

# Alstom response to the DECC consultation on the Electricity Market Review

10 March 2011

## Summary

- (i) Overall: while we agree with the Government that there is a need for market reform, there is not enough evidence in the consultation documents to conclude that the EMR package as a whole will be successful in meeting all of the Government's objectives.
- (ii) Design of instruments: we need more detail on the design of the instruments – particularly on the Contract for Difference & Capacity Payments – before reaching a final judgment on their likely effectiveness.
- (iii) Feed-In-Tariff (FIT) with Contracts- for-Difference (CfD): we agree that a Feed-In-Tariff of some kind is required to support low carbon generation. There are several attractive elements to the preferred FIT-with-CfD proposal, but it will be complex to implement, which may risk an investment hiatus and create unintended consequences. We would like to see further analysis on how the complexities could be overcome in practice.
- (iv) Emissions Performance Standard (EPS): the proposed EPS design adds nothing to the existing regulatory framework for new coal, but brings the risk of negative, unintended consequences. Consideration should be given to the alternative EPS model described in paragraph 19 below.
- (v) Capacity Payments: we are not convinced by the proposed targeted capacity mechanism and believe that more analysis on the design of a capacity instrument is required, including further consideration of a market-wide mechanism and measures such as Demand Side Response. We support the CBI's proposal for a Government/industry group to consider the design of a capacity instrument.
- (vi) Carbon Price Floor: we support the Government's overall objective of creating greater carbon price certainty, but we have doubts about the Carbon Price Floor's long-term certainty & effectiveness (see annex A).

## Context

1. Alstom strongly supports the UK Government's target of reducing emissions by 80% by 2050. We agree with the assessment that – in order to meet the 2050 target – the UK power sector needs to be largely decarbonised by 2030. This needs to be achieved by using the full portfolio of technologies, by increasing the efficiency of power generation, and by applying CCS to fossil fuel generation as speedily as practicable.
2. As the supplier of around 25% of the world's installed power generation capacity (and around 50% in the UK), Alstom Power has wide experience of power plant design and construction in over 70 countries. We offer technologies and services for all energy sources: gas, coal, oil, geothermal, biomass, hydro, nuclear, wind, tidal and solar. We have also engaged in 12 CCS demonstration projects around the world. Alstom Grid is one of the top three global players in electrical transmission and is helping today to develop the intelligent and green grids of tomorrow.

## The case for reform

3. We agree with the Government that the existing UK market arrangements will not deliver the scale of long-term investment, at the pace we need, in particular in renewables, new nuclear and CCS. Nor will they give consumers the best deal. The case for reform is clear.
4. In principle, we favour market solutions, such as the EU-ETS, but agree that there is a need for complementary regulation and incentives to encourage faster development of the low carbon economy in the UK.
5. We have five key tests for the electricity market reforms put forward by the Government, including the carbon price floor. Will the reforms:
  - (i) Give greater certainty on the 2030 decarbonisation target?
  - (ii) Provide cost effective support for low carbon generation?
  - (iii) Create the right incentives for investment in the UK & minimise any hiatus?
  - (iv) Take account of increasing EU market integration?
  - (v) Reduce regulatory complexity?
6. Those tests frame the comments we make below on the four elements of the package.

## Overall assessment of the EMR package

7. On the information currently available, it is very difficult to tell whether the reform package will succeed and whether the proposals will deliver strongly across the five key tests in paragraph 5 above. A number of significant outstanding design issues (e.g the structure of the Contracts-for-Difference) will have an impact on our final assessment.
8. There are also important questions about the interaction between the different proposals. There needs to be coherence between DECC's EMR package, the Treasury's carbon price floor and Ofgem's Market Liquidity Review. Until we have complete visibility on the interactions, it is difficult to be confident that this is going to drive the real uplift in investment that is absolutely crucial.
9. In brief, we have several cross-cutting comments:
  - (i) **Clarity:** across the package, there needs to be greater clarity about precisely what it is the Government is trying to achieve and what the impacts of the measures will be. We hope that this can be achieved in the forthcoming White Paper.
  - (ii) **Complexity:** the EMR reforms are complex – with many uncertainties still remaining - and we are concerned that the implementation of the package may in itself become a barrier to attracting investors and new capital.
  - (iii) **Trajectory:** there is no certainty about the proposed rate of decarbonisation between today's national average of around 450g CO<sub>2</sub>/kWh and the 2030 indicative target of 100g CO<sub>2</sub>/kWh (which may yet be tightened to 50g following the recent advice of the Committee on Climate Change). The consultation document does not set out a proposed trajectory for declining carbon intensity and explain clearly how the reforms would drive that outcome.
  - (iv) **Timescales:** as the consultation document notes, timescales are extremely tight to achieve the various Government-set targets. The complexity in implementing some of the proposed mechanisms leaves us concerned about the risk of delay. We note that the modelling assumes a 'perfect world' where, for instance, there are no planning or supply chain constraints. We therefore have doubts about the likely accuracy of some of the projections, which in practice are highly dependent on real world decisions and pressures.

