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With regard to the Cabinet Office PIG review, we wish to record the following points:

I. The combustion fuel of the future, particularly with regard to transport, should be hydrogen. The technology involving the combustion of hydrogen should be developed in conjunction with the hydrogen fuel cell (electricity generation), and the development and deployment of combustion and fuel cell technology should be regarded as inter-dependent i.e. using whichever technology is most appropriate to circumstance.

2. The principal means of generating electricity throughout the UK should be the photovoltaic cell, supported by wind turbines and wave power. All new domestic buildings should have incorporated into their structure (i.e. roof slates) the ability to generate electricity by photovoltaic cells, and all industrial and commercial buildings should install photovoltaic cells in their roofing. It is estimated that a domestic dwelling with photovoltaic roof slates can meet 50% of its own electricity requirements. The opportunity to convert the roofing areas of industrial estates and commercial premises around the UK to photovoltaic electricity generation is vast. We request that the Performance and Innovation Unit establish the scale of this electricity generating resource (which at present is virtually wholly undeveloped), and that the PIU estimate the proportion of total UK electricity consumption which could be supplied from a complete utilisation of this resource.

3. Wind turbines situated offshore and wave power offer the most environmentally acceptable means of supplementing the photovoltaic cell in the generation of electricity. It is therefore important that the PIU establish the scale of the generating resource that is available from the deployment of both of these technologies. When establishing the scale of this resource, the PIU must also establish the rate of time required to install these technologies in order for them to be able to meet their full capability as electricity generators.

4. When photovoltaic cells, wind turbines and wave technology generate more electricity than is currently being consumed by the national population (National Grid), this surplus electricity should be stored in the form of hydrogen (electrolysis of water). Thus when demand for electricity again exceeds supply within the daily cycle, the hydrogen may be converted back into electricity. This use of hydrogen as a store and generating resource for electricity should be regarded as a primary principle in the planning for future UK electricity generation.

5. The PIU should establish a logistical framework for the conversion of fuel filling stations for motor vehicles from petroleum fuels to hydrogen.

6. The PIU must establish a fully rigorous economic framework for the assessment of the economic costs of nuclear power. This framework must include not only the capital cost of the construction of new nuclear plant and its operating costs, but must also evaluate and incorporate into the economic framework the cost of the management of waste fuel, the decommissioning of old generating plant and the potential national economic cost from a major breach of radioactivity from an active reactor core (e.g.

the economic cost to the UK of a Chernobyl-scale event).

7. The PIU must undertake an assessment of the amount of electricity and combustible fuels which could be saved from greater efficiency in fuel use and consumption. For example, if all electrical installations used fluorescent bulbs how would this affect the total UK demand for electricity, and how would the economies of scale affect the manufacturing costs of fluorescent bulbs? Other significant areas for greater fuel efficiency need to be identified, and the likely results of greater efficiency quantified.

8. The PIU must quantify the total energy saving to the UK manufacturing industry from the use of recycled raw material feedstock. At the present time the waste materials in the municipal, commercial and industrial waste streams are being required to be diverted from landfill. Either these raw materials (paper and card, metals, glass and plastics) will be incinerated, or they will be collected and reused as basic raw materials. The energy saving to the manufacturer from using recycled raw material feedstock in preference to virgin feedstock varies from industry to industry but, in a broad sense, the energy saving is in the region of 50%. In terms of total UK manufacturing energy requirements, this is a very significant factor. It is therefore most important that the PIU quantify the total UK energy saving which would result from a UK-wide adoption of a recycling based waste management strategy. Further, this energy saving must be properly quantified and assessed against the alternative waste management strategy of incineration; and, the comparative advantages and disadvantages of recycling and incineration in terms of energy saving must be clearly documented.

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