

GREENING PUBLIC POWER:

Protecting the public interest in electricity restructuring

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GREENING PUBLIC POWER

EXECUTIVE SUMMARY

WHY PRIVATIZATION AND DEREGULATION WON'T WORK

Ontario's electricity system is in need of a profound transformation. Unfortunately, the provincial government's plan to privatize and deregulate our electricity system will result in more pollution in the short term and long term limits on what future governments can do to protect the environment through:

1. **Incentives to sell more and conserve less:** Private producers will try to maximize sales to increase profits, resulting in lower investment in energy conservation and efficiency.
2. **More dirty coal, part I:** Competition favours 'cheap' power from coal because energy companies don't have to pay the health or environmental costs associated with smog and climate change.
3. **More dirty coal, part II:** Currently, Ontario's coal plants only operate at 50 percent of capacity, but a private producer would probably run them longer and sell power to higher-priced jurisdictions in the United States.
4. **Private profits, public costs:** Aside from the hundreds of millions of dollars in health care costs from air pollution, the public is also subsidizing private producers by promising to pay all of the billions of dollars it will cost to de-commission the province's nuclear plants and by limiting the liability of nuclear plant operators in the event of an accident.
5. **Market manipulation:** Due to the unique characteristics of electricity, electricity markets are particularly prone to manipulation by a small number of large firms. These powerful market players can squeeze out small, renewable energy providers.
6. **NAFTA:** Once privatized, electricity generation will be subject to the rules of the North American Free Trade Agreement. These rules prioritize profits over environmental protection and will limit the policy options available to future governments.

THE ALTERNATIVE: THE CLEAN ENERGY PATH

Privatization and de-regulation will not achieve environmental or social improvements. The alternative to privatization and de-regulation, the Clean Energy Path, puts forward a comprehensive suite of policies to increase energy efficiency and the use of renewable energy in a publicly owned, truly accountable electricity system. Together, these will save consumers money, provide security and jobs, and leave a heritage of clean air, clean water and freedom from dangerous climate change. These benefits will be achieved through:

Energy Conservation And Efficiency

- A **public benefits fund** would collect a 0.3 cent per kilowatt-hour (kWh) charge on electricity, equivalent to about \$2.20 per month for a typical household. It would be used to develop and deliver programs for energy efficiency, renewable energy, research and development, and low-income customer protection. These programs could be delivered through independent, non-profit agencies like the members of the Green Communities Association.
- **Improved efficiency standards:** Minimum efficiency standards for buildings, electric appliances and electronic devices would be raised to levels that are technically feasible and economically justifiable, with tax incentives to promote efficiency improvements beyond minimum standards. Incentives would be provided and regulatory barriers removed for power plants that produce both electricity and useful heat at high efficiencies.

Green Power

- A **renewable portfolio standard** would require utilities to increase green, renewable energy from about 0.5 percent today to a minimum of 10 percent by 2010 and 20 percent by 2020.
- **Production tax credits** of 2 cents/kWh and **consumer tax credits** of 3 cents per kWh for renewable energy, helping to level the playing fields with fossil fuel and nuclear generation subsidies.
- **Net metering** would treat fairly those consumer who generate their own electricity with renewable energy systems by allowing them to feed surplus electricity back to the grid and spin their meters backward. Communal net metering would allow for community-based green power cooperatives like the Toronto Renewable Energy Cooperative to emerge and develop innovative partnerships with their local publicly-owned utility.
- **Research and development** spending and incentives for renewable energy and energy efficiency.

As we make the transition from an electrical system built around large, centralized fossil fuel and nuclear plants to a more decentralized and more democratic model based on green power and constantly improving efficiency, our publicly-owned local utilities and non-profit community agencies and cooperatives will play a greater role in our energy future.

To allow for such a transition to even be considered, however, the provincial government must place an immediate moratorium on the sale of Hydro One and Ontario Power Generation's plants.

GREENING PUBLIC POWER

Protecting the public interest in electricity restructuring¹

The result of privatizing and deregulating our electricity system will be more dirty power in the short term and longer-term limits on what future governments can do to protect the environment.

This paper makes the case against privatization and advocates a series of provincial policy measures to save consumers money, provide security and jobs, and leave a heritage of clean air, clean water and freedom from dangerous climate change by promoting energy efficiency and a transition to green power from the wind, the sun, small-scale hydro and bio-gas.

ONTARIO AT THE CROSSROADS

Ontario's electricity system is at a crossroads. New technologies and environmental limits have rendered the old energy model -- dominated by large, centralized generation from mega-hydro projects, nuclear plants and fossil fuels -- obsolete. The environmental and social costs of the system built around the expansionist Ontario Hydro (and its successor company Ontario Power Generation) are evident in the massive debt, security risks and long-term dangers from radioactive wastes associated with nuclear power, as well as in the deadly regional air pollution and global climate change associated with the combustion of fossil fuels.

The provincial government's proposed solution is an ideologically-driven rush to privatize and de-regulate the electrical sector. But this will not solve our environmental or health problems, for the 'free' market in electricity has hidden costs.

Incentives to sell more and conserve less

Private producers seek to maximize sales in order to increase profits and hence investment in energy efficiency drops. While the provincial government has been silent on this question, private sector firms recognize that -- in the absence of government policy to the contrary - opening the electricity market to competition will reduce investment in energy efficiency. According to a report prepared for the Canadian Electrical Association:

“Investment in Demand Side Management (DSM) has been greatly reduced by electricity suppliers wherever a competitive model of electricity supply has been implemented.... The lack of interest in DSM in a competitive market is not surprising. The traditional rationale for DSM was deferral of new generation supply by integrated utilities. In a competitive generation market, energy efficiency is no longer a reasonable activity for wholesale electricity retailers -- who would want to sell less product?... The re-invigoration of DSM and energy efficiency will, if it happens, be a policy decision”²

Increased prices may stimulate some conservation on the part of consumers, but the principal barriers to energy conservation are institutional, not price. For example, tenants are unlikely to invest in significant retrofits to buildings they simply rent, but landlords are unlikely to invest in conservation if the tenant pays the electricity bill. Builders choose not to invest in energy efficiency measures beyond the legally required minimum as they are concerned with the cost of construction, not future fuel costs. Additionally, there are significant ‘transaction costs’ associated with energy efficiency technology, i.e. decision-makers simply don’t know about them.

