# ALTERNATIVE ENERGY

Is the Martin government up to the challenge of seriously developing more alternative sources of energy now in a world threatened by climate change? His government says yes. His critics say no. Read what the players have to say. John Efford, Stephen Owen, Stéphane Dion, Bryon Wilfert, Glen Murray, Marc Renaud, Stephen Harper, Jack Layton and Serge Cardin. Inside. Pages 13-25

Photograph by Jake Wright, *The Hill Times*

**Hello:** Prime Minister Paul Martin entering the National Press Building on Wellington Street on June 29 in Ottawa at about 2 p.m.

POLICY BRIEFING - ALTERNATIVE ENERGY

# Energy Minister Efford says hydrogen and fuel cell industries hold 'enormous potential,' promises to invest more

■ *Energy Minister John Efford defends his government's leadership on alternative energy, but he defends Canada's reliance on coal, oil, oil sands and natural gas, too.*

THE HILL TIMES

Canada's Energy Minister says the hydrogen and fuel cell industries hold "enormous potential from both an economic and environmental perspective," promises to invest more money into R&D in the fuel cell and wind energy industries, says the government wants to develop a wind energy manufacturing base here in Canada and says solar power will become an important contributor to Canada's electrical grid.

"I see solar power becoming an important contributor to Canada's electrical grid. Some analysts have even drawn parallels between the prospects and perceived benefits of PV as a form of micropower [decentralized electrical network] with recent revolutions in the telecommunication and computer industries," said Mr. Efford in an email interview with *The Hill Times* for this week's "Alternative Energy Policy Briefing" while Environment Minister Stéphane Dion turned down requests for an indepth interview on Canada's vision and leadership on alternative energy.

Mr. Efford defended his government's leadership and vision on alternative energy.

Declared Mr. Efford: "In the 2005 budget, the Government of Canada invested an additional $200-million over five years, and a total of $920-million over 15 years, to expand the Wind Power Production Incentive. In addition, the budget introduced the Renewable Power Production Incentive to encourage the development of emerging renewable energy sources, such as biomass, landfill gas and small hydro. The budget will provide a total of $886-million over 15 years."

As well, Mr. Efford said biodiesel production in Canada is expected to grow "immensely" this year "from nearly zero production to approximately 100 million litres."

Mr. Efford's interview follows.

**What are the top five priorities you're working on in the renewable energy sources front for Canada?**

"My primary mandate as Minister of Natural Resources Canada, and that of my department, is to ensure the sustainable development of Canada's energy resources, minerals, metals and forests, as well as to provide the geographical and geological information base that supports decisions about Canada's land-based and offshore resources.

"In support of the sustainable development of Canada's energy resources, my department promotes the development of emerging sources of renewable energy for electricity generation and biofuels such as ethanol and biodiesel, as well as technologies that use renewable energy for heating and cooling.

"Our actions work for the short and long term—reducing greenhouse gas emissions now through existing, reliable technologies; and developing new technology solutions for the longer term. The purpose is to diversify Canada's energy mix for sustainable development of our energy resources.

"My priorities regarding renewable energy are as follows:

"•to work with provincial and territorial governments, industry associations and non-governmental organizations to explore ways to further promote and develop renewable energy technologies and sources in Canada;

"•to expand energy sources through the Wind Power Production Incentive;

"•to design and implement the Renewable Power Production Incentive program for other types of renewable energy sources, such as biomass, landfill gas and small hydro;

"•to continue providing incentive payments to organizations that install renewable energy technologies for heating and cooling technologies under the Renewable Deployment Incentive Program; and

"•to continue to expand and support the development of biofuels and emerging and established renewable energy sources for Government of Canada facilities."

**Mr. Efford, you said in your speech on April 6 to the Americana 2005 Conference in Montreal that there's "an inherent and fundamental link between the natural resources sector and building strong, sustainable communities." What do you mean?**

"For starters, natural resources development is a key economic driver in many communities, so developing resources in a way that is sustainable for the economy and the environment is critical.

"But it is important for all communities to develop and use our energy, mining and forest resources in efficient and sustainable ways. So we work with communities on planning. For example, we support district energy systems for institutions or communities; these systems might generate electricity through natural gas, and use heat from that process to meet hot water needs. We work with communities, businesses and individual homeowners to promote energy efficiency through a variety of programs."

**How much has the federal government invested in alternative energy in the last budget and is the alternative energy sector a good investment and good for the economy?**

"In the 2005 budget, the Government of Canada invested an additional $200-million over five years, and a total of $920-million over 15 years, to expand the Wind Power Production Incentive.

"In addition, the budget introduced the Renewable Power Production Incentive to encourage the development of emerging renewable energy sources, such as biomass, landfill gas and small hydro. The budget will provide a total of $886-million over 15 years.

"The budget also proposed to accelerate the Capital Cost Allowance rate for renewable energy generation equipment.

"From an economic perspective, supporting renewable energy obviously has a direct benefit on employment and on the potential sale of new technologies in global markets. But even more fundamentally, we need to think about how we can use energy sustainably over the longer term and which technologies to support, as well as set priorities and coordinate research. The Prime Minister has asked me to develop a Sustainable Energy Science and Technology Strategy, which will help identify some of those priorities, articulate that vision and provide some funding for relevant projects."

**How do you and Environment Minister Stéphane Dion work together? How often do you talk? How often do you meet?**

"I was pleased when Stéphane was appointed as Minister of the Environment. I respect Minister Dion's dedication to his mandate and look forward to pursuing our ongoing joint initiatives for the benefit of all Canadians."

**Do you feel you're representing competing interests?**

"As a 21st century government, we have a goal to ensure sustainable development. This means recognizing that humans are part of an ecosystem that must be respected to ensure our future well-being. But the development of natural resources is also necessary to ensure our economic prosperity. My role, as Minister of Natural Resources Canada, is to ensure the sustainable development of natural resources. For instance, our economy needs energy to flourish, but not at the expense of the environment. So, our energy policy framework promotes development, but our programs and regulations ensure that the environment is protected and that we develop climate-friendly ways to produce and use energy."

**The federal government has recognized the potential of wind power with some new financial incentives in your most recent budget. But how much of a priority is wind energy?**

"The Government of Canada recognizes that all forms of renewable energy, including wind and solar, play a significant role in diversifying Canada's energy supply mix and in contributing to Canada's climate change and sustainable development objectives. As well, the Government invested an additional $920-million to quadruple the Wind Power Production Incentive program, as well as close to $900-million for other emerging renewable energy sources such as biomass, landfill gas and small hydro. One of our challenges for the future will be investing in R&D for wind energy and developing a manufacturing base here in Canada. This is something we'll be working on over the coming months."

**The *Globe and Mail* recently ran a piece (May 27) on how there's a "fuel cell fatigue" over the whole "commercialization is around the corner" mantra and that there's been a lot of disappointment over the years in the fuel cell industry. How much did the federal government put into its research and development budget in the fuel cell industry and do you think it should be pumping in more?**

"The Government of Canada has invested more than $200-million and has been a key supporter of the fuel cell industry in Canada since 1983. These investments have helped position Canadian firms as world leaders. Examples include Ballard Power Systems, Dynetek Industries, Hydrogenics and Stuart Energy Systems. We can be proud of our industry's progress.

"Fuel cells are a truly transformative energy technology, one that could fundamentally change the way we use energy. Creating a hydrogen economy requires successful research, development and demonstration projects, and our government has been very active in supporting such initiatives. But it will also take time. These activities are integrally linked as part of a chain of activities leading to the successful commercialization of fuel cell technology. Further Government of Canada investment will contribute to its success."

**The "burn rate" for R&D in the fuel cell industry in Canada is estimated at more than $300-million a year. Do you think the Canadian government is doing enough to invest in the fuel cell industry, while a company like Ballard is running out of operating R&D monies and recently announced it will receive $30-million (U.S.) from Japanese partner Ebara Corp?**

"In 2003, we announced $215-million to support hydrogen and fuel cells. These technologies are providing both economic and environmental opportunities. Canada must continue to make strategic investments in hydrogen and fuel cells, as we have done in the last two decades, if we want to maintain the leading position we have created. This is particularly true given that other jurisdictions like the United States, Japan and Europe are increasing their investments."

**How important is the hydrogen fuel-cell industry?**

"Fuel cell and hydrogen technologies will provide both economic and environmental benefits. It is a technology that has the potential to truly transform the way we produce and use energy. The industry is growing at a phenomenal rate worldwide and Canada is well positioned to take advantage of that. In Canada, there are more than 80 companies across the country focused on these technologies and associated services. So I think hydrogen and fuel cells hold enormous potential from both an economic and environmental perspective."

**Do you think solar power will ever become a major contributor to Canada's electrical grid, even though it's expensive?**

"The costs of solar power worldwide, particularly photovoltaics (PV), have been falling at about five per cent a year in real terms over the past 20 years following a well established curve. As the experience base of manufacturers grows and technological improvements from R&D labs are implemented, costs will continue to drop significantly, and I see solar power becoming an important contributor to Canada's electrical grid. Some analysts have even drawn parallels between the prospects and perceived benefits of PV as a form of micropower (decentralized electrical network) with recent revolutions in the telecommunication and computer industries.

"To illustrate the potential of PV, there are almost seven million detached residential houses in Canada, consuming about 62 terawatts of electricity at a cost of $6-billion. If a 30-square-metre PV array were to be installed on the roof of a typical Canadian house, it would supply approximately 4,000 kilowatt-hours of electricity a year, or 45 per cent of the electrical load. By comparison, the Waterloo Green Home, part of NRCan's Advanced Houses program, uses only 4,340 kilowatt-hours, so the same PV system on this house would be able to meet almost the entire electrical load on an annual basis, assuming that the heating system is not electric. So combining energy-efficient lights and appliances with an aggressive PV program has the potential to meet all the electricity needs in residential housing."

**How about biodiesel?**

"Biodiesel production in Canada is expected to grow immensely this year, from nearly zero production to approximately 100 million litres. The large majority of the production will be from using animal fats as feedstock. The Government of Canada is encouraging production through the Biodiesel Initiative, which addresses technical and market barriers. We are also exempting biodiesel from federal excise tax. In addition, through the Opportunities Envelope, we have allocated $8.5-million for biodiesel production projects."

