Letters From Those Who Support Nuclear Power

Before we get very far down this road, I think we have to realistically address the question of the alternative to nuclear power. It would be irresponsible not to. If we don't present a feasible response to this question, I have doubts about associating my name with the position taken.

The text below outlines the issue. I can't vouch for the accuracy of all
the figures because I haven't studied the issue but they do outline the scope of the challenge.

According to a Wikipedia entry (Ontario electricity policy). 36.6% of Ontario's generation capacity (2006) is nuclear, 24.9% is hydroelectric,
20.6% is coal, 16.4% is oil/gas, 1.3% is wind and 0.2% is biomass/landfill gas. In terms of capacity, the figures are nuclear (11,419 MW), hyroelectric (7,768 MW), Coal (6,434 MW), oil/gas (5,103 MW), wind (395 MW) and biomass/landfill gas (70 MW) for a total of 31,189 MW. The Ontario Power Authority (OPA) estimates that by 2025, hydroelectric capacity will increase by about 2300 MW, wind by about 4600+ MW and biomass by about 800 MW. There might be some debate about these figures (although I am not aware that they have been challenged) but they convey the scale of things.

From an environmental point of view, I expect the ranking from least to most attractive is coal, oil/gas, nuclear and hydroelectricity, to consider only the large contributors. Coal and oil/gas is 37% of full capacity. If we want to very substantially reduce or eliminate coal plus
oil/gas generation, what are we going to replace it with? Replacing only
coal generation requires expansion using other generation methods by about 6500 MW; to eliminate both coal and oil/gas requires other methods
to generate about 11,500 MW. And that makes no allowance for population growth.

Add to all of that the expectation that over the next 20 years, approximately 80% of the province of Ontario's existing electricity generation capacity will need to be replaced. Thus if coal plants are to
be eliminated and nuclear plants not replaced, the generation of the order of 15,000 MW of electricity by other means will have to constructed. Can that be realistically done in an environmentally

satisfactory way? If so, how? These questions need to be answered. I note here that Energy Probe has come out against photovoltaic and wind systems, in part because output cannot be counted on (eg cloudy windless
days) and also in part because of the cost. I say this as one who has a microFIT contract, ie We have a photovoltaic array on our roof.

Don McDiarmid, Perth

Thoughts of Michael Szarka

By way of background, until just over a year ago I worked at UOIT in research management and worked closely with research professors in the Faculty of Energy and Nuclear Science. I currently work for a publicly-funded organization devoted to "green chemistry"; we are a bunch of research chemists who want to lessen the environmental impact of the chemical industry. The chemical industry is the world's largest manufacturing industry. It is somewhere at the base of everything you drive in, sit on, wear, eat, play with, etc. Adhesives, coatings, plastics, fertilizers, medicines, and synthetic fabrics are only some examples. Chemicals are both utterly ubiquitous and necessary. The thing is, there really is no such thing as "green chemistry"; there is only green-ER chemistry. That is, every manufacturing process pollutes to some extent, just some processes pollute less than
others. Something is only "green" relative to something else.

The same principle is true of energy production; every way that we produce energy has some negative environmental impact, just some are less harmful than others.

I will make a few statements that I believe to be true:

1) The biggest environmental challenge facing humanity appears to be global warming due to anthropogenic sources of greenhouse gases;
2) Modern civilization is based on an energy-intensive infrastructure and paradigm. Changing this will take many decades, and 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;
3) Human behavior in democracies is more sensitive to economic pressures than environmental pressures (and I wish this were not so).

I believe that the result of these three factors is that the energy-

intensity of first-world countries will only decrease very slowly, and that it will be driven primarily by a slowly escalating price of energy (and occasional "shocks" such as the oil spike in summer 2008). In the interim, we want to shift energy usage away from carbon-based fuels to mitigate the effects of greenhouse gas emissions, and, quite frankly, to shift wealth away from unstable third world dictatorships and oligarchies. Nuclear energy is one medium-term solution to this challenge.

Nuclear has several advantages:

- virtually zero carbon emissions per kilowatt-hour (post construction);
- stable baseload energy production (doesn't vary depending upon sunshine or wind)
- "Made in Canada" technology which we as Canadians should take pride in (CANDU)
- extremely safe compared to the health effects associated with fossil fuels (smog, acid rain, spills, etc.)