Hence there is a need for effective public policies, such as the Public Benefits Charge and increased energy efficiency standards proposed below, if the ‘win-win’ gains for the environment and the economy from energy conservation are to be achieved.

Competition favours coal

The experience in the U.S. has shown that “competition favours coal”. The U.S. Federal Energy Regulatory Agency developed a variety of scenarios, with assumptions as to whether the introduction of competition would result in increased use of (cleaner) natural gas or increased use of (dirty) coal. The actual emissions of nitrogen oxides and carbon dioxide were 4.3 and 7.9 percent higher than those predicted in the ‘competition favours coal’ scenario.³

This means that not only does privatization and deregulation tend to increase electricity consumption, but this new power comes disproportionately from the dirtiest (but cheapest) fossil fuel. This is because market prices don’t capture the full cost of power. If coal plants had to include the health and environmental costs from the air pollution they produce, the price of electricity from coal would double.⁴

In Ontario, the health costs include the 1,900 premature deaths per year from smog, the over \$580 million Ontario hospitals spend annually to treat the victims of air pollution and the \$560 million cost to employers in lost productivity. Once conservative estimates of the value of pain and suffering and loss of life are included, the Ontario Medical Association’s research shows that total annual economic losses reach \$10 billion.⁵

Toronto Public Health estimates that 1,000 Toronto residents die prematurely each year due to the mix of six air pollutants, while another 5,500 Toronto residents are admitted to hospitals due to air pollution. Premature deaths and hospitalizations are,

The Health Cost of Dirty Power

“Dirty electricity is cheaper to the consumer, but the expense is displaced to the health care system, and people suffer needlessly as a result. Increased expense to our already overburdened health care system, and poor health for Ontario citizens will be the result of ‘letting the market decide’ whether to purchase electricity from clean or dirty producers.”

-From the presentation by Ontario Medical Association to the legislative committee on the Energy Competition Act, August 19, 1998.

however, only the tip of the iceberg – air pollution also results in hundreds of thousands of asthma symptom days, respiratory infections, and other illnesses.⁶

The possibility of creating incentives for increasing the production of dirty power is particularly worrisome in Ontario, where the coal-fired generating stations currently operate at only 51 percent of their capacity.⁷ Even at half capacity, Ontario Power Generation's coal plants emit 14 percent of Ontario's smog-causing nitrogen oxides; 20 percent of its climate change pollutants, 23 percent of the lung irritant and acid rain-causing sulphur dioxide, and 23 percent of Ontario's total emissions of the nerve toxin mercury. Coal plants also emit significant amounts of lead (a nerve toxin) and five cancer-causing substances including cadmium, arsenic and chromium.

Even if the government requires the addition of scrubbers (i.e. selective catalytic reduction) on the coal plants - and the current regulation does not even comply with the Canada-U.S. smog treaty, due in part to the loopholes in the emissions trading system - this will reduce only one of the pollutants (nitrogen oxides) while emissions of other toxic, smog-causing and greenhouse gases will increase. In short, the environmental promises contained in Bill 35, the legislation ushering in electricity sector restructuring in Ontario, have not been realized.⁸

Private Profits, Public Costs

The billion dollars spent annually on health care costs and lost productivity in Ontario are not the only public costs associated our electrical system.

The privatization of the nuclear plants is also subject to hidden subsidies from the taxpayer – subsidies which perpetuate an environmentally disastrous industry. Twenty one billion dollars of the debt from the old Ontario Hydro – most of which was a result of unwise nuclear investments – has been transferred to the public rather than being attached to the nuclear assets which created the debt. British Energy has leased the Bruce Nuclear station (and were awarded all eight reactors for the price they bid on the first four⁹), but they will not have to bear any of the estimated \$3 billion in decommissioning costs for cleaning up the site after the plant is closed. Furthermore, the government has subsidized their operating costs by limiting their legal liability in the event of an accident to \$75 million. This will reduce the company's insurance premiums, but this amount which wouldn't even pay the associated legal fees in the event of an accident.

Market Manipulation

The introduction of 'competition' in the electricity market is filled with potential pitfalls, as demonstrated in California and Alberta. This is because electricity is not a 'normal' good and the supply-and-demand assumptions found in economics textbooks simply don't apply – creating very lucrative opportunities for energy companies who can 'game', or manipulate, the market to obtain higher prices.

Market Power

“Policymakers are slowly learning a tough lesson: the fundamental conditions of supply and demand in the electricity industry are so unique and severe that it is difficult to make this market work properly. The elasticity of supply and demand is so low, that market power problems are inevitable. The supply of electricity cannot be increased quickly because it is expensive and time-consuming to produce, while consumer demand for electricity is fairly constant and is not significantly affected by prices when overall demand increases.

In all of the major electricity markets, the abuse of market power – withholding supplies (hoarding) to drive prices up or demanding prices that are far above costs (price gouging) - has been alleged. Detailed econometric analysis shows overcharges of 25 percent or more in market after market...

While a laudable goal of public policy is to promote markets, markets are a means to an end, not an end in themselves. By placing the goal of ‘creating’ electricity markets above that of the delivery of a reliable supply of electricity at just and reasonable rates – no matter how blatant the market failure becomes – policymakers have gotten it backwards. By failing to recognize the fundamentals of the electricity market, public policy has deregulated too much, too soon and responded with band-aids that are incapable of solving the problems in real world markets.”

- Dr. Mark Cooper, *Electricity Deregulation and Consumers: Lessons from a Hot Spring and a Cool Summer*, (Consumers Federation of America: August 30 2001)

Electricity is fundamental to the functioning of the 21st century economy and has no readily-available substitutes, making demand inelastic in both the short- and long-run (see Market Power box below). Because of the basic physics of electricity, the production, transportation and distribution are extremely demanding, real-time systems. And since electricity cannot be stored economically, the market is extremely vulnerable to volatility and the abuse of market power on the supply-side, as large companies are able to extract huge ‘scarcity rents’, as occurred in California and other U.S. jurisdictions.¹⁰

In short, you can eat rice if the price of wheat goes up, but you can’t decide to run your computer or your fridge on kerosene if the price of electricity skyrockets. Hospitals can’t choose to shut down their equipment when the price spikes. Nor can you stockpile electricity when prices are low to tide you over when prices are high.

