



**EDISON**  
MISSION ENERGY

An EDISON INTERNATIONAL<sup>SM</sup> Company

## PERFORMANCE AND INNOVATION UNIT REVIEW OF ENERGY POLICY.

- 1. Edison Mission Energy (EME) operates 26,000 MW of independent generating plant in the USA, Australia, New Zealand, the Far East and Europe. EME is the fifth largest generator of electricity in England and Wales where the company operates some 6,500 MW of coal, gas and pumped storage plant. The company is part of a consortium developing a 100 MW offshore wind project in North Wales and expects to be a major developer of wind generation in the UK over the next decade. In the rest of Europe EME's generating activities include the world's largest project financed wind development - 283 MW in Italy, 86 MW run of river hydro in Spain and 512 MW CCGT in Italy using synthetic gas derived from waste oil.**
- 2. EME welcomes the opportunity to contribute to the Review of Energy Policy. The company's expertise as a developer of independent power projects both in the UK and worldwide, its experience of the operation of regulation in the UK market and its commitment to the development of renewable and other environmentally beneficial energy sources are all relevant to issues which have been highlighted in the PIU Project Scoping Note.**

### Energy Policy Objectives

- 3. The Project Scoping Note identifies a number of potential challenges and conflicts involved in meeting the multiple set of objectives which exist for energy policy. Those challenges and conflicts will change as developments take place in the energy market and this submission sets out EME's views on the short (next 2 years), medium (2 - 5 years) and longer term (5 to 20 years) prospects and the policy responses that should be considered. We also set out a longer term scenario for a low carbon, non-nuclear option.**
- 4. The broad objectives which we consider should be adopted for the electricity sector (and which can be generalised to energy as a whole) are:**

**maintaining a high quality supply of electricity to meet growing demand**

**meeting tightening emissions limits**

**delivering competitive electricity prices consistent with encouraging necessary investment**

5. **There are external factors which are partly or totally outside Government's control which will have an important influence on these objectives and how they are achieved. These include the level of oil and gas prices, emissions targets whether driven by post-Kyoto agreement, EU standards or UK aspirations and public attitudes to new investment.**
6. **We have assumed a continuing commitment to competitive markets in the generation and supply of electricity, with regulation of network businesses. Within that framework we believe that the biggest challenges to meeting the above objectives will come in reconciling pressures to reduce electricity prices, which are inherent in the existing regulatory and market structures, with the need to provide incentives for long term investment in new capacity which can meet the tightening environmental constraints. There will be particular challenges in the following areas:**

**In the short to medium term existing emissions limits will lead to the retirement of older less efficient coal plant. However, coal plant provides much of the shaping flexibility needed to meet the national load profile, and as it is retired prices (particularly over peak periods) will need to rise to encourage new investment in flexible plant.**

**In parallel with this retirement, investment will be required in zero-emission technology such as wind turbines. The output of such plant is inherently unpredictable, and this will change the dynamics of managing the electricity system to acceptable standards; again flexible and controllable plant will be required to 'smooth' the output from wind turbines. Overall more installed capacity will be required to reliably meet peaks in demand and the cost of operating the electricity system as a whole will rise .**

In recent years, and particularly with the introduction of NETA, regulatory focus has been on reducing electricity prices toward avoidable cost. This is not consistent with the medium and longer term need to attract new investment in generation. Plant with unpredictable short term output such as wind and some CHP face additional costs under NETA and new approaches will be needed to ensure that the environmental benefits of this type of plant are not lost.

**A key challenge will be the reshaping of the regulatory and market environments to allow prices to rise to a level which attracts new flexible plant onto the system, and to ensure that renewable generation is economic without losing the basic principle that reliable and flexible generation should be properly rewarded.**

7. **EME is firmly of the view that a market solution which properly rewards both renewable generation for its environmental benefit and flexible plant for its system management benefit provides the most viable and economic means of meeting these potentially conflicting objectives.**