**How seriously is the federal government looking into emerging technologies such as geothermal heat pumps and wind energy?**

"Encouraging greater efficiency and increased use of renewable energy are only a part of Canada's response to climate change and its commitment to reducing GHG emissions. The Government of Canada has demonstrated its interest in emerging renewable energy technologies over the past few years.

"We have developed a comprehensive set of initiatives to support emerging sources of energy, ranging from scientific

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POLICY BRIEFING - ALTERNATIVE ENERGY

# Efford says Canada to become increasingly important source of oil and gas for markets in North America and elsewhere

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research to incentives for producers and consumers. In 1996, my department produced a Renewable Energy Strategy and has since introduced a series of measures and programs, and provincial governments, utilities, industry and consumers have responded to them.

"The 2005 Budget allocated more than $5-billion in investments over the next five years for climate change, supporting the quadrupling of the Wind Power Production Incentive and providing funding for a new incentive to install 1,500 megawatts from emerging renewable energy technologies. In addition, the Budget extended the application of Section 43.1 of the *Income Tax Act* to emerging renewable energy technologies, including geothermal systems.

"These programs are over and above our existing programs that provide significant support for research and development, demonstrations, pilot projects and deployment of emerging renewable energy systems. These systems use solar, biomass and geothermal energy for space heating and water heating and cooling. The Renewable Energy Technology program, for example, is designed to support the renewable energy industry to develop and deploy systems."

**Alternative fuels such as biodiesel, ethanol and the fuel cell industry may be promising, but when do you think Canadians will see them become realistic alternatives to oil and gas?**

"Ethanol-blended gasoline is a realistic alternative today; it is already sold at more than 1,000 retail locations in Canada, and the number is growing. With the current state of prices for fossil fuels, renewable fuels like biodiesel and ethanol, blended with gasoline or diesel, are competitively priced. As consumer awareness grows, we expect that the use of these fuels will continue to increase for the foreseeable future."

**It's estimated that it will be at least 20 years before alternative fuel technologies are readily available, due to price and supply issues. Do you think that's accurate?**

"A number of alternative fuels are already commercially available. If by 'alternative fuel technologies' you mean ethanol and biodiesel, and fuel sources such as propane and natural gas for vehicles, then these technologies are well understood and well established. I suspect BBI was referring only to hydrogen fuel-cell technology in that statement.

"Widespread use of hydrogen as a fuel is going to take awhile, but its use is already currently being successfully demonstrated. The project to have a hydrogen highway from Vancouver to Whistler for the 2010 Olympic Winter Games is an example. My department works closely with the industry through the Canadian Transportation Fuel Cell Alliance and our Hydrogen and Fuel Cell R&D Program. We are working to address the barriers to a more widespread use of hydrogen."

**What about geothermal energy? How interested is the federal government in geothermal?**

"NRCan has provided significant funding to support geothermal technology and the industry. The Renewable Energy Deployment Initiative promotes geothermal energy systems because of their use of renewable energy sources and their environmental and energy-efficiency benefits.

"NRCan was also instrumental in creating the Canadian GeoExchange Coalition, which is a major government-industry partnership established to transform the market for geothermal technology in Canada. This coalition was formed by a number of Canadian electrical utilities that are currently engaged in promoting geothermal systems and working to accelerate deployment of the technology.

"NRCan and the Canadian GeoExchange Coalition have entered into a $10.5-million contribution agreement to address the economic and technical issues, as well as institutional barriers, that have impeded the market development of geothermal systems. The joint activities of NRCan and the coalition will serve to strengthen the geothermal industry in Canada by building confidence in the technology and enhancing the industry's overall competitiveness.

"The industry will benefit from integrated promotion of products and services, the development of tools to facilitate decision making, and a strategic alliance that will grow and solidify the small, fragmented industry that currently exists. Canadian energy consumers will recognize that geothermal systems are a reliable, economic, environmentally friendly and renewable energy option."

**What is the government's vision or goal on solar energy and photovoltaic systems?**

"The goal of the Government of Canada is to accelerate the deployment of this technology throughout Canada, and to facilitate the development of a Canadian-based globally competitive PV industry, and it is doing this through the Photovoltaic (PV) and Hybrid Systems Program.

"As I mentioned before, a recent study of the grid-connect segment of the PV market, which has been experiencing the strongest growth, has shown that costs of PV worldwide have been falling at about five per cent a year in real terms over the past twenty years. However, there remain several barriers to be addressed before greater inroads can be made within this sector of Canada's PV market.

"The government has been addressing these challenges through its research, development and demonstration (RD&D) activities, which include removing interconnection barriers to the grid, providing assistance to the Canadian industry by championing climate change projects under our TEAM program, accelerating the development of adequate policies and providing quality information to Canadians.

"The government is committed to continuing to build alliances with the private sector and with other levels of government to bring grid-tied PV into Canada's mainstream. We will continue to seek out technology investment opportunities, such as those provided by TEAM, in order to share the RD&D risk and to demonstrate the benefits of linking private-sector business strategies and technology capabilities with global business opportunities. Numerous projects have shown that PV can reduce greenhouse gas emissions while providing economic, environmental and social benefits."

**Tidal power?**

"NRCan supports the development of all forms of renewable energy. Some are more technically and commercially viable than others at the moment. There is work underway to further advance tidal power, but there are a few hurdles yet to cross. As you may be aware, the Government of New Brunswick has recently announced that it will participate in a preliminary study on the potential of tidal power. The study will assess the feasibility of tidal power off the New Brunswick coastline. It will look at the potential of a new generation of tidal technology that is more environmentally friendly and which uses a simple turbine installed on the seabed, rather than containment dams."

**Many critics say that for more than 30 years, Canadian politicians have been talking about tidal power, wind, solar, hydro, and independence from fossil fuels, but why haven't we progressed so fast?**

"Independence from fossil fuels may be a reasonable objective for countries that lack domestic hydrocarbon resources. However, Canada has an abundance of many types of energy resources, particularly hydrocarbons, such as coal, oil, oil sands and natural gas. Developing these resources for domestic and export markets has been a major source of both economic prosperity and energy security for Canadians. Over the next several decades, Canada will become an increasingly important source of oil and gas for markets in North America and elsewhere.

"Our energy policy needs to reflect our country's energy circumstances. That does not mean, however, that alternative and renewable energy sources will not grow in importance. Already, renewable hydro accounts for 60 per cent of our electricity—one of the highest percentages in the world. Wind power is growing rapidly with federal and provincial government support. Ethanol from corn and biomass is poised for rapid growth over the next several years. And although our current focus is on abundant and generally less expensive hydrocarbons, we stand to benefit in future years from untapped potential for hydro, wind, tidal and other forms of renewable energy. We are also working with industry on the efficient use of conventional sources of energy, and technologies that reduce their environmental impact.

"The Canadian economy relies on a mix of secure and reliable energy sources, and we will rely on markets to determine the most appropriate mix of energy sources and technologies. This is the best way to ensure continued prosperity and energy independence."

**When will these alternative sources of energy deliver?**

"Alternative energy projects already deliver. The Wind Power Production Initiative is supporting 16 wind farms—12 that are already in operation and four that are under construction—with a total wind energy capacity of 563 megawatts. We are making technical and commercial breakthroughs for solar applications. For example, Natural Resources Canada is leading the Drake Landing Solar Community project, which is North America's first large-scale solar heating system with seasonal storage.

"The Government of Canada is leading by example by committing to purchasing 20 per cent of our electricity needs from emerging renewable energy sources. Agreements are already in place in Alberta, Prince Edward Island and Saskatchewan, and negotiations are underway in other provinces."

**Critics say the voluntary commitment to reduce emissions with the automotive industry should be mandatory. Obviously the Government of Canada does not. But is the Government of Canada afraid to make it mandatory?**

"I have always supported a voluntary agreement for the benefit of the industry, the Government of Canada and all Canadians. A voluntary agreement offers manufacturers the flexibility to find the most economic solutions for reducing greenhouse gas emissions. This is important to addressing their domestic and international ability to be competitive. In addition, a voluntary agreement can be put in place relatively quickly, leading to earlier actions by industry and greater emissions reductions. Such agreements are also being used to improve fuel efficiency or reduce emissions in Australia and Europe.

"The automotive industry has a good track record of establishing and meeting voluntary agreements with government. In fact, more than a dozen active voluntary agreements like this one have been successfully implemented in Canada.

"The Government of Canada intended from the beginning to reach a voluntary solution. In the end, after a series of challenging negotiations, we produced a memorandum of understanding under which vehicle manufacturers commit to reducing emissions by 5.3 megatonnes annually by 2010. There is also a detailed monitoring process to ensure they remain on track. I am very pleased that our voluntary agreement has the support of the Sierra Club and other groups."

**What are you doing to develop new ways to make homes and vehicles more fuel-efficient, such as solar heating, and what about electric cars?**

"We are doing a great deal. Our EnerGuide for Houses Retrofit Incentive, which gives grants to homeowners for energy-efficiency upgrades, is very popular and successful. We expanded it in Budget 2005 to quadruple the number of houses covered. We have similar programs to help commercial and institutional building owners make their buildings more energy-efficient.

"There are many components to improving energy efficiency in buildings, including looking at building codes—which are a provincial responsibility—as well as working with industry to increase its capacity to build to higher standards of efficiency and ensure an adequate supply of the right materials.

"On vehicles, we have discussed our efforts to promote alternative fuels such as ethanol and biodiesel. And I am particularly proud that we were able to successfully conclude an agreement with the auto industry on emissions reductions. Consumers will certainly benefit from that.

"If we encourage builders to construct to the R-2000 Standard, then all new construction would be about 30 percent more energy-efficient than the average new house today. This means using the best of our current products and technical know-how. Examples are installing ENERGY STAR-qualified heating systems and windows, and increasing insulation levels. Houses can also be designed to benefit from renewable energy—active solar for space heating, solar hot water, ground-source heat pumps and passive solar heat.

"How are we doing this? We are encouraging the industry by offering training on demand—and going to the builders themselves to make this training more accessible. Through our Building Canada initiative, we are offering larger builders access to confidential professional advice on ways to make high energy performance part of the design of their products, usually at no incremental cost, by finding savings elsewhere in their building processes and even their business operations. In return, we ask them to provide homebuyers with EnerGuide for Houses energy ratings so that they can see how well these houses will perform.

