

## Chapter Six Alberta

### Nuclear History

Unlike the other provincial case studies, Alberta is largely bereft of a nuclear history. The University of Alberta does host a small slowpoke research reactor, built by AECL in 1978, for teaching and research. There were also some crazy schemes in the 1950s and 1960s to detonate a nuclear bomb in the oil sands.<sup>1</sup> But that is about it. This has meant that Alberta represented a virgin territory for the global nuclear revival.

### The Alberta Nuclear Policy Community

Since Alberta was a brand new market, it would have been simple for the Canadian nuclear policy community to replicate itself in the province. Yet, a unique provincial nuclear policy community emerged instead. The Alberta provincial nuclear policy community includes some of the same actors as the national policy community (Bruce Power, AECL, CNA, CNS) and some of the same actor types as other provincial policy communities (government departments of energy and environment). But it also includes some unique actors like Alberta Energy Corporation, Alberta Electric System Operator, Nuclear Free Alberta, etc.

The provincial government bureaucracy is just starting to come to grips with nuclear power. Unlike other provinces, there are few bureaucrats with nuclear expertise or experience. If nuclear power were to be established in the province, and while the nuclear process is proceeding, the Department of Energy is the lead department. Alberta,

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<sup>1</sup> For more information on this fantastic story see William Marsden, *Stupid to the Last Drop: How Alberta is Bringing Environmental Armageddon to Canada (and doesn't seem to care)* (Knopf: Toronto, 2007), 2-41.

unlike most other provinces, has its electricity produced by privately-owned or municipality-owned companies. The government “does not select the fuel or location of plants, and the decision to apply to build any generation facility is made by private sector companies.”<sup>2</sup> The role of Alberta Energy is to “develop, support and monitor the framework for bringing new generation on-line, competitive electricity markets, and efficient delivery systems.”<sup>3</sup> If nuclear power came on-stream it would be regulated by the Alberta Utilities Commission (AUC) which regulates the province’s electricity transmission system. The other major department with an interest in nuclear power is the Department of the Environment. Alberta Environment’s mission is to “assure the effective stewardship of Alberta’s environmental systems to sustain a high quality of life.”<sup>4</sup> This involves oversight over factors like water usage, air quality, and land use.

The Canadian Nuclear Safety Commission (CNSC) plays the same role in the provincial nuclear policy community as it does in the national nuclear policy community. This is because the federal government has constitutional jurisdiction over the regulation of the nuclear sector. Although in the environmental assessment process, there is coordination between federal agencies (CNSC and the Canadian Environmental Assessment Agency) and provincial departments (Alberta Environment).

The story of Energy Alberta Corporation (EAC) is a classic case of Alberta entrepreneurialship. EAC was created in 2005 by two prominent Alberta-based entrepreneurs: Hank Swartout and Wayne Henuset. Swartout, one of the big players in Calgary’s oilpatch, was CEO of Precision Drilling. Henuset, the face of EAC, had made

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<sup>2</sup> Alberta, “Province releases results of nuclear consultation,” *News Release* (14 December 2009).

<sup>3</sup> Alberta Energy, “Electricity,” (22 May 2009). Accessed on 13 August 2009 from <http://www.energy.alberta.ca/News/electricity.asp>

<sup>4</sup> Alberta Environment, “Vision and Mission,” (2009). Accessed on 12 September 2009 from <http://environment.alberta.ca/1217.html>

his money in the pipeline business and through his chain of Willow Park Wines and Spirits liquor stores. In a famous story that was often-told, Henuset became a nuclear advocate while withstanding a hurricane during a Florida vacation. Henuset realized that climate change was real and that there was need for electricity generation that did not contribute to greenhouse gas emissions. This sparked his interest in nuclear power.

EAC was a small firm; employing only a handful of full and part-time personnel with its offices above Henuset's flagship Willow Park liquor store. This was hardly the setup for constructing and operating a multi-billion dollar nuclear facility. However, the reality was that EAC was a "shell" company that was intended to be the face of nuclear power in Alberta. Behind the scenes was AECL. EAC remained independent and AECL did not put any money into the company, but there was a very close relationship. What AECL provided was the technical expertise. It conducted numerous studies on nuclear applications for Alberta. It also paid for its scientists to participate in speaking tours organized by EAC. Both firms realized that it was important that a private Alberta-based company with strong ties to the oil patch take the lead, as opposed to a federal crown corporation based in Ottawa.<sup>5</sup> In August 2006, an exclusive contract was reached between EAC-AECL which formalized the relationship. This contract specified that the ACR-1000 would be the sole reactor used by EAC.

EAC's business plan was not to build Alberta's first nuclear power plant, it was to create the right conditions for nuclear power in Alberta and then, at the right opportunity, sell off to a major player. EAC's job was to raise awareness for nuclear power in Alberta. It did so by commissioning two public opinion polls, conducting media

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<sup>5</sup> Interview with Guy Huntingford, Director of Media and Public Relations, Energy Alberta Corp (Calgary, 21 August 2009).

interviews (especially in the small communities that were viewed as possible sites like Grimshaw, Whitecourt, and Peace River), and holding public information sessions in different parts of the province.<sup>6</sup> EAC even took politicians, business people, aboriginal leaders, and activists on tours of nuclear reactors in New Brunswick and Ontario. The trip to visit Bruce Power’s facility near Kincardine, Ontario along the shores of Lake Huron (250 km northwest of Toronto) was very successful in demystifying nuclear power. The visitors were surprised by a number of things:

- how small the plant was – a very small environmental footprint;
- the fact that there was wildlife right up to the fence of the plant and that cottages surrounded the plant;
- the number of people working in the plant – showcasing not only thing . the plant’s safety culture, but also the economic impact (jobs);
- local politicians emphasizing to the visitors the economic benefits of a nuclear power plant in their community; and
- how property values went up after the nuclear plant opened.<sup>7</sup>

Beyond public relations, EAC did the necessary ground work: preparing a preliminary budget, identifying workforce requirements, establishing timelines, etc. A site selection process was undertaken. On August 27, 2007, EAC submitted a “license to prepare site” with the CNSC for a twin ACR-1000 megawatt reactor on the shore of Lac Cardinal just outside of Peace River.

With these important introductory tasks completed, it was time to either move on to the next phase, or get out. In March 2008, EAC sold out to Bruce Power, the largest private nuclear operator in Canada. Duncan Hawthorne, President of Bruce Power,

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<sup>6</sup> For a community’s views of EAC’s outreach efforts see Trevor Thain (Whitecourt Mayor), “Nuclear Power in the Snowmobile Capital of Alberta.” Presentation to the 30<sup>th</sup> annual Canadian Nuclear Society conference (Calgary, 3 June 2009).

<sup>7</sup> Interview with Guy Huntingford, Director of Media and Public Relations, Energy Alberta Corp (Calgary, 21 August 2009).

commented on the critical role that EAC had played in Alberta.<sup>8</sup> “Energy Alberta deserves great credit for progressing the dialogue around nuclear energy to the point where we feel it’s worthy of further exploration. In the Peace Country region, where an application has already been made to site a nuclear plant, we have a community that wants to learn about our technology. This is a valuable first step, but more information needs to be shared. Our partners are serious investors and we are a proven operator, but any decisions we make will rely heavily upon a willing host community.”<sup>9</sup>

With the purchase of EAC, Bruce Power joined the Alberta nuclear policy community. Bruce Power benefited from EAC’s public campaign promoting nuclear power and obtained its assets. However, it also discarded two of its major achievements. First, Bruce Power determined that Lac Cardinal was too shallow and only the Peace River was a suitable water source for a nuclear reactor because it was deep, wide, and had a good flow. Maintaining the Lac Cardinal site, but utilizing the Peace River, would have required building a 35km pipeline leading to all sorts of economic, technical, and environmental complications. In addition, the local population was concerned that the Grimshaw Gravels Aquifer would be adversely affected by a nuclear power plant on the Lac Cardinal site. Therefore, after a detailed technical review using 41 evaluation criteria, Bruce Power changed the site from a location on the banks of Lac Cardinal to Whitemud which is much closer to the Peace River.<sup>10</sup> Second, it ended the exclusivity contract with AECL. The bid process was opened up to include four competing firms: AECL, Areva, General Electric-Hitachi, and Westinghouse.

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<sup>8</sup> Wayne Henuset would remain as a consultant for Bruce Power, and would receive a very large bonus when/if the CNSC awarded Bruce a “license to construct” in Alberta.

<sup>9</sup> Bruce Power, “Bruce Power signs letter of intent with Alberta Energy Corporation,” *Press Release* (29 November 2007).

<sup>10</sup> Bruce Power, “Bruce Power Alberta narrows focus to Whitemud site,” *Press Release* (23 March 2009).

