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## Facing the Challenges of a Competitive Market

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British Energy is one of the world's largest nuclear generating companies. In this paper I will describe the business environment in which the company competes, its strategic responses to the challenges it faces, and share with you some conclusions regarding the priorities for the nuclear generation industry if it is to thrive as a mainstream source of energy.

### **The Shaping of British Energy**

I will begin by describing the British Energy Group in outline, and the forces which have shaped it.

#### *Nuclear Assets*

The British Energy Group is an energy company with a turnover of around £2 billion (about US\$3 billion), which operates 15 nuclear units in the United Kingdom supplying about a quarter of the UK electricity market. It also operates three LWRs jointly with PECO in the United States in the 50/50 AmerGen partnership, and will shortly add a further eight units, four of them operating, in Canada via the Bruce Power Partnership.

The total capacity of British Energy's share in nuclear generation assets is around 16 GWe net (assuming a 1.5 GWe contribution from Bruce A), placing British Energy among the largest nuclear generators in the world. You will understand then that, as the Chief Executive of British Energy, I feel a degree of involvement in the future of the nuclear industry on both a national and an international scale.

British Energy's nuclear stations in the UK and those owned by AmerGen are generally well known (and are described on the British Energy web site, [www.british-energy.com](http://www.british-energy.com)), but I expect that less is known about the Bruce Power Partnership, so I shall briefly describe it in a little more detail.

Bruce Power, wholly owned by British Energy Canada Ltd, will enter into a lease to operate the 3100 MWe capacity of the Bruce nuclear station in Ontario until 2018, with an option to extend for up to another 25 years. These reactors achieved an average capability factor of 79% over the last five years. The site also includes 3000 MWe of capacity (Bruce A) which is currently shut down, but we believe that half of this can be restarted if a business case can be achieved. Financial closure of the deal is expected by mid 2001, subject to obtaining the appropriate licences, permits and consents, including licences from the Canadian Nuclear Safety Commission and the Ontario Energy Board.

The Bruce transaction is a significant development for British Energy and represents the next stage in our international strategy. It will enable us to deploy both our existing nuclear operating skills and our experience of trading in competitive markets. A competitive electricity market is coming to Ontario shortly. A date for market opening, expected to be in 2001, will be announced

later in 2000. Full retail competition will be introduced immediately on market opening.

We are confident that Bruce Power will make an important contribution to British Energy, and we expect the transaction to be making firm profits from 2002–03. The Ontario market therefore promises some exciting challenges — something we at British Energy have learned to embrace.

#### *Non-Nuclear Assets*

We also now have non-nuclear generation. Following the introduction of new electricity trading arrangements in the UK market later this year it will be vital to have flexible plant and the ability to offer shaped contracts. We have acquired a 2000 MWe coal station at Eggborough. The station is already performing well, and by capturing mid-merit prices will complement and enhance the earnings of our nuclear baseload output.

#### **The Electricity Market that has Shaped British Energy**

I will not dwell on the mechanics of the way electricity prices are determined in the UK markets. These mechanisms have been much discussed and many people are generally familiar with them. What is important for us is to recognise some of the fundamentals that drive the markets.

In the UK, examples of the main factors to date have included:

- Over-capacity in the electricity market. UK peak winter demand is some 70% of installed capacity, while minimum summer demand is less than one third of installed capacity. Much of the excess capacity has been in the form of new entrant gas-fired stations.
- Competition has increased considerably over the past decade. Over this period, the number of electricity and gas suppliers in the market has increased by more than a factor of four.
- Our competitors' input fuel prices have reduced substantially over the period, even though gas prices have recently picked up. The lifting of the moratorium on new gas-fired stations in the UK, however, can be expected to define an effective long-term price ceiling for the industry.
- The UK electricity and gas market regulator, Ofgem, has issued far reaching proposals for new electricity trading arrangements in England and Wales, due to be implemented in November 2000. The restructuring of the markets is intended to increase competition still further, while effectively penalising baseload generation such as nuclear.

As regards electricity prices in the UK, competition has increased with corresponding reductions in prices. Moreover, the pace of change in the UK electricity market has accelerated markedly over the last year. The combination of these factors will have a fundamental effect on the structural level of electricity prices.

