



Canadian Renewable Energy Alliance

promoting a transition to renewable energy

Framework for a Model National Renewable Energy Strategy for Canada

Prepared by the Canadian Renewable Energy Alliance

June 2006

The Canadian Renewable Energy Alliance (CanREA) – Canadians promoting a global renewable energy transition

The Canadian Renewable Energy Alliance (CanREA) is an alliance of Canadian civil society organizations from the non-profit or voluntary sector that hold a common interest in promoting a global transition to energy conservation and efficiency and use of low-impact renewable energy. Members of CanREA believe that this transition is needed to address global climate change, pollution, global energy supply, human security, poverty eradication and economic sustainability. CanREA recognizes that our window of opportunity is limited and that this global transition must begin now through individual country action and international cooperation using a variety of market instruments, regulatory measures, public education and voluntary measures. CanREA was also formed to respond to the Canadian government's call for consultations on a national renewable energy strategy and to represent the voices of Canadian civil society in international dialogues related to renewable energies and energy efficiency.

This discussion paper provides a framework and recommendations for a comprehensive Canadian renewable energy strategy. This model strategy includes recommendations for provincial renewable energy and energy efficiency policies and actions backed up by national enabling measures and international participation in these areas.

The organizations actively involved in the formation of CanREA include:

- ▶ Canadian Association for Renewable Energies
- ▶ BC Sustainable Energy Association
- ▶ The David Suzuki Foundation
- ▶ Falls Brook Centre
- ▶ The Halifax Initiative
- ▶ One Sky - Canadian Institute of Sustainable Living
- ▶ The Ontario Sustainable Energy Association
- ▶ The Pembina Institute
- ▶ Pollution Probe
- ▶ The Saskatchewan Environmental Society
- ▶ The Sierra Youth Coalition
- ▶ STORM Coalition

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Contents:

The Bonn Conference – A Landmark Event for Renewable Energy	2
The Canadian Context	3
The Canadian Renewable Energy Alliance (CanREA)	3
Objectives of a National Renewable Energy Strategy	4
Elements of a National Renewable Energy Strategy	4
Policy Briefs	

**The Bonn Conference –
A Landmark Event for Renewable Energy**

In 2004, a high-level international conference in Bonn, Germany set the stage for renewable energy to become a major international issue. The meeting resulted in a political declaration that leaders from 154 countries agreed upon (including Canada), policy recommendations for nations to consider in developing renewable energy and an action plan that summarized various national initiatives regarding renewable energy.

The Bonn conference was timely in that it took place as global interest in renewable energy was growing rapidly. At the same time that the International Energy Association World Energy Outlook (2004) claims that fossil fuels will remain our dominant source of energy in the foreseeable future (to 2030), oil and gas prices have begun to rise dramatically. In February 2005 the Kyoto protocol came into effect further challenging our reliance on fossil fuels. The World Council on Renewable Energy urges us to redirect our resources toward the decentralized application of renewable energy. The 2005 G-8 meeting focused on climate change and renewable energy. Finally, meetings on energy and development have highlighted the importance of renewable energy in meeting the United Nations Millennium Development Goals.

National governments and elected representatives are responsible for the formulation of policies that support effective and efficient renewable energy and energy efficiency markets. The policy recommendations for national governments from the Bonn conference included both domestic and international policies:

- 1 Develop an Overall Renewable Energy Policy:
 - a Incorporate renewable energy into a general energy framework based on renewable energy resource evaluations.
 - b Integrate renewable energy into non-energy sector policies.
- 2 Formulate Targets and Strategies for Renewable Energy and Energy Efficiency: Set clear targets with timelines, strategies and implementation plans, taking into account all sectors and energy end uses.
- 3 Market Transformation:
 - a Overcome subsidies for conventional energy sources and other biases against renewable energy to establish a level playing field.
 - b Establish performance-based, gradually declining subsidies for renewable energy sources and technologies (such as production tax credits and ecological fiscal reform).
 - c Provide temporary incentive/regulatory measures (e.g., portfolio standards and feed-in tariffs).
- 4 Increase Public Awareness and Support: Build public knowledge and support for a transition to renewable energy.

- 5 **Human Resources and Infrastructure:** Build energy efficiency and renewable energy capacity and implement industry transition policies/financial assistance.
- 6 **Establish Enabling Institutions:** Such as a Renewable Energy Secretariat.
- 7 **Secure Access for Renewable Energy:**
 - a Ensure grid access and provide transmission capacity for green power (including on-site sources);
 - b Support renewable energy heating and cooling technologies.
- 8 **R&D and Demonstration:** Increase support for renewable energy technologies, including heating and cooling technologies.
- 9 **Public Procurement:** Lead by example by purchasing green power, green heat and green fuels/transport as a base for market transformation.
- 10 **Global Cooperation:** Foster the work of international organizations to incorporate global support for RE. Strengthen global and regional cooperation on RE through fora such as the CSD, NAFTA and the G8.
- 11 **Utilize Kyoto mechanisms to Support Renewable Energy Deployment:** Use direct purchase of credits from renewable energy projects with high development value through the CDM and JI.
- 12 **International Assistance:** Focus bilateral and multilateral development assistance (ODA) on renewable energy programs that catalyze access to clean energy and reduce poverty.
- 13 **Promote Export Technologies:** Support renewable energy exports through Export Credit Agency guarantees, market surveys, etc.

Recommendations in Bonn were also made for local authorities:

- 1 **Local Codes:** Use building codes to accelerate the uptake of renewable energy technologies.
- 2 **Licensing and Siting:** Strengthen staff and stakeholder knowledge of renewable energy to remove obstacles to renewable energy deployment.
- 3 **Public Procurement:** Lead by example by purchasing green power, green heat and green fuels/transport as base for market transformation.
- 4 **Increase Public Awareness and Support**
- 5 **Financing:** Establish local public and private renewable energy financing funds.
- 6 **Integration:** Include renewable energy in non-energy sector projects including transport and waste management.

These recommendations give us a clear path forward. In many countries, led largely by the Europeans, national governments are

moving away from reliance on fossil fuels and quickly developing renewable energy sources. The Canadian government and all major federal parties have made explicit plans to move toward cleaner, more renewable and efficient energy sources. Some provinces are starting to set targets or consider renewable portfolio standards and are engaged in their implementation. It is now time to develop and implement a truly national Canadian renewable energy strategy.

The Canadian Context

In the early 1980s, Canada supported the development of a solar thermal and biomass energy industry through a combination of industry commercialization grants, consumer incentives and government procurement. The Canadian Solar Industries Association (CanSIA) was established to develop a strong, efficient, ethical and professional Canadian solar industry including solar electric, solar thermal and passive solar. The Solar Energy Society of Canada Inc. (SESOCI) was established in 1974 and still advances the awareness of solar energy in Canada.

