



**Canadian Unitarians for Social Justice**

*A national faith-based organization founded in support of Unitarian values*

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**Darlington Brief from Canadian Unitarians For Social Justice  
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Dear Panel Members,

Thank-you for giving us this opportunity to present the views of Canadian Unitarians For Social Justice on the subject of commitments to new nuclear power plants in Darlington, Ontario.

**Introduction**

Canadian Unitarians For Social Justice (CUSJ) is a National, faith-based organization founded to actively promote Unitarian values in the society at large. Included in those values is the understanding that our world is very interconnected, and that the actions taken regarding nuclear power at Darlington will have wide ramifications across Ontario, the United States, in Quebec, across Canada, and in the world as a whole. We write also to share our concerns about the economic, environmental, and military impacts of nuclear power, and the overall risk to the well-being of our planet, both today and for future generations.

A majority of our board believes that Ontario and other provinces should not proceed with new developments of nuclear power until there is a full assessment of all the energy options. From that assessment we need to coordinate provincial and national energy strategies. These strategies should include:

- plans to realize real gains in energy conservation. This is the most cost-effective approach.
- plans to phase out both carbon-based fuels and nuclear reactors while we plan to accelerate the phase in of renewable options.
- Develop a vision for a mix of many power sources from many locations and a sensitive system that can increase or decrease supply on demand. It may be possible, but it is our hope it will not be necessary to include nuclear power in that mix.
- Provide the same sort of subsidies and incentives to a range of renewable energy sources that are now provided to oil and gas and nuclear power. Remove those incentives and subsidies from oil production. Avoid the nuclear option if at all possible because of the size of the public investment required and the nature of the risk.
- Develop plans to educate the public on the new energy strategy for the 21st century, its impact on their lives and how they must be involved in the solutions.

We acknowledge that the issues presented here are complex and that while the majority of us oppose nuclear technology, there are some who feel it is necessary in the short term.

### **Problems With the Nuclear Industry**

- The nuclear industry has certain well-known problems. We have had a moratorium on nuclear development for the past 30 years--a time for the industry to address those issues--and as far as we know, none of those issues have been adequately addressed.
- Nuclear reactor construction projects have a history of design problems, big cost over-runs, and high maintenance costs that result in large public debt. Experience shows that either high electricity rates or significant government subsidies are required to make the nuclear choice a feasible option. In Ontario we are still paying 1.8 billion a year in debt retirement for past cost overruns on reactors that are past their useful lives.
- Because of the high risk, nuclear plants are uninsurable except by the public purse. If there is a major disaster the public will pay for it. We are told over and over by the nuclear industry and government that nuclear power is safe and there will be no big disaster. It is simply not possible to take this position. Nobody predicted a 9.0 level earthquake in Japan. Today nuclear workers are sacrificing their lives to prevent a major environmental catastrophe. With climate change we can anticipate more frequent and more intense catastrophic events, of all kinds, by land and sea. According to Mark Clayton, Friday, March 18, 2011 in the Christian Science Monitor, there were 14 near misses due to slow responses in safety upgrades and poor regulatory monitoring in the United States in 2010. It

was just such slack safety and maintenance practices that caused the Chernobyl disaster in Russia and the Gulf Oil Spill in 2010.

- The cost of decommissioning a single reactor after its useful operating life will exceed two billion dollars.
- There is no demonstrated safe way of disposing of the nuclear waste of the spent fuel in a nuclear reactor or of managing it securely for the necessary time period (Possibly hundreds of thousands of years). This represents both an enormous cost and an enormous hazard.
- Uranium enrichment of used fuel leads to weapons-grade plutonium for nuclear weapons. This poses problems of security and control of used fuel on an on-going basis. The more nuclear power plants there are, the greater the risk of nuclear weapons and possibly war.
- Nuclear Power Plants and spent fuel storage areas are obvious targets for terrorist actions. Even in otherwise safe geographic locations, it cannot be said that the risk of a catastrophic event is negligible. The damage caused, if such an event were to occur, would affect population health and well-being, all living plants and creatures in the ecosystem, the water, the air, the earth, and the food supply.
- The Darlington plants are located in the heart of a huge population area, on the edge of the Great Lakes, source of drinking water for millions of people. Its connection with the waters that feed the St. Lawrence means that the impact of a catastrophic event could easily go as far as the United States or Quebec.
- In their day to day operations nuclear power stations emit tritium and other radioactive materials into the environment. According to Dr. Gordon Edwards of the Canadian Coalition for Nuclear Responsibility, "Tritium poses an ever-present radiological hazard to CANDU (reactor) workers. It is also an environmental contaminant which pollutes the drinking water of many communities situated near CANDU reactors. In addition, atmospheric emissions of tritium are readily inhaled - and also absorbed directly through the skin - by residents living near CANDU reactors." There is increasingly strong evidence linking these emissions to childhood leukemia.
- Nuclear power is portrayed as a steady, reliable source of energy, but the track records of the Ontario power plants show just the opposite. Corrosion problems have caused major shut downs of the plants more often than expected, often for many months. The renewal and maintenance costs have been much higher than expected. This is why we are still paying \$2 billion a year on our power bill for these old plants.
- Nuclear power is sometimes seen as clean energy. It is supposed to reduce our use of green house gases. If you take into account the energy used to produce nuclear power from cradle to grave including including CO2 emissions during mining, fuel enrichment and plant construction and deconstruction and spent fuel storage, this is not true.