Nuclear has several disadvantages as well:

- very expensive; but increased energy prices is a good thing if we want to change human behavior, and all low-carbon energy production will be more expensive than fossil fuels for the foreseeable future;
- generates radioactive waste; however that waste takes up relatively little space and can be stored safely long-term in stable geological formations. Moreover, there is a potential to develop new technologies that could produce energy from the current waste. (These technologies exist; the barriers to implementation are political not technological and relate to international protocols for managing fissile material).
- could be a security threat; terrorists could target nuclear reactors or attempt to steal materials to create bombs or dispersive devices (dirty bombs that shower radioactive material). The fact is that there is no safety from terrorism, but reducing money flow into the middle east for oil is certainly one strategy that would help. Secondly, the consensus among security experts seems to be (based on discussions I have had) that bio-terrorism is cheaper, easier to implement, and has more dramatic and immediate results than radiation poisoning.

The thing is, you can make such a list about every form of alternate energy with pros and cons. Solar power is still too inefficient for large-scale energy production. Wind power is too variable, and even on a small scale is encountering massive resistance from property owners close to the wind farms (which boggles my mind but there it is nonetheless). Geothermal has few disadvantages, but it is initially

expensive and really only useful for heating.

Of course, we can say plow the money into conservation. Personally, I am deeply pessimistic about getting Canadians to voluntarily make dramatic changes in their behavior. Right now, the Ontario NDP (whom one would think should know better) are giving heat to the Provincial government for having HST applying to hydro rates. Apparently even a small increase in energy costs is unacceptable for a leftist party, let alone the right. Imagine what the chances are of convincing the Tim Hortons crowd that they should pay more for clean energy, stop idling their pick-up in the drive-through, and turn down their thermostat voluntarily. The only thing that will make Canadians use less energy (in a substantive way) is to make it cost more, and that is simply incompatible with our political system and the views of the majority of Canadians.

So that is why I am pro-nuke; I believe it to be the lesser of evils, and a far lesser evil than burning fossil fuels. Change has to be gradual because the public will not accept radical change, and nuclear is the best alternative to mitigate the negative effects of modern energy intensity in the meantime.

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I basically agree with Michael's text. I would add the following observations:

1) It is true that people are slow to react to pressures to change - up until it becomes clearly apparent to the majority that something needs to done. Then at some point a drastic shift can occur. That happened in the UK in the late 1930s. Resistance to rearmament was strong and some despaired that there would ever be an adequate response to the Nazis. When it became apparent that this strategy was disastrous, people's views changed rapidly. Similarly when the Soviet Union could no longer function effectively, it collapsed rapidly. I think something similar

will occur when the environmental and social justice limitations of the currently dominant economic creed are realized to be inadequate and unsustainable.

2) I agree that energy generated from fossil fuels, especially coal, present significant health effects (smog, acid rain, spills, etc as listed by Mike). There is also the large number of deaths experienced in
the coal mining industry. Premature deaths from the mining, smog and other consequences of coal power generation are significant but, because
they are individual (with the cause often unknown) and scattered in both
place and time, we are unaware of them. The situation is similar to transportation. If an aircraft crashes, people everywhere know and are shocked about it. Nevertheless far more people die in automobile crashes. Coal as an energy source, has been a significant killer and I expect it still is.

3) Mining is a problem with both coal and nuclear generation. Mining is a dirty business. I suspect coal is the greater offender but I don't know the details here.

Don McDiarmid, Perth

All this discussion is nice, but I'm not sure it's what we (Unitarians) as a community should be pursuing. I think we have the cart before the horse.

What we want to accomplish as a community is to apply pressure to the Federal and Provincial governments to advance aggressive and realistic policy targets on pollution, climate change, and sustainability. Then let the experts (scientists, engineers, expert bureaucrats) make recommendations as to which technologies will help meet those broad objectives. The most enlightened energy policy I have seen in my lifetime was Stephane Dion's proposed carbon tax. We all know what happened there. That's the sort of initiative we should be supporting, not as lay people second-guessing people who are

professional technology experts on how to solve technical problems. I'm a professional scientist and only consider myself barely qualified to have an opinion. And the same goes for biotechnology and many other controversial areas of advanced technology. I trust independent scientific opinion, and little else. Scientists can be wrong too, but I give them better odds than people with an axe to grind. Al Gore earned the Nobel; he made people care about finding a solution. That's what we need to be doing.