While support for renewable energy lost momentum after oil prices fell later in the 1980s, environmental issues such as global warming and urban air pollution have renewed interest in renewable energy and energy efficiency. New organizations to promote renewable energy have been formed, including the Canadian Association for Renewable Energies, the Clean Air Renewable Energy Coalition and industry associations related to wind, biomass, solar, small hydro, geothermal/earth energy and ocean energy. These organizations have called for the establishment of national renewable energy targets and enabling policies. The Canadian government has responded with tax incentives for wind and other renewable power sources, including major commitments in the 2005 Budget. As the role of renewable energy accelerates, there will be an increasing need for a coordinated approach and a national strategy. There is a clear need for a renewable energy secretariat to coordinate and facilitate at a federal level and to represent Canada internationally in the growing field of renewable energy.

The Canadian Renewable Energy Alliance (CanREA)

Following Bonn, an international network of environmental NGOs working on renewable energy was established called Citizens United on Renewable Energy and Sustainability (CURES). REN21, a global multi-stakeholder renewable energy policy network, was also set up to monitor international progress on renewable energy.

Since Bonn, individual Canadian environmental non-governmental organizations have taken lead roles in advocating for policy changes regarding renewable energy. However, there was no unified civil society voice representing the broader issue of renewable energy in Canada.

In March 2005, therefore, several non-governmental organizations from across Canada established the Canadian Renewable Energy Alliance (CanREA) to provide recommendations on the development and implementation of a National Sustainable Energy Strategy. Alliance members recognized the need for an organized NGO body to respond to government consultation processes and to represent the voices of Canadian civil society in international dialogues. CanREA envisions a world in which energy needs are minimized through energy conservation and energy efficiency, and in which low-impact renewable energy is consistently the first choice to meet energy needs.

Objectives of a National Renewable Energy Strategy

In CanREA's view, Canada should act on the renewable energy commitments made in the 2004 Bonn Renewable Energy Conference Political Declaration and implement Bonn's Policy Recommendations for Renewable Energy described above. The objectives of a Canadian Renewable Energy Strategy should be to:

- ▶ Recognize the environmental, economic and social value of renewable energy in meeting Canadian and international goals of reducing environmental impacts (especially climate change), promoting economic development and improving world energy security
- ▶ Be a truly national strategy, coordinating federal and provincial targets and actions on renewable energy
- ▶ Include international commitments such as export development of Canadian RE technologies (through EDC) and official development assistance (through CIDA) to support the utilization of renewable energy to reduce poverty
- ▶ Be built on a strong foundation of energy efficiency
- ▶ Be comprehensive — including green power (both sides of the meter), green heat, and green transport in industry, businesses, homes, communities and First Nations.

Elements of a National Renewable Energy Strategy

CanREA held three regional workshops in 2005 and early 2006 to obtain local civil society input on energy efficiency and renewable energy policy options. CanREA also co-hosted an international conference on renewable energy policy in December 2005. On the basis of these consultations CanREA has developed a Model National Renewable Energy Strategy built on the Bonn Policy Recommendations but also recognizing Canada's unique division of responsibilities among federal, provincial, territorial, First Nations and municipal governments. We believe that this common/unified view from civil society of what a

renewable energy strategy should contain will contribute to a national debate in support of the commitments already made by governments. CanREA is also planning to establish a monitoring function to assess Canada's progress on implementing renewable energy policies to chart progress on renewable energy deployment and provide Canadian civil society with an annual report on Canada's progress.

CanREA's model strategy contains recommendations for the three main services met by energy — power, heat and transport — supplemented with national strategies for energy efficiency, a sustainable energy financing plan, and international cooperation and assistance. Policy briefs on each of these are enclosed and/or can be downloaded from the CanREA website (www.canrea.ca).

Policy Brief Topics

Green Power – Creating an Industry in Canada

By Julie Green, Pollution Probe

Green Heat

By Bill Eggertson, Canadian Association for Renewable Energies

Energy Efficiency — The Cornerstone of a Sustainable Energy Future

By Roger Peters, Pembina Institute

A National Green Transportation Strategy

By Bob Oliver, Pollution Probe and J.P. Jepp, Pembina Institute

Financing Sources and Mechanisms for Renewable Energy and Energy Efficiency

By Roger Peters, Pembina Institute

Distributed Generation in Canada: Maximizing the benefits of renewable resources

By Alex Doukas, Ontario Sustainable Energy Association (OSEA)

International Cooperation — Moving Toward a Sustainable Energy Future

By Nikki Skuce, One Sky

Community Power — The Way Forward

By Alex Doukas, Ontario Sustainable Energy Association



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Green Power – Creating an Industry in Canada

Global Green Power wind and solar markets have experienced double-digit annual growth rates for the past decade with the world leaders reaping the substantial benefits of job creation and export markets. For example, the European Union is expected to gain about 711,000 full-time jobs by 2010 under current Green Power policies, and another million by 2020.

Across Canada, provinces and territories are facing major decisions about electricity generation due to air quality and related health issues, increasing demand and aging facilities. At the same time, Canada has an international commitment to reduce its GHG emissions to 6% below 1990 levels by 2012 and has identified thermal electricity generation as a major source that is projected to contribute 16% of Canada's GHG emissions by 2010, under a business-as-usual scenario. As a result, there is a growing interest in the use of renewable energy for electricity generation. This brief uses the term Green Power for low impact sources of renewable energy used for electricity generation. Green Power includes wind, solar, small hydro, biomass, geothermal, tidal and wave energy projects that meet the criteria for EcoLogo[®] certification for electricity generation as developed by the Environmental Choice Program.

The use of Green Power to generate electricity offers many benefits beyond climate change mitigation and air pollution reduction – it also offers opportunities for substantial job creation, rural development, price hedging, greater energy security, clean technology exports and Clean Development Mechanism projects. Canada is far behind many other countries in taking advantage of its substantial Green Power resources. While there are several Green Power initiatives underway across the country, there is no overall plan. If Canada is to reap the full benefits that Green Power offers, it will need a long-term National Renewable Energy Strategy that supports development of Green Power to its fullest potential. For effective implementation, the strategy needs to be based on regional plans, be a shared vision among all jurisdictions, and have broad stakeholder and public support.

Recommendations for Provincial/Territorial Strategies and Federal Support Measures

1 **Leveling the Playing Field.** Recommendations include renewable portfolio standards, targets or equivalent policy commitments; green

power procurement; and a renewable energy certificate system. A national Green Power Production Incentive should be developed.