- (v) **Critical Path:** there needs to be a clearer critical path for implementation of the EMR reforms to highlight the key dependencies and to avoid the risk of doing everything in sequence, rather than on the most efficient, integrated pathway. We urge the Government to present the critical path in the forthcoming White Paper.
- (vi) **Cost:** we have concerns about the possible scale of costs and effect on electricity prices, particularly in moving from theoretical modelling to implementation in practice.
- (vii) **Market Liquidity:** as a number of market analysts have noted<sup>1</sup>, the lack of UK market liquidity represents a significant barrier to establishing a reliable wholesale market reference price for the effective operation of the proposed Contracts-for-Difference. We would like to see further Government analysis on how this can be overcome, including the conclusions of Ofgem's forthcoming Market Liquidity Review.
- (viii) **EU Integration:** we are concerned that some elements of the reform package may run counter to the direction of European energy market liberalisation legislation (e.g long-term contracts; potential effects of Carbon Price Floor/Capacity Payments on imports/exports of electricity). It would be helpful to have clarification on the European Commission's view of the reform package as soon as possible.
- (ix) **Investment Hiatus:** points (i)-(viii) mean that we are concerned that the design and implementation uncertainties around the package may make any hiatus in investment deeper and longer than would otherwise occur.

10. We have three, high-level technology points:

- (i) **Coal:** coal plant plays an important role in the UK's overall generation mix, particularly in the winter, when gas prices are high. That is particularly the time when it becomes an important hedge against gas price volatility. It is not clear from the EMR package that there will be any incentive to invest in coal plant, which may have a detrimental effect on both energy prices and the UK's development of a CCS market.
- (ii) **CCS:** we see little evidence in the EMR package so far to suggest that it will incentivise the development of CCS. Given the centrality of the technology to delivering the Government's decarbonisation targets at a reasonable price, we find

---

<sup>1</sup> For example, IHS CERA report 'The United Kingdom: First to Liberalize and Dictate?' February 2011

that surprising. We are also concerned that there is still uncertainty over the funding of CCS demos. We are therefore supportive of many of the points put forward by the Carbon Capture & Storage Association in its EMR submission.

- (iii) **Renewables:** greater certainty is needed on the transition from the Renewables Obligation to the proposed Contract-for-Difference. It is unclear from the consultation whether the CfD will be as supportive to renewables as the RO has been and how the RO 'grandfathered' support will be priced. That uncertainty needs to be addressed quickly in order to avoid investors' plans being put on hold.

11. There are also two issues which we think should feature more strongly in the analysis presented in the forthcoming White Paper:

- (i) **System flexibility:** the consultation paper briefly mentions interconnection, demand side response and storage as all having 'the potential to provide additional diversity and flexibility to assist security of supply'. We would like to see dedicated analysis of these areas in the White Paper and proposals to realise the projected potential.
- (ii) **Grid:** we note the Government's view that: 'the attractiveness of the UK electricity market is affected by other areas of policy including .... the grid connection regime that....supports the development of major infrastructure. The Electricity Market Reform project is not trying to address these wider factors, but we recognise that they are *critical enablers for investment decisions that have the potential to significantly reduce investment costs*'. (Chapter 1, para 12). In the forthcoming White Paper, we urge the Government to say more about how it sees the development of the UK Grid and how that development fits with the vision within the EMR reform package.

## Summary assessment of the four proposed instruments

### Feed-In-Tariff (FIT) with Contracts for Difference (CfD)

12. We agree with the Government that a new incentive for low carbon generation should be introduced. The preferred option of a Feed-In-Tariff with Contract for Difference has a number of attractive elements, including:

- (i) The long-term contract is likely to give investors greater certainty.