The resulting volatility and the ability to manipulate prices and supply through the exercise of market power does not bode well for would-be green power producers, who can be squeezed out by larger players.¹¹ For green power to come on-line, we will need long-term commitments in public policy (such as the Renewables Portfolio Standard discussed below), rather than a reliance on spot markets and the strategic games played by multinational energy companies.

These types of public policy, however, may be difficult, if not impossible, to implement if electricity becomes subject to international trade rules.

NAFTA

So long as the electrical system is publicly owned, it is exempt from the North American Free Trade Agreement (NAFTA). Once privatized, however, the system is subject to NAFTA trade rules which prioritize private profits over environmental or social protections.

In effect, under NAFTA Ontario's courts and government would no longer be allowed to make decisions about many economic, health and environmental issues.¹²

These decisions would be made in secret NAFTA panels by trade experts whose primary aim is to protect foreign corporations against government actions that restrict trade in electricity, even if such restrictions would protect the public interest in clean air or stable prices.

Even the staunchly pro-free trade North American Commission for Environmental Cooperation – the tri-national body established under the NAFTA – has issued a warning regarding potential trade challenges to environmental policies such as the Renewable Portfolio Standard.¹³

If Ontario's electrical system is privatized, our electrical grid will inevitably become more integrated with higher-priced jurisdictions in the northeastern United States, since it would be illegal under NAFTA to favour Ontario consumers. Indeed, this integration has been publicly advocated by key figures such as the U.S. ambassador to Canada and the CEO of Hydro One. This integration brings significant risks, since private energy firms could use Chapter Eleven of the NAFTA to sue the Canadian governments (federal or provincial) for lost profits under if they feel that environmental rules have increased their costs or pose an 'unfair barriers to trade'.

So not only can the provisions of NAFTA overrule Canadian environmental laws, they also empower corporations to sue our governments for lost profits due to environmental rules. This poses a direct threat to Canadian democracy and sovereignty, but also an indirect threat in the form of a 'regulatory chill effect' where politicians and bureaucrats are afraid to propose new environmental rules since they could end up being struck down by a trade panel.

The Chilling Effect of NAFTA

“Canada’s international trade obligations impose significant constraints on public policy and law concerning Ontario’s electricity sector. These undermine the capacity of Ontario governments to achieve broader societal objectives such as environmental protection, or community economic development, and may also frustrate the efforts of provincial regulators to ensure system reliability and stable affordable energy prices....

In our view, the constraints imposed by Canada’s obligations under NAFTA and WTO will significantly exacerbate these risks if Ontario proceeds further with its program to privatize and de-regulate its electricity sector.”

- Stephen Shrybman, *A Legal Opinion Concerning the Impact of International Trade Disciplines on the Privatization and Restructuring of Ontario’s Electricity Sector*, (Sack, Goldblatt and Mitchell: December 2001), page 9.

Lack of Vision

And finally, the provincial government's plan lacks an environmental vision for the future. It is clear that existing energy sources are not sustainable. Electricity from coal, oil and natural gas create the twin problems of regional air pollution and global climate change. Fossil fuels currently produce 28 percent of Ontario's electricity, making Ontario Power Generation responsible for a fifth of the province's smog- and acid rain-causing emissions and 14 percent of the greenhouse gas emissions.¹⁴ Ontario Power Generation's Nanticoke coal-fired power plant is the largest source of air pollution in Canada, while the Lambton and Lakeview coal-fired power plants are also amongst the top ten air polluters in the country.

Nuclear power is not a solution to our energy problems, for it poses a unique security threat and even under the best of conditions generates radioactive waste which will be dangerous for centuries. It regularly releases radioactive tritium into Ontario's air and water, and requires enormous amounts of 'upstream' energy in building nuclear plants and mining and refining uranium. Large-scale hydro transforms eco-systems through flooding and releases large amounts of methane, a potent greenhouse gas.

The government's implicit environmental policy is to increase rates, which will spur some energy conservation (but not much for the reasons discussed above) and to allow consumers to buy green power. But as long as dirty power doesn't have to pay its full price, green power will be at a significant price disadvantage.

Clean air and freedom from climate change should not be a luxury good. Yet this is what they will be, if we rely on the market to deliver environmental improvements when polluters don't have to pay.

Consumer should be able to purchase 100 percent green power, but this should be the 'icing on the cake' of our environmental strategy, not its core. Furthermore, we don't need to hand our electricity system over to multinational energy companies like Enron or secret NAFTA trade panels in order to be able to buy green power – it could be offered by local utilities in conjunction with community-based cooperatives such as in the Toronto Hydro – Toronto Renewable Energy Cooperative joint initiative or through the new possibilities being explored in other communities through the Ontario Sustainable Energy Association.

To answer the challenges of the 21st century, Ontario must develop a balanced portfolio of clean electricity solutions that stop wasting energy, while developing local, renewable energy

Fifty per cent cut in greenhouse gas emissions is available now

"It's a straight-forward approach to reducing energy costs, improving air quality and creating new jobs. We know all the variables -- building retrofits, alternative energy, improved public transportation and fuel-efficient cars. What's missing from the equation are the combination of broad and targeted policies in government and industry that will make these changes a reality."

- Energy expert Ralph Torrie on *Powershift: Cool Solutions to Global Warming*

supplies to increase energy security. Consuming less or using energy more efficiently – the ‘negaWatt’ -- is the cleanest form of energy. The remainder of our energy needs can be met by using clean, green renewable resources like wind, solar and micro-hydro power or by capturing methane gas from composters and landfills.