The decision to change site locations showed the strengths and weaknesses of EAC. EAC was a very good nuclear promoter and put the issue on the agenda in Alberta, but it was weak when it came to its knowledge about nuclear technology and Canada's nuclear regulatory framework. According to nuclear experts, Lac Cardinal should never have been chosen as the location for a nuclear reactor for the reasons cited above. In addition, Wayne Henuset, in a couple of public appearances in 2007 (before a Parliamentary committee and the Canadian Nuclear Association's annual conference), had embarrassingly suggested that regulation of nuclear reactor should be the same, and take just as long, as with any other power facility. In particular, Henuset felt that the environmental assessment process needed to include fewer stakeholders, less negotiation, and fewer time.<sup>11</sup> While there should be efforts at streamlining the regulatory process, Henuset's comments showed a complete lack of understanding about the critical importance – both from a safety perspective, but also from a public confidence level – which regulation of the nuclear industry plays. As one nuclear insider put it, "Bruce Power had to act quickly in its purchase of Energy Alberta Corp, or else the Alberta nuclear market would have been ruined because of their amateurishness."<sup>12</sup> This account was also confirmed by an unlikely source – the Peace River Environmental Society (PRES). Brenda Brochu, PRES President, has commented that:

EAC was out of their depth.... They did not really seem to understand the water requirement for a nuclear reactor. EAC's performance damaged the credibility of the entire nuclear industry. So did its tactics. When Bruce Power came in things changed. Bruce is very polished and professional. They know what they are

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<sup>11</sup> Murray Elston, then President of Canadian Nuclear Association, and who was testifying with Henuset before the House of Commons Natural Resources Committee, felt compelled to clarify some of Henuset's remarks. Canada, House of Commons, Standing Committee on Natural Resources, "Committee Evidence," (16 May 2007).

<sup>12</sup> Confidential interview.

doing. Because of Bruce's involvement, this worried people even more because they realized that a nuclear power plant was now a real possibility.<sup>13</sup>

AECL was the first nuclear vendor to take an interest in Alberta when they signed the exclusivity contract with EAC. However, reflecting the importance of distinguishing provincial policy communities from their national cousins, AECL could not just replicate its strategies from other jurisdictions and apply them to Alberta. In order to support the extraction of oil from the Alberta oil sands, AECL had to expand its technological focus beyond simple electricity generation. AECL "carried out feasibility studies with several major oil sands producers on how a CANDU reactor could supply their large energy requirements." It looked at "both surface mining projects and in situ extraction projects." AECL recognized the problems of transporting pressure steam across distances of more than fifteen kilometres, but its scientists were working on other options.<sup>14</sup>

When EAC was acquired by Bruce Power, the bid process opened up to other vendors and AECL's activities were matched by, among others, Areva. Both AECL and Areva worked on public education strategies in the province. AECL President Hugh MacDiarmid and then-Areva Canada President Armand Laferrere were active in the province: meeting with political leaders (provincial and municipal), granting media interviews, and delivering presentations to the public.

If specific nuclear firms recognized the uniqueness of the Alberta market, industry associations did not. The Canadian Nuclear Association and the Association of CANDU Industries treated Alberta as just another Canadian province. This shows that some actors

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<sup>13</sup> Interview with Brenda Brochu, President of the Peace River Environmental Society (telephone, 14 September 2009) and <http://www.peaceriverenvironmentalsociety.org>

<sup>14</sup> AECL, "Canada's Nuclear Opportunity: 60 years in the making." An address by Hugh MacDiarmid, President & CEO, Atomic Energy of Canada Limited, at the Calgary Chamber of Commerce, February 2009.

treat the national policy community the same way that they do the different provincial policy communities.

Alberta has had a private electricity market since the mid-1990s. The Alberta Electric Systems Operator (AESO) was created in 2003 as a non-profit organization. It is “responsible for the safe, reliable and economic planning and operation” of Alberta’s electricity transmission system.” AESO plays an important role in ensuring access to the grid, facilitating the exchange of electricity within Alberta, developing relationships with neighbouring jurisdictions.<sup>15</sup> AESO has started to include nuclear generation in its forecasting scenarios.<sup>16</sup>

The Alberta Branch of the Canadian Nuclear Society was established in April 2007 following a year of discussion with the CNS Council. The Alberta Branch, which includes both Albertans and those with an interest in Alberta, is one of the smallest. However, it makes up for its size with its activity. Its mandate, like the other branches, is public education of nuclear issues. Members have participated in teacher’s conventions and science conferences, given presentations to local governments, written letters to the editor, attended energy conferences, conducted media interviews, and participated in public debates with anti-nuclear activists.<sup>17</sup>

As a new and small organization, the CNS Alberta branch relied on support from the CNS national office. The national office has provided financial support for the branch, especially expenses for members and funds for participation in local events. The

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<sup>15</sup> Alberta Electric System Operator, “About AESO.” Accessed on 13 August 13 2009 from <http://www.aeso.ca/ourcompany/ourCompany.html>

<sup>16</sup> Alberta Electric System Operator, *AESO Long-Term Transmission Plan* (2009). Accessed on 18 October 2009 at <http://www.poweringalberta.com/media/ltp/aeso-ltsp-final-july-2009.pdf>

<sup>17</sup> Telephone interview with Duane Pendergast, Chair, Alberta Branch, Canadian Nuclear Society (30 August 2009).

most high profile form of support was the decision to host the CNS's annual conference in Calgary in 2009. The parallel Western Focus Seminar was designed by the Alberta Branch, but supported by the national office, to provide special interest to Albertans and Westerners.

As speculation about the possibility of nuclear power in Alberta increased, anti-nuclear groups started to spring up. The earliest responder and the most active regional group is the Peace River Environmental Society (PRES).<sup>18</sup> This is not surprising because, if a nuclear power plant is built in Alberta, it will likely be in the Peace region. Originally formed in 1989, the PRES has had a history of activism against the forestry, oil & gas, and large agribusiness, but it was unconscious about nuclear until EAC came to town. When EAC, and now Bruce Power, proposed building a nuclear plant in their area, PRES shifted their focus to the nuclear sector. It was a galvanizing event for PRES because it increased its membership, funds, and provided a clear direction.<sup>19</sup> For the most part, the members of PRES had little prior knowledge about nuclear issues and it has been a steep learning curve for them to get up to speed. There are exceptions, like Pat McNamara, who was a prominent anti-nuclear activist in Port Hope, Ontario and even wrote a small book (*Port Hope – Canada's Nuclear Wasteland*) describing the adverse health effects of uranium processing in that community. McNamara later moved to Grand Prairie, Alberta and joined up with the anti-nuclear forces in the region. However, for the most part the local opposition is not made up of long-time activists against nuclear power.

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<sup>18</sup> Citizens Against Nuclear Development was a second group that emerged in the region, made up largely of farmers surrounding the Lac Cardinal site. They have cooperated with PRES.

<sup>19</sup> Interview with Brenda Brochu, President of the Peace River Environmental Society (telephone, 14 September 2009) and <http://www.peaceriverenvironmentalsociety.org>

Concern about nuclear power was not isolated in the Peace River region. Citizens Advocating the Use of Sustainable Energy (CAUSE), based in Calgary, was formed in January 2007. Its goal “is to inform the public about the safety, environmental, health, and economic risks of nuclear power. We support energy conservation, and renewable energies, such as wind, solar and geothermal, as safer, less expensive and more environmentally friendly energy alternatives.”<sup>20</sup> While most of CAUSE’s members were inexperienced in nuclear activism, its founder was not. Elena Schacherl became involved in the anti-nuclear movement in the 1990s while living in Saskatoon.

As relatively new and inexperienced interest groups, PRES and CAUSE established links with other national and international anti-nuclear groups and activists.<sup>21</sup> For example, there is frequent information sharing with similar groups in Ontario, Saskatchewan, and Quebec. PRES and CAUSE have also helped to sponsor a series of visits by Gordon Edwards (President of the Canadian Coalition for Nuclear Responsibility), Jim Harding (long-time anti-nuclear activist from Saskatchewan and author of *Canada’s Deadly Secret*), and Helen Caldicott (internationally known Australian medical doctor and author of *Nuclear Power is Not the Answer*) to Alberta. These linkages were crucial to PRES and CAUSE because many of its founding members had experience in public advocacy, but lacked technical experience in the nuclear sector. Further illustrating the cooperation that PRES and CAUSE have made with larger national organizations is the fact that they were unable to solely finance the trips by Edwards, Caldicott, and Harding. Instead they have relied on sponsorship from larger,

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<sup>20</sup> Citizens Advocating the Use of Sustainable Energy, “Who we are.” Accessed on 18 August 2009 from <http://www.nuclearfreealberta.ca/whoweare.html>

<sup>21</sup> Email correspondence with Elena Schacherl, Chair of CAUSE (2 September 2009) and interview with Brenda Brochu, President of the Peace River Environmental Society (telephone, 14 September 2009).

non nuclear-specific groups, like Mountain Equipment Co-Op, the David Suzuki Foundation, and the Gordon Foundation.