- (ii) Consumers should be protected against windfall profits.
- (iii) Generators should be protected against market price collapse.
- (iv) The modelling suggests that the CfD will deliver sufficient low carbon investment at a lower cost than the alternative designs.
- (v) The wholesale power market will continue to have an important role.

13. But there are a number of potential weaknesses and uncertainties:

- (i) A Feed-In-Tariff with CfD is likely to be complex to implement; certainly more so than the Government's alternative option of a Premium Feed-In-Tariff.
- (ii) It is unclear how the CfD will apply across the different technologies, and how the strike price is going to be set. Until investors have some confidence in those issues there will be a high value to wait-and-see, and the hiatus in investment will be deeper and longer.
- (iii) There needs to be more analysis on how the CfD will interact with the full portfolio of technologies, including:
  - How will the design of the contract affect the deployment of nuclear, renewables and clean fossil fuels? Will aspects of the design favour one fuel source over another?
  - What happens if there are only limited potential providers of particular technologies?
  - Who decides how much non-fossil fuel generation to purchase?
- (iv) Achieving a balance between long-term certainty, and the need to be adaptable to economic and technological change, will be a significant challenge in designing and managing the CfD.

14. On the basis of the evidence in the consultation document, our initial view is that the CfD strike price should be banded by technology; paid by reference to a single, transparent, traded index; and set at first through a banding process, rather than auctions, which appear to be difficult to introduce successfully, particularly in the short-term. However, we would like

to see further analysis and evidence on the precise design options for the CfD before drawing a final conclusion on its merits compared to the Government's alternative option of a Premium FIT.

15. For renewables, the transition between the RO and any new FIT regime must not disadvantage investors in RO schemes or create an investment hiatus. We agree that it would appear sensible to have period of time up to 2017 where the RO and any new incentive run in parallel. Schemes accredited under the RO should be given a one-off opportunity to switch to the chosen FIT mechanism prior to 2017.

## **Capacity payments**

16. We believe that more analysis is required on the case for, and design of, a capacity instrument, including further consideration of a market-wide mechanism and the contribution of other measures (e.g interconnection, demand side response and storage). We support the CBI's proposal for a Government/industry group to consider the details of a capacity instrument.
17. We are not convinced, from the available evidence, that the Government's preferred option of a targeted mechanism would necessarily be the most effective instrument. There is a risk that the proposal may introduce market distortions by incentivising over-investment in peaking units to the detriment of existing conventional generation, which could offer flexibility at a lower cost than new peaking plants. There is also the risk that a mechanism that reduces peak prices may result in a disincentive to build new CCGTs. In addition, the combined impact of a targeted capacity mechanism, high levels of renewables, and priority despatch of renewables over thermal, may accelerate both thermal retirement and a reduction in investment in new thermal capacity.
18. We therefore consider that the Government's approach to ensuring security of supply should recognise the importance of:
  - flexibility in maintaining security of supply, rather than narrowly focusing on meeting peak demand;
  - the potential benefits of providing incentives for both new and existing capacity, so as to avoid early and inefficient closure of existing plant;
  - ensuring infrastructure adequacy and system flexibility (e.g interconnection, demand side response and storage).

## Emissions Performance Standard (EPS)

19. Alstom is not against an Emissions Performance Standard in principle, but has serious concerns about the design of the proposal in the EMR consultation document. The main points are:

- (i) The National Policy Statement requirement for all new coal fired power stations to fit CCS to around 25% of their generating capacity, plus the market conditions for new coal build, already make it impossible to build unabated coal plants in the UK. The proposed EPS adds nothing to that situation, except creating a number of potential negative consequences (described at paragraph 17).
- (ii) An appropriately designed EPS could help to drive CCS, but only if it is balanced with the right package of CCS incentives combined, and timed, to ensure no discrimination between coal and gas fuels.
- (iii) CCS should be incentivised through a market support mechanism (e.g. a FIT of some kind) as the main driver for moving to widespread use of the technology, with EPS being the main instrument to disincentivise “laggards” from continued operation of unabated fossil fuel generation.
- (iv) An EPS that applies to both coal and gas from a certain point in the future could provide support to the deployment of CCS, increasing the diversity and security of supply by enabling continued, but decarbonised, use of coal.
- (v) Our preferred model (in a market with effective CCS incentives) would be to set an EPS at 350g CO<sub>2</sub>/kWh from 2020 (or when CCS is commercially available, whichever is the earliest) and then to move to 150g CO<sub>2</sub>/kWh five years later (i.e 2025, or earlier if CCS commercially deployable before 2020).