"Of course, we are also encouraging new developments. One good example of the results of our R&D is the KOCOMFORT system that combines heating with domestic hot water. There is also the Drake Landing development in Okotoks, Alta., that I already discussed. It will use active solar for heat and hot water through a district heating system. But just like a conventional house, individual homeowners will have a turnkey system that will be managed by ATCO, the gas utility."

*The Hill Times*

POLICY BRIEFING - ALTERNATIVE ENERGY

# Harper says Liberals' dithering prevents Canada from making meaningful progress in alternative energy sector

■ *Conservative Leader Stephen Harper says the Libs know how to spend money, but don't have strong leadership, or vision on alternative energy sector.*

THE HILL TIMES

Conservative Party Leader Stephen Harper says Liberal government "dithering and delay" are getting in the way of any meaningful progress in the advancement of alternative energy technologies in the country.

Moreover, Mr. Harper (Calgary Southwest, Alta.), who acknowledges that Canada must curb its greenhouse gas emissions, says the federal Liberals are "directionless" on alternative energy, adding that they're good at spending billions of dollars but can't be trusted to carry through on their Kyoto Plan promises.

"How can the government responsible for the gun registry and the HRDC billion-dollar boondoggle be trusted to develop and monitor environmental projects in China and Russia? Twelve years of Liberal neglect have jeopardized Canada's environment. The Kyoto plan they have hatched will only serve to compound the damage and further endanger the legacy to which all Canadians are entitled—the legacy of clean air, clean water, and clean land."

For his part, Mr. Harper says if he were Prime Minister his Conservative government would create a transition plan to move Canada's heavy reliance on fossil fuels to more alternative sources of energy, including to natural gas, ethanol and biodiesel.

Mr. Harper, who's trying to pump up his political support across the country this summer, conducted an email interview with *The Hill Times* last week on the current political leadership, or the lack thereof, on Canada's alternative energy sector.

**If you were Prime Minister of Canada, what would be your five priorities on developing alternative sources of energy for Canada?**

"I think that it's important to take a balanced and objective approach to meeting the challenges of a carbon-restrained economy and the reality that non-renewable energy sources are going to comprise a smaller and smaller share of our energy mix. A Conservative government would initiate a plan to transition from fossil fuels in a way that stimulates economic growth and that taps into the vast talent of our scientific research and development communities. This plan will include natural gas, ethanol, and bio-diesel, as the integration of these fuels into our energy mix is currently both practical and realizable. Wind and solar are also alternative energy sources that show enormous potential right now, and will contribute significantly to our energy mix in the very near future. Hydrogen fuel cell technology is very promising, and will likely play a significant role in our future energy mix. It's also important to remember that any successful energy plan must focus on conservation and improving energy efficiency and also on the development of carbon dioxide capture and sequestration technologies."

**And what's your vision?**

"When I'm Prime Minister, I think the most important contribution I can make to this process is to facilitate the creation of an environment where innovation and imagination can flourish and where good ideas never get crushed under the weight of burdensome government bureaucracy. I feel very strongly that we cannot provide Canadians with a secure, stable, affordable, and environmentally-friendly energy framework if we don't support Canadian innovation and ingenuity."

**Do you think the current federal Liberal government invests enough in the alternative sources of energy sector right now?**

"This directionless government is very talented at spending billions of dollars without achieving its objectives. There are some valuable programs which do encourage research and innovation, but without visionary leadership and a coherent plan, no amount of money will get us closer to producing marketable and viable energy alternatives which will help us improve our environmental integrity and reduce greenhouse gas emissions. A Conservative government will not only continue and even enhance many of these programs, we will also augment our plan with tax incentives, and even more importantly, we will exhibit the leadership and vision that is needed to fully utilize Canadian research and development talent and expertise. The Kyoto plan, or lack thereof, is an excellent example of how the Liberal government has managed to spend billions of dollars, yet greenhouse gas emissions continue to climb."

**What's your take on the government's $10-billion plan to cut greenhouse gas emissions in accordance with the Kyoto Climate Treaty?**

"Well, as I indicated in my previous response, I think this plan is seriously lacking and will not meet the unrealistic Kyoto emission reduction targets. Worse than that, however, it appears that $10-billion is just a down-payment on the future billions that the Liberals will spend if they attempt to fully implement this incoherent and ill-fated plan. Canada must curb its greenhouse gas emissions, but I think it is foolhardy and naïve to think that buying foreign hot air credits will in any way achieve that end. How can the government responsible for the gun registry and the HRDC billion-dollar boondoggle be trusted to develop and monitor environmental projects in China and Russia? Twelve years of Liberal neglect have jeopardized Canada's environment. The Kyoto plan they have hatched will only serve to compound the damage and further endanger the legacy to which all Canadians are entitled—the legacy of clean air, clean water, and clean land."

**It's estimated that it will be at least 20 years before alternative fuel technologies are readily available, due to price and supply issues. Do you think that's accurate?**

"It is difficult to estimate these things. Look at the sharp rise in oil prices and it's even harder to construct a definitive timeline. That being said, business realities and market forces have a way of focusing research and development initiatives. If we, as a nation, put the full force of our research talent and skill toward realizing commercially viable alternative fuel technologies, I believe we can significantly shorten that timeline. Biofuel production presents Canada with a two-fold opportunity—the prospect of affording those who work in the agricultural and natural resource-based sectors a viable and stable economic future while developing technologies that reduce our dependence on fossil fuels. Ethanol and bio-diesel production not only serve to help us meet major environmental challenges, but they also have the added benefit of helping to support rural economies and preserve the rural communities that are essential to the fabric of Canada."

**Many critics say that for more than 30 years, Canadian politicians have been talking about tidal power, wind, solar, hydro, and independence from fossil fuels, but why hasn't Canada progressed so fast?**

"Although government leadership in this area is essential, we can never forget that Canada's economy is market-driven and subject to consumer preference and demand. Environmental and price concerns influence the choices that people make and the direction that energy producers and suppliers will take. I believe it is a welcome market reality that energy consumers—whether on an individual level, or at the industrial level—are making choices that reflect their concern for the environment and the desire to responsibly develop a sustainable economy.

"Unfortunately, the Liberal government has not shown the leadership necessary to encourage swift creation of the favourable conditions needed for these technologies to develop. Liberal government indecision and ambiguity in developing a Kyoto plan has created a climate of uncertainty and speculation that has left industry players trying to guess how government policy may affect their interests—not the ideal environment for investment in research and development. Liberal government dithering and delay has been a considerable impediment to meaningful progress in the advancement of alternative energy technologies.

"I have great confidence that strategic investments in promising technologies, coupled with Canadian ingenuity, will result in advances in the development of all manners of alternative energy sources and energy efficient technologies, perhaps some that we haven't even conceived of yet. A Conservative government will make those strategic investments and will support Canadian research and technology into alternative energy. I believe that this is the best contribution Canada can make to address the global environmental challenges faced by our planet."

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*The Hill Times*

Photograph by Jake Wright, *The Hill Times*

**It's about ingenuity:** Stephen Harper says Canada must support innovation and ingenuity.

# UNIVERSITY of TORONTO

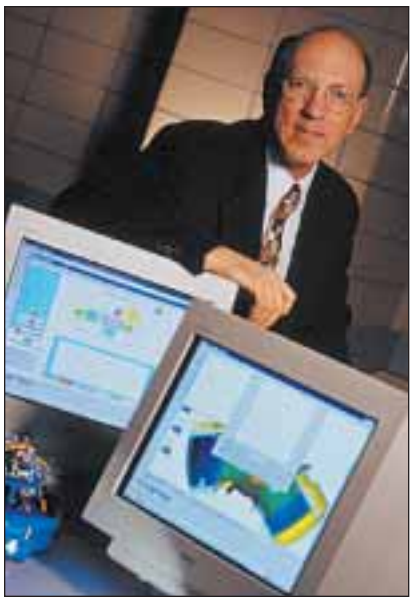
## *extraordinary...*

## *in Alternative Energy*

**Ted Sargent**
*Harnessing the sun's energy*
Canada Research Chair in Nanotechnology Ted Sargent has developed a plastic composite that could convert 30% of the sun's power into electrical energy. Sargent's discovery could eliminate the need to recharge battery-operated devices like cellphones and palm pilots.

**Reza Iravani, Peter Lehn and Pierre Sullivan**
*Going with the wind*
Electrical and Computer Engineering professors Reza Iravani (r) and Peter Lehn (centre), pictured with a Windshare co-op turbine, are designing the circuitry that will ultimately convert and coordinate wind power into usable and reliable energy, while Mechanical Engineering professor Pierre Sullivan (l) is looking at optimal design of the turbine system itself.

**David Boocock**
*Innovation in biodiesel fuel*
Chemical Engineering professor David Boocock's patented process for using waste animal fats to produce biodiesel fuel is about to hit the market. This fall, Biox Corp., formed to commercialize Boocock's innovation, will commission a manufacturing facility that will produce 60 million litres of biodiesel a year.



**Heather MacLean**
*Exploring the possibilities of renewable fuels*
Civil Engineering professor Heather MacLean is evaluating the environmental and economic implications of the production and use of renewable fuels, such as ethanol and hydrogen, for transportation.

**Nazir Kherani**
*New battery prototype matches efficiency of solar power*
Electrical and Computer Engineering professors Nazir Kherani (pictured) and Stefan Zukotynski are developing high-efficiency solar cells using a novel technique, and unique self-powered batteries that last more than a decade without a recharge, for applications in spacecraft or cardiac pacemakers.

**Jim Wallace**
*Fuelling a new era in energy*
Mechanical Engineering professor Jim Wallace's goal is the development of a hydrogen-fuelled pre-combustion chamber engine prototype. Commercialization of the engine could help fuel demand for hydrogen distribution, and a clean-energy economy.

## *U of T takes the environment seriously*

Our new Sustainability Office will ensure U of T exceeds its proportion of Canada's Kyoto Protocol commitments. The St. George campus generates about 16% of its own power U of T at Mississauga is introducing technologies such as fuel cells that will power student residences. And U of T at Scarborough's heating and cooling program has resulted in a major reduction in energy demand.

The university gratefully acknowledges the Government of Canada for its investment in alternative energy research.