- 2 **Supporting Innovative Technologies.** Some provinces have established energy research centres with a Green Power focus, such as the Ontario Centres of Excellence, Centre for Energy, which brings to the marketplace ideas around leading edge research and development in energy markets, new energy systems, and emerging technologies. Provinces and territories that do not have comparable energy centres should consider developing similar initiatives. They should also participate in creating technology road maps in cooperation with the federal government and partnerships should be established between Sustainable Development Technology Canada (SDTC) and the provinces.
- 3 **Engaging Canadians.** To meet Green Power targets in Canada, it will be essential to gain widespread public support for national, provincial, territorial and municipal targets. Community engagement should become a standard component of local Green Power planning by provincial governments and industry with a focus on community-based projects. A comprehensive public education and outreach strategy should also be developed.
- 4 **Accessing the Power Grid.** Often the best resources for Green Power are in locations distant from the grid or in areas with weak grid infrastructure. Power grids should be extended to appropriate areas with increased capacity, and transmission planning should proactively support the expansion of Green Power as the aging grid is rebuilt.
- 5 **Mapping Green Power Resources.** Some resource mapping has been done, particularly for wind. However, more comprehensive renewable resource assessments are crucial for both policy making and for facilitating the deployment of Green Power

▶ 2006

technologies. Mapping should include assessment of backup for variable Green Power resources.

- 6 **Establishing Mechanisms for Distributed Generation.** Policy frameworks need to be developed specifically for distributed generation to reduce demand for central, large-scale electricity generation and to reduce peak demand for grid electricity (i.e. peak-shaving). Provincial targets should be set for solar roofs. Advanced Renewable Tariffs should be introduced in provinces and territories, such as Ontario's Standard Offer Contract program. Several provinces, such as Nova Scotia, British Columbia and Ontario, have implemented net metering programs; other provinces should follow suit. Green Power generation in remote communities should be subsidized to be competitive with other subsidized fuels (e.g. diesel) used in electricity generation. Aggressive targets at the national level should be set for solar roofs, supported by capital buy-downs, to facilitate their widespread use (for example Germany has a target of 100,000 solar roofs).
- 7 **Streamlining Zoning, Planning and Permit Requirements.** Regulations and institutional structures need to be redesigned to reflect the realities of small power generation units and to reduce the administrative burden for Green Power projects. Environmental impact assessment for Green Power projects should be tailored to the needs of specific technologies. The approvals process should be streamlined for technologies proven to be low-impact, and there should be one process between federal and provincial governments.
- 8 **Developing Standards to Ensure Quality and Safety.** Standards need to be developed at the provincial and territorial levels in accordance with legislation, such as the building codes and other areas. There is also a need for more national Canadian engineering standards.
- 9 **Preparing the Labour Force.** The provinces and territories should be proactive in preparing the labour force for Green Power as a shortage of qualified personnel can limit the deployment of new generation facilities and lead to lost job opportunities for Canadians. Green Power investment can create high-paying geographically dispersed jobs in the provinces and territories. Education initiatives should include primary and secondary school curricula, post-secondary curricula, and training courses.
- 10 **Setting Up Green Power Coordinating Bodies.** Coordinating bodies should be created at the provincial and territorial levels to engage relevant ministries and stakeholders to oversee the establishment

and implementation of targets for Green Power development and deployment. A new national coordinating body or network should also be established.

Recommendations for Other Green Power Actors

Municipalities. Local governments have a major role to play in the engagement of Canadians, as well as the removal of barriers to Green Power deployment by streamlining planning and permitting practices. Many local governments have taken the lead on developing other types of renewable energy than electricity generation providing relief for strained electricity grids and market development for these technologies. There have also been several local government procurement initiatives and sustainable community development, such as Okotoks, Alberta. Local governments are also central in the development of Community Power Systems and in the development and implementation of energy efficiency initiatives.

First Nations. There is considerable opportunity for First Nations communities to develop Green Power. One example of an active community is the Squamish Nation in British Columbia. This First Nations community offers a unique perspective to renewable energy development by using site rehabilitation as a starting point, as opposed to developing projects and then attempting to mitigate environmental impacts. This type of approach not only allows the development of more environmentally benign energy sources, but also strives for site remediation, which offers several economic and environmental benefits. Renewable energy development in First Nations communities offers additional benefits, such as economic development, the creation and preservation of jobs, education and skills development, and enhanced community leadership.

Other Stakeholders. Utilities should provide expertise for the development of regional strategies and play a key role in the implementation phase. They can determine the most effective way to offer Green Power products to industrial and retail customers. The Canadian Standards Association, and other standard-setting bodies, should develop appropriate Green Power standards. Universities and Community Colleges, and their national associations, should develop programs to educate and train the labour force. The Canadian public should be able to support and invest in local Green Power projects. Finally, every level of government can develop programs to encourage the secure supply of more environmentally benign fuel sources.

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Green Heat

Green Heat is the use of renewable energy to heat or cool a building (or heat water) using these technologies in the residential or commercial-institutional (C/I) sectors: geothermal (earth energy) heat pumps, solar thermal water heaters, solar thermal air pre-heaters, and advanced biomass heaters. All these technologies perform best when the building has optimized its demand with energy efficiency and conservation measures.

Unlike green power (electricity from wind turbines, solar PV, small hydro) or green fuels (transport fuels from ethanol, biodiesel), Green Heat technologies provide low-grade thermal energy for low-grade thermal applications, and displace the need to combust natural gas, oil or propane for space / water conditioning.

Canada consumes large amounts of conventional energy for heating, and 1,500 million m² of floorspace in 12.2 million homes consume 1,458 PJ of secondary energy, while 548 million m² in C/I buildings consume 1,180 PJ each year. Total emissions of greenhouse gases are 79.8 Mt and 69.3 Mt, respectively, within these applications:

	Residential energy – PJ	Residential GHG – Mt	C/I energy – PJ	C/I GHG – Mt
space heating	873	45	644	36
water heating	312	17	76	4
space cooling	18	1	73	5
lights / electrical	255	16	387	25
total	1,458	80	1,180	69
Green Heat potential	83 %	80 %	67 %	64 %

In Canada's residential sector, 1,203 PJ of energy (83%) is consumed for applications that could be reduced by the range of market-ready Green Heat technologies, plus another 794 PJ (67%) in the national C/I sector. Annual emissions of 64 Mt and 45 Mt (respectively) could be displaced with greater Green Heat uptake in these two sectors alone.

For each residential dwelling in Canada (house or apartment), Green Heat can reduce annual energy consumption by 98,606 MJ and reduce GHG emissions by 5.2 tonne. For every m² of residential space, Green Heat can reduce consumption by 802 MJ and by 1,449 MJ in C/I buildings, with a reduction of 0.4 t and 0.8 t of GHG emissions each year.

This level of almost 2,000 PJ of low-grade thermal energy is equivalent to 60 billion kWh of electricity, and the 109 Mt of emissions is higher than all coal-fired generating facilities.

Two basic steps are required in Canada to increase awareness of the appropriate use of low-grade thermal energy for low-grade thermal applications:

- quantify and qualify the potential for Green Heat to provide secondary energy and to reduce GHG emissions from space & water conditioning applications; and
- implement policies to increase the feasible use of Green Heat technologies.