#### **British Energy's Strategic Response to the Electricity Market**

We will be concentrating on five key areas: safety; cost competitiveness and reliability of nuclear plant; preparations for the new trading arrangements; development of a UK energy wholesale business; and development in North America. I will describe some of these in more detail below.

*Safety*

I make no apology for stating the obvious. Our number one priority is and always will remain safety, both nuclear and non-nuclear. Without a safe business, we have no business. Few of you will doubt our commitment to nuclear safety, which has been confirmed on many occasions by the UK safety regulator, the Nuclear Installations Inspectorate.

One example of our commitment to non-nuclear safety is the string of gold and silver awards from the Royal Society for the Prevention of Accidents (RoSPA) for safety performance at our power stations. All the major players from the electricity, chemical and construction industries enter, so we are able to compare our results year on year as a way of monitoring our performance against other market leaders. What we want is to continue to make steady progress to eliminate all injuries.

*Cost Competitiveness and Reliability of Nuclear Plant*

Against the electricity market background described above, the principal task for British Energy will be to optimise the performance of its nuclear generation business and to secure the benefits of its acquisitions for the overall business.

Our key objective is to be fully cost competitive against other forms of generation.

In the UK, we will improve the reliability and cost competitiveness of our nuclear plant. We are focusing strongly on increasing both the reliability and the output of our nuclear power stations. Our nuclear fuel efficiency programme lowered fuel costs last year by £28 million (US\$42 million), with further savings planned over the next five years. We believe that there is scope for further station life extensions, and are now doing preliminary work at Heysham-1 and Hartlepool.

We expect these and other cost reduction initiatives, when combined with planned output improvements, will enable us to reduce nuclear unit costs by approaching 20% within three years.

However, these measures alone will not be enough to remain competitive and we have also started discussions with British Nuclear Fuels (BNFL) with a view to renegotiating our reprocessing and fuel handling contracts, currently costing over £300 million (US\$450 million) per annum in cash terms, or about a quarter of our total costs. British Energy does not see the case for reprocessing its own spent fuel and we want to move in the direction of long term storage, which we believe represents a more cost-effective solution to the waste problem.

We have always been and still remain BNFL's biggest customer, and BNFL is our biggest single supplier. Over the coming years, it is entirely possible that our strong interdependency may decrease as our businesses develop, but this is not likely in the short term. For these reasons, it is therefore right that the two companies consider how they can make nuclear power in the UK as competitive as possible.

*Development of Business in North America*

British Energy's international strategy is based on exploiting our expertise, developed in the UK, in the deregulated markets of North America.

AmerGen, our joint venture in the USA with PECO Energy, has made significant progress by completing the acquisition of three nuclear plants: Clinton (a 930 MWe BWR), Oyster Creek (a 627 MWe BWR), and Three Mile Island-1 (a 790 MWe PWR). We expect that these stations will provide, subject to the timing of outages, an average pre-tax profit contribution of some £10 million (US\$15 million) per annum to British Energy per reactor. In addition, we are in the process of obtaining regulatory clearances for Vermont Yankee, and this acquisition should be completed by December 2000.

AmerGen has benefited from being in the forefront of acquiring US nuclear plants, but there is increasing activity from competitors. AmerGen is developing other prospects, including a revised bid for Nine Mile Point-1 and -2, for which a public auction is now expected to be held in September 2000.

**The Environment for Nuclear Power in the UK**

The above outlines the strategy which we have put in place for the present, but of course markets can change and can be changed. So I shall now return to some of the wider issues that may determine the climate for nuclear power in the UK.

*Climate Change in the UK — Royal Commission Review*

Climate change is a subject that has become a central issue for the Uranium Institute. I believe this to be the most fundamental environmental problem which mankind has to face. Many of us at this Symposium are privileged to be leading an industry which is potentially capable of protecting this planet from the consequences of climate change that could begin to affect our children and our grandchildren, while affording the immense benefits of electricity supply to a growing world population. But the long lead times needed to develop both nuclear generating capacity and public policy mean that the industry already needs to be winning the arguments if it is to make a difference.