POLICY BRIEFING - ALTERNATIVE ENERGY

# Alternative energy: building a green and prosperous economy in Western Canada a top priority

■ *Governments must work together to minimize pollution and greenhouse gases, assist industry and consumers to reduce energy consumption, and stimulate the emergence of a competitive alternative energy industry.*

**By WD MINISTER STEPHEN OWEN**

Canadians are looking ahead into a future where alternative fuel and power sources are common practice. I am proud that Western Economic Diversification Canada (WD) and the Government of Canada are taking steps to make this future a reality.

Governments must work together to minimize pollution and greenhouse gases, assist industry and consumers to reduce energy consumption, and stimulate the emergence of a competitive alternative energy industry.

The Government of Canada is working hard to maximize the opportunities these challenges present. In December of 2003, Prime Minister Paul Martin participated in the Western Canadian Environmental Technology Forum in Vancouver, which I hosted. He asked industry, community, and NGO leaders for concrete suggestions on how the federal government could work with them and other levels of government to advance Canada's leadership in the environmental technology sector.

An industry-led report on the Western Canadian Environmental Technology Sector was generated in response to the Prime Minister's challenge. It included recommendations that the government focus on demonstration projects, financing, and the development of regulatory regimes that foster development, commercialization and adoption of environmental technologies and processes.

WD is doing its part to embrace the challenge in Western Canada at each of four critical stages in the innovation cycle: R&D, demonstration projects, commercialization and market expansion.

The transformation to a carbon-neutral economy will not happen overnight. It requires focused investment in R&D and technologies that help set the stage for transition.

That's why WD is investing in industry initiatives such as the Calgary-based Petroleum Technology Alliance Canada, in support of leaders in the oil and gas industry striving toward dramatic increases in extraction efficiency.

It's also why WD has invested in the Petroleum Technology Research Centre (PTRC) in Regina, a leader in research into oil recovery and carbon sequestration, and Climate Change Central, a Calgary-based public-private partnership that develops solutions to global climate change issues.

Complementing these initiatives is a strong national focus on increasing the number of Canada Research Chairs, with the aim of spurring innovation in renewable technologies and carbon sequestration, and drawing expertise from around the world to Canada.

Demonstration projects are a critical next step toward commercialization and success. WD is working in partnership to develop and test emerging technologies across the West.

For example, we recently joined with the Government of Saskatchewan to invest in the country's first pilot-scale biodigester. This green power plant will turn biogas from waste feedstock into electricity and generate income for rural communities. Likewise, Canada Post is partnering with Azure Dynamics of Burnaby, B.C., with a plan to gradually switch a portion of its commercial fleet to hybrid vehicles, thereby opening an untapped global market niche for more efficient commercial vehicles.

Carmanah Technologies of Victoria, B.C., epitomizes the successful leap from demonstration to commercialization. With award-winning solar-powered LED lighting technology for navigation and safety applications, Carmanah has grown annually at a rate of 68 per cent since 1998. Carmanah creates value for customers and shareholders by packaging its unique, advanced technologies into products that are in high demand across its targeted markets, with over 100,000 installed in 110 countries.

Rural and aboriginal communities also participate in our success. The Community Alternative Energy Development Initiative (CAEDI) is an example of how WD is expanding markets for alternative energy while creating jobs and fostering self-sufficiency in rural and aboriginal communities. CAEDI has invested in the early stages of 10 projects ranging from community energy planning, site selection, resource assessments and engineering studies to support the development of local renewable energy projects.

WD has partnered with Indian and Northern Affairs Canada to enable the Hupacasath First Nation to construct a 6.5 megawatt run-of-the-river hydropower facility at China Creek in Port Alberni, B.C. This plant will ease the heavy burden on Vancouver Island's power grid and has already put the Hupacasath in a leadership position in Canada's renewable energy sector.

WD has also invested in the first Manitoba housing subdivision with piping for Ground Source Heat Pumps already installed. This complements Manitoba Hydro's aggressive geothermal heat initiative, which saw 650 new ground source heat pumps installed last year.

The Vancouver area is also leading Canada in technologies ranging from fuel cells, lower emission vehicles and wind power development, to solar receptor technologies, mine waste remediation and green building practices. Ballard, Westport, Azure Dynamics, Xantrex, Dynamotive, Novex, NORAM, Day 4 Energy, Sea Breeze Power, and Blue Energy are Canadian companies receiving international recognition for their accomplishments.

I believe that Canada is at the forefront of alternative and renewable energy technology development and application. WD is positioned to deliver on the government's commitment to reduce the effects of climate change and ensure clean air.

*Stephen Owen is the Minister of Western Economic Diversificatioin and Minister of State for Sport.*

*The Hill Times*

# UNCLEAR A B O U T NUCLEAR?

Most Canadians don't really understand the benefits of nuclear energy. They don't know that it uses less space to produce more electricity than any other energy source. They also don't know that it already provides 50% of Ontario's total electricity. So it's time to clear things up.

## CLEAN

Nuclear energy is *clean*. It's the world's largest source of emission-free energy, which means it emits no pollutants into the air. This keeps the air clean, prevents acid rain, preserves the earth's climate and avoids ground-level ozone formation. And nuclear waste is managed in a safe, environmentally responsible way.

## RELIABLE

Canadian nuclear energy provides dependable electricity that you can count on, anytime, *all the time*. Its Canadian-designed and built plants are reliable thanks to more than four decades of experience with the technology. The high level of training and expertise of the staff who operate them, and the fact that nuclear's fuel – uranium – is mined, milled and fabricated right here in Canada, makes Canadian nuclear power extremely reliable.

## AFFORDABLE

Nuclear energy is an economical energy source. Well-maintained plants mean efficient performance. Plus, stable fuel prices make nuclear power the cost-effective alternative.

To learn more about nuclear power, visit **www.cna.ca**.
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**More power to you.**

POLICY BRIEFING - ALTERNATIVE ENERGY

# Environment Minister Dion says Canada has been able to stabilize climate change, but it's not enough

■ *Environment Minister Stéphane Dion delivered this speech at the Annual Smog Summit on June 8.*

**By ENVIRONMENT MINISTER STÉPHANE DION**

Let me take this opportunity to congratulate Minister [of State for Infrastructure and Communities John] Godfrey for his New Deal for Cities and Communities. Prime Minister Paul Martin has been very clear that every penny of this New Deal, the gas tax, the transfer of the gas tax to municipalities, will go towards environmental purposes. Not a penny will go to urban sprawl. We have programs for bridges and roads.

Gas is a polluting substance, and this gas tax transfer to the municipalities must try to correct the problem. This is why everything should go to either urban transit or environmental infrastructures.

I was looking for a title for my speech today, and in the video a little girl gave it to me, *Birds Fly Through It*. The title of my speech is *Birds Fly Through It*.

To the sponsors and the organizers let me say merci, mille fois, tout le monde. And now I will go right to the point.

I would like to talk to you about our focus today—clean air, smog, transportation as a source of smog, and the problems and solutions that we're all pushing ahead.

Let me first focus on the problem. Ontario has a large population. It is very close to the United States' most populated regions. Ontario is a large industrial engine surrounded at the south of its border by other industrial engines of North America. These conditions make this province very vulnerable to smog, acid rain, air pollutants and climate change.

These problems share a main common source, fossil fuel combustion. Health Canada has reacted. The mortality level associated with air pollution is a concern. We will die from it if we do nothing. Health Canada estimates that the number of deaths that can be attributed to air pollution in Canada is 5,900 deaths per year.

Just [recently], we were reminded of the severity of the problem in the Montreal-Windsor corridor. Toronto Public Health, in collaboration with Environment Canada and Health Canada, released a study on the combined health effects of air pollution in extreme hot weather in the cities of Toronto, Montreal, Ottawa and Windsor.

The study estimates that smog causes 822 deaths per year in Toronto, 818 in Montreal, 368 in Ottawa, and 258 in Windsor. The study predicts that if the trend continues, health related deaths will double by the year 2050 and triple by the year 2080 because of climate change. We risk facing more heat, more smog, and more death.

So far in 2005, Toronto has had 14 days under an air quality advisory already and it is still early June. Fourteen is usually as many as we get in a year. I have been told that there is no smog alert today in Toronto, but there is one in London, in Sarnia and in Windsor. Advisories are only issued for Ontario, not for the rest of the country.

There are many sources of air contaminants such as industrial, electric power, and residential wood burning. But transportation is the theme of today's Smog Summit. Transportation is indeed the major source of air contaminants. The transportation sector accounts for almost one-third of Canada's greenhouse gas emissions which trap heat and contribute to climate change and hot days which create more smog.

I invite you to read the declaration that we will sign before leaving. It is very interesting to see the numbers in the declaration that we are giving to Canadians for their information. In Ontario, the transportation sector is responsible for 20 per cent of smog causing particulate matter, 85 per cent of carbon monoxide emissions, 29 per cent of VOC's and 63 per cent of NOX. Transportation is also responsible for 30 per cent of Ontario's carbon dioxide emis-

*Continued on Page 22*

Photograph by Jake Wright, *The Hill Times*

**Climate change file:** Environment Minister Stéphane Dion said Canada and the U.S. have the strictest vehicle engine and fuel regulations in the world for air pollutants.

POLICY BRIEFING - ALTERNATIVE ENERGY

# Wilfert defends federal Liberals' track record on alternative energy sector, says government moving 'aggressively forward'

■ *Lib MP Bryon Wilfert, Parliamentary secretary to Canada's Environment Minister, says the government wants to be the No. 1 industrialized country producing renewable energy sources, not No. 2.*

**By BEA VONGDOUANGCHANH**

The government could be making more progress in the alternative energy sector, but the government has also delivered "the greenest budget in history," and is "aggressively" moving forward, says Bryon Wilfert, Parliamentary secretary to Canada's Environment Minister Stéphane Dion, who defended his government's track record on the alternative energy front, pointing out that his government's vision for the future is to rely less on traditional fuels and to become the No. 1 industrialized country, not No. 2, in producing renewable energy sources.

"We want to move forward," Mr. Wilfert (Richmond Hill, Ont.) said in a recent telephone interview with *The Hill Times*, pointing out that the federal budget includes more than $5-billion of funding over the next five years for programs to reduce greenhouse gas emissions; to expand the EnerGuide for Houses Retrofit Incentive; to support the Sustainable Energy Science and Technology Strategy; to quadruple the Wind Power Production Incentive; to stimulate the development and use of forms of renewable energy such as small hydro, biomass and landfill gas; and, finally, to improve conservation initiatives.

