Large Combustion Plant Directive

Background

European Union directive aimed at reducing acidification, ground level ozone and particles throughout Europe by controlling emissions of sulphur dioxide (SO2), nitrogen oxides (NOx) and dust (particulate matter (PM)) from large combustion plants (LCPs). Large refers to combustion plants rated over 50 MW (thermal) and includes plants in power stations, petroleum refineries, steelworks and other industrial processes running on solid, liquid or gaseous fuel.

The directive Imposes emission limits on new plant i.e. licensed after 1st July 1987. Existing plants i.e. licensed before 1987 have 3 options:-

1. Meet new emission limits which will require retrofitting of flue gas treatment equipment
2. Opt out limited life derogation
   20,000 hours of operation between 1st Jan 08 and 31st Dec 2015
3. Close before 1st Jan 2008

There has been considerable debate within the EU Commission about the meaning of the term combustion plant. The agreed definition is that a collection of plants whose waste gases are discharged through a common stack should be considered to be a single plant. Furthermore a stack is a structure rising above roof level which may embody one or more flues.

Based on these definitions Littlebrook has a single large combustion plant whereas Tilbury has two large combustion plants.

Start up and shut down hours will not be counted as operating hours i.e. LCPs will not expend operating hours whilst the output is below the minimum stable output. As the Directive imposes a limit on operating hours rather than energy, opted out power stations will endeavor to maximise the volume of MWs generated per LCP. This paper identifies running regimes which generators may adopt for opted out power stations and discusses the challenges that this will present to National Grid.

The Generators strategies for utilising the operating hours have not been divulged to National Grid and it is expected that they will vary during the 8 year period as market conditions change Hence the purpose of considering the running regimes is to highlight the issues which may arise and simulate a debate between National Grid and users of the GB Transmission System on the effect of the LCPD. The list may not be exhaustive and it is very likely that the generators will adopt a mix and match approach to their operating regimes.

On 1st January 2008 there will be 11550 MW of opted out generation the stations affected are shown below.

Station	MWs
Didcot A	1940
Ferrybridge	980 (half)
Kingsnorth	1940
Ironbridge	970
Tilbury	1037 (both LCPs)
Littlebrook	1245
Fawley	990
Grain	1300
Cockenzie	1152

Operating Regimes

Units within a LCP Load and Deload in Unison
Operational effect will be mitigated by Grid Code restrictions on loading and deloading rates and commercial incentives for Generators to remain in balance

LCP at Full or Zero Output
This will lead to additional volatility and uncertainty on flows across constraint boundaries where the output of one or a group of LCPs makes up a large proportion of the boundary flow.

Consume Hours Prior to 31st December 2015
Generators would adopt this approach where savings in fixed costs outweigh opportunities in the electricity market... It is very unlikely that it will be economic for oil fired generation to increase their load factors hence this strategy would be adopted only by coal fired power stations.

Generators may decide to run LCPs overnight in summer at high output resulting in LCPs being the only units capable of providing downward regulation. The desire to maximise MW per hour of operation will put upward pressure on the price for providing downward regulation. However this will be offset by savings made from not having to pull back on generation to provide footroom.

LCPs to Remain in Operation to 31st Decmeber 2015
Operational hours will tend to be used when prices are high enough. This may lead to LCPs going summer cold which could affect the Electricity Supply Industry's ongoing Black Start restoration plans. In so far as the LCPD results in altered running arrangements for specific power stations then in a black start situation this could impact on the flexibility for the Grid Operator including the options and timescales for system restoration. Consideration of the Grid Operator options for managing these potential impacts is on-going. In order to progress it's considerations of these options National Grid would welcome detailed assessments from the Generators of their likely running regimes, up to 2015 but in particular for years 2008-2012.

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BM Prices
The Offer price to schedule an LCP up to the minimum stable level will have to include the lost opportunity costs associated with generating below full output. As output increases Offer prices should reduce as lost opportunity costs decrease Furthermore for multi unit LCPs the same Offer Price up to MSL will have to be submitted across all units to ensure that, whichever unit is scheduled by the System Operator, lost opportunity costs will be recovered. However under current BSC rules Offers prices must increase monotonically with increasing output. National Grid will be undertaking a review of the Balancing Principles Statement to facilitate the scheduling of LCPs in accordance with current BSC rules.

Conclusion
The LCPD directive presents a number of challenges to generators and National Grid. However it is felt that through close co-operation these can be met without any major changes to the existing Codes.