20. We have serious concerns about the Government’s two proposed options for limit values (600g or 450g CO<sub>2</sub>/kWh) both of which would only affect coal:

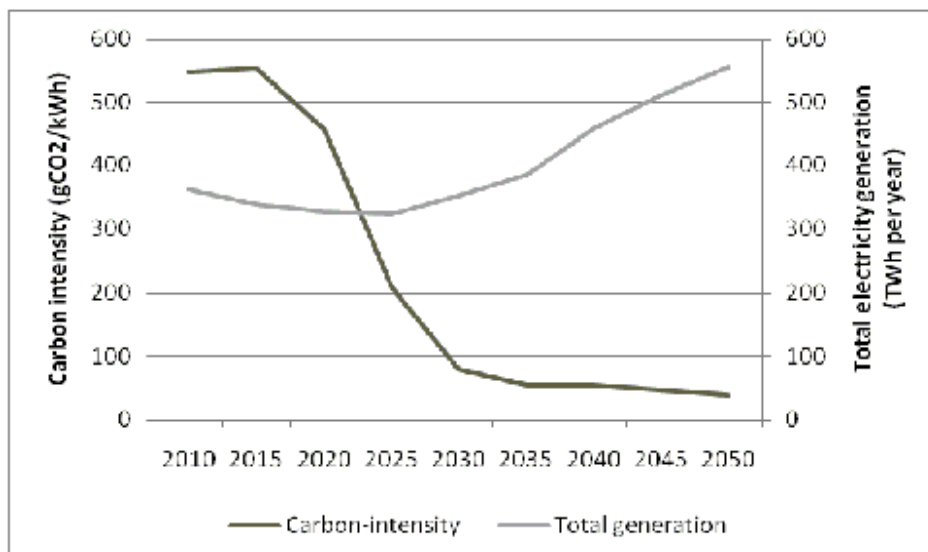
- (i) There would be a significant rise in the demand for gas, which would increase the UK’s exposure to gas price volatility. That in turn would have an adverse impact on security of supply. With the proposed EPS grandfathering rights, the UK would end up



with additional gas power stations without CCS for their entire lifetime - locking in avoidable CO<sub>2</sub> emissions; and reducing the UK's ability to hedge against gas price volatility.

- (ii) A grandfathered exemption from the EPS for all new gas plants implies that unabated gas can continue for the next 20 years. This will disincentivise CCS (and nuclear and renewables) and is inconsistent with the requirement for new gas-fired power plant to be CCS-ready. As a result, there is a risk that industry would reduce or slow down its investment in CCS.
- (iii) If an EPS model of this kind was adopted more widely in Europe, the CCS market would take longer to build. As economies of scale will be crucial to bringing the costs down, CCS would not be commercially viable until later.
- (iv) It is also unclear how the proposed EPS fits with the 2030 indicative national target of 100g CO<sub>2</sub>/kWh by 2030, or 50g, as recently proposed to the Government by the Committee on Climate Change. The lack of a clear trajectory from today's average of around 450g CO<sub>2</sub>/kWh to 100g, or 50g, by 2030 (as illustrated in graphic below) is a significant gap in the consultation paper's proposals. An appropriately designed EPS could deliver that clear trajectory.
- (v) The proposed regular review of the EPS (every 3 years) will add to regulatory uncertainty.

### Declining carbon-intensity and increasing generation of electricity to 2050



21. We note the EPS analysis by the Energy & Climate Change Select Committee, in particular its conclusion that an EPS 'is more likely to be successful in encouraging the development of CCS technology..... if it is introduced as part of a package of measures.....this should include some form of financing help in order to help reduce risk for investors'.

22. We also note the Committee on Climate Change's letter of 8 March 2011 to the Secretary of State in which they argue for a tighter emissions performance standard:

'An emissions performance standard or similar instrument strictly limiting investment in new unabated gas plant beyond 2020 could also strengthen incentives for investments in low-carbon capacity'.

