

October 17, 2001

W.B. Lewis Memorial Lecture address by Dr. Robin Jeffrey

It is a real privilege to be invited by AECL's R&D Advisory Panel and, in particular, Bob Van Adel, to deliver the annual W.B. Lewis Memorial Lecture. When I look through the names of past speakers, world renowned academics, Nobel prize winners and top business people, the honour of being invited is even greater.

As many of you know, I have only just returned to the UK after living in Ontario for almost four years, first in Toronto and then the last 12 months at Kincardine in Bruce County.

Indeed, all the Jeffrey family belongings arrived in Glasgow only a few days ago and last weekend was spent unpacking crates and boxes. As well as all of the wonderful things from the Casa Loma fundraisers and the "One of a Kind" Christmas events, there was the Jeffrey collection of Canadian art, the Morrisseaus, the Pichets and the two dozen or so Inuit and Iroquois statues, paintings and textile hangings.

Unpacking them brought back so many wonderful memories of what Canada and Ontario mean to me.

And then I thought of all the GST and PST I had paid over these four years. We shall both miss each other.

So, to today's topic. My focus will be energy policy with reference to the UK government's ongoing Energy Policy Review. However, my remarks will go much beyond that and will address four issues:

- First, what are the respective roles of business and government in energy policy?

- Secondly, what are the principles underlying good energy policy?
- Thirdly, how does this relate to nuclear power and to CANDU?
- And finally, some remarks about British Energy and Ontario.

Let me start by giving you an overview of who we are, both at home and abroad.

Today, British Energy is the world's largest, private sector, owner of nuclear reactors with businesses in three countries: the UK, the US and, of course, here in Canada. Three countries, three regulatory jurisdictions, four technologies; AGR, PWR, BWR and CANDU.

In 1996, we were the last generator in the UK to be privatized. That occurred some six years after the rest of the industry. Today, we are the UK's largest generator producing over 20 per cent of the country's electricity from 15 nuclear reactors and four coal fired plants.

Our first foray overseas was in the U.S. where, in 1997, we formed a joint venture with Exelon Energy Corporation to acquire nuclear power stations. To date, AmerGen, the company we created, has acquired three plants and the business is providing a steady contribution to our earnings.

Significantly, it was the first of these AmerGen transactions, Three Mile Island, that caused the Wall Street Journal to coin the phrase that others have since copied, "The Renaissance of Nuclear Power."

And it was also this transaction that won the Financial Times Global Energy Award for the "Boldest, Successful Business Development 1999." Good to be bold, better still to be successful.

However, our most significant overseas venture by far is here in Ontario when, earlier this year, we completed the Bruce transaction with Ontario Power Generation. This covers an over-life lease on the four operating reactors of Bruce B and the four, presently shut-down, reactors of Bruce A.

Today, Bruce B provides 16 per cent of the electricity needs of this province and that will rise to almost 25 per cent once we have restarted the two Bruce A units.

It is really quite striking that the transfer of nuclear power to the private sector was deemed to be too difficult by Mrs. Thatcher in 1989, yet it was the first move in the generation decontrol process here.

I think that speaks volumes for the vision of the Ontario provincial administration and also shows how far nuclear power had moved on as a business.

The new Ontario-based company we created, Bruce Power, has many unique features. This is a joint venture with a strong Canadian content. Our co-equity investment partners are Cameco Corporation, the world's largest uranium mining company, and also the two main unions on site, the Power Workers' Union and The Society of Energy Professionals.

We are committed to making Bruce Power a success and will continue to invest in its future. Over the initial 18-year lease period, the value to Ontario is estimated to be \$3.2 billion. Furthermore, we have recently announced we will be committing some \$350 million over the next two years to restart Units 3 and 4 of Bruce A.

Not only will this be a significant spend in Ontario, it will also reinforce the electricity system here and provide yet further electricity capacity free from greenhouse gas pollution, assisting Canada meet its Kyoto commitments.

Now back to the first of the questions I posed, “What are the respective roles of business and government in energy?”

Well for a start, government is accountable to the electorate for delivering social and economic policy and is also responsible for creating an environment in which wealth can be created.

Businesses, on the other hand, are accountable to their shareholders for providing reliable dividends and growth in share value. But leaving it there would be too simplistic. Businesses, too, have wider responsibilities to their employees and customers and to the community and society at large.

For example only one of British Energy’s five company values, “profit through progress,” directly addresses profit. The remainder, “Safety first; openness; respect and recognition; professional and personal integrity,” address much wider responsibilities.

Specifically addressing energy policy, I think the respective responsibilities and accountabilities are actually quite straightforward..