This can be achieved, even without further technological advances. A report produced by the Canadian Institute for Environmental Law and Policy and the David Suzuki Foundation has shown how Ontario can reduce energy waste and generate enough energy to shut down all five of its coal-burning power plants in the medium-term,¹⁵ while parallel research has shown that Canadians can cut greenhouse gas emissions to 50 percent of current levels over the next 50 years, using existing technology.¹⁶

Air pollution reduces our quality of life and results in enormous costs to our health care system and economy. But climate change is also an important policy consideration. The federal government has indicated that it intends to ratify the Kyoto Protocol – a historic compromise forged between 178 nations on reducing greenhouse gas emissions. As Canada prepares for formal ratification and then implementation, it becomes even more important that energy policy decisions fit and support climate protection needs.

Thus it is critical that the restructuring of Ontario’s electricity sector not ignore the new reality of living in a carbon-constrained world, but rather turn this challenge into an opportunity. We can do this by adopting measures to save energy by changing consumption patterns, using more efficient technologies in homes, businesses and industry, and increasing the use of Ontario’s renewable energy sources.

Global Warming

“The Tory plan to privatize is a how-to guide on changing the climate.”

- Peter Tabuns, Executive Director of Greenpeace Canada.

The Clean Energy Path measures detailed below will lead to new industries, new jobs, and increased energy security in a period of economic instability. Ontario could play a growing role in those new industries, at home and in export markets. But it will require a new approach to ensure that those opportunities are not missed by a reluctance to reduce our reliance on nuclear power and fossil fuels.

And these new approaches demand that we not embark on an ill-advised privatization and deregulation of our electrical system.

PART II: THE CLEAN ENERGY PATH

This paper offers a new approach to electricity sector restructuring: the **Clean Energy Path**. It outlines how Ontario can have an electricity system that serves the public by saving consumers money, providing security and jobs, and leaving a heritage of clean air, clean water and freedom from dangerous climate change.

To achieve such a system, we don't deregulate the electricity sector. Rather, we need smart regulations designed to:

- Plan for the welfare of the whole system, not just big power companies or big consumers.
- Ensure that all Ontarians have access to clean air, clean water, and sufficient safe, reliable and affordable power.
- Ensure that all buildings, appliances, equipment or processes use electricity efficiently, improving the competitiveness of our economy through lower electricity bills and protecting the environment.
- Make a transition to a decentralized energy future, where power from the sun, wind, small-scale hydro and hydrogen replace massive coal and nuclear plants.

WHAT IS THE CLEAN ENERGY PATH?

The **Clean Energy Path** is a suite of policies to increase energy efficiency and the use of renewable energy that will save consumers money, provide security and jobs, and leave a heritage of clean air, clean water and freedom from dangerous climate change. These benefits will be achieved through:

ENERGY CONSERVATION AND EFFICIENCY

- A **public benefits fund** would collect a 0.3 cent per kilowatt-hour (kWh) charge on electricity, equivalent to about \$2.20 per month for a typical household. It would be used to develop and deliver programs for energy efficiency, renewable energy, research and development, and low-income customer protection. These programs could be delivered through independent, non-profit agencies like the members of the Green Communities Association.
- **Improved efficiency standards:** Minimum efficiency standards for buildings, electric appliances and electronic devices would be raised to levels that are technically feasible and economically justifiable, with tax incentives to promote efficiency improvements beyond minimum standards. Incentives would be provided and regulatory barriers removed for power plants that produce both electricity and useful heat at high efficiencies.

GREEN POWER

- A **renewable portfolio standard** would require utilities to increase green, renewable energy from about 0.5 percent today to a minimum of 10 percent by 2010 and 20 percent by 2020.
- **Production tax credits** of 2 cents/kWh and **consumer tax credits** of 3 cents per kWh for renewable energy, helping to level the playing fields with fossil fuel and nuclear generation subsidies.
- **Net metering** would treat fairly those consumer who generate their own electricity with renewable energy systems by allowing them to feed surplus electricity back to the grid and spin their meters backward. Communal net metering would allow for community-based green power cooperatives like the Toronto Renewable Energy Cooperative to emerge and develop innovative partnerships with their local publicly-owned utility.
- **Research and development** spending and incentives for renewable energy and energy efficiency.

ENERGY CONSERVATION AND EFFICIENCY¹⁷

We need to develop and implement policies to reduce energy demand, save consumers money, reduce emissions and create jobs in Ontario. This is not only an environmental necessity, but is actually good for the economy. This was demonstrated in the 1970s, when the energy intensity of the economy actually decreased in response to energy price increases. Fuel prices forced companies to become more energy efficient and as a result, between 1973 and present, economic productivity outpaced growth in energy consumption by 25 percent. Energy consumption per dollar of GDP fell from 16.57 megajoules in 1973 to 12.41 megajoules in 1997. This means the economy uses 0.5 liters of gasoline per dollar of GDP in 1973 and 0.34 liters per dollar in 1997.

Without that efficiency gain Canada's total energy consumption would have been 35 per cent higher for the same level of economic activity. In all likelihood that level of economic growth could not have taken place since some of the expanded economic activity happened due to the increase in energy efficiency. *More energy was saved over that period than all of the new energy supply from new oil, gas, coal, nuclear and hydro combined.* The U.S. Department of energy estimates that the energy savings resulting from efficiency gains in the U.S. during this period are currently saving the US between \$150 and \$200 billion per year.

The Union of Concerned Scientists recently released a comprehensive report on United States energy policy highlighting key measures aimed at diversifying U.S. energy supply. Through a combination of renewable energy portfolio standards, improved energy efficiency standards, enhanced building codes, net metering, tax credits for efficiency and tax incentives for

renewable energy, the US could reduce carbon dioxide by 60 per cent from projected 2020 levels and save consumers \$440 billion.¹⁸ Similar savings are available in Ontario.

Demand Management Successes in California and Seattle

Over the previous two decades, California has led the world in energy conservation and efficiency efforts, including utility sponsored incentive program, appliance and building standards. As a result of these efforts peak demand was reduced by 9000 megawatts. In recent years many of these efforts were sidelined as utilities began to anticipate competing in a deregulated electricity market. Between 1994 and 1997 utility funding for conservation and demand side management was cut over 50 per cent. Recently, due to the massive rate shock felt in California and as a result of government interventions to prevent blackouts, California revamped its energy conservation programs. As a result, over \$859 million is being allocated to the state energy commission and other state agencies to assist in peak load reduction programs. These programs are expected to reduce overall load by 3400 megawatts.