### **Carbon Price Floor (CPF)**

23. We support the Government's overall objective of creating greater carbon price certainty. A higher and more stable carbon price is one element of a more stable framework for the investment required in the UK over the coming decades. An amendment to the Climate Change Levy is one way to attempt to deliver that certainty, though we have several concerns with the proposal as currently designed (see annex A for our response to the Treasury consultation) including:

- (i) It is important that the Carbon Price Floor does not interfere with the operation of the EU-ETS. If the CPF is introduced, we strongly urge the Government to introduce measures in parallel to support and improve the effectiveness of the EU-ETS (e.g by reducing the number of allowances).
- (ii) It is not clear that investors currently see the CPF as bankable.
- (iii) We do not consider that investor certainty will necessarily be increased by a tax that may, or may not, survive from year to year, and whose level will change annually.
- (iv) The potential strategic value of the UK maintaining a reasonable amount of coal within its fuel diversity does not receive enough attention, especially given coal's seasonal contribution to security of supply, and the ease and cheapness with which it can be stored.

- (v) The CPF – in combination with the other EMR policies – is likely to speed a reduced contribution from coal plant. There is a risk therefore that we may lose the opportunity to create a successful CCS industry in this country.
- (vi) It is essential that a positive market environment is established for CCS before the CPF forces existing plants to close.
- (vii) A CPF set high enough to make a difference may only force existing plants into premature closure. That would then create a greater capacity issue.

### **Oral evidence to the Energy and Climate Change Select Committee**

24. We also refer the Government to the oral evidence Alstom gave to the Energy and Climate Change Select Committee's inquiry into the Electricity Market Review on 15 February:  
<http://www.parliament.uk/business/committees/committees-a-z/commons-select/energy-and-climate-change-committee/>

### **Background on Alstom UK**

25. Alstom UK employs around 6,500 people in the UK at around 30 locations and has an annual turnover of about £1bn. We are responsible for the maintenance, refurbishment and operation of nearly half of the country's existing power plants, providing a full mix of power generation technologies, combining traditional and renewable energy sources with clean power solutions.
26. In the UK, Alstom is responsible for the construction of four of the six new gas-fired power plants providing close to 6 GW of new generation. Alstom UK's boiler retrofit unit is a centre of expertise for biomass co-firing and has experience in all types of boiler retrofitting, including NOx reduction, performance improvement and fuel flexibility. We are also delivering three onshore wind farms and developing a 6MW turbine particularly suited to the UK offshore market.

## COPY OF ALSTOM'S CARBON PRICE FLOOR RESPONSE

11 February 2011



### Submission to the HM Treasury Consultation Carbon Floor Price: support and certainty for low-carbon investment

#### Context

1. Alstom supports the UK Government's target of reducing emissions by 80% by 2050. We strongly agree with the assessment that – in order to meet the 2050 target – the UK power sector needs to be largely decarbonised by 2030. This needs to be achieved by using the full portfolio of technologies, by increasing the efficiency of power generation, and by applying CCS to fossil fuel generation as speedily as practicable.
2. As the supplier of around 25% of the world's installed power generation capacity (and around 50% in the UK), Alstom has wide experience of power plant design and construction in over 70 countries. We offer technologies and services for all energy sources: gas, coal, oil, geothermal, biomass, hydro, nuclear, wind and solar. We have also developed 12 CCS demonstration projects around the world.
3. We agree with the Government that the existing arrangements will not deliver the scale of long-term investment, at the pace we need, in particular in renewables, new nuclear and CCS, nor will it give consumers the best deal. The case for reform is clear.
4. In principle, we favour market solutions, such as the EU-ETS, but agree that there is a need for complementary regulation and incentives to support faster development of the low carbon economy.
5. We have five key tests for the electricity market reforms put forward by the Government, including the carbon price floor. Will the reforms:
  - Give greater certainty on the 2030 decarbonisation target?
  - Provide *cost effective* support for low carbon generation?
  - Create the right incentives for investment in the UK & try to minimise any hiatus?
  - Take account of increasing EU market integration?
  - Reduce regulatory complexity?
6. Those tests frame the comments we make below on the pros and cons of the Carbon Price Floor proposal.

#### Carbon Price Floor (CPF)

7. We support the Government's overall objective of creating greater carbon price certainty. A higher and more stable carbon price is one element of a more stable framework for the investment required in the UK over the coming decades.