A number of local groups, including CAUSE and PRES, decided that they needed to coordinate their anti-nuclear efforts in Alberta. This was because individually each group was quite small and needed to maximize their numbers. In addition, there was a sense that each group was opposed to nuclear power in the province, not just in their local neighbourhood. If the nuclear power plant location was changed from Peace River to some other part of Alberta (Whitecourt, Fort McMurray, Lloydminster, etc) the cause would not be abandoned and instead they would be ready.<sup>22</sup> Therefore in January 2008 the Coalition for a Nuclear Free Alberta (CNFA) was formed. The CNFA is “comprised of several regional groups and individuals who have joined forces to speak out and raise awareness among Albertans about the risks and costs of nuclear power.”<sup>23</sup> To join the CNFA the organization needed to have a local volunteer base, not just a paid office staff. This has meant that some of the large environmental organizations (Sierra Club, Pembina Institute, Greenpeace), although supportive, are not members of CNFA.<sup>24</sup> The CNFA has a number of concerns about nuclear power: an inappropriate solution to climate change, dangerous to human health, generates radioactive waste, does not create as many jobs as renewable energy, and is expensive to taxpayers.<sup>25</sup>

Local branches of the Sierra Club and the Pembina Institute have also become engaged in the Alberta anti-nuclear movement. The Sierra Club’s Prairie Chapter

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<sup>22</sup> Interview with Brenda Brochu, President of the Peace River Environmental Society (telephone, 14 September 2009).

<sup>23</sup> Coalition for a Nuclear Free Alberta, “About the coalition,” (2009). Accessed on 18 August 2009 from <http://www.keepalbertanuclearfree.com/coalition.html>

<sup>24</sup> Interview with Brenda Brochu, President of the Peace River Environmental Society (telephone, 14 September 2009).

<sup>25</sup> Coalition for a Nuclear Free Alberta, “About the coalition,” (2009). Accessed on 18 August 2009 from <http://www.keepalbertanuclearfree.com/coalition.html>

produced a “Community Nuclear Action Guide” designed to keep Alberta nuclear free. This guide was a combination of national materials (history of nuclear energy in Canada, debunking nuclear myths, a nuclear fact sheet, and directions on taking action in the community) with local content (description of the proposal for building nuclear reactors in Alberta, and a sample letter to Premier Stelmach).<sup>26</sup> The Pembina Institute is a national environmental organization but takes a special interest in Alberta because that is where it is headquartered. In April 2009, the Pembina Institute released *Greening the Grid* which identified green electricity options for Alberta that included a critique of the proposal to introduce nuclear power in the province.<sup>27</sup>

### **The Nuclear Issues**

#### *Setting the Stage for Nuclear Power*

EAC and Bruce Power decided to investigate nuclear power for a number of reasons. First, was a belief that nuclear power could be used to help meet Alberta’s growing electricity demand. Alberta’s Department of Energy has noted that “power consumption has been growing at an annual pace exceeding 3%.”<sup>28</sup> Alberta Energy explained that “[i]n the next 20 years, based on past demand patterns, we will need another 11,500 megawatts of new generation. Many of our existing generators are nearing the end of their useful life. There will be more than 2,000 megawatts of

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<sup>26</sup> Sierra Club, Prairie Chapter, *Keep Alberta Nuclear Free: Community Nuclear Action Guide* (2007). Accessed on 14 April 2008 from <http://www.sierraclub.ca/prairie/nuclear.htm>

<sup>27</sup> Jeff Bell and Tim Weis, *Greening the Grid: Powering Alberta’s Future with Renewable Energy* (Pembina Institute: Drayton Valley, Alberta, April 2009). Accessed on 28 April 2009 at <http://pubs.pembina.org/reports/greeningthegrid-report.pdf>

<sup>28</sup> Alberta, *Launching Alberta’s Energy Future: Provincial Energy Strategy* (2008), 11. Accessed on 3 November 2008 at <http://www.energy.gov.ab.ca/Initiatives/strategy.asp>

generation retired from service over the next 20 years.”<sup>29</sup> AESO also projects that Alberta needs another 6,650 megawatts of electricity by 2024. While this is not as high as Alberta Energy, it is still a 75% increase. This surge in electricity demand is due to three factors: an increase in population; the increased use of electricity in the production of other energy fields (most notably oil and gas); and the expected shut-down of coal plants that contribute to greenhouse gas emissions. AESO’s long-range planning saw them model a number of different scenarios and many of them included nuclear power in their projected electricity generation.<sup>30</sup> In the oil sands alone, AESO projects an increased demand of 3,200 MW of electricity by 2016.<sup>31</sup>

As a result, Alberta, in contrast to much of Canada,<sup>32</sup> is a net importer of electricity. With the exception of 2001, Alberta has been a net importer of electricity every year since 2000. In 2008, Alberta exported 558,759 MWh and imported almost four times as much at 2,248,118 MWh.<sup>33</sup> One of the objectives of the nuclear power proposal is not only to end electricity imports, but through sales to the United States, to turn Alberta into a net electricity exporter.

Alberta does require a substantial increase in electricity, but this increase cannot be currently absorbed by the electrical grid. Don Lowry, the President of EPCOR Utilities, has warned that due to a shortage of new transmission lines, “it will only be a matter of time before there is a catastrophic failure” in the Alberta electricity

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<sup>29</sup> Government of Alberta, Department of Energy, “Outgrowing our Electricity System,” (11 December 2009). Accessed on 20 December 2009 at <http://www.energy.gov.ab.ca/Electricity/1773.asp>

<sup>30</sup> Alberta Electric System Operator, *AESO Stakeholder Consultation* (16 November 2007).

<sup>31</sup> Alberta Electric System Operator, *Northeast Alberta Load Forecast* (8 May 2007).

<sup>32</sup> Canada’s electricity exports are over two times that of its imports. Ontario, Quebec, and Manitoba are particularly high electricity exporters. National Energy Board, “Electricity Exports and Imports,” (15 December 2009).

<sup>33</sup> Government of Alberta, Department of Energy, “Electricity Statistics,” (11 October 2009). Accessed on 20 December 2009 at <http://www.energy.gov.ab.ca/Electricity/682.asp>

transmission system.<sup>34</sup> The grid is aging, congested, and inefficient. It has not seen any significant new lines since the 1980s. It is true that the issues with the grid are independent of the energy source; whether the supply comes from nuclear, coal, or natural gas, an upgrade of Alberta's transmission system, as AESO has recommended, needs to occur. That being said, building a 4,000 megawatt facility in an isolated north-central locale like Peace River, as Bruce Power is proposing, would increase the transmission requirements and expense because of the distance.

The government of Alberta has started to take significant steps to upgrade and expand its electricity grid. On November 27, 2009 the Electric Statutes Amendment Act, 2009 received Royal Assent approving five of AESO's electricity projects at a cost of about \$3.4 billion:

- Southern system reinforcement to connect new wind farms.
- Two new high-voltage direct current transmission lines between Edmonton and Calgary to carry more power to Alberta consumers in central and southern Alberta.
- One new double circuit alternating current transmission line between Edmonton and the Heartland area (near Fort Saskatchewan) to carry power to industrial consumers like Alberta upgrading facilities.
- Two new alternating current transmission lines between Edmonton and Fort McMurray.
- A substation in Calgary to provide more reliable service to customers in south Calgary.<sup>35</sup>

A second reason was the role that nuclear power can play in mitigating the problem of climate change. Alberta is the heartland of Canada's oil and natural gas sector. As a result, Alberta is also Canada's largest producer of greenhouse gases. Despite

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<sup>34</sup> Quoted in "Alberta producer warns province on cusp of 'catastrophic' power failure," *CBC News* (13 June 2008). Accessed 13 June 2008 at <http://www.cbc.ca/canada/calgary/story/2008/06/13/cgy-alberta-power.html>

<sup>35</sup> Alberta, Department of Energy, "Outgrowing our Electricity System."

having only 12% of Canada's population, Alberta produces 31% of its GHG emissions.<sup>36</sup> Currently, Alberta produces over 233 million tonnes of GHGs per year.<sup>37</sup> Alberta could significantly reduce its GHG emissions by replacing coal and natural gas plants with nuclear power plants.

Making matters worse for Alberta is the fact that its conventional oil and natural gas supplies are dwindling, meaning that the province needs to rely more on the oil sands which generates more GHG emissions. The oil sands represents a great resource for Alberta since it has proven reserves of 178.8 billion barrels of oil, a total that is only exceeded by Saudi Arabia's reserves. However, it is also a very difficult resource to extract. The bitumen (petroleum that exists in a semisolid or solid form) is trapped in sand. There have been two primary means of extraction, both expensive and labour intensive. The first way is surface mining (using the famous three-story high trucks) followed by procedures to wash out the sand and silt. The second way is in situ production via steam-assisted gravity drainage (SAGD). The SAGD process pumps natural gas-generated steam deep into the surface freeing the oil from the sand and sending it up to the surface. Further upgrading of the bitumen, using hydrogen, is also required. Whichever method is used, the result is that oil sands production generates over twice the amount of GHG emissions as conventional oil.