### **The Short Term Scenario**

- 8. Over the next two years we expect there to be a continuing surplus of generating capacity. NETA systems will settle down but vertical integration will limit the development of price transparency and a liquid derivatives market.**
- 9. Base load prices are likely to remain low but as capacity margins begin to tighten there should be an increase in the peak to base-load price differential. This increase will only occur if the costs of balancing the system over peak are fully reflected in the system cashout prices (System Buy Price and System Sell Price). Provided that this happens, power exchange prices and ultimately wholesale prices will reflect the additional costs of meeting peak demand and load shape, and this will provide an important investment signal.**
- 10. It is important to note that many of the current modifications to the NETA rules are aimed at reducing the strength of these price signals; this will not reduce cost of managing the system but will dilute and obscure the underlying cost cause, and by failing to provide appropriate price signals jeopardise future investment.**
- 11. Gas prices are likely to remain high and linked to world oil prices. There may also be more seasonal variation. This will deter investment in new CCGT plant for which consents have already been granted. High gas prices and gas price volatility combined with uncertainty about regulatory policy focused on delivering low electricity prices, will make it difficult to finance new projects**
- 12. Emissions targets for coal plant (SO<sub>x</sub> and NO<sub>x</sub>) are set but low electricity prices will deter investment in FGD. The fuel mix for generation will continue to show a high level of diversity.**
- 13. Over this period it should be relatively easy for the policy objectives to be met. There should be no capacity or fuel shortages. Environmental targets set for the period should be met. But initial experience with NETA suggests that there will be higher CO<sub>2</sub> and SO<sub>x</sub> emissions per unit of generation than under the Pool regime as more coal plant is running part-loaded at a lower efficiency.**
- 14. Rising gas prices will put some upward pressure on electricity prices. This, if coupled with price rises in either the balancing mechanism or wholesale markets, could lead to pressure for Government or Regulatory intervention. This is already apparent in early modifications proposals under NETA. The apparent policy ‘calm’ of this period could contain the seeds of problems in later years.**

### **Short Term Action**

- 15. The regulatory regime of recent years, with its emphasis on driving prices down to the level of avoidable costs, and intervention to investigate detailed**

levels of plant operation, has produced a climate in which there is considerable reluctance to put capital at risk. Short term intervention to control price rises or dampen price spikes would further deter investment and create shortages in later years.

16. The principal focus of any active Government involvement in the electricity sector in this period should be on ensuring a supportive climate for investment in generating capacity by reducing regulatory interventions and leaving the competitive generation market to function freely subject to the general provisions of competition law.
17. The principal market structure issue in generation which may affect the achievement of objectives is the vertical integration between generation and supply. This will limit the development of electricity trading which has always been a key objective in NETA. Forward price signals will be less clear with an impact both on new investment and competition in generation. The impact of vertical integration in the electricity sector should be reviewed by the Competition Commission with the possibility of separation of generation and supply as a remedy to any adverse effects.
18. This period will see the first round of development of offshore wind farms and the continued opportunity to develop onshore renewables projects. Uncertainty about the impact of NETA on these projects, particularly the effect of balancing charges, needs to be resolved.
19. Obtaining the necessary consents is one of the most serious obstacles to the development of wind projects. This is likely to be an increasing issue in later years as the need for this type of project increases. Government should make an early start in designing a less restrictive planning process. It should also work to change public attitudes towards the location of renewable generation projects.

#### **The Medium Term Scenario**

20. In the two to five year time horizon the capacity margin is likely to narrow significantly. Demand will continue to grow, some old plant - Magnox and unabated coal will be withdrawn. The withdrawal of coal plant could affect the market's ability to meet the daily load shapes.
21. The combined effect of high gas prices and past regulatory uncertainty will continue to put a brake on new investment. This period is likely to see increases in both base load and peak prices and a rising incidence of price spikes.
22. Towards the end of this period it will become clear whether the 2010 targets for 10 % of electricity to be generated from renewables sources and for 10 GW of CHP capacity are likely to be met. It is probable that without some further action there will be a shortfall on these targets.

23. The NFFO process has shown that permitting is a major obstacle to attaining build targets. Only about 400 MW of wind turbines out of a total of 2400 MW contracted under NFFO, has been built to date. Unless there is a change in approach this gap between the scale of plant which is viable under the Renewables Obligation and the capacity of plant installed will continue.
24. In addition to the difficulty in obtaining permits for wind plant, we are concerned that the impact of NETA on wind generation will also contribute to a significant shortfall in the contribution from wind energy to the 10% target. This is recognised in Ofgem's August 2001 report. The development of CHP plant to meet the 10 GW target may also be affected by NETA and will be further constrained by rising gas prices.
- 25. During this period achievement of all three of the electricity policy objectives will be threatened. Security of supply could be at risk because of shortages of capacity. In the first instance this is likely to lead to rising prices rather than power cuts. Any attempt to restrain these price rises could, as in California, precipitate more serious supply shortage. Non-greenhouse gas targets are likely to be achieved but progress towards the 2010 targets for GHG could be below expectations.**