The politics of climate change have become extremely complex, and for more detail in this area I would refer you to the Uranium Institute briefings on climate change activities. However, I wanted to mention that there are some signs that that we are making limited progress in the UK. I shall mention just one example, which may benefit the opportunities for nuclear power in the United Kingdom in the long run.

The Royal Commission on Environmental Pollution has recently published a report entitled, "Energy — The Changing Climate". The report concludes that the UK should plan for a 60% reduction over the next 50 years in the amounts of CO<sub>2</sub> produced by burning fossil fuels. This will be difficult, since all but one of the UK's nuclear power stations are slated to close by 2025. If the current UK nuclear capacity were replaced by a representative mix of fossil generation, CO<sub>2</sub> emissions would actually increase by over 10%.

The Commission noted that the UK is poorly prepared to reduce emissions from coal, oil and gas to far below present levels, and therefore calls on government to set out, within the next five years, a programme for energy demand reductions and development of alternative energy sources.

Additionally, in a clear application of the widely accepted principle that the “polluter pays”, the Commission called for the introduction of an upstream carbon tax. In particular, it backed a general carbon tax to replace the climate change levy (which is essentially an impotent energy tax which does nothing to encourage any change in the balance of carbon emitting generation). Moreover, the Commission also says the UK should press for a carbon tax at the European Union level.

The Commission further argues that the UK government should facilitate the creation of a national emissions trading scheme. British Energy particularly favours tradeable carbon permits, which would have the effect of stimulating sources of electricity which do not release carbon dioxide.

However, it should not be assumed that a rebirth for nuclear based on the full internalisation of all environmental costs is assured. The industry will still have to prove to the public and decision-makers that it safe, and that it can manage its waste effectively to the satisfaction of the scientific community and the general public. In addition to all of this, it must be highly competitive with other forms of generation.

### **Nuclear Development Priorities**

This brings me to the point where I can summarise where I see the priorities for the development of nuclear power. The success of nuclear certainly depends on the industry demonstrating safety, competitive costs and environmental benefits, but these will not be enough if we do not address two fundamental issues.

#### *Public Acceptance*

As the Royal Commission made clear, the nuclear option needs to be acceptable to the scientific community and the general public. The industry needs collectively to develop a shared compelling vision in which nuclear generation plays its part in the future. Such a vision may, as already proposed by the Uranium Institute itself, be described in terms of a world market share in the future.

Such a figure could be based on the CO<sub>2</sub> reductions required, taking account of the electricity requirements of a growing population and the potential of other forms of generation. It needs to spell out the consequences of alternative visions. Moreover, it needs to be backed by a strategy for its realisation. I look forward to contributing with others in forming this vision.

#### *Influence*

Finally, the industry needs to hone its skills of advocacy and influence to enable it to be as effective as its opponents in setting the energy agenda. This goes beyond delivering the nuclear case to the public or the scientific community. It includes the ability to penetrate the walls of resistance within government and the other institutions that influence the energy debate, where some seek to preclude any consideration of nuclear in the misapprehension that any further development is no longer politically acceptable. I do not believe that this is the case, particularly when the electorate is confronted with the consequences, for example for transport, of losing the nuclear contribution to meeting greenhouse gas emission targets.

The time is right for politicians to take a more open-minded look at nuclear power. Climate change is a global problem requiring a radical response, which as far as energy policy is concerned, includes nuclear energy as well as renewables and energy efficiency.

### **Conclusions**

The challenge of competitive electricity markets for nuclear power in the United Kingdom may serve as a guide to other nuclear operators and suppliers worldwide, where competitive markets have opened but the full consequences have yet to unfold. There is much we can do within the nuclear industry to meet these challenges. Most immediately, we must relentlessly reduce the cost of nuclear electricity, but we must also have the courage, where necessary, to adapt and to put aside ideology and technology in favour of alternatives which will serve us better in the future.

It will not be enough, however, just to put our own house in order. We must be proactive in shaping our environment.

The future of nuclear power will not be guaranteed simply because it is the only safe source of energy currently available which is able to meet the requirements of a growing world population, or because it is environmentally sound or even economically advantageous. Success is not guaranteed even if the public is fully supportive. We in the industry must also convince policy makers to take the tough decisions that will ensure energy prices reflect the true external costs of electricity production.