Most Green Heat output is 'behind the meter' and, therefore, not viewed on the same economic level as green power or green fuels (i.e. it is never included in any report). There is no federal support for Green Heat; the only program (Renewable Energy Deployment Initiative) was demanded by Finance Canada to offset the monetary and fiscal disincentives to Green Heat technologies in relation to conventional energy sources. Industry groups (Canadian Solar Industries Association and Earth Energy Society of Canada) have estimated that their installations displace the emission of almost 1 Mt of GHG a year.

In Europe, the Renewable Energy Council called for a European Union Directive to support 'renewable heating' and, in February 2006, the European Parliament directed the EC to develop a directive to promote Green Heat. Half the energy on that continent is consumed for space heating, and politicians want the share of Green Heat to double by 2020.

A 2004 report from the David Suzuki Foundation estimated that 80,000 new jobs would be created by 2025 in Ontario alone from greater uptake of Green Heat. A GreenTherms Standard (requirement for an increase in Green Heat use, similar to a Renewable Portfolio Standard for green power) could displace combustion of 1 billion m³ of natural gas by 2020 from geothermal heat pumps alone, and that gas could then be used for centralized power generation, hydrogen production or

► 2006

export to the U.S. There was no value placed on the potential savings for reduced need of transmission upgrade from such an initiative.

Recommendations for Governments and Other Actors to Promote Green Heat

A number of measures should be undertaken to promote Green Heat:

- ▶ Governments (federal AND provincial) should set targets for the sourcing of green heating and green cooling from renewable sources in all their buildings;
- ▶ Regulators should impose GreenTherms Standards to require distributors of thermal heating fuels to source an increasing percentage of energy content from eligible Green Heat technologies, with a target of 20% by 2020;
- ▶ Governments should provide financial support to offset any first-cost premium of a Green Heat installation;
- ▶ Building managers of government facilities should be required to evaluate comparative costs of Green Heat compared with conventional heating alternatives;
- ▶ Energy service companies (ESCO) and energy performance contractors should be encouraged to install and maintain Green Heat facilities in government buildings;
- ▶ Governments should promote 'off-carbon' initiatives, similar to 'off-oil' campaign of the post-OPEC crisis, to raise public awareness of the available options;
- ▶ Tax law should expand the use of CCA class 43.1 to make Green Heat technologies eligible for accelerated capital cost allowance;
- ▶ Emission trading credits should include the deemed GHG mitigation from Green Heat technologies, and Green Heat options should be eligible under CDM / JI activities;
- ▶ Collection of accurate and timely data on existing installed capacity, thermal output and GHG impact of all Green Heat technologies should be undertaken;
- ▶ Governments should place greater emphasis on lifecycle costing of energy systems, to encourage consumers to understand the combined value of installation AND operating costs for each technology option.

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Energy Efficiency – The Cornerstone of a Sustainable Energy Future

Using energy as efficiently and effectively as possible will be essential if we are to meet future energy needs and see a global transition to sustainable energy sources. Without major changes in the way we use energy to meet our needs (energy conservation), and use the most efficient equipment and measures (energy efficiency), there is little hope of reducing the impact of energy production and use to reasonable levels. This is even more important for Canada which has one of the highest energy consumptions per capita in the world.

Fortunately energy efficiency and conservation are also the lowest cost options for meeting energy needs and provide many other environmental, economic and social benefits, including cost savings, lower environmental load by avoiding GHG and local air, water and land emissions associated with energy production and consumption, local economic development opportunities and associated new jobs, enhanced reliability of energy system and reduce price volatility, and improved energy supply security.

While it is in consumer and the public interest to use energy more efficiently, there are several reasons why energy users and providers of energy, such as utilities, do not always make rational investments in efficient technologies and practices. Consumers often lack the information necessary to make good choices; also the equipment, services and financing they need are often not available. It is left to governments, therefore, to put policies and programs in place that encourage investments in energy efficiency and conservation and transform markets towards energy efficient products and practices.

Canada has a reasonable track record on energy efficiency but has the potential to make significant gains over the next decade. Energy efficiency and conservation policies should become the cornerstone of future energy policy because of their multiple benefits.

Canada needs a national energy efficiency strategy and action plan developed by provincial and federal governments which expands the support for energy efficiency - learning from best practices used elsewhere and building a strong energy efficiency industry that can deliver cost saving products and services to all consumers and businesses. There are also important roles for municipalities, NGOs,

energy utilities, First Nations, and international agencies and partnership.

Recommendations for Provincial Strategies

- 1 Set a **goal of meeting all new growth in energy demand** over the next two decades through energy efficiency and conservation. Set energy efficiency targets for each sector along with appropriate intermediate milestones for energy utilities and industries. Make these milestones into legal requirements by using Energy Efficiency Portfolio Standards and tradable permit (white certificates) programs.
- 2 Treat **energy efficiency as a resource** and given priority over supply resources. All resources should be assessed using social, environmental and economic cost criteria.
- 3 Mandate an **independent dedicated agency** to coordinate and deliver energy efficiency and conservation programs, and recommend policy changes.
- 4 Establish **permanent funding sources** through the budget process to support a building code and equipment standard review cycle.
- 5 Provide a **shared savings DSM incentive mechanism** for energy utilities, technical support provided for smaller utilities, and **coordinate DSM programs** across the Province.
- 6 Establish **regular review cycles** of energy efficiency requirements in building codes and minimum efficiency requirements for equipment. Changes in codes and standards should be negotiated

▶ 2006

with all stakeholders and supportive incentives provided to builders and suppliers in the lead up to changes.

- 7 Provide **comprehensive energy efficiency programming** covering all sectors and geographic areas in the Province. Market transformation programs should target the whole supply chain – manufacturers/builders, suppliers, contractors, users/consumers.
- 8 Provide **targeted financial incentives** to kick start market transformation and raise efficiency levels between code and standards cycles, providing effective support to suppliers, users, or contractors as appropriate.
- 9 Build an **infrastructure to deliver energy efficiency products and services** through training/certification of DSM program managers, contractors, circuit riders, building operators.
- 10 Partner with **municipalities and First Nations** to deliver community energy plans and community based energy efficiency programs.

Recommendations for Federal Enabling Policies and Support

- 1 Develop and implement a **national energy efficiency strategy and action plan** with targets and timelines, based on best practices, individual and joint initiatives across Provinces, and participation in international initiatives on energy efficiency.
- 2 Establish a **permanent review cycle** of the national model energy code for buildings, EnerGuide for Houses, and vehicle efficiency requirements, in cooperation with the Provinces.
- 3 Use the **Energy Efficiency Act** to raise minimum efficiency standards for all energy using equipment to the highest levels in North America in cooperation with Provinces and harmonized with the most progressive US States.
- 4 Provide **enabling legislation and protocol support** for energy performance and best in class labeling programs.
- 5 Promote and support the use of measures that **provide value to energy efficiency labels** so that they reflect the full environmental and social benefits of high efficiency. These should include tradable energy efficiency permits or “white” certificates, green mortgage concessions, preferential tax treatment, and targeted incentives.