As well, Mr. Wilfert said the government is looking at a full range of "policy instruments" to reduce greenhouse gas emissions and he pointed out that the government has set up "joint decks" in Cabinet to deal with the environment and the alternative energy sector at the beginning of the process, rather than at the end.

Mr. Wilfert spoke to *The Hill Times* about his government's vision for alternative energy recently. Mr. Wilfert will be interviewed for the upcoming *Hill Times* "Policy Briefing on Climate Change" to be published on Aug. 8.

**As Parliamentary secretary to Canada's Environment Minister, what are your government's top five priorities to develop alternative sources of energy for a cleaner environment?**

"We've positioned the environment as not being mutually exclusive to competitiveness. So we look at the whole issue of the environment and we say, to have a green economy doesn't mean you're going to lose your jobs, that Canada can be very competitive internationally promoting a green economy. And the fact that there are a number of areas that we have looked at, obviously, the unveiling of our climate change plan back in April, demonstrates that it's the most aggressive plan of the G7 in terms of meeting our Kyoto commitments.

"In renewable energy, we rank second amongst industrialized governments that have produced some renewable energy sources. We get about 17 per cent of our primary energy supply from renewable sources. The average of industrialized countries is 6.5 per cent. We're 17 per cent; they're 6.5. In the budget, we've set an additional 10 per cent target for new electric generating capacity so that would bring us up to 27 per cent to come from renewable energy sources by 2010.

"Most of our current production for renewable energy comes from hydro electricity and the use of wood waste forest by-products. Now, the government recognizes, the [Environment] Minister [Stéphane Dion] recognizes that other emerging sources, whether it's wind power, high efficiency biomass and other large resource potentials, all these are going to make an important contribution to our future energy mix. In other words, we're interested in not picking winners or losers, but promoting or giving opportunities for these kind of sources that could be utilized. Solar is another example.

"One of the things we're looking at now is the commercialization of wind power in Canada. So, rather than bring these big wind turbines that are manufactured in Germany or Denmark, [we want] to have the capacity for commercialization for wind power to be built and produced in Canada, which is very important in terms of making it more cost effective as well. This is something we've been working on obviously. Back when I was president of the Federation of Canadian Municipalities in October 1996, the minister of the day for NRCan was Anne McLellan. She announced a renewable energy strategy. The primary objective of that time was to support the development of more dynamic self-sustaining renewable energy industry in Canada and I think you're now starting to see the results of that coming to fruition.

"There's three basic pillars that I would suggest we, as a government, have in terms of renewable electricity. The first area is the science and technology initiatives. Through science and technology, NRCan supports industry research, promotes development activity for increasing the efficiency of reducing the costs of emerging technologies and those efforts are also supported by broad technology programs. For example, we've just created the sustainable development technology Canada and Technology Partnership Canada and $350-million has been earmarked for sustainable development in the budget. It will help demonstrate technologies related to climate change or clean air. We've also got $250-million for R&D for cleaner fossil fuels, the hydrogen economy—all those are in the budget and past budgets as well. The wind atlas that we announced as well will be important. It's technology that will help identify areas where there's strong consistent wind which is also important because we can now forecast wind strengths up to two weeks in advance, which, of course, is going to be important as to where you're going to locate these structures. The technology obviously is developed in coordination with our scientists at Environment Canada and putting [the turbines] in the right location is really, really important.

"We also have a second element for direct producers' support; that is, the business tax system provides two tax incentives for certain investments to produce electricity. Under the Canadian Renewal and Conservation Expense, early tangible project expenses are 100 per cent deductible. They can be financed through the flow of shares which is a very powerful tax shelter so there's a huge incentive there because you get 100 per cent deductible.

"Under class 43.1 [of the Income Tax Act] it says production equipment can be written off at a higher rate than in the past. So if I have a district energy system, rather than writing off 30 per cent, I can now write off 50 per cent of my capital costs which means that producing energy systems is cheaper. It applies to investment over the next seven years on equipment that generates high energy efficiency or cogeneration of certain renewable sources, so that's really important in terms of getting people into the market place, to get them to build, as an example, district energy systems.

"The tax system also provides an incentive that encourages the production of ethanol, which is an alcohol that's produced from renewable biomass sources. It's an alternate transportation fuel, and ethanol benefits from exemption of the federal excise tax on motor fuels.

"We also have, of course, the Wind Production Incentive. That encourages the installation of 1,000 megawatts of new capacity between March 31, 2002 and, I think, April 1 of 2007. So, what you're going to have is a production base incentive of about one cent per kilowatt hour, provided in the first 10 years of the new wind power projects, expanded to 4,000 megawatts in 2010.

"We also have in this budget $886-million over 15 years for the creation of a new program which is called the Renewable Power Production Incentive. That's for non-wind renewable sources, to support the installation of 1,500 megawatts by 2011.

"The third area of this renewable portfolio is support for consumer demand and market demand. The Government of Canada has committed to purchase 20 per cent of its auto requirements or more from renewable sources. Electrical utilities and other retailers can obtain a refund of up to 40 per cent for marketing the costs of using green power programs. We would aim that at residential and small business consumers, and that's up to a maximum of $5-million per project.

"So basically what I'm saying is the government has demonstrated its commitment to renewable energy sources, encouraging investors and partnerships. We want to promote commercialization of renewable energy technology, generally, in Canada, but the example of growth in wind energy serves as an example to others that renewable energy can and will be making an important contribution to our climate change objectives as a nation.

Photograph by Jake Wright, *The Hill Times*

**Green talk:** Grit MP Bryon Wilfert says, 'We want to move forward.'

"The government is looking at a full range of policy instruments to obviously affect reducing greenhouse emissions. The tax system plays a role. I was certainly pleased that the Minister of Finance [Ralph Goodale] responded, I think very positively. One of the things that this minister has done has been joint decks, for example, to Cabinet—working with Industry or Natural Resources, Agriculture. In other words, the environment is not at the end of the process, it's at the beginning. That's really important. We're also working with Public Works Canada, the issue of green procurement which will be unveiled next year. That's very, very important. We want a sustainable environment. The budget clearly outlines many, many issues in that regard whether it's ecological integrity or whether you're talking about the green municipal funds. We're of course working with Minister [of State for Infrastructure and Communities John] Godfrey on the gas taxes and the fact that we're allocating gas taxes money to municipal governments. It's again used for transit, clean water, clean air projects which is important to what we're trying to do as a country because we have signed on to Kyoto.

"We have to then look beyond Kyoto, beyond that framework. We hope to be a bridge to the United States, to Australia, China, other countries that haven't signed on. How can we get them into the post-Kyoto period? So all of those things, I think, show that we are in fact, have been and continue to be, aggressive on this file. The Minister, who's absolutely great to work with, I think, has demonstrated a strong commitment to work with NGOs, his provincial and municipal colleagues, with cities—he's there to make sure we move this agenda.

"In the end, we want to deal with issues of pollution. As many things are in this country, the environment is not solely a federal preserve. It's all about partnerships, it's all about having the right tools to move the program forward. So those are the kinds of things we as a government have done and are continuing to do more."

**What is your government's vision and leadership on alternative energy and the environment in Canada?**

"I think the vision would be that we want to, as we are moving even more aggressively forward, to rely less on traditional fuels and that's why renewable energies in areas I've already mentioned are increasing by 10 per cent; we're not satisfied with being No. 2. We want to move forward. That type of approach is a pretty clear commitment."

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POLICY BRIEFING - ALTERNATIVE ENERGY

# Canada is only halfway on federal Clean Air Agenda: Dion

*'We owe this to Canadians, and quite frankly to human kind,' says Environment Minister*

*Continued from Page 20*

sions which trap heat and contribute to climate change. In the greater Toronto area, transportation accounts for up to two-thirds of smog forming pollutants. This is the problem.

I would like to take this opportunity now to address the solutions that we need to continue in order to move forward together. What have we done since the first Smog Summit in 2000? The Government of Canada launched our conferences and the Ten Year Clean Air Agenda in the year 2000. I was at the table supporting my courageous predecessor, David Anderson when he announced the Ten Year Clean Air Agenda at the 2000 Smog Summit.

We have committed $210-million to deliver on key elements of the Clean Air Agenda. But our financial commitment is not all that is important. The path forward created by this very important policy is equally significant. We have put forward ways to minimize pollution, reduce transportation sector emissions, lower emissions from major industrial sources, advance clean air science, and engage the public in finding solutions to clean air issues.

Since I cannot speak about all of this, I will focus on transportation, the topic of today. One of the key elements of the Ten Year Clean Air Agenda for transportation is a strict regulatory action plan for vehicles, engines and fuels. This is already paying significant dividends. These regulations will reduce smog forming emissions from new vehicles by 90 per cent by 2010 compared to 2000. This is good, it is too bad that these regulations only impact new vehicles.

We are making progress with stricter vehicle and fuel regulations for both diesel and gasoline. Taken together, Canada and the United States have the strictest vehicle engine and fuel regulations in the world for air pollutants. Our transportation regulatory plan will also ensure that starting in 2007, bus standards will require a reduction of 85 per cent from current allowable levels of emissions of NOX and of hydrocarbons and 95 per cent for particulate matter.

I have listened to the debate about the use of public buses and changes that need to be made in the greater Toronto area. I have also heard what Mayor Bill has said about what needs to be done for the TTC. I am very pleased that the Government of Canada has recently announced its expansion of the National Urban Transit Bus Retrofit Program. The program expansion consists of retrofitting an additional 101 urban transit buses with diesel oxidation catalysts with the TTC upgrading an additional 20 buses.

These are some of our actions, but the Government of Canada cannot act alone, we need to act with the provinces, territories, municipalities and our American friends, along with everyone, all the stakeholders, and all Canadians. According to the Constitution of Canada, many of the sources of air pollution and smog fall within provincial jurisdiction. The federal government is working very closely with the provinces and territories to implement the Canada-wide standards for particulate matter and ozone, the two main precursors to smog. We are moving forward through the Canadian Council of Ministers for the Environment.

