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Dear Ian,

**Project Discovery – a response to issues raised in the report**

We would like to share with you our views on the Project Discovery consultation process. We found the report enlightening and we have been regularly telling our customers about the looming energy gap and the challenges for investment in new infrastructure. To have your report as a reference source has been a great help in marketing energy efficiency technology to our customers.

There is much in the report that we agree with. So we are going to focus on those areas that we believe require further attention. Our key concern in the report is that there is insufficient emphasis given to energy efficiency in the electricity market and too much emphasis given to production of more energy, whether it is gas-fired generation, renewables or nuclear. The challenges of production including investment risk, availability of capital and keeping energy prices under control are less of an issue for energy efficiency technology. Energy efficiency is a much more sustainable way forward.

In addition energy efficiency is lumped together with other green measures. However energy efficiency gives a range of benefits that other green measures do not deliver. This includes a natural hedge against rising energy prices, social benefits of reducing energy bills, and reducing supply demand stress. This in no way implies that there should be a transfer of economic support away from renewable generation. It is just that the current support for energy efficiency is poor and with a small additional level of support, the energy efficiency industry could make a substantial contribution to energy security in the UK.

Attached is our detailed response. I trust our comments are constructive and helpful. Please feel free to contact me if any of the points made in our response require further explanation.

Yours sincerely,

Angus Robertson

Chairman and CEO of powerPerfector

## **powerPerfector response to the Project Discovery Report**

### **Introduction**

In this response, we have tried to tell a logical story to set out our view of the report. We have then cross referenced our views to the questions asked by the authors of the Project Discovery report. We believe that this makes our views easier to follow.

### **Overview**

1. It is recognised that it is not possible to do a detailed analysis of more than a handful of scenarios. Indeed, the process of carrying any scenario analysis must use a high degree of simplification and aggregation to produce any kind of result. At this level, the report makes a substantial contribution to sensitising the stakeholders to the magnitude of the challenges ahead in the energy sector.
2. Our key concern is that the role of energy efficiency is not appropriately recognised within this report or in government policy. Too much emphasis is placed on production and new infrastructure investment when the most rational way forward is to reduce consumption. In addition there is the coarse aggregation of green measures as a homogeneous group when different green solutions lead to different outcomes, and consequently have different merits in terms of the work set out in this report. Policies that are specific to further enhancing the appeal and encouraging action on energy efficiency should be implemented. *[Reference to Questions 1, 2, 3, 5, 6 and 7.]*
3. We are not advocating the displacement of support for renewable and nuclear generation as low carbon solutions given that we will always need energy production. What we wish to highlight is the disproportionately low support for energy efficiency initiatives.
4. We recognise that even after energy efficiency measures have been implemented, that energy demand might rise. What energy efficiency will do is to reduce the rate of rise, which defers any investment or provides more time to make better investment decisions. *[Reference to Questions 1 and 12.]*

### **Gas security of supply**

5. The report repeatedly refers to security of supply. In the consultation paper of the 9<sup>th</sup> October 2009, the gas security of supply is described as an annual demand issue and a failure of supply on winter day in terms of a 1 in 20 cold day in a 1 in 20 cold winter event.
6. In terms of the supply demand balance, failure to meet gas demand may be due to engineering failures which is a challenge within our national ability to influence through appropriate investment. But the paper focuses on the lack of available energy, which is an international problem beyond the control of national agencies. Only actions and measures that are within our own national control will provide any sense of security of supply for the UK at a reasonable cost. There is an implicit recognition of this in the report in paragraph 4.9. Energy efficiency is within our national control.
7. A one day interruption of supply of gas may be an issue that can readily be dealt with through the use of gas storage, by switching to coal-fired generation and curtailing supplies of gas to industry. So the real issue for gas supplies appears to be in instances where there is a prolonged loss of international supplies.