- 6 Make **market transformation** the primary objective of federal energy efficiency programming, working with Provinces, Territories, Municipalities and all stakeholders to transform new and retrofit building, appliance, lighting, electronic equipment, and industrial equipment and process markets.
- 7 Provide national support for **training/certification** of DSM program managers, contractors, circuit riders, building operators.
- 8 Show **leadership and support for market transformation** by expanding the Federal Buildings Initiative into a full green procurement strategy where all federal facilities are built, leased, upgraded, equipped and operated to the highest levels of efficiency on a life cycle cost basis.
- 9 Establish a **national energy efficiency finance fund** in cooperation with the finance industry, private sector investors, and municipalities. Reduce financial incentives and tax concessions for fossil fuels and nuclear and divert them toward **new incentives for energy efficiency** (and renewable energy).
- 10 Put special programs in place to reduce “energy poverty” and raise building standards for **First Nations communities and low income families**.
- 11 Expand Canadian participation in **international partnerships** such as REEEP, NAFTA, and the IEA, providing support for energy efficiency in developing countries as well as North American and international discussions.

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A National Green Transportation Strategy

Transportation supports the demands of people for accessibility to goods and services, work, and social activities. It is an integral part of our economy and quality of life. A variety of impacts on human health and the health of the environment result from transportation activity. The energy used for transportation is mainly derived from petrochemical fuels, which when burned to power vehicles, contributes to poor air quality, climate change, and acid deposition.

There are significant opportunities to reduce the environmental impact of transportation activity in Canada. A National Green Transportation Strategy should be introduced to achieve an overall reduction in energy used for transportation, and to increase the use of renewable fuels.

Reducing Transportation Energy Use

Petroleum fuels dominate the supply mix of energy for transportation. These fuels pack large amounts of energy into a compact liquid form. Energy in this form is easy to distribute and can be conveniently stored onboard vehicles. To use the energy in the fuel, however, the fuel must be burned. This generates emissions harmful to human health and the environment.

Reducing the amount of energy used for transportation directly reduces the amount of fuel burned and the associated emissions. Actions to reduce transportation energy use generally fall into three categories:

- i **Using energy more efficiently** – Through improved vehicle technology and design, people and goods can be moved with less energy.
- ii **Shifting transportation modes** – By providing people with options for less energy-intensive modes of transportation, such as commuting by public transit instead of by personal car, the demand for transportation energy can be reduced. The same can be true of shifting the mode of transportation of goods, such as from truck to rail, especially for longer hauls.
- iii **Urban design** – Urban areas can be designed so that people live, commute to work and access services with a minimum of travel, thus lowering the demand for transportation energy. The same can be true for goods transport within urban regions.

Some measures to reduce transportation energy use can have immediate impacts while others require longer-term vision and commitment from governments. For example, the Ontario Government's 'Places to Grow' Act supports denser, mixed-use development of urban land, which should lead to reduced demand for transportation energy over the long term. The federal government funds public transportation through the gas tax and has proposed a tax credit for transit pass holders, potentially increasing transit use over the short term and the long term. These policies are moving in the direction of improved sustainability, but much more is needed.

Increasing Use of Renewable Fuels

Canadians can improve air quality and reduce emissions of greenhouse gases (GHGs) by utilizing non-petroleum fuels. Ethanol is a gasoline fuel substitute manufactured from starch-based grains, such as wheat or corn, or from lignocellulose (plant fibres), such as straw, hay, or wood. Biodiesel is a diesel fuel substitute that can be produced from agricultural oils, recycled vegetable oils or animal fats. Both fuels can be used in conventional engines in low percentage blends without modification, and can reduce overall emissions.

Biodiesel and ethanol fuels, however, are not all created equal. The different feedstocks and technologies used can have a wide range of environmental impacts. To get maximum environmental benefits, it is important that petroleum fuels are not simply replaced by renewable fuels; rather, the fuels with the lowest life-cycle GHG and criteria air contaminant (CAC) emissions should be produced and utilized. For example, cellulose ethanol and biodiesel have lower overall GHG emissions than starch ethanol. As well, the environmental impacts vary depending on the agriculture and forestry practices used to produce the feedstocks, and the way in which co-products of the fuel production

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process are used. Government policies should provide targeted support to fuels with the lowest life-cycle environmental impacts.

Ethanol and biodiesel have considerable presence in international markets, but Canada is a relative newcomer in production of these fuels. Approximately half of the provinces have announced renewable fuel mandates or exempt biofuels from provincial fuels tax, while the federal government recently announced that a 5 per cent national renewable fuel standard will be in place by 2010. To meet this target, it is projected that Canada would need to produce 3.1 billion litres of renewable fuel - a volume that far exceeds the capacity of current and proposed domestic production facilities.

Recommendations for Provincial Enabling Policy

- 1 Increase resources for community-level initiatives to promote active living/active transportation (such as walking, biking), and the use of public transit.
- 2 Apply economic incentives to various transportation modes, consistent with their full economic, environmental and social cost, and base the funding of transportation systems on full-cost accounting.
- 3 Emphasize compact, mixed-use developments over urban sprawl and align major policy areas to support sustainable transportation (e.g., reorient housing and land use policies to support public transit use).
- 4 Develop new financial instruments to support sustainable transportation (road tolls, congestion charging, parking fees, etc.).
- 5 Provide exemptions from fuel taxes for distributors to bring renewable fuels pricing to a level more competitive with petroleum fuels in the marketplace.
- 6 Provide exemptions from property or sales taxes, or provide loan guarantees for the purchase of equipment as a catalyst for producers to establish production facilities.
- 7 Provide funding for research and development to bring the large volumes of "waste" feedstocks into commercial production, and maximize environmental benefits.
- 8 Add renewable fuels to all provincial renewable portfolio standards. To do so would provide a stable market for the upstart industry and reduce emissions from the public fleet.

Recommendations for Federal Enabling Policy

- 1 Formulate a common vision and strategy for sustainable transportation.
- 2 Develop metrics to provide indicators of sustainable transportation.
- 3 Financially support public transit, introduce incentives and regulations to shift freight to the most energy efficient mode, and support new innovations to minimize freight movement.
- 4 Implement standards to improve automobile fuel efficiency and reduce idling.
- 5 Implement tax shifting measures (i.e. 2 cents per litre of gasoline tax to fund public transit – a new element of the federal budget that should continue).
- 6 Research links between transportation and human health.
- 7 Introduce policies that will help secure a reliable supply of feedstocks, increase production capacity, and establish an integrated fuel distribution system.
- 8 Implement policies that will place preference upon renewable fuels with the lowest life-cycle GHG and CAC emissions.
- 9 Introduce policies requiring cropped sources of feedstocks to be produced using the best practices of sustainable agriculture.
- 10 Provide funding for Canadian researchers to identify opportunities for maximizing the environmental benefits of renewable fuels.
- 11 Establish national fuel quality standards to ensure that all renewable fuels sold in Canada meet accepted industry standards.