The federal provincial and territorial governments, led by Ontario, are also finalizing Canada-wide standards to substantially reduce mercury emissions from the coal fire electric power generation sector by 2010. The goal is to capture mercury from coal burned in the range of 60 to 90 per cent. If I have time, I would also like to address later the local air quality initiatives that we are undertaking with many of you including the activities of the greater Toronto area, clean air council and of course today's summit. But you know that very well.

I would like to turn now to what we are doing with the United States. In January of 2003 we pledged to build on the success of the 1991 U.S.-Canada Air Quality Agreement to combat transboundary air pollution in the Great Lakes Basin airshed and elsewhere in Canada and announced a Border Air Quality Strategy five months later.

…Canada and the United States now have strong policies to reduce emissions of air pollutants. But the fact is that progress is difficult to assess because indicators are difficult to reconcile. They change over the years. In my assessment, we have been able to keep the problem stable. But we must consider the impacts of population growth, economic growth, the increasing number of vehicles on the road and so on. If we have not done that, the solution will be substantially worse today. And certainly we could be at the range where Houston and Tokyo are or even worse. But we have been able to stabilize.

It is not enough. I have been told…that before 2020 about two million people may be added to the greater Toronto area. So that means that we need to do what we are doing to move forward with the Ten Year Clean Air Agenda. We must try to do as much as possible to decrease the pollution we have. We must make progress or we risk ensuring that the prediction that deaths will go up will come true. We must move forward and we must do more. The number of air quality advisory days that we now have must decrease.

In addition to our actions to address smog, we are implementing other policies that are delivering co-benefits. The most important of all of them is the improved climate change plan which we recently released called *Moving Forward on Climate Change*. With this plan the Federal Government has committed $10-billion towards honouring our Kyoto commitment. And in this plan you will find a lot of ways to improve our capacity to work with municipalities.

One key point of the plan, for instance, asks the auto industry to decrease their emissions by 5.3 megatonnes. Another key aspect of the plan is the Climate Fund which will operate as a Canada environmental bank. If you provide reductions of greenhouse gas emissions, then you will receive credits for them. You can sell your credits to the market and make money with it. I would be pleased to discuss with all of you the way it will work. But certainly if you come with initiatives for transportation it is something that we can discuss further.

Our climate plan also includes a Partnership Fund. The Partnership Fund helps us to work on joint priorities with the provinces and territories. It will be important that your priorities are reflected in this Partnership Agreement that I hope to sign soon with my colleagues at the Government of Ontario. My colleague, John, will be talking further about the New Deal as this is also a key point of the revised climate change plan.

Let me conclude by announcing the launch of the National Clean Air Online website. This website is designed to provide Canadians with timely, locally relevant and action oriented information. I'm very proud of that. It will be a tool and a resource to help Canadians take action to improve local air quality, reduce greenhouse gas emissions and help Canada meet its Kyoto commitments.

I would also like to say that the declaration that we are signing today is very important for Toronto. One of the commitments of the declaration that I am particularly interested in is to explore the possibility of expanding the Toronto Atmospheric Fund Model so that it will apply across the entire greater Toronto area.

I am also interested in exploring the benefits of hosting a cross-border Canada-U.S. Smog Summit to engage in transboundary air quality discussions and identify issues and strategies with municipal, state and federal representatives in the Great Lakes Basin Region.

To conclude very shortly, we are now only halfway through on delivering on our federal Clean Air Agenda. It gives us the strictest vehicle engine regulations and regulations for air pollutants in the world. It will give us cleaner buses, cleaner cars, and cleaner snowmobiles.

With Canada-wide standards for mercury emissions from electric power generation, the numerous local air quality initiatives we are supporting, the particulate matter annex we are negotiating with the United States, the climate change plan we just announced as part of the government's broader vision, ProjectGreen, and with the New Deal for Cities and Communities we have so many things to do.

Next year when we meet again for the GTA Smog Summit 2006 I am sure we will have much more progress to discuss. We owe this to Canadians, and quite frankly to human kind.

*Stéphane Dion, who represents Saint-Laurent-Cartierville, Qué., is Canada's Environment Minister. This speech was delivered to the Clean Air Day, World Oceans Day and the Greater Toronto Area Smog Summit 2005. The speech was edited to fit the page.*

*The Hill Times*

POLICY BRIEFING - ALTERNATIVE ENERGY

# Governments have to make decisions about large-scale technologies in face of disagreements among scientists

■ *So much of international trade relations and international power struggles are tied up with oil. But what will a clean, efficient hydrogen fuel that would be accessible to every country with a coastline do to the dynamics of our current world power structure?*

**By MARC RENAUD**

As electricity providers threaten rolling blackouts and air quality advisories tell our children to play indoors, it seems more and more obvious that Canada—and the world—needs clean, reliable and renewable sources of energy.

Hydrogen fuel may be one of the answers. By combining hydrogen gas with the oxygen we breathe, scientists are able to create electricity, literally, out of thin air. And the only by-product is pure water. It seems like the perfect cure for our addiction to energy sources, such as fossil fuels, nuclear and hydro-electric power, that are finite, or produce dangerous chemicals, or damage the environment—or all three.

Canada, in particular, seems poised to reap great benefits from a hydrogen fuel future. Canadian scientists and engineers already lead the world in developing this new technology. And the federal government is so confident about the potential of hydrogen that it has invested $130-million in its Hydrogen Economy Initiative. But while hydrogen may indeed have the potential to lead the way to a clean fuel future, the society-wide adaptation of a new technology *always* has important—and usually unforeseen—social, political and cultural implications. Scientific research, in other words, offers only part of the answer.

Social sciences and humanities research begins where the narrowly scientific leaves off in order to probe the complex impacts of technological changes on individuals, communities, and economic and political systems. Pollution-free hydrogen may one day fuel our cars, heat our homes and power our factories, but what will be the consequences for our economic and social structures, for the international geopolitical system, even for personal relations?

Take the example of the internal-combustion engine. The introduction of the automobile had huge and largely unforeseen effects all over the world. It moved urban populations out to the suburbs, created gigantic oil corporations that rival nation-states in power and influence, led to a reconfiguration of the geo-political map, and contributed to environmental destruction on a scale unprecedented in human history. Not to mention making 50,000 auto-related deaths a year an unremarkable feature of the North American social landscape.

In order for a hydrogen-based economy to deliver on its apparent promise, our best political, economic, legal, philosophical and sociological minds must carefully examine its human and environmental implications. We must be sufficiently prepared to be able to seize opportunities, manage risks, and have the knowledge and foresight to recognize the difference between the two.

To help prepare the way to this new future, the Social Sciences and Humanities Research Council of Canada (SSHRC) is funding an international workshop on Hydrogen and Governance at the University of Victoria this October—the first, it is hoped, in a series dealing with the challenges of making intelligent public policy decisions about large-scale technologies in an uncertain and diverse world.

This meeting will bring leaders from government, industry, science and community organizations together with experts doing relevant research in the social sciences and humanities. Together, they will discuss the issues from many perspectives, and ask tough questions, both about the consequences of a large-scale switch to this still-experimental energy alternative, and the merits of other possible pathways to achieving a sustainable society.

For example, how do we manage the political, economic and social fallout in Alberta if Canada's dependence on fossil fuels fades away? If, as predicted, we are able to produce commercially viable hydrogen from water, will Atlantic Canada become the nation's new economic juggernaut as those provinces set up massive hydrogen plants along the ocean?

Could large-scale emissions of water vapour actually cause new environmental problems? And how can we lessen economic upheaval across the country as new hydrogen-based jobs displace existing businesses and careers? How must education and training change to prepare for the rise of an entire new industry? What will be the large-scale consequences if each individual household can generate all of its energy needs from the hydrogen fuel cell that powers the family automobile?

Finally, so much of international trade relations and international power struggles are tied up with oil. What might clean, efficient hydrogen fuel, accessible to every country with a coastline, do to the dynamics of the current world power structure?

We must understand the diverse implications of this new technology—and of the many competing options that may emerge over the next 30 years—before we can intelligently plan for long-term change. And we must do so in tandem with technological development, not after the fact.

As workshop organizer Gordon Smith, formerly deputy minister of foreign affairs and currently executive director of the University of Victoria's Centre for Global Studies, has put it, "When you are faced with large-scale change in an uncertain world, institutional innovation is probably more important than technological innovation."

We must move beyond the technology and see the human face of these changes if we are to prosper in a hydrogen economy. We must acknowledge that technological change never confines itself to technology. This workshop is an important first step in beginning a discussion on the massive impact a hydrogen fuel economy would have on how we live, how we work and how we interact with one another in our own communities and around the world. Only by engaging the researchers who study the many facets of human life itself will Canada develop the knowledge it truly needs to face such a promising, yet uncertain, future.

In the not-distant future, governments and regulatory bodies will have to make decisions about large-scale technologies in the face of disagreements among scientists and pressure from competing interest groups. This will be a major challenge for our elected leaders and public servants—one they cannot meet successfully without the understanding made possible through social sciences and humanities research.

*Marc Renaud is president of the Social Sciences and Humanities Council of Canada.*

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# Tilting towards windmills, transitioning to sustainable energy

## *Governments have power to encourage evolution of cleaner electricity sources*

**By GLEN MURRAY**

Against the backdrop of skyrocketing oil prices and fears about a carbon-choked, overheated future, it's easy to become seduced by the cool gleam and purr of electricity.

But the electrical energy supply is not endless, and we would be wise to pursue the relationship with our eyes wide open. As intermittent power blackouts remind us during this summer of heightened demand, Canada needs to hasten the evolution of a more sustainable energy future. In addition to rigorous conservation measures, we should be thinking about greener forms of power generation.

One of the best ways to achieve that would be to embrace the concept of ecological fiscal reform (EFR), an integrated strategy to redirect taxes and government spending to encourage a shift toward sustainable development. EFR is based on the understanding that how the government taxes and spends has an enormous effect on the way the economy works—and the way to maximize this impact is to ensure policies work together to support over-arching goals, like a sustainable energy future.

Applying a range of economic measures, governments could, among other things, promote the development of renewable energy sources, while discouraging Canada's reliance on carbon-emitting activities.

Canada is a world leader in various energy production and technology sectors. This leadership has been fostered through a long history of deliberately using public policy to successfully partner and contribute to the development of new energy technologies and sources of supply. Canada, like the rest of the world, is moving into an era marked by a carbon-constrained economy. A key challenge is how to make the transition to a sustainable energy future.