California's programs include:

- A real time program for customers with loads greater than 200 kilowatts. This is expected to result in a peak reduction of 1500 MW at a cost of US\$35 million.
- A door to door program in low income areas which will allow for free distribution of high efficiency fluorescent light bulbs and will deliver 10 MW at a cost of \$20 million.
- Commercial lighting incentives at a cost of \$60 million and will deliver 60 MW.
- Low income weatherization at a cost of \$20 million delivers 8 MW.
- A further \$30 million will be spent on renewable resources through net metering with a delivery of 10 MW's.

A Problem Worth Having

“Those energy conservation ads appear to have worked too well. Californians are now using less electricity per capita than any other state. While this is applauded by utility officials and environmentalists, it leaves California with contracts for far more electricity than it needs.”

—from ‘New California Crisis: Too Much Electricity’ in the *Globe and Mail*, November 22 2001

There was also a 20 percent rebate program that provided California ratepayers with a 20 percent credit on their monthly utility bills if they cut back their electricity use by 20 percent during the months of June, July, August and September of 2001. In total, over 4 million customers participated in the program resulting in savings of over 3,000 MW per month.

The results of the California energy conservation and demand reduction programs have been impressive. The September 2001 weather-adjusted load reduction, including growth for the region, was over 3,100 MW – the equivalent of the Bruce A nuclear reactor or the combined capacity of the Lakeview and Lambton coal-fired generating stations in Ontario.

Seattle City Light also chose to aggressively pursue energy conservation measures. They are attempting to

reach an objective of reducing their energy use by 10 percent over one year. By June, they had reached a 6.5 per cent goal with four out of ten households reducing their energy use by more than 10 per cent, thereby saving the city US\$65 million in energy purchases. In one innovative program the utility offered free compact fluorescents; 175,000 households responded to this offer, resulted in saving 45,500 MegaWatt hours.¹⁹

The following specific policy recommendations can form the foundation for the development of energy policy which will provide economic and environmental benefits. Such a policy will further enhance Ontario's competitive advantages and protect future generations from energy security concerns, price fluctuations, and environmental and health impacts.

SPECIFIC POLICY RECOMMENDATIONS:

A Public Benefits Fund

One means of ensuring that energy conservation and efficiency programs receive adequate funding is to adopt a non-bypassable public benefits charge on the electricity and/or gas distribution system. The funds collected are invested in programs for energy efficiency, renewable energy, research and development, and low-income customer protection. This increase in the price of electricity could be more than offset by reduced consumption, resulting in lower bills and environmental protection.

Currently, 15 states (including California, New York, Pennsylvania and New Jersey) have a public benefits charge on electricity sales. These are expected to generate approximately \$907 million annually for energy conservation, \$334 million/year to support renewable energy like wind and solar power, and \$96 million per year for research and development on conservation and renewables. Seven other U.S. states are in the process of adopting a public benefits charge.²⁰

Public Benefits Charges in other Jurisdictions

- In the U.S., 15 states (including California, New York, Pennsylvania and New Jersey) have a public benefits charge on electricity sales. Seven other U.S. states are in the process of adopting a public benefits charge.
- Efficiency Vermont, an independent non-profit agency funded through a Public Benefits Charge, spent \$5.5 million on conservation measures which saved customers \$17.7 million in energy costs, exceeding their energy savings target by 55% in its first year.
- The United Kingdom created a Non-Fossil Fuel Obligation (NFFO) levy to fund renewables when electricity was deregulated in 1990. The goal is to achieve 10% of its electricity supply from renewables by 2010.
- In Norway, a Public Benefits Fund has generated a \$160 million fund to finance conservation initiatives.

In Ontario, we propose that a 0.3 cent per kilowatt-hour (kWh) public benefits charge be collected on electricity. This would be equivalent to about \$2.20 per month for a typical household and generate approximately \$400 million per year. These funds would be invested in programs for energy efficiency, renewable energy, research and development, and low-income customer protection.

Investment in these programs can provide considerable public benefits. According to the American Council for Energy Efficiency, investments in energy efficiency in the three Mid-Atlantic (New York, New Jersey and Pennsylvania) states would reduce energy use in the region by more than 20 percent by 2010 – reducing consumer and business energy bills by more than \$150 billion cumulatively over the 1997-2010 period, creating 164,000 jobs in the region and reducing emission of air pollutants by up to 24 percent.²¹

These funds also provide a minimum and stable level of investment in renewable technologies thereby stimulating sector growth and market activity. Investment options can be tailored to capitalize on regional strengths and

needs. A made-in-Ontario Public Benefits Fund could, for example, finance energy efficiency retrofits of every social housing unit in the province and help develop a domestic wind power industry.

The charge would be regulated under the Electricity Act and mirror the Debt Reduction Charge program that was introduced in June 2001. The proceeds would be remitted to the Ontario Ministry of Finance and held by a newly created non-profit independent trust similar to the Ontario Innovation Trust or Efficiency Vermont in the U.S.

This central organization could take advantage of opportunities to capture efficiencies through economies of scale in program delivery issue, but could also requests for proposals for third party delivery. A promising model for de-centralized, third part delivery of energy efficiency, renewable energy and low-income customer protection programs is via the non-profit, community-based members of the Green Communities Association (see www.gca.ca).

To overcome the inherent contradictions in utility-driven Demand Supply Management programs – contradictions rooted in the effort to make electricity sellers into electricity savers – the funds collected through the Public Benefits Charge could be administered through a provincial non-profit agency set up for this purpose (similar to the system in Vermont) and through community groups such as the members of the Green Communities Association (see www.gca.ca for details).

Improving the energy efficiency of residential and commercial buildings

Canada’s R-2000 and C-2000 program for building efficiency should be adopted as provincial residential and commercial building standards. This standard would ensure that Ontario’s housing and building stock becomes 35-40 per cent more energy efficient than today’s conventional buildings, resulting in major, ongoing economic savings as well as environmental savings.