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Canadian Renewable Energy Alliance

promoting a transition to renewable energy

Financing Sources and Mechanisms for Renewable Energy and Energy Efficiency

Significant improvements in energy efficiency and conservation and a global transition to renewable energy will require huge investments in national and local energy infrastructure in every country over the coming decade.

These investments will need to come from both the public and private sectors, and take many forms – including financial incentives from government; loans and capital investment from banks, private investors, venture capital funds, and communities; and new innovative markets that provide a value to the benefits of renewable energy and energy efficiency. Financing sources include venture capital, share raised capital, energy bill charges (public benefits or lines charges), financial institutions, community development funds, and general tax revenues.

According to New Energy Finance, the total global investment in “clean energy” in 2005 was over US \$42 billion. They estimate that a five fold increase in renewable energy investment will be needed over the next decade if there is to be a meaningful switch away from fossil fuels without requiring new nuclear power capacity. Wind energy dominates renewable energy investments with investments of \$12 billion in 2005, but global solar photovoltaic cell production is expected to climb to over 5 GWP/yr by 2010 spurred by new policy initiatives in US, Germany, Japan, and Spain.

Renewable energy and energy efficiency are unique in that they require higher up-front investment than conventional energy sources, while at the same time providing multiple benefits that are not reflected in their cost. Innovative strategies and policies are therefore needed to increase investment, spread cost over the life cycle, and reflect the multiple benefits of renewable energy and energy efficiency.

While investment in renewable energy and efficiency is increasing, it still lags far behind conventional energy investments. A major reason for this is a continuing focus of investors, governments and lending institutions on conventional energy sources such as fossil fuels, large hydro and nuclear energy. The Pembina Institute has shown that subsidies for the Canadian oil and gas industry were almost \$1.5 billion in 2002 and are continuing to rise.

Financing is therefore a crucial element of a global transition to renewable energy. Government commitment and policies to leverage investment are the keys to success. Canada lags behind the US, Europe,

China and India in support for renewable energy investment. Provinces play an important role in attracting investment through standing offers and Renewable Portfolio Standards. The federal government must show leadership at the national and international levels by providing financial incentives, removing barriers, and leveling the playing field.

Recommendations for Provincial Strategies

Provincial governments should put in place policies and programs that maximize private, community, and public investment in renewable energy and energy efficiency through:

- ▶ Incentive mechanisms such as feed-in tariffs, renewable portfolio standards (RPS), renewable energy certificates, standards and codes taking into account the technology's relative position on the cost curve and social value.
- ▶ Changes to the public support of energy (tax breaks, subsidies, royalty reductions) – reducing those for conventional energy and diverting investment flows into renewable energy, especially at the local level.
- ▶ Taking action to remove all barriers to renewable energy investment and installation, including requiring solar readiness in building codes; updates of electrical, plumbing and building codes; and training of inspectors.

Investment in energy efficiency should be supported by:

- ▶ Setting Energy Efficiency Portfolio Standards and establishing a tradable permit (white certificates) program.
- ▶ Providing permanent funding sources through the budget process to support a building code and equipment standard review cycle, and through a rate based funding mechanism.
- ▶ Establishing a shared savings DSM incentive mechanism for energy utilities, providing technical support for smaller utilities, and coordination of DSM programs across the Province.

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- ▶ Providing targeted financial incentives to kick start market transformation, providing effective support to suppliers, users, or contractors.
- ▶ Supporting and promoting innovative community scale financing mechanisms such as micro credit, leasing, and use of local improvement charges.

Recommendations for Federal Enabling Policies and Support

The Federal government should play a leadership and enabling role to increase investment and financing of renewable energy and energy efficiency as part of a national strategy. The objective should be to remove barriers, level the playing field, and maximize private and public investment. This should be achieved by:

- ▶ Making a strong political commitment to renewable energy and energy efficiency.
- ▶ Implementing ecological tax reform in which financial incentives for conventional energy sources such as oil, gas, coal and nuclear are significantly reduced and diverted into incentives for renewable energy and energy efficiency.
- ▶ Establishing a national renewable energy and energy efficiency investment facility with major banks and credit unions through Finance Canada, setting investment targets for each technology and end-use.
- ▶ Encouraging the private sector to establish more Canadian venture capital funds and revolving funds that rapidly increase investment in and debt financing of renewable energy and efficiency.
- ▶ Developing and implementing a national renewable energy industrial development and infrastructure action plan through Industry Canada that includes financial support for the commercialization and cost reductions in manufacturing; training and certification of large and distributed system designers, installers, operators, and inspectors; financial incentives for manufacturers, builders, suppliers; and risk reduction strategies for project developers.
- ▶ Supporting innovative financing strategies such as a national tradable certificates program for renewable energy and energy efficiency investments that would work with Provincial portfolio standards, and municipal financing using local improvement charges.
- ▶ Taking an active role internationally in support of a global transition to renewable energy by participating in and supporting international initiatives and finance forums, and supporting the establishment of a new international renewable energy agency and financial institution.

- ▶ Committing CIDA to precise and ambitious targets for official development assistance for renewable energy and make sure this funding is made more accessible to community level projects.
- ▶ Requiring EDC to allocate funds to renewable energy and energy efficiency technologies.
- ▶ Working with stakeholders and Provincial governments to improve Canada's investment attractiveness for renewable energy and energy efficiency.
- ▶ Taking global action to remove trade barriers to renewable energy investments and stop the trade in low-efficiency second-hand equipment to developing countries.

Recommendations for Other Actors

- ▶ Municipalities should encourage community investment in energy efficiency and renewable energy through the establishment of community power corporations, green funds, and the use of local improvement charges for project financing.
- ▶ The Renewable Energy and Energy Efficiency Industries should join with NGOs and other stakeholders in holding finance forums, advocating more support for investment and local manufacturing, and work with government and stakeholders to increase Canada's investment attractiveness.
- ▶ NGOs should work with all stakeholders to lobby for investment supportive policies in Canada, and participate in North American and global networks supporting the establishment of an International Renewable Energy Agency and Investment Bank.
- ▶ Socially Responsible Corporations and Institutions should purchase green energy (power, fuels, and heat) and energy efficiency through purchase of tradable certificates and investment in community power and fuels projects.
- ▶ International Financial Institutions should set meaningful and ambitious renewable energy targets, and part of the funding should be allocated to the development of energy commodities export markets in least developing countries. A new Global Renewable Energy Investment Bank should be established and the grant capacity of the Global Environmental Facility (GEF) increased.

