

Driving the Nuclear Renaissance – Nuclear Power in Canada

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Not a day goes by without talk of a “nuclear renaissance” and Canada is no exception. 2008 has been a banner year with unparalleled nuclear activity all across the country.

Canada is no stranger to the nuclear industry. In 1945, the ZEEP reactor in Chalk River Ontario achieved the first sustained nuclear reaction outside of the US. Since that time Canada has developed a vigorous nuclear industry. Today, nuclear energy accounts for about 15% of the electricity produced in Canada, which is also the world’s largest producer of uranium. It produces over half of the global supply of medical isotopes and about 75% of the world’s cobalt used for medical sterilisation.

Within Canada, Ontario has 20 nuclear units, 16 in operation having produced 51% of the province’s electricity last year, two being refurbished and two more being put into safe storage. The **Ontario Energy Board (OEB)** is now reviewing the province’s first comprehensive electricity plan in more than 15 years. This plan shows that Ontario needs to refurbish and/or replace up to 80% of its generating capacity over the next 20 years. All of its nuclear plants are nearing their end of life and government has taken a decision to remove coal generating stations (>20%) from service for environmental reasons.

Bidding in Ontario

Having restarted two units at the Pickering A station, the province continued its efforts by approving the refurbishment of the Bruce A station. The first two units are nearing the end of their four-year refurbishment programme with the first expected to be back in service next year. **Ontario Power Generation** is also in the process of taking a decision on whether or not to refurbish the Pickering B station.

Ontario is now the first jurisdiction in North America to start a formal bidding process for a new build nuclear plant. Earlier this year, they issued a Request for Proposals (RFP) for a new nuclear plant at the Darlington site. Three vendors have agreed to bid - **Atomic Energy of Canada Ltd (AECL)**, **AREVA** and **Westinghouse**. Bids are due at the end of the year and a decision forthcoming in the first quarter of next year.

This process is the only competitive tendering process underway or even contemplated in North America. This is also the first time that a Canadian utility is considering building a technology other than a Candu plant. The process itself is unique as transparency is maintained by negotiating with vendors prior to bid submission. Once the terms are

finalised later in the year, bids will be submitted, with the evaluation then considering price and local content.

New Brunswick study

New Brunswick in eastern Canada has a single nuclear unit that generates about a third of the electricity in that province. Earlier this year, this unit was taken out of service for 18 months for major refurbishment and life extension. And in neighbouring Quebec, **Hydro Quebec** has just recently taken a decision to proceed with refurbishing its single nuclear unit.

Last year, New Brunswick announced a feasibility study for a new nuclear unit (AECL’s advanced Candu reactor, ACR-1000) primarily for export to the northeast US. This project would be unique in that it would be owned by the private sector using the existing Point Lepreau site and having NB Power as the unit’s operator. This study was completed earlier this year. A decision by government on whether or not to move to the next phase of the project is imminent.

Saskatchewan and Alberta

Saskatchewan, the world’s largest uranium producer, has decided that it would like to reap more benefits from this industry than just supplying the raw material to the world. **Bruce Power** has started the Saskatchewan 2020 Initiative to study the potential of bringing nuclear power to Saskatchewan. And more recently, a special Enterprise Saskatchewan “sector team” has been put in place to research value-added opportunities for Saskatchewan’s uranium industry.

And finally, Alberta has announced its intention to consider nuclear power to support its huge growth in the oil sands. Bruce Power has identified the Peace River site for a new nuclear plant. At the same time, the government of Alberta has put in place an expert panel to report back on nuclear power in October.

It’s hard to imagine so much activity in the nuclear sector all happening in Canada. 2008 is a pivotal year. What will happen next? Will Ontario be the first jurisdiction in North America to sign a new build nuclear project contract? Will Candu continue to be the technology of choice? Will New Brunswick take the ACR project to the next phase? Will Alberta embark on a nuclear programme? Will Saskatchewan enter into new segments of the industry? These questions are all in the process of being answered. There are exciting times ahead for the Canadian nuclear industry.