Our current federal government is devoted to doing nothing on this file at all. Of course, they could ask advice of the national science advisor; oops, but wait, the Tories eliminated that position in 2008. Too bad. So much for objective input. Can't have that. But the public has long forgotten about that (if they ever cared); and in a similar vein to losing independent scientific advice, we are going to lose the ability to obtain good advice on social issues because our best source of data (the long from census) has also been gutted. So much the better for Tory policies if no-one has the data to prove that the poor are getting poorer. These are the things we should be writing letters about, not trying to decide which technologies may help solve what is clearly the most complicated technology challenge facing mankind (peak oil and climate change). One thing I am confident of, no single technology or approach (nuclear, solar, conservation, etc.) is going to solve this immense problem by itself. We cannot afford to dismiss any potential part of the solution, especially when many highly-trained and expert professionals believe it to be a useful technology with low risks, and when there has been a half-century of successful application with very few problems.

But that's just me. And we wouldn't be Unitarians if we agreed on everything. ;)

Michael G. Szarka, Ph.D. Director, Commercial Development

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Greetings all,

I basically agree with Mike although I don't believe in giving experts carte blanche. They are important and not to be ignored (or given carte blanche) when it comes to means but decisions about purpose should be resolved by the full community.

I also have reservations about claims that full speed ahead in conservation and renewable energy sources will clearly solve our problems. We have been at conservation for over 20 years and longer and still have a good way to go. But that should not be surprising; retrofitting is expensive and takes time. We could faster, perhaps much faster if the economic drag could be reduced, but we are still looking at decades. And now that automobiles are becoming more efficient, they are also lasting progressively longer. These two trends re automobiles work against each other. Also renewable electric energy sources do not contribute well to base- demand needs – the wind cannot be counted on to blow when needed and likewise cloud cover cannot be counted on to be absent when direct sunlight is needed. Renewables also require changes to distribution systems to be effective.

The long and short of it is that conservation and renewable energy developments should certainly be pushed with resolve but they will not be a panacea. The extent of the electrical system refurbishing and renewal we are told is necessary in Ontario does not seem to me to give us the choice choosing between various approaches. I think we will have to make use of most of them including nuclear while avoiding the worst of them as best we can.

The question is whether we do that with an appropriate outcome in mind. Mike is right when he states, "What we want to accomplish as a community is to apply pressure to the Federal and Provincial governments to advance aggressive and realistic policy targets on pollution, climate change, and sustainability." Thinking

in Ontario seems to have moved in this direction. We should encourage greater evolution.

Don McDiarmid, Perth

----- Original Message -----
From: Alan Jessop

Sent: April 4, 2011 3:54 PM
Subject: RE: [CUSJ-L] vote to support moratorium on nuclear power plants

Fran,

I must take issue with the emotional and inaccurate "information" about nuclear power plants. I have not seen what the CUSJ has to say, but I was horrified by Penney;'s piece.

Last night I reviewed a book on climate change at the church. In it I reported the author's calculation that, whereas Chernobyl might have killed 4000 people, pollution from coal fired plants kills 100,000 per year. Further, if we keep on burning coal and other hydrocarbons as we are now, there is a good chance that we will raise sea level by 25 m some time after carbon dioxde content gets to 450 ppm, which will be in about 30 years. These calculations were from a reputable scientist who has spent a career studying climate, both now and in the geological past.

I am afraid there are two sides to this discussion, and I do not think the emotional reaction to nuclear power helps at all to get a rational discussion or decision.

Best wishes, Alan Jessop

Hi, I too support nuclear power for Ontario. I am a retired Ontario Hydro worker. Those who oppose nuclear power in Ontario in the near future must answer one question, In a non nuclear, non fossil fuel, power system what will provide the base load? AL
----- Original Message -----
From: OJ Zawalsky
To: sj-forum ; Canadian Unitarians For Social Justice members forum
Sent: Monday, April 04, 2011 7:02 PM

Subject: [CUSJ-L] Fw: vote to support moratorium on nuclear power plants

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This was the point of the article I posted which stressed 1) One must then have alternatives or do without power and 2) the danger of coal smoke. I agree with the many who do not like nuclear power as I prefer windpower and water power. but is there enough power for now? I still like electricity in my life.
Christine Johnston