- According to a December 14, 2006 report by the Pembina Institute, no other energy source combines the generation of as wide a range of conventional pollutants and waste streams—including heavy metals, smog-and acid-rain precursors and greenhouse gases. It notes that "...total greenhouse gas emissions associated with uranium mining, milling, refining, conversion and fuel fabrication in Canada are estimated at between 240,000 and 366,000 tonnes of CO2 per year."
- If Ontario, other provinces and other areas of the world all renew their commitment to nuclear power, we will soon face a shortage of uranium. This will result in great economic and environmental costs as we exploit lower and lower grades of Uranium ore, leaving huge radioactive tailings to spoil the environment and degrade the quality of life on earth for all living things.
- Harmful emissions from the nuclear industry will continue to increase as supplies of rich uranium ore decrease. According to scientists Jan Willem Storm van Leeuwen and Philip Bartlett Smith, "...at the present rate of use, worldwide supplies of rich uranium ore will soon become exhausted, perhaps within the next decade. Nuclear power stations of the future will have to rely on second-grade ore, which requires huge amounts of conventional energy to refine it. For each ton of poor-quality uranium, some 5000 tons of granite that contain it will have to be mined, milled and then disposed of. This could rise to 10,000 tons if the quality deteriorates further.
- According to energy writer David Fleming in Prospect magazine on the subject of rich ore depletion, as the need to exploit lower grade ores grows, "...it (nuclear) would be putting more energy into the process than it could extract from it. Its contribution to meeting the world's energy needs would become negative! The so-called reliability of nuclear power, which its proponents enthuse over, would therefore rest on the growing use of fossil fuels rather than their replacement."
- Nuclear power is high cost and simply not economical -- especially when you include the costs of overruns, extra maintenance, full precautionary security measures, regular inspections, and the cost of dealing with decommissioning and management of the waste. It is not an acceptable investment of public funds.

## **The Precautionary Principle**

We live in a time of major change. We have built our energy security on huge, centralized mega-projects. The future will be different. We now know that we will not have the steady fuel supplies to sustain this strategy and that the costs or potential costs to the environment of our methods has been too great. What we need from our leadership, including the Joint Review Panel for Darlington is a commitment to moving us forward into a sustainable energy future that honours both the health and well-being of our people and of the planet as a whole. To do this, we must take into account the

precautionary principle -- that if there is doubt about the safety of an approach, and the consequences of an accident are disastrous, then we must err on the side of caution and prevention.

In this regard, we consider it unwise to commit to the on-going production of nuclear waste when there is no known way to detoxify it or store it with any degree of safety. Even though nuclear power has been operational for nearly 50 years, the nuclear industry has yet to determine how to safely dispose of extremely toxic radioactive materials. According to the brief submitted by the Mouvement Vert Mauricie, these materials should not be moved from the site where they were created for between twenty and thirty years because they are simply too radioactive and unsafe to move. After this waiting period, these materials will have to be stored in a controlled, safe storage site for thousands of years, posing on-going health and safety risks to future generations. We have not successfully identified anywhere in the world that would meet the required conditions for truly safe storage over such a period of time crossing many generations.

According to the Canadian federal environmental assessment panel (Seaborn) report released in March, 1998 after an eight year intensive public process "... the (AECL) concept in its current form for deep geologic disposal does not have broad public support, and does not have the required level of acceptability to be adopted as Canada's approach for managing nuclear fuel wastes." Canada's nuclear industry-based Nuclear Waste Management Organization (NWMO) may endorse the permanent underground burial of irradiated nuclear fuel wastes, but as Elizabeth May says, (former Executive Director of the Sierra Club of Canada and currently leader of the Green Party of Canada), "...the NWMO has taken its mandate and skewed it to allow them to make decisions that are industry-biased, and not based on health, safety and security measures."