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Distributed Generation in Canada: Maximizing the benefits of renewable resources

Historically, energy policy in Canada has emphasized large centralized electricity generation and long-distance, high-voltage transmission from centralized sources such as large-scale hydro, coal, natural gas and nuclear power plants. Canada's aging centralized energy infrastructure is becoming more problematic as demand for clean, reliable and affordable electricity generation grows.

North America's centralized grid system, stressed to its limits, has become vulnerable, increasingly brittle, and inefficient. Large, polluting and expensive generation and transmission is no longer an option that Canadians will accept. The centralized model is reaching the end of its period of dominance, and must be phased out in favour of a clean, robust and efficient system. In its place, a new model for electricity generation and distribution is emerging around the world: distributed generation (DG).

The U.S. Environmental Protection Agency defines DG as "small, modular, decentralized [...] energy systems located in or near the place where energy is used." Renewable energy options are typically modular, and better-suited to low environmental impact DG applications than centralized generation. DG and renewable energy are closely linked, as the transition to sustainable energy sources is resulting in a shift towards less centralized generation and grids.

Advances in power electronics and communications technology make it possible for power systems to act as sophisticated but predictable networks that can improve grid reliability through distributed nodes, in a manner similar to the Internet. The smart grid, a concept being put into practice in Europe and studied in the U.S., develops a high-tech approach to energy systems that are reliable, accessible, economical and flexible. Reducing transmission losses through better grid planning increases energy efficiency, while new technologies that utilize demand-side management, such as virtual power plants, represent an integrated approach to energy management in a decentralized electricity system, another important element of DG.

Numerous economic, social and environmental benefits that accompany investment in distributed generation. A distributed approach can improve the reliability of power systems and reduce the risk of system-wide

failure. Producing electricity near its source of use also decreases the need for expensive transmission infrastructure and reduces transmission losses, while facilitating cost-effective technologies that need to be situated near a load for electricity and heat, such as combined heat and power (CHP) applications from renewable, sustainable bioenergy sources. Distributed generation also facilitates smaller-scale siting of renewable generation, typically resulting in reduced environmental impact and increased public acceptance (particularly in the case of wind power). Of key importance to Canada's rural economies, distributed generation also encourages community economic development by allowing for local ownership and local control of energy resources, keeping revenues from generation in the community. Canada is lagging behind in the development of an energy infrastructure more compatible with distributed generation. Fully 25% of new electricity generation comes from distributed resources, compared to 13% in 2002. To be on the leading edge of this growth trend, all levels of government, along with several other actors, must take the following steps.

Recommendations for Joint Provincial and Federal Strategies

To facilitate the rapid deployment of distributed generation, provinces and the federal government must cooperate to:

- ▶ Provide access to development capital and adequate financing through innovative loan, grant and tax-based incentive programs, including low or forgivable interest loans, grants and progressive policy mechanisms to enable the participation of individuals and communities in DG, improve loan repayment and project success rates, and tap into community capital for energy infrastructure.

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- ▶ Implement effective renewable energy policy mechanisms by provincial and territorial governments with federal support, particularly Advanced Renewable Tariffs (ARTs), such as the Standard Offer Contract program in Ontario.
- ▶ Promote public and technical education on, and provide technical support for renewable energy, distributed generation and new technologies, including resources for civil society actors to implement distributed generation and educate the public, decision-makers, and tradespeople and professionals. The coordination of broad deployment and support strategies for DG could be carried out through a national renewable energy secretariat, as recommended by CanREA.
- ▶ Train and educate a skilled technician base capable of supporting integrated power systems and distributed technologies through post-secondary and certificate-based training programs, utilizing existing programs like the Association of Canadian Community Colleges renewable energy program.

Recommendations for Federal Support Measures

To continue to develop a distributed grid that makes sense for the future, the federal government must:

- ▶ Create a collaborative multi-stakeholder consortium to research and implement best practices for a secure, sustainable distributed grid, similar to the GridWise Alliance in the U.S. and the SmartGrids Technology Platform in Europe, to coordinate the development of a grid that is flexible, accessible, reliable and economical. The federal government can utilize Natural Resources Canada's five existing programs targeting interconnection to guide this process.
- ▶ Invest in innovative technologies to maximize the benefits of renewable energy and distributed generation, focusing on the aggressive deployment and commercialization of existing energy storage technologies, advanced power electronics, and other mature technologies, enabling Canadian industries to capitalize on the global transition to an era of distributed generation.

Recommendations to Provincial and Territorial Governments

To facilitate the rapid deployment of distributed generation, provinces and territories must:

- ▶ Remove barriers to grid interconnection for small-scale renewable generators by developing reasonable standards for interconnection that maximize the contributions of distributed renewable energy and ensure the protection of grid operators and maintenance personnel.
- ▶ Streamline planning and permitting processes through the development of standards for embedded generation technologies in regional building codes, reasonable electrical standards, and streamlined siting procedures.
- ▶ Provide incentives for generators and utilities to move away from the traditional motivation of selling more electricity by dissociating revenue streams away from the total kilowatt hours of electricity sold by utilities to build an energy efficient culture focused on conservation.

Recommendations to Municipal and Local Governments

Advance local solutions to multiply the benefits of DG by committing to:

- ▶ Develop community energy plans and land-use policies that support distributed generation, particularly policies and strategies that encourage the siting of distributed generation technologies to provide opportunities for improved energy security and to benefit from the revenue streams provided by distributed technologies.
- ▶ Promote innovative, local solutions to growing energy demand, engaging community members through partnerships in community / municipally-owned renewable generation.

Inspire and educate at the community level, including initiatives to:

- ▶ Lead by example in partnering with community groups to create demonstration projects that educate and encourage distributed generation technologies.
- ▶ Promote awareness and an understanding of energy issues to reduce electricity use and encourage smart energy choices as a key component of a DG vision, and to make local economies more attractive to businesses.

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Canadian Renewable Energy Alliance

promoting a transition to renewable energy

International Cooperation – Moving Toward a Sustainable Energy Future

For environmental and equity reasons, renewable energy has become a global imperative – a means of transforming economies from fossil fuels to sustainable energy, and as a means to providing modern energy services to those currently without.

More than 1.6 billion people live without access to electricity and 2.4 billion lack modern energy services for cooking and heating. Millions more are connected to the grid but experience poor power quality and frequent power outages. Women, the elderly and children will benefit the most from access to renewable energy technologies as they are most often burdened with the collection of fuel wood, the pumping of water and exposure of harmful emissions from customary cooking methods, which is the leading cause of respiratory illness. In 2005 the richest 20 percent of the world's population consumed 58% of the world's energy while the poorest 20 percent consumed less than 4% - the majority of whom live in sub-Saharan Africa and Asia.

Access to basic, clean energy services is essential for sustainable development and poverty eradication, and provides major benefits in the areas of health, literacy and equity. Simply put, the developing world needs more access to energy while at the same time the world as a whole needs to rely on less polluting forms of energy. Energy services have a critical role in achieving the Millennium Development Goals (MDGs). The UN Commission on Sustainable Development has called access to renewable energy a "prerequisite" for halving poverty by 2015. International cooperation in the area of renewable energy is needed to help fill the gap and improve energy equity.