According to research conducted for the National Round Table on the Environment and the Economy, ecological fiscal reform measures could encourage a ramping up of emerging renewable energy technologies, including wind turbines, tidal power, geothermal energy, photo-voltaics, landfill gas and certain types of low-impact biomass.

These technologies currently contribute only two per cent of all the power flowing through Canadian electricity grids. But, while small, they've got loads of potential. From a practical standpoint, after taking into account the technological, economic and other obstacles that stand in the way, these innovative technologies could inject a major spark into Canada's power grid.

By 2020, for example, wind turbines erected on our coastlines could generate between 15,000 and 40,000 MW, up from today's installed base of just over 300 MW. Another 2,000 MW could flow from tidal power, which currently contributes nothing to the electricity grid. Biomass, one of today's biggest alternate energy forms, could see annual growth rates of more than 70 per cent, delivering up to 6,000 MW to the power grid over the next 15 years.

But, as in any free-market economy, what we *can* do is not necessarily the same as what we *will* do. Private enterprise will develop, build and maintain renewable energy technologies only if and when the right economic signals exist.

This creates a clear and compelling role for government: To come up with a package of fiscal instruments that is designed to lead Canada to a low carbon emission future.

Research conducted for NRTEE has helped identify economic measures that, alone or in combination, would promote environmentally sound alternatives to fossil fuels. These include:

- A renewable portfolio standard (RPS), which requires utilities to buy "green certificates" that favour renewable energy technologies over conventional fossil fuels;
- Lowering the production costs for renewable energy technologies through a direct government subsidy or a capital cost allowance;
- A combination of an RPS and generation subsidies;
- A research and development subsidy that would reduce the long-term cost of renewable energy generation;
- A tax on power-generation activities that release carbon into the atmosphere.

Using an analytical model developed for the U.S. Environmental Protection Agency, the researchers concluded that these options would exert a positive influence, whether on consumer or corporate behaviour, whether in the short or the longer term.

The result would be to reduce our reliance on carbon-generating energy technologies. This would improve the quality of our air and slow the pace at which we are altering climate patterns.

The environmental impact of a particular course of action can be measured in economic and human terms as well.

Poor air quality, for example, places a big burden on our healthcare system, while climate change exacts a staggering toll through extreme weather events, wild temperature fluctuations and rising sea levels. Measures to mitigate such environmental devastation would, therefore, translate into clear cost savings and relieve a lot of suffering and misery

Realistically, however, even the most publicly minded energy company cannot be expected to embrace a new technology unless the right economic signals to do so exist.

Governments, on the other hand, have a responsibility to take a broader view of what constitutes the public good. With a range of fiscal instruments at their disposal, they also have the power to influence the market in a positive way.

As a society, Canada needs to create the right economic environment for such technologies to flourish. Our natural environment depends on it.

*Glen Murray is chair of the National Round Table on the Environment and the Economy (NRTEE). The NRTEE will be releasing a State of the Debate report, entitled Economic Instruments for Long-term Reductions in Energy-based Carbon Emissions in July 2005. To request a copy of the report, contact the NRTEE (www.nrtee-trnee.ca).*

*The Hill Times*

POLICY BRIEFING - ALTERNATIVE ENERGY

# Government doesn't invest enough into alternative energy: NDP

■ *NDP Leader Jack Layton says the green energy sector is being held back by a regulatory and tax regime that provides an unfair advantage to the fossil fuel and nuclear energy sectors. But he has a plan, if he were Prime Minister.*

THE HILL TIMES

The federal Liberal government does not invest enough money into the alternative sources of energy sector in Canada, its Kyoto plan is inadequate, and the green energy sector is being held back by a regulatory and tax regime that provides an unfair advantage to the fossil fuel and nuclear energy sectors, says NDP Leader Jack Layton.

"Even the playing field and we'll see a dramatic reduction in the price of green power and a dramatic increase in supply of renewable energy," said Mr. Layton (Toronto-Danforth, Ont.) in an email interview with *The Hill Times* last week.

Moreover, Mr. Layton said that if the federal government fully implemented the NDP Kyoto Plan it would create almost 80,000 new green jobs and would pump $4.8-billion into the renewable energy sector.

His interview follows.

**If you were Prime Minister of Canada, what would be your five priorities on developing alternative sources of energy for Canada? And what's your vision on this front?**

"The vision is to have a vibrant green energy sector in Canada that would not only meet growing green energy demand in Canada but also energy demand in the rest of the world. This green energy sector would dwarf the fossil fuel and nuclear sectors both in output and job creation. It would also help make Canada's economy truly sustainable."

**How do you get there?**

"Implement the NDP's Kyoto Plan, in particular:

"a. Develop 10,000 MW of wind power by 2010 by providing a subsidy to wind energy projects across Canada through the Wind Power Production Incentive (WPPI) program and through the Canadian Renewable and Conservation Expense (CRCE).

"b. Install 100,000 solar rooftops with a federal grant of 30 per cent of the purchasing cost and a loan available for 100 per cent of the balance to be paid off over 20 years.

"c. Promote the development of other non-wind renewable energy technologies such as tidal, biomass and small hydro using the WPPI model, including access to CCRE tax treatment.

"d. Negotiate with all provinces to adopt provision of renewable energy rates that give a fixed price for renewable power to match the European experience.

"e. Develop an east-west electricity grid, expand co-generation and develop a Just Transition strategy for affected energy sector workers."

**Do you think the current federal Liberal government invests enough in the alternative sources of energy sector right now?**

"No. The February 2005 Federal Budget was willfully inadequate. In fact, there is only $592-million over five years in new money specifically targeted to supporting green power, with just over $200-million to be spent in the next three years. Compare this to the estimated $1.45-billion in subsidies given to the fossil fuel industry in 2002 (see Pembina Institute report, 2005). In contrast, the NDP's Kyoto Plan calls for $4.8-billion to be invested in green power between 2005 and 2012."

**What's your take on the government's $10-billion plan to cut greenhouse gas emissions in accordance with the Kyoto Climate Treaty?**

"Let's be clear. This figure is what the Liberal government has acknowledged could be the cost of their Kyoto Plan, a plan that was roundly criticized by 11 prominent national environmental groups as being completely inadequate in meeting Canada's international Kyoto commitments.

"Even worse is the fact that the February 2005 budget fails to deliver the money needed for this inadequate plan. Finance Minister Goodale only promised $2.3-billion over five years in new money for greenhouse gas reduction. He tried to hide this pathetic 'commitment' by lumping it in with other environmental initiatives and $2-billion in climate change spending announced in previous budgets. So, according to the Liberal government's own estimates, they have under-funded their inadequate plan by more than $5-billion.

"About the only good thing that came out of the recent budget cycle was the NDP Better Balanced Budget Act which invests $900-million over two years into public transit and a low income housing energy retrofit program."

**It's estimated that it will be at least 20 years before alternative fuel technologies are readily available, due to price and supply issues. Do you think that's accurate?**

"No. Over the past couple of years, I've met with a host of green energy companies and associations. The message I repeatedly get is 'we're ready.' For example, the Canadian Wind Energy Association is quite serious about being ready to economically develop 10,000 MW of wind power by 2010.

"What's holding the green energy sector back is a regulatory and tax regime that provides an unfair advantage to the fossil fuel and nuclear energy sectors. Even the playing field and we'll see a dramatic reduction in the price of green power and a dramatic increase in supply of renewable energy."

**Many critics say that for more than 30 years, Canadian politicians have been talking about tidal power, wind, solar, hydro, and independence from fossil fuels, but why haven't we progressed so fast? When will these alternative sources of energy deliver?**

"Once the playing field in the energy sector is even and once the federal government adequately invests in green energy development, then we will see the growth in alternative energy that this country needs (and let's not forget that hydro power, a renewable energy source, is already delivering a significant portion of energy supply in Canada.)

"To help make this growth happen, the NDP proposes the federal government stop tilting the marketplace towards unsustainable fuel and, over four years, shift government subsidies away from unsustainable fuels towards renewable ones. The first step is to reverse the tax reductions for fossil fuel industries contained in previous Liberal government legislation. When fully phased in after four years, the government will no longer subsidize non-renewable fuel and will divert current subsidies to renewable energy development.

"Next, fully implement the NDP Kyoto Plan therefore creating almost 80,000 new green jobs and pumping $4.8-billion into the renewable energy sector."

*The Hill Times*

Photograph by Jake Wright, *The Hill Times*

**Energy supply**: NDP Leader Jack Layton, pictured recently on the Hill, says once the playing field in the energy sector is even, Canada will see growth in alternative energy.

# Canada's sources of energy: coal, oil, natural gas, nuclear…

**Sources of energy used in Canada**

- Oil, coal, natural gas, nuclear, tidal, hydro, wind, solar, geothermal, fuel cells, biomass.

**Canada's environment funding in budget 2005**

- $1-billion for an innovative Clean Fund to further stimulate cost-effective action to reduce greenhouse gas emissions in Canada.
- $225-million to expand the EnerGuide for Houses Retrofit Incentive program for Canadians.
- $200-million to support the development of a Sustainable Energy Science and Technology Strategy.
- $200-million over five years and a total of $920-million over 15 years to further stimulate the use of wind power to generate energy. The government says this delivers on its commitment to quadruple the Wind Power Production Incentive.
- $97-million over five years and a total of $886-million over 15 years to stimulate the development and use of forms of renewable energy other than wind, such as small hydro, biomass and landfill gas.
- An estimated $295-million in enhanced tax incentives through accelerated capital cost allowance (CCA) to encourage investment in efficient and renewable energy generation and establishing that new accelerated CCA will only be considered for investments in green technology.
- $300-million provided to enrich the Green Municipal Funds, which make investments in innovative green municipal projects. Half of this amount will be targeted to the cleanup of brownfields.
- $85-million to fund strategic investments to minimize the risk of invasive alien animal and plant species damaging our environment and economy.
- $40-million to improve the ecological integrity of the Great Lakes ecosystem.
- $28-million over two years to preserve the health of Canada's oceans.
- $15-million per year ongoing to ensure the conservation of our fisheries in the Northwest Atlantic.
- $90-million to support scientific assessments and research under the *Canadian Environmental Protection Act*, which will help reduce the exposure of Canadians to potentially harmful substances.
- $209-million for the maintenance and acquisition of capital assets in national parks and $60-million to restore the ecological integrity of parks.