Since 2001, Alberta has been increasing its GHG emissions to the tune of over 1 million tonnes per year.<sup>38</sup> This is the largest increase in GHG emissions in Canada. This

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<sup>36</sup> Jeffrey Simpson, Mark Jaccard, and Nic Rivers, *Hot Air: Meeting Canada's Climate Change Challenge* (McClelland and Stewart: Toronto 2007), 24.

<sup>37</sup> Email correspondence with Zewei Yu, Senior Policy Analyst, Climate Change Unit, Ministry of Environment, Government of Saskatchewan (11 October 2008).

<sup>38</sup> Email correspondence with Zewei Yu, Senior Policy Analyst, Climate Change Unit, Ministry of Environment, Government of Saskatchewan (11 October 2008).

problem will get even worse because only about 3% of the oil sands has been converted since 1970. As oil sands production inevitably increases, Alberta's GHG emissions will grow even larger. At the current rate of production, without new technology, it is estimated that the oil sands will emit 156 million tonnes of GHGs by 2015.<sup>39</sup>

Today and for the foreseeable future, the basis of Alberta's economy is oil and gas. The major challenge facing the oil and gas economy is climate change. If the environmental problem of GHG emissions is not effectively dealt with, this could result in long-term damage to both Alberta's economy and its quality of life. Already, there are increasing warnings from President Obama, the United States Congress, and California, about restricting imports of Canada's "dirty" oil. There are a number of environmental problems that nuclear power could help to mitigate: expanding electricity to meet Alberta's growing demand in a cleaner fashion, reducing GHG emissions by displacing dirtier electricity sources, and reducing GHG emissions in oil sands production. In short, the long-term international competitiveness of Alberta is jeopardized by climate change, and nuclear power offers some ways to reduce the threats posed by it.

A final comment on the link between climate change and nuclear power is needed. As governments around the world start to add a price to carbon emissions, the cost advantage of nuclear power over coal and gas plants begins to emerge. An influential study out of the Massachusetts Institute of Technology demonstrated that "nuclear does become more competitive by comparison if the social costs of carbon emissions are internalized."<sup>40</sup> This removes a major argument from the anti-nuclear forces who have traditionally maintained that nuclear power is too expensive. The fact that private firms,

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<sup>39</sup> Simpson *et al*, *Hot Air*, 84.

<sup>40</sup> MIT, *The Future of Nuclear Power*, 7.

like Bruce Power, are the ones promoting the expansion of nuclear reactors shows that there are economic advantages when the price of carbon is included.

A third reason is the role that nuclear power can play in lessening Alberta's dependence on natural gas. Natural gas is valuable because it is a cheap, efficient, and relatively clean energy source. In addition, natural gas is a versatile resource that allows it to generate electricity, heat homes and businesses, and is a key ingredient in many petrochemicals. Finally, natural gas exports have contributed greatly to the economic prosperity of Alberta. Natural gas royalties in Alberta amounted to \$42.6 billion between 2000/2001 and 2006/2007.<sup>41</sup>

Unfortunately, we are starting to run out of natural gas. While there has been lots of discussion about peak oil, a more immediate concern, especially for Alberta, is the long-term supply of natural gas. David Hughes, of the Geological Survey of Canada, has argued that Canada's natural gas production peaked in 2001. Hughes, working with estimates out of the National Energy Board, determined that at current production rates, Canada had only 9.4 years of proven reserves, 4.9 additional years of resources, and the possibility of 46.9 more years of undiscovered resources. Already gas production in Alberta is declining, and the rate of decline would be even worse were it not for the increased use of unconventional sources like coalbed methane and upgraded bitumen gas.<sup>42</sup>

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<sup>41</sup> Alberta Department of Energy, "Natural Gas," (2008). Accessed on 2 August 2008 at <http://www.energy.alberta.ca/NaturalGas/Gas.asp>

<sup>42</sup> J. David Hughes, "The Energy Sustainability Dilemma: Powering the Future in a Finite World." Presentation to the Institute of Public Administration in Canada Conference, *Canada's Energy Security: Superpower...or a Player* (Edmonton, 25 February 2008). <http://www.ipac.ca/EnergyConference/SpeakersPresentations> Also see Soheil Asgarpour, "Energy for Oil Sands Production." Presentation to the 30<sup>th</sup> Annual Canadian Nuclear Society conference (Calgary, 1 June 2009).

Nuclear power can help conserve the supply of natural gas in two major ways. First, it can replace natural gas as a source of electricity generation. Currently, 38.4% of Alberta's electricity is generated by natural gas.<sup>43</sup> Adding several thousand megawatts worth of electricity to the grid from nuclear would reduce the demand for gas-fired plants.

Second, nuclear power could be used in the oil sands. In fact, the initial proposal of nuclear power was to place a nuclear reactor in Fort McMurray to extract and upgrade the bitumen in the oil sands. After all, it takes about 1,200 cubic feet of natural gas (a cleaner fuel) for every barrel of bitumen (a dirtier fuel). One oil executive referred to this as "burning a Picasso for heat."<sup>44</sup> The National Energy Board also predicts that "natural gas requirements for the oil sands industry are projected to increase substantially from 0.7 billion cubic feet per day in 2005 to 2.1 billion cubic feet per day in 2015."<sup>45</sup> A 2007 MIT study determined that replacing natural gas with nuclear energy in the oil sands would reduce CO<sub>2</sub> emissions by 3.1 million metric tons per year for a plant producing 100,000 barrels of bitumen daily.<sup>46</sup>

Unfortunately, there are some technical problems for using nuclear power in the oil sands. The biggest impediment is the fact that the reactor's high pressured steam can only travel 15 kilometres. This means that many small reactors (less than 300MW) would need to be built. However, because of economies of scale (high initial construction costs

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<sup>43</sup> Alberta Department of Energy, "Natural Gas," (2008). Accessed on 2 August 2008 at <http://www.energy.alberta.ca/NaturalGas/Gas.asp>

<sup>44</sup> Quoted in Andrew Nikiforuk, *Tar Sands: Dirty Oil and the Future of a Continent* (Greystone Publications: Vancouver 2008), 15.

<sup>45</sup> National Energy Board, *Canada's Oil Sands – Opportunities and Challenges to 2015: An Update Questions and Answers* (8 July 2008).

<sup>46</sup> Ashley Finan Bersak and Andrew C. Kadak, *Integration of Nuclear Energy with Oil Sands Projects For Reduced Greenhouse Gas Emissions and Natural Gas Consumption* (MIT Center for Advanced Nuclear Energy Systems: Cambridge, MA, August 2007).

support building larger reactors) and licensing challenges, deploying many small reactors in the oil sands is not feasible at this time. This is why EAC/Bruce Power changed their proposal to using nuclear power for pure electricity generation. This does not mean that nuclear power has no role in the oil sands since the complex upgrading and refining of bitumen also requires electricity. Moreover, there are new technologies that are being developed that would separate bitumen through massive amounts of electricity instead of using natural gas.<sup>47</sup> Finally, there are proposals for multi-use reactors that combine steam production for the oil sands with electricity generation (both dedicated supplies to oil sands facilities and wholesale sales to the Alberta electricity grid).<sup>48</sup> The National Energy Board has argued that “Co-generation of steam and electricity holds tremendous synergies for oil sands operations by lowering energy costs and improving electricity reliability.”<sup>49</sup>

The more that nuclear power can be used as an alternative to natural gas (electricity production and oil sands extraction) the longer that natural gas supplies can last. Since natural gas is a key component in the international economic competitiveness of Alberta, it makes sense to take steps to ensure the long-term supply of this valuable, but non-renewable, resource. Environmental writer Andrew Nikiforuk has recognized that “the rapid depletion of natural gas in the tar sands is driving Canada’s so-called nuclear renaissance.”<sup>50</sup>

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<sup>47</sup> AECL, “Canada’s Nuclear Opportunity.”

<sup>48</sup> See R. Oberth, S. Kuran, R. Duffey, and C. Cottrell, “CANDU Nuclear Plant Configured for Multiple Oil Sands and Power Applications.” Presentation to the 30<sup>th</sup> Annual Canadian Nuclear Society conference (Calgary 2 June 2009).

<sup>49</sup> NEB, *Canada’s Oil Sands*.

<sup>50</sup> Nikiforuk, *Tar Sands*, 4.

*The Nuclear Power Expert Panel and Public Consultation Process*

The Alberta government was behind the rest of the provincial nuclear policy community industry in considering the ramifications of nuclear power within the province. EAC, and later Bruce Power, were involved in building public support for a nuclear power plant, making arrangements for reactor vendors, and selecting a site. Grassroots nuclear organizations, like PRES and CAUSE, were starting to mobilize. The media was covering the emerging story. What was lacking was government involvement. There were some initial musings from politicians, and some preliminary discussions within the departments of energy and environment. But that was it.