#### **Medium Term Action**

- 26. Allowing price signals to feed through to encourage new investment will continue to be essential. Investment in generation with a short lead time will be particularly attractive. A speeded up consents process will be necessary. Gas fired generation is likely to be most economic, OCGT and CCGT. But Government financial encouragement for coal clean up equipment, FGD, fluidised bed etc, could help extend the life and economic capacity of existing plant. Rising electricity prices will make wind generation increasingly attractive but further offshore developments will still require some grant funding to be viable.**
- 27. Given the lead time involved in developing new nuclear plant it will be necessary for Government to form a clear view during this period on whether to support this option if it is to contribute to meeting emissions targets in the longer term. That will require a clear assessment of other low carbon options which we believe can provide a viable alternative to nuclear generation.**

#### **The Longer Term**

28. Looking out beyond five years the challenge of meeting all of the energy policy objectives will become increasingly difficult and the need to establish trade-offs between them will be important.
29. As nuclear and coal plant is retired gas will become an increasingly dominant fuel. A growing proportion will be sourced from outside the UK over long pipelines subject, in some cases, to risk of political disruption.

30. The growth of generation from renewable sources and the development of CHP will mean an increase in smaller scale generating units embedded in local networks. Some of that supply, particularly wind power, will be both intermittent and unpredictable depending on climatic conditions. This problem can to some extent be reduced by diversity of location. Some flexible plant will be required to 'smooth' output but this will not need to be on a one to one basis.
31. There is likely to be pressure for a further tightening of emissions limits at a time when the options for further improvement are limited by technology, concern over rising prices and continued resistance to the visual impact of new developments.

### **A Low Carbon, Non-Nuclear Option**

32. With the progressive retirement of nuclear plant new zero or low carbon emission capacity will be needed if environmental targets are to be met. Reliance on further new gas-fired generation will not only raise security of supply issues as set out earlier but will not enable rising emissions limits to be met.
33. Development of new nuclear capacity will continue to have a long lead time in terms both of consent and construction. In addition, the economics of nuclear power is likely to remain unattractive relative to other options due to very high construction costs and uncertainty surrounding decommissioning. It remains very uncertain whether publicly acceptable solutions to concerns about operational safety and decommissioning can be found.
34. We believe that a non-nuclear option can be developed which combines the further development of zero emission wind plant with the use of existing pumped storage plant or with other forms of flexible plant. This provides a low emissions approach which can be developed quickly and incrementally and without the ongoing and long term issues associated with nuclear plant.
35. The UK has an abundant renewable resource in wind with over 40% of the resource available in Europe as a whole. This is, in principle, enough to meet the country's electricity needs three times over.
36. **In the DTI consultation document "Prospects for New and Renewable Energy" scenarios were developed to consider the likely split in forecast growth of various renewable technologies. The "high wind" scenario showed a target capacity for onshore wind of 3,773 MW (2.6% of 10% target) and for offshore wind 2,612 MW (1.8% of target) in order to meet the target of 10% of generation from renewables by 2010.**
37. **The report prepared by the BWEA "Planning for wind energy - a guide for regional targets" shows that the land area required to install 3,773 MW of onshore wind turbines is only 0.17% of the total UK land area. Wind turbines are typically sited on land that continues to be used for other purposes, typically agriculture.**
38. There is scope for substantial further investment in wind power after 2010 during the period when 6 GW of nuclear plant is expected to close. On its own this plant

will not provide the secure continuous supply of electricity that consumers require. But can be coupled with flexible plant powered from other energy sources to create the equivalent of base load generation. This approach will offer substantially lower emissions than fossil fuel base-load generation. This low carbon option has the potential to make a major contribution to meeting the UK's key energy policy objectives in the longer term.

### **Longer Term Action**

#### **39. The principal actions required from Government to realise this low carbon, non-nuclear scenario are:**

**encouraging the evolution of a market and associated regulatory regime which adequately rewards renewable generation;**

**ensuring that the market and regulatory regime also attracts flexible plant onto the system, and properly rewards such plant for its role in managing the electricity system as a whole;**

implementation of a planning regime which allows renewables projects to be taken forward without delay.

40. Achieving these energy policy objectives in the longer term will require changes in public attitudes both to the price paid for energy, which will have to rise, and to the location of energy projects. Such changes take time and it is therefore important that Government makes an early start to developing new policies and providing leadership in shaping public opinion.