Government’s role is to determine the short- and long-term goals for energy provision such as affordable energy, security of supply, environmentally responsible and sustainable energy provision. Government creates the framework for delivering energy policy including energy taxation, incentives, market rules and regulations.

Business is then given the framework in which it can work and deliver energy policy while at the same time creating value for its shareholders.

All very well in theory, but what’s it like in practice? Let me run through the main changes that have taken place in the UK over the last 10 years.

Coal, once the dominant source of electricity generation, has been reduced from its stranglehold of 70 per cent some 10 years ago down to around 30 per cent. The power base of the mining unions has been broken forever.

Gas, which was not used at all for electricity generation up to 1990, now provides nearly 40 per cent of the UK's needs, all as the result of new, private sector investment.

Nuclear has steadily increased its contribution largely through the enhanced performance of existing plants. Its share of some 20 per cent 10 years ago has now risen to 25 per cent. Furthermore, this focus on commercial success has also given rise to significant improvements in safety performance. You see, cutting corners in the full glare of shareholder scrutiny is just not acceptable. Safety and commercial success go hand in hand.

The environment has benefited greatly from this. Over these 10 years, the emission of carbon dioxide from electricity generation has reduced by around 30 per cent. As a consequence, the UK is one of the few countries in the world that looks set to achieve its commitments to Kyoto. Nuclear power is playing a pivotal role in this.

The last 10 years has seen the introduction of competition and choice, significantly reduced electricity prices and greatly enhanced quality of service to end-customers. Yes, we have had the market abuse stories too. But the great majority of customers have benefited and the papers have had a field day over the minute quantity of complaints.

Privatization of British Energy, and of all the other UK electricity companies, has brought greater transparency, more accountability and has given the industry opportunities that were never available under government ownership.

And finally, the restructuring of the UK electricity industry has made it possible for North American companies to invest in the UK and vice versa.

All of that seems a roll call of success. So, why did the UK non-interventionist and business friendly government decide it was necessary to carry out a review of energy policy?

Well, the answer lies in some other figures I need to share with you.

On present trends, in about 20 years, all but one of the UK's nuclear power plants will have reached the end of their working life and will have closed. Today's 25 per cent share from nuclear power will have become about three per cent by the year 2020.

And, for similar reasons, coal's contribution to the UK energy mix will have fallen from 30 per cent today down to some six per cent.

Gas will have become the dominant fuel, providing some 75 per cent of all of the UK's electricity needs. Coal over-dependence will have been replaced by gas over-dependence and this could have huge implications for the UK.

Whereas coal was largely an indigenous resource or available from stable countries, the same cannot be said for gas. As the UK's North Sea reserves dwindle, there will be an increasing reliance on supplies of gas from overseas. These are not available in Europe, but will come via pipelines from Russia, the Middle East and Northern Africa.

These regions are potentially unstable with the pipelines easy targets for terrorists. With over 80 per cent of the UK's gas coming from these regions, there must be huge questions on the future security of electricity supply.

So, the energy policy question the UK government has asked is remarkably visionary, "How will the energy needs of the country be sourced in 2050?" Yes, 2050! And what are the issues that need to be addressed regarding care of the environment, security and diversity of supply?"

To help find the answer to these issues, it is necessary to reflect on some of the characteristics of the electricity industry.

First, electricity is one of the basic needs of modern life, both in our private lives and to the economy.

Secondly, there is the long, time cycle for investments, maybe up to 10 years or more to gain the necessary consents and to construct a new plant.

And finally, there is the financial scale of most of the investments.

Of course, these are the reasons why some argue that electricity should be government owned. However, experience shows again and again that major infrastructure investments made on the basis of vote-winning appeal and subject to pressure-group lobbying frequently turn out to be flawed in concept and bungled in execution.

I am delighted to say that the UK government seems to be taking the energy policy issue very seriously. They recognize that the route set out upon so vigorously by Mrs. Thatcher some 12 years ago has been a great triumph but, left to itself, the market will take the UK down a path of potentially disastrous consequences.

A new policy is now required.

This brings me onto the next question, "What is good energy policy?" Perhaps the best way of starting this off is to describe the consequences of bad energy policy.

California is a case well worth studying. Here, the energy crisis was precipitated by a combination of factors: poor market design with little incentive to back energy demand with physical assets, years of under-investment with reliance on imported power to cover growing demand and inadequate transmission infrastructure.

The net result has been disastrous for consumers, politicians and shareholders. It has been bad energy policy in action for the whole world to see.

If anything good has come out of California, it is the wake-up-call it has given to many governments. Energy cannot be taken for granted.