Eventually the Alberta government decided that it had to get more involved in the growing nuclear debate. In April 2008 the Alberta government appointed the Nuclear Power Expert Panel (NPEP), chaired by former federal Conservative Cabinet Minister Harvey Andre, to prepare a comprehensive report on nuclear power in Alberta. According to Andre, the provincial government was forced to act because it realized that there was simply too much government responsibility in the area of nuclear power for it to be absent. First, the federal government has constitutional authority for all nuclear facilities. Second, both the provincial and federal governments have responsibility over the environment. Third, the province has primary responsibility for social issues emerging out of major industrial projects. Fourth, the public frequently demands that all levels of government become involved in major energy projects; especially nuclear projects.<sup>51</sup>

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<sup>51</sup> Harvey Andre, "Alberta Expert Panel on Nuclear Energy." Presentation to the 30<sup>th</sup> Annual Canadian Nuclear Society conference (Calgary, 1 June 2009).

The NPEP would examine: environmental, health and safety issues; waste management; comparing nuclear energy with other electricity generation technologies; current and future nuclear power generation being used in Canada and around the world; Alberta's future electricity needs; and social issues/concerns related to nuclear energy.<sup>52</sup> The report would not make any recommendations; instead the panel's mandate was to "prepare a balanced and objective Report for the government of Alberta on factual issues pertinent to the use of nuclear power to supply electricity in Alberta."<sup>53</sup> Unlike other panels appointed by the Stelmach government, most notably the Oil & Gas Royalty Review, no public hearings would be held during the drafting of the report. Instead, the panel's findings would be used as the basis for a public consultation process that would gather input from Albertans. As Andre noted, "the report was written for government, but the ultimate audience was the public." This is why the report was kept short and relatively free of scientific jargon.<sup>54</sup>

The report was drafted in secrecy. The panel decided that it would not meet any interest groups: organizations representing nuclear technologies; organizations interested in nuclear power development; and organizations opposed to any form of nuclear energy.<sup>55</sup> Instead, the panel relied on its member's personal expertise and a specially commissioned technical study by the Alberta Research Council (ARC) and the Idaho National Laboratory (INL).<sup>56</sup> In fact the ARC/INL study was substantially more detailed

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<sup>52</sup> Government of Alberta, "Expert panel to develop comprehensive research paper on nuclear power," *News Release* (23 April 2008). Accessed 29 April 2008 at <http://www.energy.alberta.ca>

<sup>53</sup> Government of Alberta, *Nuclear Power Expert Panel Order* (23 April 2008). Accessed on 28 April 2008 at [http://www.energy.alberta.ca/Org/pdfs/MO\\_31\\_Nuclear\\_Expert\\_Panel.pdf](http://www.energy.alberta.ca/Org/pdfs/MO_31_Nuclear_Expert_Panel.pdf)

<sup>54</sup> Andre, "Alberta Expert Panel on Nuclear Energy."

<sup>55</sup> Andre, "Alberta Expert Panel on Nuclear Energy."

<sup>56</sup> Alberta Research Council and Idaho National Laboratory, *The Nuclear Energy Option in Alberta* (1 October 2008). Accessed 5 April 2009 at <http://www.arc.ab.ca/documents/ARCINL-report-secure.pdf>

than the NPEP report. At three times the length and written by nuclear experts it was able to more fully describe the following topics:

- Electricity supply and demand in Alberta;
- Comparisons between the different electricity technologies of fossil fuel-based, nuclear, and renewables;
- Integrating nuclear power plants into Alberta's electricity grid;
- Nuclear reactor's operation, maintenance, and decommissioning;
- Nuclear fuel handling and disposal;
- Nuclear safety and security;
- Water usage and sourcing;
- Environmental and social impacts;
- Regulatory processes;
- Comparisons of different nuclear reactor types; and
- A synopsis of the of the Chernobyl accident.

It was apparent from reading both studies that the ARC/INL report formed the technical basis of the NPEP report. What the NPEP did was evaluate the ARC/INL's data, condense its information, add in its own economic analysis, and put it in more laymen's language. Although the ARC/INL study was acknowledged by the NPEP report and was listed in its bibliography, its importance seemed to be downplayed. For instance, you cannot find the ARC/INL study on the Alberta Energy website as part of the NPEP documents, nor was it mentioned in the subsequent consultation process by the Alberta government. Instead, you had to go to the Alberta Research Council website to locate their report. The ARC/INL study would not be widely read, but it should have been more transparently available due to the obvious influence that it had on the NPEP report.

The NPEP's report was widely touted in Alberta's long-term energy strategy paper. The Alberta energy strategy paper stated that "nuclear energy, dependent on mined uranium, is one alternative to fossil fuels. Uranium is still plentiful globally, however issues include waste management and environmental, health, safety, and social concerns. Nuclear has experienced resurgence as the world attempts to reduce its CO2 emissions.

Some synergistic applications involving bitumen processing may be available. Alberta is currently examining the merits and challenges of nuclear power.”<sup>57</sup>

Even before its release, the NPEP report generated controversy over the panel’s membership. Anti-nuclear activists targeted John Luxat because of his past life with the nuclear industry. At the time of appointment, Luxat was teaching nuclear engineering at McMaster University, but prior to that he had worked for decades in the Canadian nuclear industry (principally with Ontario Hydro, but with other firms as well). Critics charged that he would be biased in favour of the nuclear industry in general and the CANDU reactor system in particular. CAUSE argued that “the very composition of the panel made it inevitable that we would be presented a very one-sided and biased view of the nuclear issue. The nuclear panel report can in no way claim to be objective.”<sup>58</sup> They also asserted that somebody from the anti-nuclear community (Helen Caldicott, Gordon Edwards, a member from the Pembina Institute) should have been added to the NPEP to provide balance. This charge became amplified when Luxat was later appointed to AECL’s Board of Directors. That being said, the NPEP required some advanced technical knowledge of nuclear power and Luxat provided it. None of the other panellists had a nuclear background: Andre was a former federal politician who was working in the oil & gas sector,<sup>59</sup> and Joe Doucett and Harrie Vredenburg were business professors specializing in energy policy at the Universities of Alberta and Calgary.

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<sup>57</sup> Alberta, *Launching Alberta’s Energy Future*, 10.

<sup>58</sup> CAUSE, *Nuclear Power in Alberta: An Alternative Perspective* (6 April 2009), 6-7. Accessed 24 April 2009 at <http://www.nuclearfreealberta.ca>

<sup>59</sup> Prior to entering politics, Harvey Andre was a Professor of Chemical Engineering at the University of Calgary. This meant that he had a scientific background, albeit not in the nuclear area.

The NPEP, after several months of delay, was released by the government on March 26, 2009.<sup>60</sup> Although it does not contain any recommendations, it did make some important conclusions that will frame the debate over the development of nuclear power in Alberta. These are the key conclusions of the NPEP:

1. Alberta's economy and population will continue to grow and significant additional electrical power will be needed to maintain and improve the standard of living of Albertans. Options include more fossil-fuel-burning power plants (with or without carbon capture), more renewable sources and greater energy efficiency, as well as nuclear power.
2. Each technology has trade-offs associated with it. Such trade-offs include the availability of technology, environmental impacts, costs and operating implications for the Alberta system.
3. The decision to build a plant – whether powered by thermal combustion, or wind or nuclear – is a private-sector decision taken by a company based on its assessment of the project's economic viability. But, as with any large industrial construction project, all such plants must obtain approval from relevant government and regulatory authorities regarding their impacts or consequences.
4. Nuclear power has been in use for generating electricity for more than 50 years, and more than 400 units are in operation worldwide. New designs, based on learning from previous incidents and from long-term safe operation, are safer, more efficient and easier to control and operate.
5. Nuclear power does not release carbon dioxide. This is a significant difference (in environmental terms) between it and traditional technologies using coal and nuclear gas.
6. The offsetting concerns relate primarily to nuclear waste disposal. While the spent fuel removed from a reactor is radioactive, more than 99% of this material is made up of the heavy metals uranium and plutonium, which can be recycled to be reused as nuclear fuel. The remaining waste fission products decay comparatively quickly. Thus a program of separating the spent fuel and recycling heavy metals will dramatically reduce the amount of waste to be dealt with and the time period during which this material would be radioactive at levels above the natural background radiation. (Capturing carbon from fossil fuel plants also creates storage issues).
7. In Canada, the Federal Government has the authority and responsibility for approving and regulating all nuclear facilities and nuclear related activities. Normal provincial approvals required for any major project would also be required, based on the Provinces' constitutional responsibilities for land resources.