OPG has not evaluated or costed the long term expense of managing the more toxic and longer-lived radioactive wastes produced by the Generation III reactors (the AP-1000, the EPR and the Advanced CANDU). It has also not evaluated the health and environmental risks involved to the communities along transportation routes, and to workers handling that waste, if nuclear waste must be moved from the reactor site to a permanent storage site.

Communities who are now considering taking on the task of nuclear waste storage will be putting their own children and grandchildren at risk. Such a policy does not meet the standards of the precautionary principle. It does not achieve a vision of sustainable energy and living for the twenty-first century.

In addition to the waste disposal problem created by Nuclear Reactors, we also have the radiation problem of tailing ponds at mining sites. The Stop Darlington coalition says “there are currently over 200 million tonnes of uranium tailings in Ontario and Saskatchewan. This waste remains a hazard for thousands of years and contains carcinogens, such as radium, radon gas, and thorium among others.” We learned at Sharbot Lake that the ore at that site would be much lower grade and create a much bigger problem of radioactive tailings polluting the environment and the water supply.

We also cannot ignore the threat that nuclear waste poses in terms of providing fuel for nuclear and conventional weapons. Low grade spent fuel is already being used in “dirty cluster bombs.” Plutonium, of course, is the necessary fuel for modern nuclear bombs. For true safety and security we need to eliminate the nuclear threat, not increase it by producing this dangerous fuel.

More nuclear reactors can lead directly to greater nuclear weapons proliferation. According to Dr. Helen Caldicott, as a result of the projected so-called “...renaissance of the nuclear power industry, twenty-five countries and consortia will have access over a period of two decades to Generation IV reactors fueled by plutonium.” In her book, *Nuclear Power is Not the Answer*, Dr. Caldicott reminds us that “Canada supplied India with a CIRUS heavy water reactor for making nuclear energy. . . It was this reactor that gave India the plutonium it used in its first 1974 nuclear weapons test.”

One negative consequence often leads to another. A decade ago, few would have expected North Korea to have developed atomic weapons. What will a nuclear armed world look like a decade from now.

***All of these very real risks and problems can be prevented or eliminated if we choose to phase out nuclear power.***

## **The Energy Alternatives**

We are very concerned that a huge investment in nuclear energy will preclude the possibility of a serious investment in more sustainable energy options. We can’t afford both. It is an urgent priority for Ontario to invest in constructing and maintaining more energy and cost-efficient alternatives to both coal and nuclear power. The province needs to set up a financial incentive system that will encourage the initiative and creativity of Ontarians to develop and implement a great range of energy projects including:

- Conservation projects that reduce the overall demand for power. Ontario is one of the most wasteful users of electricity in the world. As was noted by Jack

Gibbons, Chair of the Ontario Clean Air Alliance, Ontarians can build a "virtual nuclear power plant" by eliminating wasteful energy use at less than one fifth the cost of a real one. (OntarioCleanAirAlliance.ca)

- natural gas projects that simultaneously heat a home or business and provide it with electricity. These highly efficient combined heat and power (CHP) systems have a current running cost of 5.7 to 9.7 cents per kilowatt hour compared to 21 cents per kwh for nuclear.
- various scales of wind power projects sensitive to the local environment
- small, ecologically sensitive water power projects
- various scales of solar power projects including both photovoltaic and hot water.
- More water imports from Quebec. Existing transmission lines could meet up to 75% of the power now produced by the Darlington Station at a cost of 6.5 cents per kwh.
- biomass projects
- cogeneration
- heat pumps as an alternative to electric air conditioning and gas or electric heating.

It should be noted that a recently released study (January 27, 2011) by Mark Jacobson and Mark Delucchi of Stanford University concludes that the world can be electrically powered by alternative energy from wind, water and sunlight within 20 to 40 years.

A renewable energy strategy for Ontario is both possible and realistic. The UN Environment Programme (UNEP) and the International Energy Agency-backed Renewable Energy Policy Network for the 21st Century (REN21) project, declared that, for the second year in a row, the quantity of "newly installed capacity" of renewable energy in Europe and the U.S. outpaced that for fossil fuels and nuclear. The report suggests the same outcome is likely on a global basis this year. Everyone is going this way. If we don't invest seriously in this direction, we'll miss out on the innovation, the research and development and the jobs this new sector has to offer.

### **The Alternative Viewpoint**

Every method of energy production has a negative environmental impact. Some processes pollute less than others. Something is only "green" relative to something else. Even big water projects are very environmentally damaging. The gains to be made of a steady source of power outweigh the potential risks and the environmental costs.