### Electricity security of supply

8. The inability to sensibly store bulk electricity means that the definition of security of supply for electricity is different from gas. Gross annual measures of capacity to generate against the demand are meaningful for gas-fired generation and hydro generation only, but peak demands occur daily in power. So security of supply is a both a gross annual issue as well as a daily peak demand issue. Obviously, this peak demand issue is more acute in winter. Peak demand is primarily an investment issue whereas gross annual demand is an international sourcing issue.
9. In order to understand what we mean by security of supply it is essential to have a clear definition of an acceptable level of failure.
  - a. Securing annual supplies of electricity (and of gas) might be facilitated through contractual arrangements<sup>1</sup>. But securing peak supplies is about very specific infrastructure investments.
  - b. If we had one-hour brown-out of electricity in 10 years as a result of low supplies of energy, would we define that as an insecure supply?
  - c. If we had one-hour brown-out of electricity in 10 years as a result of engineering failures, would we define that as an insecure supply?
  - d. We can have increased security of supply, but sensibly we can never have absolute security of supply.
10. In paragraph 3.26, there is mention of changes to the market rules to encourage short-term price signals. Many of the initiatives by Ofgem in the past nine years have been designed to reduce the impact of the price signals to reduce volatility in the balancing mechanism. What is more, such signals are of low priority relative to the wider concerns about security of supply in terms of sourcing primary energy internationally or reducing demand. We would like to see a business case that sets out how such changes could compare with the benefits of energy efficiency. Of course these initiatives are not mutually exclusive.
11. If demand reduction in response to price signals is seen as a priority, then energy efficiency should be seen as an even higher priority since energy efficiency delivers reduction in demand on an on-going basis.

### The role of energy efficiency in security of supply

12. Assuming that we will always be exposed to imports of primary energy, the most effective and unambiguous way of improving security of supply is by reducing consumption. *The most secure energy, in both supply and engineering terms, is the energy that is not used.* This is a well understood mantra in the energy industry. We believe that there is insufficient regard and support given to energy efficiency; historically and in the current environment, preference is given to production. *[Reference to Question 5.]*
13. Building more gas-fired stations does not hedge the UK against rises in gas prices, and carbon prices highlighted in paragraph 3.51. Energy efficiency however does provide a hedge against rising wholesale prices of all input commodities into power generation. In this regard, we disagree with your assessment of the current arrangements. *[Reference to Question 1.]*

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<sup>1</sup> Contracts do not secure energy supplies. To secure supplies via contracts requires both parties to honour the contract and the recent history of the energy market is littered with international disputes.

14. The paper recognises the role of energy efficiency in security of supply. In the paper the role of energy efficiency in the market is bundled with carbon emissions reductions, and renewables initiatives as the green scenarios. Perhaps this is a reflection of the culture set out in the government's initiatives in this area (eg CRC Energy Efficiency scheme). The green agenda is rationalised on the basis of the impact on emissions and such a simplification does not do justice to energy efficiency technology which also has an impact on the demand for energy and provides a price hedge. In addition demand reduction also has a direct social benefit to the fuel poor and consumers in general.
15. In terms of organising the findings in the report, see paragraph 3.9, the emphasis is unambiguously on investment, finance risk, production and cost to consumers. This simply reinforces out points in section 14 above. Aggregating the green agenda together is devaluing the analysis. *[Reference to Questions 8, 9 and 11]*
16. Paragraph 3.13 reinforces the issues raised in respect of finance risk in new production. It is our view that the risk associated with energy efficiency investment is lower because of the embedded benefits of a reduction in energy costs (and the natural hedge in section 13 above) which contributes in a positive way to the investment appraisal in terms of risk and benefits. Many energy efficiency solutions are long-lived reliable assets where the asset risk is low.
17. Where many production solutions outlined in the report increase substantially the cost of energy<sup>2</sup>, energy efficiency measures can often lead to either overall cost reductions or much lower increases in prices relative to production solutions.
18. The report summarises the investment required to meet the national objectives. Up to £200 billion may be required by 2020. It is incumbent on all the industry stakeholder to direct this substantial economic resource in the most efficient way.
19. We note in paragraph 4.3 of the report that "Many of the key policy choices about the broad direction of GB energy markets rest with government..... none of the packages we outline below is achievable without some government involvement." Our comments on the report should be seen in the context of the sentiment expressed in paragraph 4.3. Government policy should lead to more support for energy efficiency. This in no way should be interpreted as a call to reduce support from renewable production, since there will always be a demand for energy and that the best source of energy is renewables. The issue is that the profile and support for energy efficiency is disproportionately low.
20. The marginal "carbon abatement" cost of energy efficiency solutions is significantly lower than production through new generation capacity. We would like to see a scenario modelled to determine the impact on energy demand of incremental levels of support for energy efficiency up to the cost of nuclear energy.