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<sup>60</sup> Government of Alberta, *Nuclear Power Expert Panel: Report on Nuclear Power and Alberta* (February 2009). Accessed 15 March 2009 at <http://www.energy.alberta.ca>

8. Any nuclear generating project would be a major construction project and have social impacts in areas such as schools, hospitals, transportation infrastructure, Aboriginal communities, local economies, housing and so on. Significant though these issues might be, they are regularly dealt with by the Government of Alberta and its agencies and affected municipalities. (pp. 4-5)

A thorough examination of the tone and emphasis within the NPEP report revealed strong support for the development of nuclear power in Alberta. The report made clear that the demand for electricity will rise in Alberta. It estimated annual increases of 3.3% until 2024 (p. 14). Therefore the question is what electricity sources will be used to meet the demand: coal, natural gas, hydroelectric, wind, solar, or nuclear? On this point about comparative energy sources, the NPEP repeatedly emphasized that the absence of greenhouse gases in the generation of nuclear power “is a significant difference (in environmental terms) between it and technologies using traditional coal and natural gas” (p. 52). When the discussion turned to renewable energy, the NPEP pointed out that “while there is considerable interest in other non-conventional power generation means such as geothermal, bio-fuel, solar, etc., it is unlikely that these technologies will be able to satisfy all of Alberta’s growing electricity needs” (p.10). In addition, “compared with hydroelectric and wind power, nuclear has a smaller physical footprint on the landscape” (p. 52).

Nuclear waste is a prominent issue among both anti-nuclear activists and the public in general. How can highly toxic elements, some of which have half-lives in the range of hundreds of thousands of years, be effectively handled? The NPEP’s response was twofold. It began by emphasizing the role that fuel recycling (also called reprocessing) can play in significantly reducing the amount of waste. It highlighted the fact that “more than 99%” of spent fuel “is made up of the heavy metals uranium and

plutonium, which can be recycled into nuclear fuel. The remaining waste fission products decay comparatively quickly” (p. 53). All of this is true, and in fact, is critical to mitigating substantially the long-term nuclear waste issue. The problem is that fuel recycling is not yet cost effective. However, there is a ramped up research and development effort in this area that should start to bring results. Its second point was to describe in detail Canada’s Nuclear Waste Management Organization’s *Phased Adaptive Management* approach to spent fuel. This is a three-pronged approach:

- Phase One, lasting 30 years, is on-site dry storage (done at all existing facilities);
- Phase Two, lasting another 30 years, sees the spent fuel moved to a centralized facility (these exist in Manitoba, Ontario, Quebec, and New Brunswick); and
- Phase Three, after 60 years, sees the used fuel moved to a permanent storage facility in a deep geological repository (p. 34).

The NPEP acknowledged that “opinions on nuclear safety tend to be highly polarized between supporters and opponents, making it more difficult to develop an objective, balanced view of the risks and impacts” (p.35). Nevertheless, the report followed that statement up with a detailed chapter identifying all of the comprehensive safety features of a nuclear reactor (pp. 35-43). In the process, it minimized the risks of radiation exposure (by comparing nuclear-created radiation and natural radiation), reactor safety (by listing the triple redundancies of control, cool, and contain features), and the lessons learned from accidents like Three Mile Island and Chernobyl (by citing the role played by the IAEA, WANO, and the CNSC in ensuring reactor safety). The NPEP was correct to note that nuclear reactors have been functioning for six decades with few fatalities. Chernobyl being the obvious exception, and even then, it notes that the “consequences” have often been “overstated” (p. 42). When these facts are presented, it

becomes apparent that around the world, nuclear power has a substantially better safety record than any other energy source, and better than other sectors like construction or agriculture.

One of the tasks that the NPEP was mandated to address were social issues. This is because anti-nuclear critics often highlight social issues as a reason to prevent or eliminate nuclear power. However, the NPEP maintained “that there are no separate social issues which fall within provincial jurisdiction that are uniquely associated with nuclear power generation plants. Any project of the magnitude under consideration will have social impacts in areas such as schools, hospitals, transportation infrastructure, aboriginal communities, the local economy, housing and so on” (p. 53).

There are some unique challenges identified in the NPEP report that would have to be resolved before a nuclear power plant could be built in Alberta. For example, the large size of a nuclear power plant (a 800-1,000 MW reactor is over twice the size of the largest coal unit at 450 MWs) “could require increased operating reserves or, alternatively, additional transmission interconnections with neighbouring jurisdictions” (p. 44). Another challenge is the requirement of nuclear specialists such as engineers and physicists. The report noted (moving very closely to making a recommendation) that “it might be desirable to develop the nuclear-specific skill sets within Alberta, both for future employment within Alberta as the sector grows and as a technical-service export to a growing international sector. This would require training programs to help develop the necessary expertise, which could be sponsored by government or facility owners” (p.46).

Critics who were hoping for a denouncement of nuclear power have argued that the NPEP was biased. For example, Gordon Edwards was blunt when he said that “they

are really presenting a very one-sided, very limited picture which doesn't give the average member of the public, or the average politicians, any real insight into the nature of the hazards that are peculiar to nuclear."<sup>61</sup> Meanwhile, Brian Mason, the leader of the Alberta New Democratic Party complained that the panel "cannot claim to be unbiased when it clearly tries to abdicate responsibility of the decision to have or not have nuclear power. B.C. and Manitoba have anti-nuke policies and we should too."<sup>62</sup>

For its part, CAUSE has argued that the NPEP was riddled with errors and omissions. Here is just a sampling:

- does not discuss the design and construction problems of generation III+ reactors;
- does not discuss the risks and consequences of a nuclear accident;
- ignores the Nuclear Liability Act that makes insurance available to nuclear operators at a fraction of the costs of a catastrophic accident;
- does not address the health risks of nuclear power;
- and ignores the real financial costs of nuclear power (hefty government subsidies, massive cost overruns, costly unscheduled reactors repairs, etc).<sup>63</sup>

CAUSE also responded to the NPEP with its own report: *Nuclear Power in Alberta: An Alternative Perspective*.<sup>64</sup> This alternative view, which was written prior to the release of the NPEP report, was heavily influenced by the Pembina Institute's *Greening the Grid* report.<sup>65</sup> It reiterates most of *Greening the Grid's* recommendations: appoint a panel on renewable energies; Alberta should collaborate with the federal government on a study on the health effects of nuclear power; and Alberta should

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<sup>61</sup> Quoted in Hanneke Brooymans, "Nuclear energy safe alternative, says expert panel," *Calgary Herald* (27 March 2009), A11.

<sup>62</sup> Quoted in Kerry Diotte, "Nuke power input urged," *Edmonton Sun* (27 March 2009).

<sup>63</sup> CAUSE, *Response to the Alberta Nuclear Panel Report* (7 April 2009). Accessed 15 April 2009 at <http://www.nuclearfreealberta.ca>

<sup>64</sup> CAUSE, *Nuclear Power in Alberta: An Alternative Perspective* (6 April 2009).

<sup>65</sup> Bell and Weis, *Greening the Grid*.

establish a centre of excellence to support growth and expertise in renewable energies. The rest of CAUSE's short rejoinder repeats most of the typical arguments against nuclear power: it is unsafe, unreliable, expensive, has cost overruns, damages the environment, consumes too much water, and produces massive amounts of highly radioactive waste. In a public response to the NPEP's critics, Harvey Andre asserted that "facts are by definition one-sided" and that contrary to the allegations of CAUSE and others, the NPEP did include risk assessments.<sup>66</sup>

In a sense, these critics are correct; the NPEP did come out in favour of nuclear power. The NPEP authoritatively dispelled some of the myths around nuclear power and put it on a level playing field with other electricity sources. This is the very definition of neutrality. The NPEP has properly framed the debate not as "nuclear yes or no?" but "what electricity sources does Alberta need to build to address its growing needs?"

Nuclear power is very contentious. Therefore, it is crucial that the people are heard. The NPEP served as the basis for a "multi-faceted consultation process" that was designed to gather the views of Albertans on nuclear power. Innovative Research Group, an independent research firm, was commissioned by the government to collect the data and provide a summary to the government.<sup>67</sup> The process, which took place between April 27 and June 1, included:

- a workbook and survey was developed, and made available to all Albertans, that covered the themes of the NPEP report. These were completed either via an interactive online mechanism or in paper form.
- Twenty discussion groups were held in ten communities across Alberta.

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<sup>66</sup> Andre, "Alberta Expert Panel on Nuclear Energy."

<sup>67</sup> Government of Alberta, "Alberta government releases Nuclear Power Expert Panel report: Process to gather views from Albertans begins next month," *News Release* (26 March 2009) and Government of Alberta, *Alberta Nuclear Consultation* (April 2009). Accessed 28 April 2009 at <http://www.energy.alberta.ca>

- Six stakeholder discussion meetings were held in Edmonton with individuals from groups that came forward asking to participate and those identified as having an interest in the issue. Included were local government politicians, aboriginal people, businesses, and environmental groups.<sup>68</sup>

Not all members of the Alberta nuclear policy community participated in the public consultation process. For example, Bruce Power, despite being the principal advocate for nuclear power in Alberta, deliberately avoided the public consultation process. Similarly, the CNS Alberta Branch was not asked to participate in any of the stakeholder meetings. In contrast, the anti-nuclear organizations, despite being very critical of the process, participated in the stakeholder sessions in Edmonton. CAUSE was upset that the online workbook and feedback form starts with the executive summary of the NPEP. This led them to allege that “a biased nuclear panel report with one-sided, pro-nuclear information will play a key role” in the public discussions. They believed that a counter-document, focusing on alternative energy, needed to be commissioned by the government to balance the debate. Instead of “selective meetings with stakeholders and some focus groups,” they recommended that “public hearings be held throughout the province.”<sup>69</sup> However, the reason that public hearings were not chosen was because they often get hijacked by interest groups. The only people who tend to participate in public hearings, with the exception of hearings at potential reactor sites (which will be included in the consultation process) are the rabid anti-nuclear and pro-nuclear activists. It is to avoid this problem that focus groups, where the participants are not told what the topic is in advance, were used to provide input from Albertans who were undecided about nuclear

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<sup>68</sup> Government of Alberta, “Alberta Energy: Nuclear Power,” (9 July 2009). Accessed on 30 July 2009 at <http://www.energy.gov.ab.ca/Electricity/1577.asp>

<sup>69</sup> CAUSE, *Response to the Alberta Nuclear Panel Report*.

power. Allowing any interested person to fill out the workbook (in combination with the stakeholder consultations and focus groups) was a legitimate compromise.