The biggest environmental threat we face is global warming and nuclear is a good option in the face of that problem because it results in fewer greenhouse gases. Global warming is real where is a serious nuclear catastrophe is less likely.

Many proponents of nuclear power believe we do not have the capacity to replace nuclear power and coal power with renewable energy. We're not technologically or politically ready.

The non-nuclear alternatives require political will and much behaviour change. Modern civilization is based on an energy-intensive infrastructure and paradigm. Changing this will take many decades and much political will (which we do not see available at the present time.) The inertia of energy usage patterns will be exacerbated by pressures in the developing world to "catch up" to living standards enjoyed in the west since the industrial revolution.

In this regard, human behavior in democracies is more sensitive to economic pressures than environmental pressures. People won't make these changes because it is the right thing to do. They'll have to be pushed by price. If change is too accelerated, it will disrupt the economy and cause social upheaval. We need a phased in approach. Nuclear energy provided by public investment can be a stabilizing force as we develop the capacity for renewable energy.

In the interim, we want to shift energy usage away from carbon-based fuels to mitigate the effects of greenhouse gas emissions. Nuclear energy is one medium-term solution to this challenge. It will also have the side effect of reducing the threat of terrorism by shifting wealth away from unstable third world dictatorships and oligarchies.

Nuclear is claimed to have several advantages:

- It is seen as a cleaner alternative with virtually zero carbon emissions per kilowatt-hour (post construction); This is less true than its proponents believe (see above)
- It is seen as a stable, reliable energy source, and able to provide stable baseload energy production (doesn't vary depending upon sunshine or wind). This is its greatest strength, when it is not shut down for maintenance and repair.
- We have a "Made in Canada" technology which we as Canadians should take pride in (CANDU) (The report submitted to the review panel February 22, 2011 by the Mouvement Vert Mauricie gives a detailed critique of the quality and safety of the CANDU reactor technology and its high maintenance costs due to frequent corrosion problems.)
- It is seen as extremely safe compared to the health effects associated with fossil fuels (smog, acid rain, spills, etc.)



- If people have to pay the real cost of energy represented by nuclear power, it will encourage conservation.
- The fuel can be reprocessed and used again. (Posing a risk of nuclear terrorism or war.)

Proponents of nuclear energy assume we will find a solution to the storage of nuclear waste. Coal and oil cause considerable pollution in addition to green house gases and coal causes many deaths due to dangerous mining situations. They consider it to be the lesser of evils, and a far lesser evil than burning fossil fuels. They believe baseload generation from nuclear is probably the safest foundation going forward while we continue to increase renewable capacity.

Proponents of nuclear energy also have grave concerns that we have the political will and commitment to build a renewable energy system in time to significantly turn the world around on greenhouse gas emissions. They fear we will not be able to provide sufficient electricity without burning more coal. We acknowledge this difficulty.

### **The Political Problems**

The problem for proponents of renewable energy sources may be one of political beliefs. Today we have a big discussion on the role of government. In all areas of the energy sector we believe it is the private sector that should finance, build, and run energy projects. This works in most cases, but not in the case of nuclear power. Because the risks are so great, nuclear power must be planned, financed, regulated, and insured by government. Because non-nuclear alternatives don't have those risks, we believe they should happen on their own, at the initiative of the market and don't give them the regulated framework and financial support of nuclear. They aren't, therefore, on a level playing field. If we understood provision of power for people as the role of government then we could put the same investment into alternative energy and achieve excellent results in the delivery of green power. Given that as a province and as a country we need a proactive energy policy to reduce green house gases as quickly as possible, we need to look at our beliefs about the role of government in developing and implementing energy capacity. What could we do with \$26 Billion dollars in the renewable energy sector!?

The development of a comprehensive energy plan is held up in Ontario by a stalemate situation with strong arguments on both sides and risks on both sides. The question is, will we conduct a serious, comprehensive and unbiased comparative analysis which includes projections of the full range of benefits and costs of new nuclear construction from cradle to grave vs. those from a realistic spectrum of green energy sources and conservation?

***Will we consider, in that analysis, the best interest of future generations, and the ultimate relationship we want between humanity and the earth?*** Will we commit, as a people, to the implementation of an economically and ecologically rational energy plan? Or will we succumb to political pressures, lobbyists, business interests, and tendencies to prefer the status quo to real change? Without an objective study, any conclusions drawn regarding the efficacy of proceeding with a highly centralized, extremely expensive nuclear option at this point would be meaningless and could do a great disservice to the people of Ontario.