The British Energy submission to the UK review of energy policy is boldly entitled **“Replace nuclear with nuclear.”** In this, we have set out what we think is good energy policy. And before you think that the answer we’ve given is nuclear, nuclear and even more nuclear, let me say that this is absolutely not the case. Indeed, some nuclear aficionados have criticized us for that very reason!

The thrust of our submission is as follows:

The UK must maintain a balanced energy mix which addresses security of supply and environmental considerations, a range of fuels with no fuel dominating and a high complement of carbon-free generation.

Nuclear should be part of this mix and maintained at its existing 25 per cent level and that as existing nuclear stations close, new stations are commissioned. Hence, replace nuclear with nuclear.

The market and regulatory framework has to create the environment that will stimulate re-investment. Today’s emphasis on lowest achievable prices will not deliver the right energy mix. Government action is needed to achieve this.

For example, already the UK government is stimulating investment in renewables through arrangements that require electricity suppliers to source up to 10 per cent from renewables or pay a penalty. We have suggested an extension of this to create a carbon-free obligation that would apply to new nuclear investments.

However, there are no easy answers. This is a highly complex issue with many agendas, high stakes and long-term consequences.

Let me turn now to my third question, “How does this relate to nuclear power?”

Only a few years ago, nuclear seemed dead as an energy source. Particularly in the west; any discussion of new build would have been quite unthinkable. Many plants were under performing, moral was low and, sometimes, safety standards fell well short of where they should have been. This was beginning to manifest itself in early closures and a belief that once existing nuclear reached its end of life, that was that.

But the Wall Street Journal’s phrase “a nuclear renaissance,” now applies to the existing portfolio of currently operating nuclear plants. Performance is improving across the board, as is safety. Investors are now enthusiastic and no longer shying away.

When AmerGen bought Three Mile Island in 1999, we paid just over US \$100 a kilowatt. Today, plants are changing hands for six or seven times that price. Reactors are no longer facing early shutdown and life extension applications are running at record levels.

So there is good cause for optimism. But the real question is, “Will new nuclear build just be talked about, or will it happen?”

From the perspective of security and diversity, there is no choice. It has to be. Nuclear power has a vital role to play in the society of tomorrow as well as today.

Specifically from an environmental standpoint, nuclear is the only technology capable of producing significant quantities of reliable and affordable carbon-free electricity and, thereby, making a meaningful contribution to preventing global warming.

Renewables have a significant role. But for a variety of reasons, they cannot provide the total answer. So, replacing nuclear with nuclear is something that many countries and their governments will have to address in the not too distant future.

But let me sound a word of caution. Nuclear power has still to address some fundamental issues of its own.

It must address the waste issue. Long-term solutions must be found for dealing with spent fuel before we embark on a new reactor programme. The technology to do this is available, what is required is political will.

And public acceptability will, in the future, be every bit as important as it has in the past. We must continue to be open and honest, be patient and constructive.

We also need to face up to the fact that new nuclear plant designs are still too expensive and we are very up front in our submission about this. However, we also believe that under the right conditions, new nuclear can and should be funded by the private sector.

The good news is that the waste management debate shows signs of being addressed. In the UK, our government has just announced a thorough review although it is disappointing they are planning the review should take some five years.

And there is good news too about reactor designs. They are getting more cost effective and quicker to build. But there is a long way to go yet.

Turning, finally, to Ontario, I speak both as an advocate for the province and as an investor. I commend you for the boldness you have shown in developing the Ontario energy market. Bruce Power will be fully ready for opening of the market at the start of 2002. Let us march forward together.

Similarly, I believe that the program of de-control will present opportunities for both new entrants and OPG alike.

From British Energy's point of view, we believe the Bruce transaction will deliver value both to British Energy's shareholder's and also to the province. The Bruce B stations have been performing well and we're excited about re-starting some of the Bruce A units.

Furthermore, British Energy has become a CANDU convert. Our submission highlights that the CANDU NG design could be an option for a replace nuclear with nuclear program in the UK.

We are working with AECL on the development program to license CANDU NG for application in the UK.

British Energy intends to remain at the forefront of nuclear energy on both sides of the Atlantic. Visits between staff are already demonstrating the benefits to come from the exchange of expertise in both directions.

And finally, both personally and on behalf of British Energy, I would like to extend my thanks to everyone in the Ontario business community for the incredible support we've had ever since setting foot in Canada four years ago.

My wish is that this strong relationship continues to develop and prosper over the years ahead. We want to build on our initial investment in Ontario and are actively seeking ways of doing so.

Thank you for listening.