This will not only help reduce the need for fossil fuel power plants, but will also reduce demand for natural gas, which in turn helps natural gas compete with coal for utility power projects.

In addition, Ontario can assist and encourage the residential, commercial and institutional building sector by providing support for retrofit projects throughout the province, using funds collected through the public benefits charge.

The Better Building Partnership

Founded in 1996 to help achieve Toronto’s goal of reducing CO2 emissions by 20 percent, the Better Building Partnership program uses innovative financial strategies to engage building owners, the energy services community and the financial community in retrofitting commercial buildings.

To date, 467 buildings have been retrofitted, creating 3,800 person years of employment, saving \$19 million per year in fuel costs and reducing greenhouse gas emissions by 132,000 tonnes. See www.torontobbp.on.ca for details.

Regularly review and update standards for major appliances and industrial equipment

Provincial governments are responsible for regulating the efficiency of approximately 25 percent of the appliances in Canada. Standards create the economies of scale which transform the market for high efficiency equipment. As the market place changes and more efficient equipment is developed, standards must be implemented which raise the basic level of energy efficiency. This allows for, and encourages, continuous improvement.

Without continuous improvements in standards, newly designed equipment is less price competitive, even though consumers save money over the long run due to reduced operating costs. Within the existing supply of appliances and equipment, most of the manufacturers' capital costs have been recovered so that the poorest performing equipment can be priced lower than more recently designed, more efficient equipment. Updated standards remove that disadvantage against innovation and technological improvement and encourage constant upgrading, thereby cutting energy waste and the cost of that waste. By reducing energy demand through improved standards, the financial and ecological costs of energy development and use are likewise reduced.

To help speed the adoption of new, more efficient equipment in the industrial sector, the province should establish revenue-neutral tax incentives, with a 10 percent investment tax credit for investment in new production equipment, and other rebates to firms paid for with fees on purchased energy equivalent to \$25 per ton of CO₂.

Energy efficiency tax incentives

Municipal, provincial and federal governments should adopt tax policies which provide incentives for builders, retrofitters and equipment manufacturers to go beyond (the higher) minimum standards and achieve maximum energy efficiency. The City of Toronto, for example, is investigating the possibility of implementing a sliding scale building permit fee based on energy efficiency criteria and/or fast-tracking buildings with plans for enhanced energy efficiency.

Combined heat and power

Incentives would be provided and regulatory barriers removed for power plants that produce both electricity and useful heat at high efficiencies.

GREEN POWER

Renewable Portfolio Standard

A Renewable Portfolio Standard would ensure that a growing percentage of electricity is produced from renewable sources (wind, solar, run-of-the-river hydro and methane gas recapture). It works by requiring all electricity providers to include a minimum percent (which increases over time) of renewable electricity in the electric power supply portfolio they offer to their customers.

Benefits of an RPS include: reduced negative environmental impact from electricity generation; greater price certainty as a result of reduced dependence on fossil fuels; improved efficiency, competition and innovation in the renewable energy sector and reduced long-term costs of renewable technologies. For example, wind turbine costs have been declining by 5% per year as manufacturers increase their volume and improve their technology.²²

RPSs in other Jurisdictions

- The U.S. Senate recently voted to require utilities to generate 1% of electricity from renewable sources by 2005, and 10% by 2020.
- By 2003, 20% of Denmark's electricity consumption must originate from renewable sources. Electric utilities have been required to purchase output from wind turbines for ~9 cents per kWh, while receiving about 1.5 cents per kWh from a subsidy pool created by fossil fuel taxes.¹
- The UK has planned to mandate that 5% of electricity be supplied by renewables by 2003, and 10% by 2010.²
- An RPS exists in Texas, Connecticut, Maine, Arizona, Massachusetts, Nevada, and New Jersey and is planned for Kansas, Nebraska, Iowa, New Mexico, Vermont, and Wisconsin.

Twelve U.S. states have renewable portfolio standards, including Texas, Pennsylvania, New Mexico and Massachusetts and eight other states are considering RPS's.²³ These are expected to lead to the development of at least 5,450 MW of new renewables by 2012 and support the 3,600 MW already in place. Combined, this capacity will generate enough clean power to meet the entire electricity needs of 5.7 million typical (non-electric heating) homes.²⁴

An RPS could provide long term and stable development of the renewable energy market, attracting investment and stimulating industry growth. For example, Denmark, through effective government promotion, achieved 1998 revenues of nearly \$1 billion from wind turbine production.²⁵ In the U.S., the Sierra Club estimates that a 20% RPS would create 80,000 new jobs in the wind industry alone and stimulate \$80 billion in new capital investment.

An RPS can ensure steady, predictable growth of the renewable energy industry. That would enable the industry to obtain lower-cost financing and

¹ Navigant Consulting Ltd., "Review of Policies for the Promotion of Alternative Fuels and Technologies", Prepared for the Select Committee on Alternative Fuel Sources, 2001. P.56

² Epsey, Simone, "Renewables portfolio standard: a means for trade with electricity from renewable energy sources", Energy Policy, 2001v. 29, pp 557-566.

achieve economies of scale and production that would make the technologies more competitive. The RPS would ensure that the lowest cost renewables are developed by creating competition among renewable developers. The RPS would have low administrative costs, since the market would decide what kinds of renewable energy would be produced.

Currently, renewable energy supplies approximately 0.5 percent of Ontario's electricity. To implementing a Renewable Portfolio Standard in Ontario, TEA recommends that Ontario adopt an RPS, which sets a minimum of 5% of electricity from renewable energy by 2005 and 10% by 2010.

Electricity suppliers could be mandated to meet these requirements under the Electricity Act. The RPS could be administered by the Independent Market Operator and accounted for in their annual report.

Targeted development schemes could boost regional economies through export sales of market-ready technologies and at the same time support emerging technologies in becoming more commercially competitive. For example, the Ontario government could incorporate recommendations from the Wind Power Task Force as well as promote building integrated photovoltaics (BIPV) through standards set in the Ontario Building Code.