*—Source: Department of Finance*

**Memorandum of understanding between the federal government and the automobile Industry**

By 2010, the Canadian auto industry will take actions to voluntarily reduce greenhouse gas emissions of new light-duty vehicles such as cars, minivans, sport utility vehicles and pickup trucks by 5.3 megatonnes. The agreement targets reductions in methane, nitrous oxide and hydro-fluorocarbon gases in the industry as a whole, rather than specific areas and methods. The auto industry has also agreed to support Canadian-based automotive research and development. A joint industry-government monitoring committee will be established to report annually and publicly on progress made.

**Canada's diverse electricity industry**

Canada has a diverse electricity industry that benefits from tremendous regional variation in natural resources. The Canadian Electricity Association reported that Canadians consumed 585 TWh of electricity in 2000, 61% of which was generated by hydro, 19% from coal, 12% from nuclear, 5% from natural gas, 2% from oil, and only 1% from other sources. These numbers, however, hide distinct regional differences in electrical generation, as most jurisdictions, with the two exceptions of New Brunswick and Ontario, rely heavily on one type of fuel.

*—Source: Conference Board of Canada*

POLICY BRIEFING - ALTERNATIVE ENERGY

# Liberals don't have will to move quickly on alternative fuel technologies, says Bloc Québécois energy critic Cardin

■ *The Bloc's energy critic says the federal Liberals favours the oil and gas industries over clean and renewable energy sources. Serge Cardin says it's time for a change.*

THE HILL TIMES

Prime Minister Paul Martin's government offers more tax benefits to oil and gas companies in Canada than U.S. President George W. Bush's government dishes out in the oil rich state of Texas, says the Bloc Québécois' energy critic, who says the federal Liberals don't have the will to move quickly on alternative fuel technologies.

"Once again, the Liberal government has demonstrated its support for oil and gas at the expense of clean and renewable energy sources," said Bloc MP Serge Cardin (Sherbrooke, Qué.). "In the 1990s alone, Ottawa provided $280-million in direct subsidies to the oil and gas sector and $167-million to the nuclear industry, as compared to a laughable $8-million for renewable energy sources. From 1970 to 1999, Ottawa provided $66-billion in direct subsidies to the oil and gas industry, $6-billion to the nuclear industry and $329-million to renewable energy sources."

Moreover, Mr. Cardin said the federal government's promised $10-billion Kyoto Plan "lacks credibility" and is unfair to Quebec.

"The measures announced will take a number of years to be implemented, even though Paul Martin promised in the 1993 Liberal Red Book to cut Canada's greenhouse gas emissions by 20 per cent by 2005. Canada's emissions actually increased by 20 per cent from 1990 to 2002.

"Quebec's emissions, on the other hand, increased by five per cent from 1990 to 2002. Our hydroelectricity, which the Quebec government alone developed by investing billions of dollars, has helped us a great deal in this regard," said Mr. Cardin, adding that his party is calling on the federal government to give Quebec full responsibility, with full financial compensation, to implement the Kyoto Protocol in the province.

The interview follows.

**What would be your five priorities on developing alternative sources of energy for Canada? And what's your vision?**

"Unlike the federal government, which supports the oil and gas sector, the Bloc Québécois advocates renewable energy such as wind power and hydroelectricity. Wind power offers great promise for future development, both in Quebec and in Canada.

"There are other sources of renewable energy, such as solar, geothermal and biomass energy. These should not be overlooked, as they offer significant potential as supplementary sources."

**Do you think the current federal Liberal government invests enough in the alternative sources of energy sector right now?**

"Paul Martin's government has been and remains a strong advocate of the use of fossil fuels in Canada.

"After offering oil and gas companies tax benefits that are even ahead of those in George W. Bush's state of Texas, the 2005 budget announced new tax measures, improving depreciation tax allowances for the production and transportation of oil and gas.

"Once again, the Liberal government has demonstrated its support for oil and gas at the expense of clean and renewable energy sources.

"In the 1990s alone, Ottawa provided $280-million in direct subsidies to the oil and gas sector and $167-million to the nuclear industry, as compared to a laughable $8-million for renewable energy sources.

"From 1970 to 1999, Ottawa provided $66-billion in direct subsidies to the oil and gas industry, $6-billion to the nuclear industry and $329-million to renewable energy sources."

**What's your take on the government's $10-billion plan to cut greenhouse gas emissions in accordance with the Kyoto Climate Treaty?**

"In the Bloc Québécois's opinion, Ottawa's plan lacks credibility. Its plan challenges the polluter-pay principle and is unfair to Quebec, and moreover does not allow Canada to live up to its commitments under the Kyoto Protocol.

"The 5.3 Mt reduction required of the automotive industry, for instance, is not enough. Cars account for 17 per cent of greenhouse gas emissions and this problem must certainly be addressed at the source. The automotive industry should therefore reduce emissions by eight and a half times the amount set out in the agreement, or by 45.9 Mt.

"Finally, the measures announced will take a number of years to be implemented, even though Paul Martin promised in the 1993 Liberal Red Book to cut Canada's greenhouse gas emissions by 20 per cent by 2005. Canada's emissions actually increased by 20 per cent from 1990 to 2002.

"Quebec's emissions, on the other hand, increased by five per cent from 1990 to 2002. Our hydroelectricity, which the Quebec government alone developed by investing billions of dollars, has helped us a great deal in this regard.

"The Bloc Québécois is calling on the federal government to give Quebec full responsibility, with full financial compensation, for the implementation of the Kyoto Protocol within the province."

**It's estimated that it will be at least 20 years before alternative fuel technologies are readily available, due to price and supply issues. Do you think that's accurate?**

"To stimulate innovation and sustainable development, we need more than time and the necessary funding: the political will must also be clearly expressed. Unfortunately, the Paul Martin government does not have the will to move more quickly in this regard than his predecessors, either for the development of renewable energy or to develop fuels that are less harmful to the environment."

**Many critics say that for more than 30 years, Canadian politicians have been talking about tidal power, wind, solar, hydro, and independence from fossil fuels, but why haven't we progressed so fast? When will these alternative sources of energy deliver?**

"Once again, it is all a question of the political will to pursue the development of renewable energy sources. As to the Kyoto Protocol, the pressure exerted by the Bloc Québécois was much more effective in bringing about its ratification than the political will shown by federal Liberals.

"It is also because of the lack of political will on the part of the federal government that the Bloc Québécois is calling for the transfer of responsibilities from the federal government to the Quebec government in matters of sustainable development, renewable energy and implementation of the Kyoto Protocol.

"Sooner or later alternatives to oil and gas will be needed. Quebec has every interest in reducing its dependence of oil and gas. To this end, the Bloc Québécois would like to see the establishment of a sustainable development fund, a 'green nest egg' funded from clean energy exports that would make a sovereign Quebec a leader in this field."

*The Hill Times*

Photograph by Jake Wright, *The Hill Times*

**Renewable energy**: Bloc Leader Gilles Duceppe, pictured on the Hill recently with reporters. Bloc MP Serge Cardin says the Liberals favour oil and gas industries over clean, renewable energy.

# There are 16 CANDU nuclear reactors operating in Canada

- Ethanol is an alcohol derived from wheat and corn starches. Ethanol-blended gasoline (E10) is used as an alternative fuel for vehicles. Almost 1,000 gas stations across Canada use E10. In 2002, 17 million bushels of corn were used for ethanol production in Canada.
- There are 16 CANDU nuclear reactors currently operating in Canada.
- Biomass is the second largest renewable energy source in Canada. The pulp and paper mill industry both produces and uses the majority of Canada's bioenergy.
- By the end of 2006, nuclear energy will produce 20% of Canadian electricity.
- Solar electric systems are used in Canada to provide energy to telecommunications equipment, water pumps in rural areas, navigational aids, and to provide electricity to cottages in remote areas.

*—Source: Centre for Energy*

The federal government expanded its Wind Power Production Incentive (WPPI) program in the 2005 Budget so that it could support the development of 4,000 MW of wind energy development in Canada by 2010.

*—Source: Canadian Wind Energy Association*

**Wind power**

- As of December 2004, Canada's installed wind energy capacity was 444 MW.
- Northern Quebec (Nunavik) alone has enough wind resource to produce 40% of Canada's electricity needs.
- Based on the experience of other countries it is possible for Canada to achieve 20% of its electricity needs from wind energy, that would be 50,000 MW of wind energy capacity.
- Quebec and Alberta are at the forefront of wind energy production, with 102 MW and 172 MW installed respectively.
- Canada could reasonably meet 20% of its total energy needs with wind power.
- At the beginning of 2004, Canada had about 327 MW of installed wind generation capacity. This produced approximately 850,000,000 kWh kilowatt-hours of electricity per year—enough to supply over 100,000 typical Canadian homes. Used to displace coal-generated electricity, this energy generation can displace the emission of roughly 850,000 tonnes of carbon dioxide into the atmosphere annually.
- Canada has large utility-scale wind turbines installed in Alberta, Saskatchewan, Ontario, Quebec, Prince Edward Island, Nova Scotia and the Yukon.

*—Source: Canadian Wind Energy Association*

**The low-down on fuel cell industry**

Ontario invested $9-million over three years in the fuel cell industry in early January. This Fuel Cell Innovation Program focuses on commercialization and moving products to the manufacturing stage. The program is designed to nurture the development of small and medium sized Ontario companies that are involved with fuel cell technology development and fuel cell compatible technologies. In February, the B.C. government also invested $2-million to support hydrogen and fuel cell innovation.

In 2003, fuel cell companies reported total revenues of $243-million U.S., up 20 per cent from 2002. Ballard Power Systems Inc. accounted for the lion's share of that number—it had sales of $120-million US. Revenue at Fuel Cell Technologies Corp., a stationary fuel cell developer based in Kingston, Ont., jumped 157 per cent to $1.8-million U.S. Hydrogenics Corp., of Toronto, saw its sales nearly double to U.S. $26.7-million. In 2003, the market value of the companies in the survey surged 50 per cent to $3.6-billion U.S.

*—Source: 2004 Price Waterhouse study*

POLICY BRIEFING - XXX

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