*Alberta Government Decision*

On December 14, 2009, the Alberta government announced its conditional support for nuclear power in the province. “Alberta,” as Energy Minister Mel Knight explained, “will maintain its existing policy where power generation options are proposed by the private sector in the province and considered on a case-by-case basis. We will work with the federal government regarding any nuclear power application to ensure provincial rules and environmental standards are respected. Further, we will not invest public dollars in any nuclear power proposals.”<sup>70</sup>

The government based its decision, in part, on the public consultation process that was conducted on the entry of nuclear power into the province. According to Knight, “Albertans have told us that we shouldn’t be closed to new generation technologies that could provide clean, low-emission power. At the same time Albertans have identified concerns with nuclear power that potential future applicants will need to fully address.”<sup>71</sup>

The public consultation report, compiled by Innovative Research Group Inc., was released at the same time as the government’s announcement.<sup>72</sup>

As mentioned earlier, the public consultation process included a telephone survey (1, 024 people), twenty randomly selected discussion groups (193 individuals), stakeholder discussion groups (First Nations and Métis, community, business,

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<sup>70</sup> Alberta, “Province releases results of nuclear consultation,” *News Release* (14 December 2009).

<sup>71</sup> Alberta, “Province releases results of nuclear consultation,” *News Release* (14 December 2009).

<sup>72</sup> Innovative Research Group Inc., *Alberta Nuclear Consultation*. Report prepared for: The Alberta Government – Department of Energy (2009). Accessed on 14 December 2009 at <http://www.energy.gov.ab.ca/Electricity/pdfs/AlbertaNuclearConsultationFull.pdf>

environmental, and all of the province's anti-nuclear groups), and an online and mail-in questionnaire (3, 615 responses).<sup>73</sup> As Table 6.1 shows, the different tools led to different results. Most noticeably it shows that randomly-selected Albertans (telephone survey and discussion groups) were more supportive of nuclear power than self-selected Albertans. A probable explanation for the division between randomly-selected and self-selected Albertans is the efforts by the anti-nuclear groups to mobilize people to fill out the survey, but in a way that opposed nuclear power. For example, CAUSE sent out emails, labelled a "call for action," through affiliated organizations with instructions on how to fill out the survey. They wrote that "the information preceding the survey is full of false and missing information. I am attaching again CAUSE's response to the Nuclear Panel Report, our alternative report and media release. Here is a summary of some of the errors in the government document preceding the survey (this new government document is similar, but not identical, to the Nuclear Panel Report.)"<sup>74</sup> A second feature of the public consultation report was that the discussion groups showed, when more information was provided, that the level of opposition to nuclear power dropped. This was consistent with the telephone survey and workbook submission which showed a strong correlation between how informed people were about nuclear power and electricity and their support for nuclear power.<sup>75</sup>

**[Table 6.1 about here]**

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<sup>73</sup> Innovative Research Group, *Alberta Nuclear Consultation*.

<sup>74</sup> Confidential email received by the author.

<sup>75</sup> The telephone survey showed 40% of those who could explain nuclear details to others were supportive of nuclear power, compared to 10% who were "not familiar" with nuclear power at all. In addition, 31% of those who follow electricity news "very closely" were supportive of nuclear power, compared to 15% of those who follow electricity "not closely at all."

The reaction to the government's announcement was predictable. Bruce Power saw the decision as a green light. Duncan Hawthorne, Bruce Power's CEO, stated that [i]t's encouraging to see the door remain open for us to demonstrate we can bring value to the province and help Alberta meet its future energy needs without contributing to greenhouse gas emissions."<sup>76</sup> Local anti-nuclear groups, despite predicting in advance the government's decision, were nevertheless outraged. Adele Boucher Rymhs, president of the CNFA, argued that "[t]he government didn't listen."<sup>77</sup> Similarly, Elena Schacherl, the founder of CAUSE, complained that the government "ignored the 55 per cent opposition to nuclear from the 3, 600 Albertans who filled out the consultation workbook." For Schacherl, the "[t]he consultation results were the culmination of a process that right from the start suggested that the government had already made up its mind about nuclear. They set out to convince rather than consult Albertans."<sup>78</sup> In contrast, the large environmental groups argued that "[n]ot providing public dollars to subsidize the nuclear industry hits the final nail in the nuclear energy coffin for the province."<sup>79</sup>

Alberta's decision to allow nuclear power on a case-by-case basis gives approval to Bruce Power to move forward on its project. If the province had said no, then Bruce Power would have obviously abandoned the project. However, the conditional "yes" from the government only meets one of Bruce Power's conditions. The other conditions include a willing host community, a successful environmental assessment, and a profitable business case. While it was waiting, Bruce Power has been doing some

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<sup>76</sup> Quoted in Jason Fekete, "Alberta would welcome private nuclear power," *Calgary Herald* (15 December 2009), A4.

<sup>77</sup> Quoted in Fekete, "Alberta would welcome private nuclear power," A4

<sup>78</sup> Elena Schacherl, "Alberta might go nuclear despite citizens' concerns," *Calgary Herald* (18 December 2009), A17.

<sup>79</sup> Quoted in Fekete, "Alberta would welcome private nuclear power," A4.

preliminary work. It has secured the land for the Whitemud site. It is also conducting a public education and consultation campaign with the local community. Finally, it has started some of the pre-environmental assessment work (water flow and temperature, soil studies, etc).<sup>80</sup>

### **The Relationships within the Policy Community**

Alberta government departments have often met with the other actors in the provincial nuclear community. Since the departments of energy, environment, and others were largely uninformed about nuclear power, this was largely of an information sharing nature. For example, Bruce Power has had an open dialogue with bureaucrats from Energy and Environment. These talks, which have not discussed any potential role for the provincial government, have focused on defining the proposed nuclear project, explaining nuclear technology, and showing how nuclear could fit into Alberta's energy system.<sup>81</sup> Academic specialists in nuclear science and nuclear policy have also been invited to speak to members of the Energy and Environment departments. Alberta government officials also met with the CNSC for an information session to get a better idea on what the CNSC is and what it does.<sup>82</sup>

The relationship within the nuclear industry changed when Bruce Power bought out EAC. AECL and EAC had a very close partnership, exemplified by the exclusivity contract. However, Bruce Power went to an open bid process. This was because, in the words of a senior executive who was very knowledgeable about the contract, it was a "one-sided bad deal." EAC had to work with AECL, but AECL could work with another

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<sup>80</sup> Interview with Albert Cooper, Lead Alberta Affairs, Bruce Power (Calgary, 9 September 2009).

<sup>81</sup> Interview with Albert Cooper, Lead Alberta Affairs, Bruce Power (Calgary, 9 September 2009).

<sup>82</sup> Confidential interview with CNSC official.

company. Getting out of this contract was an essential condition to Bruce Power's takeover of EAC.<sup>83</sup> Bruce Power subsequently informed AECL that it was modifying the agreement to include two new conditions. First, AECL had to be exclusive to Bruce Power; they could not go to anyone else. Second, Bruce Power had the right to conduct an open bid among all nuclear vendors. AECL "was not happy" with the changes, but they accepted it.<sup>84</sup>

The relationship between the scientific community (represented by the CNS Alberta Branch) and the nuclear industry is one of similar goals, but organizational distance.<sup>85</sup> Initially there was a close relationship between EAC and the CNS Alberta Branch. Many of the EAC principals joined the CNS and CNS members helped with public education efforts in northern Alberta, but when EAC was transferred to Bruce Power, the "relationship petered out." With AECL, the CNS Alberta Branch maintains some tight relationships, due to overlapping membership, but this is at an individual to individual level, not between the two organizations. As far as the industry spokesgroup – the CNA – cooperation exists, like the 2009 CNS Conference in Calgary, but the mandates of both groups are different. The CNS has utilized some of the CNA's research when their goals meet (industry expansion for the CNA, and public education about nuclear power for the CNS). For example, when the CNA commissioned the Canadian Energy Research Institute's (CERI) to write a critique of the Pembina Institute's Greening the Grid report, the CNS helped to publicize it. The CNS has the expertise to

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<sup>83</sup> Confidential interview.