Production tax credits

Green power from renewable energy requires market recognition for its environmental and social benefits. Generally speaking, these benefits are not financially valued in energy market pricing. In parallel, those energy sources, which impact on the environment and society, are not financially penalized. Society, however, pays indirectly through the costs of treating health impacts, managing environmental impacts, and through the loss of land, watershed, and wildlife values.

This situation provides an unfair market barrier for low-impact renewable energy. To help level the playing field with the direct or indirect subsidies to fossil fuel and nuclear generation, a broad coalition of companies, environmental groups and municipal organizations have been advocating a production tax credits of 2 cents/kWh and consumer tax credits of 3 cents per kWh for renewable energy.²⁶

In response, the federal government introduced a wind power production incentive in its the November 2001 budget of 1.2 cents per kilowatt-hour of production, gradually declining to 0.8 cents per kilowatt-hour of production. The incentive will be available for the first 10 years of production and will help to provide a long-term stable revenue source. This will result in more investment in wind energy projects in all regions of Canada, which will help address climate change and improve air quality.

This measure only applies to wind power, however, and while it narrows the price gap between wind and coal power, it doesn't close it.

To help level the playing field, Ontario should match the federal wind production incentive, work with the federal government to expand these credits to other forms of Eco-logo certified low-impact, renewable energy, and provide a consumer tax credit for green power of 3 cents per kWh.

Net Metering

Net metering is an important way to eliminate penalties for households and small businesses that elect to generate their own power from renewable sources (with, for instance, small wind turbines or rooftop solar systems). It allows customers who produce more electricity than they are using at a given moment to feed the surplus back to the utility and only pay for net electricity used over an entire billing period or year. Technological advances in net metering technology have resulted in the easy incorporation of measures to safeguard the health and safety of electrical workers.

Thirty seven U.S. states have adopted net metering policies.²⁷

Ontario should adopt a mandatory net metering policy for all utilities in the province. This policy should include a form of communal net metering which would apply to community-based green power cooperatives. This would allow individuals who collectively own, for example, a windmill or small-scale, run-of-the-river hydro facility to feed as much power into the grid as they collectively use.

This would safeguard the public system, while allowing individuals to be ‘green power pioneers’ or to work on innovative joint initiatives with their local utility such as the Windshare project between the Toronto Renewable Energy Cooperative and Toronto Hydro (see www.trec.on.ca).

Research and development spending on renewable energy and efficiency

Today's energy systems did not arise just through the hidden hand of market forces, though markets have played an important role. They are as much a product of strategic visions, wherein private investments melded with government incentives and policies to create the complex networks and industries that dominate the contemporary energy scene.

Throughout Canadian history, technological and institutional innovation has increased our prosperity. Public leadership has encouraged businesses, workers, and consumers to invest in new ideas that meet the challenges of one generation, paving the path to a better world for the next generation.

The energy system that fueled our 20th century economy exemplifies such progress through partnership. Most of this system was built on innovations of the 19th century, when coal was industrialized and oil commercialized, electricity harnessed, and the automobile invented.

Private investments were only realized in conjunction with government investments in roads and transit which then enabled us to get to work and school, shop and visit family and friends, and convey goods to and from market. Electric and electronic inventions were connected to public and private investments in power plants and power lines. From city to farm and from home to factory, Ontarians benefit from reliable electricity plus the appliances and machinery it powers.

Today three concerns - our environment, our economy, and our security - compel us to rethink our 20th century energy strategy.²⁸

To respond to these concerns, we must shift research and development efforts onto the Clean Energy Path outlined above. Ironically, Ontario has already demonstrated that it is capable of achieving such a transition, as evidenced by its development and promotion of the ‘hard energy path’ embodied in the CANDU nuclear reactor.²⁹

There are a number of ways that Ontario can support a transition to the Clean Energy Path. First, the provincial government could use a portion of the funds collected through the Public Benefits Charge to promote research on renewable energy and energy efficiency technology.

Secondly, the province should also use tough performance-based environmental standards, along the lines of California’s vehicle emissions regulations, to drive investment in more energy efficient technology or renewable energy.

Thirdly, these standards can be effectively combined with market introduction incentives such as technology demonstrations and manufacture incentives, consumer education campaigns, and market innovations to reduce transaction costs and thereby lower a key hurdle between potential and realized energy savings by helping to move products from prototype designs into mass production. Once markets are established, the minimum efficiency standards outlined above would improve the performance of similar products – spreading the benefits across the economy.

CONCLUSION

To answer the challenges of the 21st century, Ontario must develop a balanced portfolio of clean electricity solutions that stop wasting energy, while developing local, renewable energy supplies to increase energy security.

Respond to these challenges will require us to move from an electricity system built around large, centralized fossil fuel and nuclear plants to a more decentralized model based on constantly improving efficiency and green power.

As part of this transition, our local, publicly-owned utilities will play a much more significant role for two reasons. First, they are decentralized - like the renewable energy technology they'll be employing. And they are potentially more democratic and responsive to community concerns because they are smaller than the old Ontario Hydro and because they won't have to construct the barriers to public information, access and involvement demanded by inherent dangers and secrecy associated with nuclear technology.

Local utilities won't be doing this on their own. Non-profit community agencies, such as Toronto's GreenSaver or the Peterborough Green Up, have a proven track record in delivering energy efficiency retrofit programs. Members of the Green Community Association (www.gca.ca) could be instrumental in achieving the 'decentralized mega-project' of promoting energy efficiency. Nonprofit environmental groups and community cooperatives have also played a large role in green power successes in Europe and the United States, and the Ontario Sustainable Energy Association is eager to learn from and replicate that experience here.

But if a greener energy future is to be achieved, the provincial government must immediately place a moratorium on the sale of Hydro One and Ontario Power Generation's plants. To make the transition to the Clean Energy Path, we must increase public control and accountability over our energy system, not give it away.

ENDNOTES

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² Global Change Strategies International, *A Bird's Eye View of Electricity Supply and Demand to 2020: A report prepared for the Canadian Electrical Association* (Ottawa: July 23, 2001), pp. 12-13.

³ Tim Woolf, Geoff Keith, David White and Frank Ackerman, *A Retrospective Review of FERC's Environmental Impact Statement on Open Transmission Access*, (Background Paper Prepared for the Commission for Environmental Cooperation, October 19, 2001).