8. An amendment to the Climate Change Levy is one way to attempt to deliver that certainty, though we have several comments on the proposal as currently designed.
9. On the positive side, we recognise that:
  - the proposal is based on the correct assumption that raising the price of carbon is central to driving decarbonisation.
  - One benefit of the CPF is that it could help to ensure that there is not a large difference between the proposed Contract for Difference strike price and the wholesale electricity price.
10. But we also have a number of reservations, comments and questions:
  - It is important that the CPF does not interfere with the successful operation of the EU-ETS. One potential risk is that the measure could depress the EU-ETS price by reducing demand in the UK for EU-ETS allowances. If the CPF is introduced, we strongly urge the Government to introduce measures in parallel to support and improve the effectiveness of the EU-ETS.
  - The CPF will do little, if anything, to reduce carbon emissions across Europe, as any reduction in demand for allowances in the UK will allow other countries to increase emissions up to the level of the EU cap.
  - We agree with the Government that a key test for the CPF is whether or not it is 'bankable'. It is not clear that investors do currently see the CPF as bankable and therefore there is an element of uncertainty around the effectiveness of the policy.
  - The CPF is a carbon tax set annually by the Government. We do not consider that investor certainty will necessarily be increased by a tax that may, or may not, survive from year to year; and may, or may not, automatically rise to meet a theoretical trajectory. Any policy exposed to annual, variable, political decisions is unlikely to create great certainty. A tightening of the EU-ETS would be a more effective policy measure.
  - A CPF set high enough to make a difference may only force existing plants into premature closure. That would then create a greater capacity issue, which would have to be addressed, potentially, through the Government's proposed capacity mechanism. That mechanism is likely to bring on to the system new fossil fuel plant in practice. Overall, costs would rise to a greater extent than if existing power stations were not forced into premature retirement and could still be used to balance supply and demand.
  - The potential strategic value of the UK maintaining a reasonable amount of coal within its fuel diversity – something that the CPF will discourage – does not receive enough attention in the EMR documentation. The existing UK generating portfolio is well diversified among multiple resources. This balance allows for a hedge against price spikes in one or more fuels, especially for the price volatility that is associated with gas. With coal-fired generating capacity reducing anyway (largely due to the LCPD & IED), it will be important to protect the remaining coal capacity, in order to maintain a balanced portfolio. If sufficient coal generation is not available in the winter season, then more gas plant output will be required at the time of year when gas prices would be at their highest.
  - The CPF – in combination with the other EMR policies – is likely to speed a reduced contribution from coal plant. There is a risk therefore that we may lose the opportunity to create a successful CCS industry in this country (see paras 12-14 for further comments on CCS).

- A CPF that increases UK electricity prices above average prices in other European countries may, among other things, create problems for greater EU energy market integration.

11. In our forthcoming submission to DECC on the Electricity Market Review, we will also be highlighting our concern about the complexity and coherence of the full package of EMR measures, which may result in a higher risk of an investment hiatus. It will be important for Government to ensure that the interaction of these measures with the Carbon Price Floor is fully understood, such that investor confidence is maintained.

## **Carbon Capture & Storage**

12. The Government is proposing to introduce:

‘...partial relief from the CCL for fossil fuels used in CCS plants to reflect the proportion of CO<sub>2</sub> abated and for making a commensurate adjustment to the amount of fuel duty that can be reclaimed on oil used in CCS plants. Subject to State aid approval by the European Commission, the Government proposes to legislate for such a partial relief once the technology has been proven and is available commercially.’

13. The proposal as it stands is not of great reassurance for CCS technology developers. The relief will potentially only be available once the technology is ‘available commercially’ (and even then is subject to State aid approval) and will therefore do nothing for the demonstration phase. The emissions not captured in a CCS demonstration would be subject to the tax, which could either lead to fewer demonstration projects materialising, or could require Government to offset the effect of the tax through any support it offers to CCS demonstration projects.

14. By applying only once the CO<sub>2</sub> has been abated, the proposal will not help with the upfront financing of CCS facilities, which already bear a higher risk premium and cost of capital. In any event, we are concerned that the policy does nothing to help CCS demonstration projects and we therefore believe that demonstrations should be completely exempt from the CCL.

## **Background on Alstom UK**

15. Alstom UK employs around 6,500 people in the UK at around 30 locations and has an annual turnover of about £1bn. We are responsible for the maintenance, refurbishment and operation of nearly half of the country’s existing power plants, providing a full mix of power generation technologies, combining traditional and renewable energy sources with clean power solutions. In the UK, Alstom is responsible for the construction of four of the six new gas-fired power plants in the UK providing close to 6 GW of new electrical power. We are also delivering three onshore wind farms.