### **powerPerfactor**

21. Powerperfactor Voltage Power Optimisation technology is an energy efficiency technology that has an immediate impact on the security of supply by reducing the unnecessary waste of electricity. Typically, the powerPerfactor unit will reduce demand at a site by 13%. If we assume that a powerPerfactor unit is installed at all 0.25 million target sites in GB and that the savings achieved prudently average 10%, the impact of

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<sup>2</sup> If new investment reduced the cost of energy, it would be displacing gas fired generation from the market with or without any government support.

the technology on emissions would exceed the benefits to be achieved by the Carbon Reduction Commitment. *[Reference to Questions 7 and 11]*

22. For every 1kWh of electricity saved by the powerPerfector unit, the technology saves at least 2kWh of fossil fuel at the beginning of the supply chain at the power station. The technology therefore has the potential to make a significant contribution to long-run security of supply both in power but also gas. This ratio of energy savings in primary energy is a feature of all energy efficiency technologies in the electricity market.

### **Other green solutions**

23. Appendix 4 of the report lists the other initiatives launched by the government such as FiT and RHI that lead to an improvement in our security of supply. We note that FiT is projected to deliver 2% of electricity demand by 2020. RHI is projected to provide 12% of heat demand by 2020. The actual impact is subject to external factors such as energy prices. In comparison to FiT and RHI, a relatively small level of support for energy efficiency technology such as powerPerfector would have a disproportionately large impact on security of supply, particularly at those sites for which the conventional economic case for installing energy efficiency measures is marginal or customers are capital constrained.
24. In addition, whereas FiT and RHI will socialise the increased costs of the scheme and contribute to increased costs to energy consumers, the powerPerfector is typically paid for by the benefiting customer on the basis of a conventional investment decision.
25. There is currently no way for those customers that invest in energy efficiency to harvest the wider benefits provided to the rest of the consumers of energy in terms of security of supply for example. If there was a mechanism, then the investment in energy efficiency would be accelerated.
26. The powerPerfector is not the only solution. There are several energy efficiency technologies available in the electricity market. The regulatory environment should encourage the use of such measures to the fullest extent ahead of any energy production measures. Energy efficiency is entirely within our national power to implement, will reduce emissions, enhance security of supply, reduce reliance on imported energy, have a positive impact on prices for energy, provide a natural hedge against escalating prices, and also support the social agenda on fuel poverty. When benchmarked against the criteria set out in the report in paragraph 4.8, energy efficiency should be a top priority.
27. One other key differentiator of energy efficiency over other green solutions is that the energy efficiency solutions tend to be integral to a site and planning consent tends to be less of an issue since fewer external stakeholders are affected. In paragraph 3.49, the report highlights the non-financial barriers to adoption of different energy solutions.
28. An increase in energy efficiency could have a material impact on the outcomes and scenarios modelled in the report.
  - a. The reduction in peak demands would reduce the risk of brown outs.
  - b. There would be a requirement for reduced generation capacity.
  - c. There will be an impact on how much energy is imported and the rate of depletion of fields in the North Sea. Power stations consume about 35% of the gas burnt in the GB.
  - d. The reduction in demand would lead to a deferral of new investment in production and transport of energy. At the very least it would provide more time to make such investments and delay any potential crisis arising.