<sup>84</sup> Interview with Ron Oberth, Team CANDU Project Leader, AECL (Calgary, 2 June 2009).

<sup>85</sup> Members of the Alberta anti-nuclear community believe that there is no separation between the CNS and the nuclear industry. They point out that CNS members often work for the industry. Academics, too, have often worked for the industry in the past. Even if they have no industry ties, teaching nuclear physics requires an expansion of the industry. Interview with Brenda Brochu, President, Peace River Environmental Society (telephone 14 September 2009).

conduct this type of research, but does not have the resources. The CNA has the funds to commission this type of work, while the CNS would have to rely on volunteers.<sup>86</sup>

There is an adversarial relationship that has pitted the nuclear industry and the CNS Alberta branch on one side, and Alberta's anti-nuclear organizations on the other. There have been public debates and competing op-eds and letter writing campaigns. While the nuclear industry is motivated by profits, the CNS members and anti-nuclear activists are intellectually and emotionally committed to their cause.

### **The Influence of the Policy Community**

There is a consensus among all actors within the Alberta nuclear policy community that the most influential actors are the nuclear industry. This does not mean that industry actors control the decision-making process. Therefore, a larger question is how influential have they been? One way to measure their influence is through agenda-setting. When EAC, and later Bruce Power, started investigating the possibility of introducing nuclear power to Alberta, they forced other actors to respond: AECL formed a partnership with EAC, the CNS established an Alberta Branch, local anti-nuclear organizations formed, and Alberta Energy began to educate itself. Eventually, the government of Alberta created the NPEP and began a public consultation process in reaction to industry actors pursuing nuclear power in the province.

A second way to measure their influence is through the level of political support for its issue. There has been an evolution, commiserate with growing public support, in the thinking of leading Alberta politicians towards nuclear power. This can be shown by

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<sup>86</sup> Telephone interview with Duane Pendergast, Chair, Alberta Branch, Canadian Nuclear Society (30 August 2009).

tracing some of the statements and actions of former Premier Ralph Klein. In 2005, Klein declared that nuclear was the “least acceptable” option for the oil sands.<sup>87</sup> By April 2006, Klein was saying that “we have to consider nuclear power.”<sup>88</sup> Finally, in February 2008, Klein co-authored a think tank study on continental energy that was supportive of nuclear power.<sup>89</sup>

The current Stelmach government had been much more cautious when asked about nuclear power in the province. During his campaign for the Progressive Conservative leadership in 2006, Stelmach did not advocate nuclear power (as did Jim Dinning, the perceived frontrunner), but instead promised to study whether it was a right fit for the province. After assuming the Premiership, there were some initial tentative comments, both in favour and in opposition, from some of Stelmach’s cabinet ministers. For example, Treasury Board President Lloyd Snelgrove said that nuclear power was “a natural fit” for the oil sands, but Environment Minister Rob Renner responded that he was sceptical and was concerned about the disposal of nuclear waste.<sup>90</sup> But once the NPEP was established a cone of silence went up around the government and no public comments were made except to say that they are consulting Albertans. Even when the government announced its conditional support for nuclear power in December 2009, there have been no comments outside of Premier Stelmach and Energy Minister Knight.

Alberta, because the Progressive Conservatives have been in power since 1971, has been described as a “one party dominant” province. Nevertheless, there is some value

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<sup>87</sup> Quoted in Claudia Cattaneo, “Nuclear ‘least acceptable’ oilsands power source: Klein,” *The National Post* (23 September 2005), FP5.

<sup>88</sup> Dave Ebner, “Nuclear Pitch for Oil Sands,” *The Globe and Mail* (17 August 2006).

<sup>89</sup> Ralph Klein and Brian Tobin, with Gerry Angevine, *A Vision for a Continental Energy Strategy* (The Fraser Institute: Vancouver, February 2008). Accessed 3 April 2009 at [http://www.fraserinstitute.org/commerce.web/product\\_files/ContinentalEnergyStrategy2008.pdf](http://www.fraserinstitute.org/commerce.web/product_files/ContinentalEnergyStrategy2008.pdf)

<sup>90</sup> Quoted in Jason Fekete and Tony Seskus, “Nuclear option divides Alberta,” *Calgary Herald* (11 February 2007).

in examining the position on nuclear power of the opposition Liberal and NDP parties. The Alberta NDP, like the NDP nationally, is strongly opposed to nuclear power.<sup>91</sup> Meanwhile, the Liberals, like the Stelmach government, have been cautious as they independently investigate the issue and await the results of the public consultation process. The Liberal party had refrained from making any official statement until the government releases its nuclear decision.<sup>92</sup> When the government did make its decision, the NDP were strongly opposed and the Liberals were ambiguous.<sup>93</sup>

A third way to measure influence is through public support. In November 2005, EAC commissioned Longwoods International to poll on the use of nuclear power in the oil sands: 40% of Albertans supported, 36% of Albertans were neutral, and 23% of Albertans opposed.<sup>94</sup> In January 2007, the Calgary Herald conducted its own poll which found that 45% of Albertans supported nuclear power, 42% were opposed, and 12% were unsure. There was stronger opposition in northern Alberta, home of the oilsands and the likely location of a nuclear power plant, with 53% opposition and only 36% support. The strongest support was found in Calgary, home of the oil sands decision-makers, with 47% support and only 41% opposition.<sup>95</sup> The July 2009 survey done in conjunction with the public consultation process revealed a similar breakdown, as Table 6.1 illustrated, Albertans favourite response was to consider nuclear power plant proposals on a case-by-case numbers. While all of these polls show support for developing nuclear power in Alberta, the support is soft. This is because of a number of factors: it has not been

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<sup>91</sup> Diotte, "Nuke power input urged."

<sup>92</sup> Interview with David Swann, Alberta Liberal leader (28 September 2009).

<sup>93</sup> Quoted in Jason Fekete, "Alberta would welcome private nuclear power," *Calgary Herald* (15 December 2009).

<sup>94</sup> Wayne Henuset, "Nuclear's New Frontiers and Canada's Oil Sands," *Presentation to the Canadian Nuclear Association*, (Ottawa, 1 March 2007).

<sup>95</sup> Fekete and Seskus, "Nuclear Option divides Alberta."

measured over time, it has shown great volatility, the degree of nuclear knowledge is weak, and there is no specific proposal that is being polled.

A final way to measure influence is through elections. The municipal elections in the Peace River region in the fall of 2007 saw several pro-nuclear councillors defeated and several anti-nuclear councillors elected. In addition, the March 2008 provincial election and the November 2008 federal election included candidates in the Peace River ridings that ran on explicit anti-nuclear campaigns. However, outside of the Peace region, the nuclear issue has not been an election issue at any level of government.

### **The Changes within the Policy Community**

Unlike other provinces, there has been no change to the Alberta nuclear policy community. This is because the community is in its infancy. Instead the Alberta nuclear policy community is in the process of being developed. Actors are being formed, relationships are being established, and each of them is vying for influence with the government.

The most notable aspect of the creation of the Alberta nuclear policy community is its relationship with the national nuclear policy community. This was not a case of the Canadian nuclear policy simply replicating itself in Alberta, but rather a series of mutually beneficial partnerships within the different components of the nuclear sector. The trend was local Alberta groups seeking out technical knowledge from members of the Canadian nuclear policy community. AECL knew that it needed to find a local partner on the ground if it was going to penetrate the Alberta market. In addition, it had to do technical studies to see if it could modify its existing reactor designs to the specific

requirements of the oil sands. Bruce Power, which is only a reactor operator in Ontario, is seeking to expand its role by becoming owner/operator in Alberta. This is because Alberta, unlike other provinces, has a privatized electricity system. There is no provincial crown corporation with a monopoly over the electricity grid. The Alberta Branch of the CNS relied heavily on financial, administrative, and technical support from the national office. Local anti-nuclear groups could mobilize grassroots opposition, but they relied upon national, other provincial organizations, and international groups to provide technical advice. Finally, Alberta government officials in the departments of energy and environment sought out information from their federal cousins.

**TABLE 6.1****COMPARING NUCLEAR POWER PUBLIC CONSULTATION RESULTS  
BY INSTRUMENT**

	<b>Telephone Survey (Randomly- Selected)</b>	<b>Discussion Group (Randomly- Selected)</b>	<b>Submission of Workbooks (Self- Selected)</b>
<b>Province should encourage proposals</b>	19%	22%	28%
<b>Considered on a case-by-case basis</b>	45%	57%	16%
<b>Province should oppose proposals</b>	27%	13%	55%
<b>Don't Know</b>	8%	8%	1%

**Source:** Innovative Research Group Inc., *Alberta Nuclear Consultation*. Report prepared for: The Alberta Government – Department of Energy (2009). Accessed on 14 December 2009 at

<http://www.energy.gov.ab.ca/Electricity/pdfs/AlbertaNuclearConsultationFull.pdf>