

# Review of Cap148 costing

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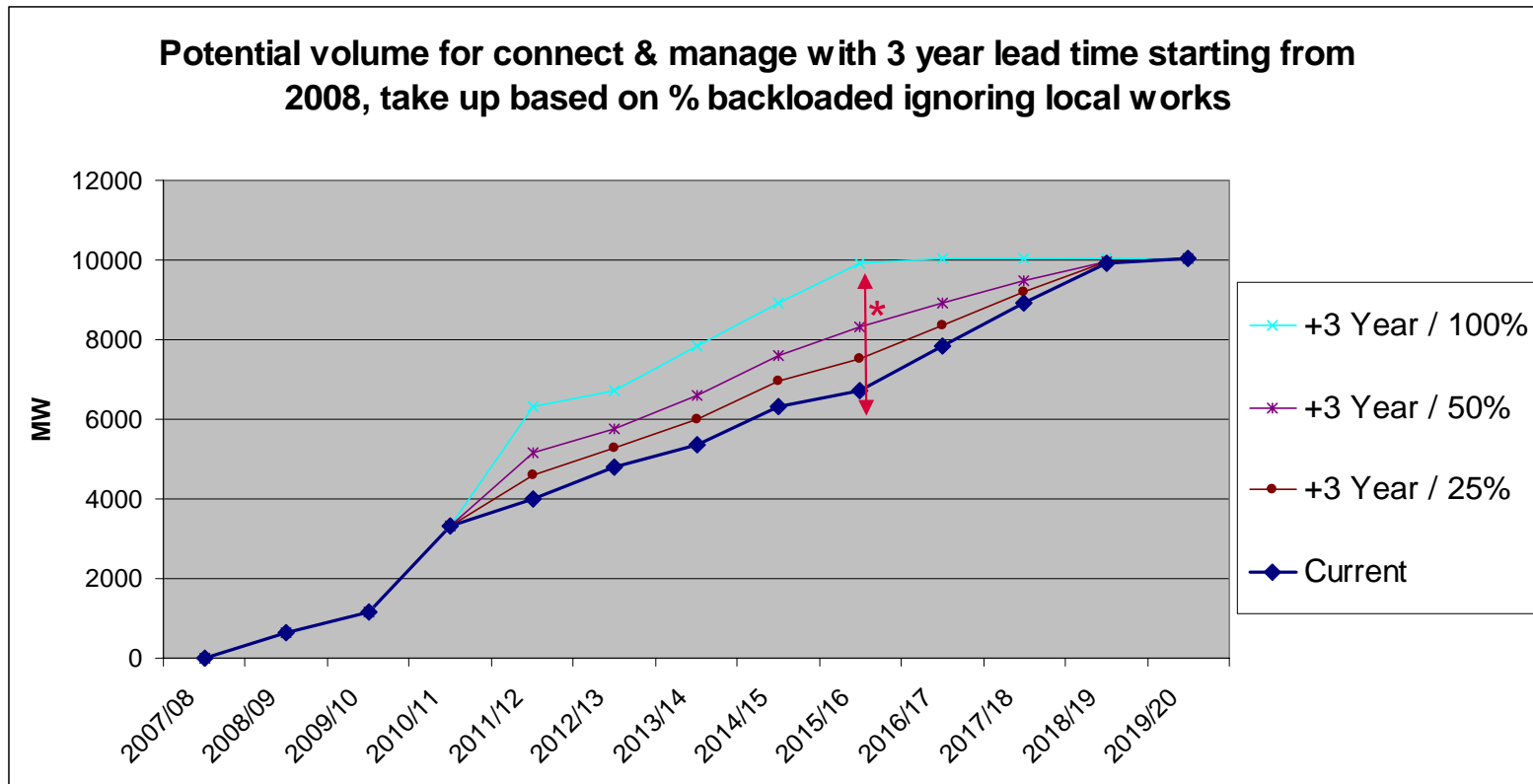
Possible constraint volumes /costs

# Data / assumptions

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- ◆ Data used was from the TEC register
- ◆ Beyond 2016 assumed constant connection rate
- ◆ Range of advancements
  - ◆ 100%, 50% & 25% of plant advanced by 3 years
- ◆ Incidence of constraints was assumed to be 10% of time
  - ◆ Under connect and manage incidence would increase
- ◆ Cost of constraint £65/MWh including replacement
  - ◆ Assumes current practice is to bid 'losses'
- ◆ 3 year lead time i.e. first increase is 2011
- ◆ Analysis is on a single boundary
- ◆ These figures are **not** a forecast but only serve to demonstrate the order of magnitude

# Volumes associated with a 3 year advancement



\* Volume is the increase from current connection rate

# Potential volumes / costs

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- ◆ Represents the additional constraint against the base line (including planned reinforcements)
- ◆ Volumes and cost if projects advanced by 3 years:

	Volume GWh	Cost £m
100%	8337	542
50%	4169	271
25%	2084	135

- ◆ Assumptions
  - ◆ 15% of time constrained (incidence)
  - ◆ 40% load factor for new plant
  - ◆ Only conventional plant constrained
  - ◆ Based on existing applications only
- ◆ Additional constraints costs only

# Annual costs

- ◆ The table shows the distribution costs over the connection period by percentage opting for a 3 year advancement
- ◆ 3 years is not linked to the 3 waiting period in Cap 148 original
- ◆ Figures are in £m / per annum

Projects advancing	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19	Total cost £/m
100%	79	65	83	89	109	75	38	3	542
50%	39	33	42	44	55	38	19	2	271
25%	20	16	21	22	27	19	9	1	135

# Assumptions

- ◆ The tables show the distribution of additional capacity and constrained volume for the 50 percent scenario
- ◆ Figures are in MW and GWh respectively

Projects advancing MW	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19
50%	1154	955	1221	1303	1600	1100	550	50

- ◆ This converts to a constraint volume using the following :  
Capacity \* constraint incidence (0.15) \* Load factor (0.4) \* 8760

Projects advancing	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19	Total
50%	606	502	641	685	841	578	289	26	4169

# Constraint incidence

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- ◆ Sample on boundary transfer indicates that major system constraints 'bite' in the region of 10% of the time
- ◆ Every additional MW generated during these periods will be 100% constrained.
- ◆ Need to take account of nesting of constraints
- ◆ Incidence of constraint increases dramatically with a small increases in generation
  - ◆ 500MW increase (RC\*LF) in generation increases the constraint incidence from 10% to 35%, (62% for 1000MW)
  - ◆ This would increase the costs in the order of 3.5 times
  - ◆ Not 100% of the volume is constrained initially
  - ◆ Construction outage costs
- ◆ For this analysis a small increase to 15% has been assumed
  - ◆ Replacement action in energy market
  - ◆ Not all of the volume will be constrained

# What further work do we need for CAP164?

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- ◆ Vary assumptions
  - ◆ Base on zones
  - ◆ Dynamic incidence
  - ◆ Outages (limits reduced during reinforcement works)
  - ◆ Market impacts
    - ◆ which plant will not run
    - ◆ cost of part loaded plant
    - ◆ cost of energy
  - ◆ Which project will come forward and by how much
    - ◆ Local connection issues (will they be able to take advantage)
    - ◆ TO resources
    - ◆ Plant availability
  - ◆ Cost of losses
- ◆ Ofgem Cap 148 IA
  - ◆ What do Ofgem need?