Our greatest concern is that, if we invest in new nuclear power plants for Darlington, that this project will devour any monies the government has to spend supporting alternative energy projects for years to come. According to the Stop Darlington coalition “This (Darlington) plan will divert billions of dollars that should be invested in cheaper and cleaner green energy sources. Expanding our use of green energy to replace Darlington would create thousands of decentralized jobs, save rate-payers money and end the production of radioactive waste.” If we can only afford one approach, then we believe it must be to accelerate the phasing in of all kinds of renewable energy.

Those who argue that social change is difficult and it will take time to turn this big boat around are right. This is the biggest problem facing the government. No matter which option they pick they will have to deal with NIMBY -- Not in my backyard please!!! If they pick the nuclear option, they will have to fight NIMBY for the location of the power plants, for the storage of the waste, for the movement of the waste from one area to another, and so on. If they pick the renewable energy option, they will have to fight NIMBY where-ever people are concerned about the noise of large windmills, or other inconveniences they may experience as a result of a renewable energy project. Whatever solution is picked, it will require leadership from our province to sell that solution and make it work. It will require political will and commitment. And it will require a political and economic infrastructure that supports the direction we seek:

- The energy strategy must be explained and sold to the people in a public education campaign.
- A renewable energy strategy will be based on bottom-up initiative rather than top-down mega projects. Financial and technical structures and systems and incentives must be available to encourage the innovation and involvement of the people of the province.
- With proper government support, renewable projects should be no more expensive to the individual or the business than other forms of power and should be competitive.
- Provincial and Municipal power companies must work with government, business, and the people to make use of all that innovation and coordinate it to produce an overall efficient system.

## Conclusion

The Darlington New Nuclear Power Plant Project Joint Review Panel has a very important decision to make. The decision here will set the future direction for energy policy here in Ontario, and may influence similar processes being made in other parts of Canada and around the world. Canadian Unitarians For Social Justice are asking you to take the full scope of the impact of your decision into account. We live in an interdependent world and your decisions will have a large impact. Just as Sweden and other countries around the area were affected by Chernobyl, we know that the winds and waters may carry radioactivity from Japan to other places. We've measured radiation effects in Canada from Japan this week. What kind of a world do we want to live in? Do we have to use this highly risky source of energy in order to meet the power needs of the human family or can we do better?

We are ordinary people. We have done our best to research the facts, but you will have at your disposal a much greater range and depth of information than we can provide. We ask you to:

- take the full range of costs, from cradle to grave in the nuclear process into account as you assess the economic feasibility of nuclear power.
- take the full range of activities required to produce nuclear power before you assess how much it is a solution to the greenhouse gas problem.
- give a very close assessment to the different types of reactors proposed and look deeply into their records for cost overruns, maintenance and repair issues, security and record of leaking and so on. Don't just take the industry message into account. That industry has a long track-record of downplaying its risks and its weaknesses.
- If Germany and the rest of the world are reviewing nuclear energy and leaning towards renewable strategies, Canada must do the same, or fall behind in technological innovation.
- Consider seriously the precautionary principle. Are the risks really worth it?
- Think about the kind of world you want for your children and your grandchildren. Will nuclear power help bring that about? Or will it put future generations at risk? What kind of a relationship do you want us to have with the earth, and with all species of life?

We have spent time here talking about alternatives to nuclear power to assure you that alternatives are possible. But it is not your job to plan the energy future of Ontario. It is your job to determine if nuclear energy is a safe and cost-effective option. It is your job to determine if it is a viable option in Ontario today. Given the costs and the risks, we ask you to say no. The nuclear industry has not found solutions to its major problems. Tell the Ontario Government to put its efforts into conservation and renewable energy options to generate sustainable energy security that allows us to live in harmony with the planet and with each other. Do this for the sake of future generations and all living beings.

Thank you for your time and concern for what's best for our province and our one and only planet.

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Margaret Rao  
Board Member,  
Canadian Unitarians For Social Justice

## Source Documents

### Anti-Nuclear

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- Mouvement Vert Mauricie submission to the Joint Review Panel (technical review of CANDU reactors)
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- Physicians For Social Responsibility - Thorium fact sheet
- Searching For a Miracle - Richard Heinberg on the need for a no-growth strategy for society.
- Walt Robbins -- Nukeshaft.ca

### Pro Nuclear

- George Monbiot -- Guardian March 22, 2011
- Nuclear Power, Thorium by By Ambrose Evans-Pritchard

### Beyond Nuclear

- Searching For a Miracle - Richard Heinberg on the need for a no-growth strategy for society.