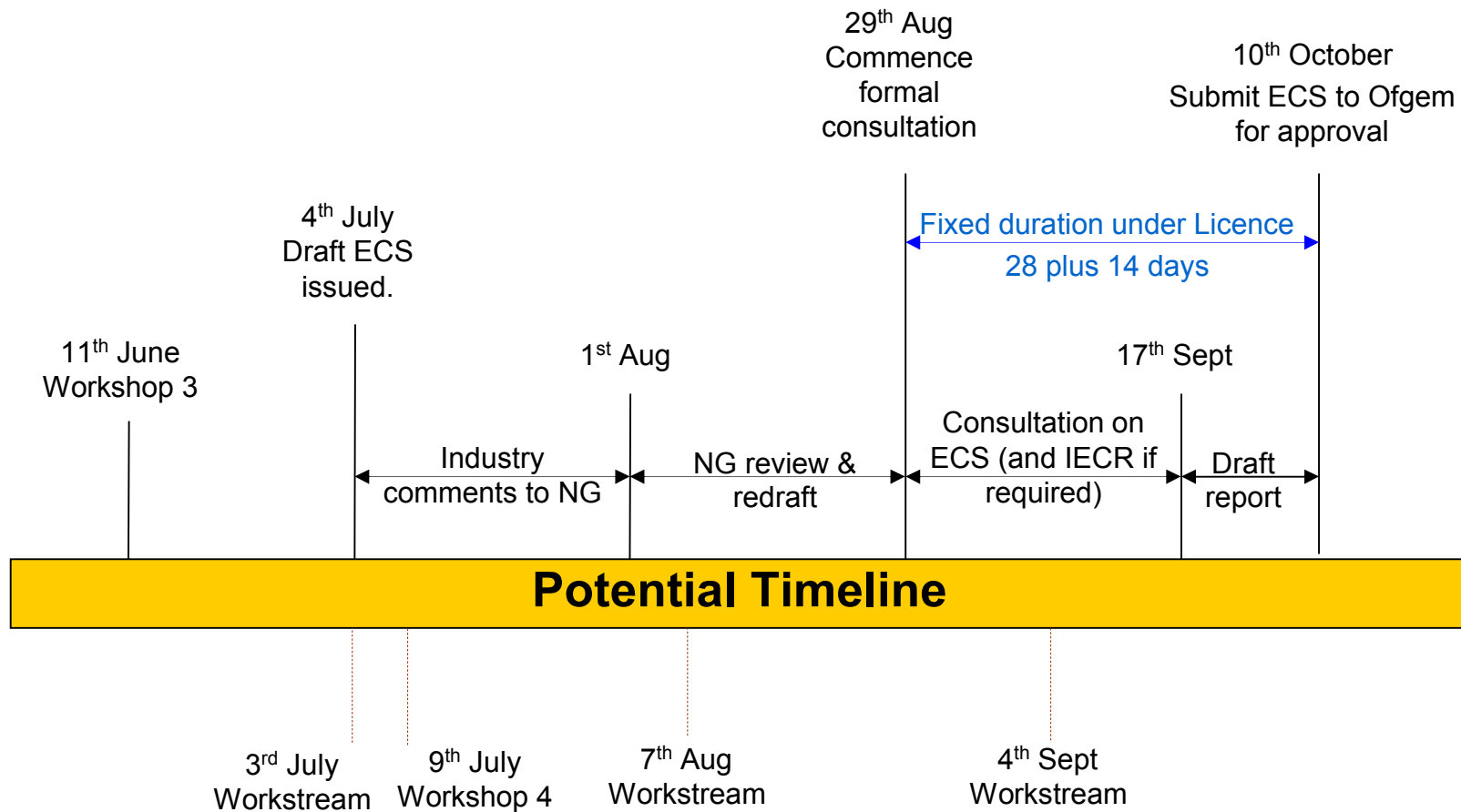
Incremental Obligated Entry Capacity Proposal.

- Initial analysis suggests that if the quantity of Incremental Obligated Entry Capacity at Easington is no greater than 16 mscmd then;
 - All the capacity will be met from substitution; with
 - The obligation at donor ASEPs reduced.
- If the quantity of Incremental Obligated Entry Capacity at Easington >16 mscmd then:
 - 16 mscmd would be met from substitution; and
 - the remainder would be “funded”.
 - Note that some substitution may be “un-picked” to make the residual investment economic.

Substitution Analysis Timeline



October Submission of Methodology Statement: Potential Timeline



Next Steps

- ◆ Next workshops
 - ◆ Pencilled in for 9th July at Ofgem office
 - ◆ Do we need one?
 - ◆ Further issues?
- ◆ Informal consultation on draft ECS methodology statement.
 - ◆ Indicative start date: 4th July.