⁴ The European Union has undertaken a 10 year research study (the EXTERNE project) which has proven that cost of producing electricity from coal or oil would double and the cost of electricity from gas would increase by 30% if external costs such as damage to the environment and to health were taken into account. For more information on the study, contact D. Rossetti, Improving energy efficiency unit, Research Directorate-General, tel. 322-299-4991 or e-mail domenico.rossetti-di-valdalbero@cec.eu.int.

⁵ Ontario Medical Association, *The Illness Costs of Air Pollution in Ontario*, (OMA: June 2000).

⁶ David Pengelly, Monica Campbell, Sherri Ennis, Franca Ursitti and Angela Li-Muller, *Air Pollution Burden Illness in Toronto*, (Toronto Public Health, May 2000).

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⁹ Martin Mittelstaedt, "Two Bruce nuclear plants leased for the price of one", *Globe and Mail*, (March 18, 2002), p. A1.

¹⁰ Dr. Mark N. Cooper, *Electricity Deregulation and Consumers: Lessons from a Hot Spring and a Cool Summer*, (Consumer Federation of America, August 30, 2001).

¹¹ Antony Froggart, *The Liberalisation of Europe's Electricity Markets: Is the Environment Paying the Price for Cheap Power*, (Greenpeace International: May, 2000).

¹² Stephen Shrybman, *A Legal Opinion Concerning the Impact of International Trade Disciplines on the Privatization and Restructuring of Ontario's Electricity Sector*, (Sack, Goldblatt and Mitchell: December 2001).

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¹⁴ Ontario Ministry of the Environment, *Coal fired Electricity Generation in Ontario*, (Toronto: Ministry of the Environment, March 2001).

¹⁵ Christine Elwell and Edan Rotenberg, *Green Power Opportunities for Ontario*, (Toronto: CIELAP and the David Suzuki Foundation, 2002).

¹⁶ Ralph Torrie, *PowerShift: Cool Solutions to Global Warming*, (David Suzuki Foundation, 2000).

¹⁷ This section draws heavily on *British Columbia at the Crossroads: Clean Energy or More Pollution?* Prepared by Dermot Foley, Stuart Hertzog and Gerry Scott on behalf of the Climate Change Campaign of the David Suzuki Foundation and submitted to the BC Energy Policy Task Force, November 1, 2001; and Stephen Clemmer, Deborah Donovan, Alan Noguee and Jeff Deyett, *Clean Energy Blueprint: A Smarter National Energy Policy for Today and the Future*, (Washington, D.C.: Union of Concerned Scientists with the American Council for an Energy-Efficient Economy and the Tellus Institute, October 2001).

¹⁸ Stephen Clemmer, Deborah Donovan, Alan Noguee and Jeff Deyett, *Clean Energy Blueprint: A Smarter National Energy Policy for Today and the Future*, (Washington, D.C.: Union of Concerned Scientists with the American Council for an Energy-Efficient Economy and the Tellus Institute, October 2001).

¹⁹ Seattle Mayor Paul Schell, "Speech on Conservation", Unico Properties, Rainier Tower, June 20, 2001 from <http://cityofseattle.net/light/conserves/phasetwo/>, accessed January 17 2002.

²⁰ For more information on Public Benefits Charges (also called System Benefit Charges) in the United States, see <http://www.ucsusa.org/energy/0renewable.html>

²¹ American Council for an Energy Efficient Economy, "Energy Efficiency And Economic Development In New York, New Jersey, And Pennsylvania", 1997 p.2, available at <http://aceee.org/pubs/e971.htm>

²² Navigant Consulting Ltd., "Review of Policies for the Promotion of Alternative Fuels and Technologies", Report prepared for the Ontario Select Committee on Alternative Fuel Sources (2001), p.56.

²³ For more information on Renewable Portfolio Standards in the United States, see <http://www.ucsusa.org/energy/0renewable.html>

²⁴ Stephen Clemmer, Deborah Donovan, Alan Noguee and Jeff Deyett, *Clean Energy Blueprint: A Smarter National Energy Policy for Today and the Future*, (Washington, D.C.: Union of Concerned Scientists with the American Council for an Energy-Efficient Economy and the Tellus Institute, October 2001).

²⁵ Howard Geller, "Policies For A More Sustainable Energy Future, (October, 1999), available at <http://aceee.org/pubs/e992.htm>"

²⁶ The members of the Clean Air Renewable Energy include Axor, BC Hydro, BP Canada Energy Company, Benign Energy Canada Inc., Dofasco, Enbridge, Federation of Canadian Municipalities (FCM), Friends of Earth (FOE), International Institute for Sustainable Development (IISD), Pembina Institute, Pollution Probe, Shell Canada Limited, Suncor Energy Inc., Toronto Environmental Alliance (TEA), Toronto Hydro, TransAlta, and WestCoast Energy. CARE was advocating measures to:

- increase the demand for green power by providing consumers with a Consumer Green Energy Credit to cover a portion of the premium cost associated with the purchase of green power from electricity providers;
- support the supply of low impact renewable energy technologies by providing a broader Canadian Renewable and Conservation Expense (CRCE) treatment, an investment Tax Credit (ITC) under the Income Tax Act on capital costs or a Production Tax Credit (PTC).

²⁷ The U.S. Department of Energy maintains an inventory of state net metering policies at <http://www.eren.doe.gov/greenpower/netmetering/index.shtml>

²⁸ For a detailed analysis of the possibilities for an alternative energy path in the United States, see *Energy Innovations: A Prosperous Path to a Clean Environment* (Washington, DC: Alliance to Save Energy, American Council for an Energy-Efficient Economy, Natural Resources Defense Council, Tellus Institute, and Union of Concerned Scientists, 1997).

²⁹ For historical accounts, see Paul McKay, *Electric Empire: The Inside Story of Ontario Hydro*, (Toronto: Between the Lines, 1983) and Neil B. Freeman, *The Politics of Power: Ontario Hydro and its Government, 1906-1995*, (Toronto: University of Toronto Press, 1996).