Climate change and the threat of peak oil are also leading to a greater focus on energy issues at the international level. Fossil fuels, large hydro dams and nuclear energy are all current sources of conflict and are implicated as prime causes in future wars. International cooperation to expand renewable energy, a relatively conflict-free and secure energy source, is increasing but needs greater political will in order to transition effectively from a fossil-fuel based economy.

Internationally, Canada has not been a leader to date in promoting supportive policies and committing to international cooperation that actively promotes renewable energy. However, as a member of the G8

which is focusing increasingly on energy issues, a participant in various international renewable energy conferences (Bonn, BIREC, CSD), a nation committed to meeting the Millennium Development Goals, and as a signatory to the WSSD, Bonn Declaration and Kyoto Protocol, Canada has the opportunity to increase its international cooperation profile by following through on its commitments and moving forward toward a sustainable energy future.

Recommendations for Federal Enabling Policies and Support

In Official Development Assistance

In an effort to meet the Millennium Development goals and improve energy equity, the federal government should:

- ▶ Recognize in its ODA portfolio the key role of renewable energy and efficiency for the developing world and poverty eradication. Canada should phase out support of fossil fuel development projects and shift toward the sole support of renewable energy (RE) and energy efficiency (EE) initiatives through CIDA. CIDA should highlight renewable energy options as a priority in its bilateral and multilateral ODA programs and provide substantial funding for EE/RE programs.
- ▶ In supporting access to energy in developing countries, give ODA priority to renewable energy projects that support national targets, greater energy security, poverty reduction and maximize local benefits. Make ODA accessible to community level projects, the rural poor and women.
- ▶ Support research and development, capacity building programs (such as technology training programs, small business support, tech transfer, community consultation) and micro-finance schemes with partners in developing countries underlining support for local private sector renewable energy initiatives, networks, renewable energy associations and partnerships.

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- ▶ Advance Clean Development Mechanism (CDM) policies to enforce sustainable development criteria and support renewable energy technologies, in particular small-scale decentralized initiatives. Support the development of these projects through capacity building and project development support with an emphasis on the rural poor and women.
- ▶ Fund South-South collaboration initiatives that can provide significant benefits in terms of technology transfer and capacity development for renewable energy.

To Level the Playing Field for the Renewable Energy Industry

In order to maximize the full potential of renewable energy, the markets need to be redesigned to support its development. The federal government should:

- ▶ Agree to an international agreement that calls on all governments to set nationally binding targets for renewable energy. Work with other countries to develop a set of internationally agreed metrics for the setting of comparable targets and the measuring of progress on renewable energy deployment globally.
- ▶ Support and implement international agreements, programs and policies that phase out perverse subsidies and lending to non-renewable energy sources, with a transition plan to avoid undue hardships on developing country economies that currently rely on non-renewable energy sources. This includes implementing para 19. (p) and (q) of the Johannesburg Plan of Implementation.
- ▶ Use Export Development Canada (EDC) to actively encourage growth in Canada's renewable energy technology sector and set a target to increase EDC's total energy portfolio to RE/EE projects. Simultaneously phase out EDC support for unsustainable sources of energy such as fossil fuels, nuclear power and large-impact hydro by 2008 and encourage all international financial institutions (IFIs) to do likewise.

Domestic Policies that Support International Cooperation

In order to strengthen Canada's leadership in the international arena, it needs to develop a national renewable energy strategy and strengthen its domestic portfolio. The federal government should:

- ▶ Implement the Bonn Policy Recommendations call of mainstreaming renewable energy into other sectors such as agriculture, forestry, transportation, economic development, poverty alleviation, education, urban and land-use planning and infrastructure development – both nationally and internationally. Canada must also meet or exceed its current commitments as outlined in the Bonn Action Plan.

- ▶ Foster greater communication and collaboration across departments, in particular between CIDA, Environment Canada, DFAIT, NRCAN and Industry Canada, to negotiate and better implement international agreements, policies and programs that call for reductions in perverse subsidies and increases in renewable energy. The establishment of a National Renewable Energy Secretariat would facilitate this and provide crucial support for international efforts.

For Participating in International Dialogues and Cooperative Programs

The United Nations, G8, international financial institutions and other international bodies have been charged with supporting and coordinating the development of renewable energy and energy efficiency. The federal government should:

- ▶ Effectively prepare for CSD 15 by involving civil society, the private sector and government in preliminary consultations on energy as well as reporting on our commitments within the Bonn Action Plan. Canada must also ensure adequate representation at these meetings and involve relevant departments.
- ▶ Support the development of local, regional, national and international networks addressing renewable energy, MDGs and global climate change objectives; and support the development of an International Renewable Energy Association (IRENA) or other international renewable energy agency that will provide a monitoring role.
- ▶ Initiate a consultative process for a global agreement on sustainability criteria for bio-energy.
- ▶ Recommit to Canada's Kyoto targets and a post-2012 international agreement.
- ▶ Cooperate globally to set standards and labeling for energy efficiency.
- ▶ Champion and support the development of international financial instruments that support renewable energy and energy efficiency programs through the Clean Development Mechanism of the Kyoto Protocol, the Global Environment Facility and the World Bank (such as the BioCarbon Fund and Community Development Carbon Fund).
- ▶ Provide financial and more active Canadian participation in the Global Village Energy Partnership (GVEP), REEEP and RN21, and establish a Canadian renewable energy trust fund at the GVEP, UNDP or other multilateral organization supporting community based RE projects.

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Canadian Renewable Energy Alliance

promoting a transition to renewable energy

Community Power – The Way Forward

Canada is facing an energy crisis. The Canadian Electricity Association is calling for tens of billions of dollars to shore up an aging power grid stretched to its technical limits. Conventional forms of electricity generation are becoming more costly and fuel supplies less predictable. Additionally, meeting Canada's Kyoto targets requires a shift away from polluting sources of energy, including coal and natural gas. But with these challenges comes an incredible opportunity for a Canadian energy infrastructure at a crossroads: the ability to make a conscious choice to embark on a sustainable energy path, one that is economical, environmentally sound and socially productive, based in communities across Canada.

Community power (CP) is the way forward for Canada. Defined as locally owned, locally sited, and democratically controlled distributed renewable generation that minimizes environmental impacts, CP has the potential to revolutionize energy policy and practice in Canada. It advances Natural Resources Canada's goal of ensuring "sustainable development and safe and efficient use of Canada's energy resources", while maintaining the balance between the three pillars of the stated objectives for Canada's energy policy: ensuring security, prosperity and the protection of the environment.

A significant body of research points to substantial economic, social and environmental benefits in the community ownership of renewable energy projects when measured against the commercial development of renewable generation. CP taps into local sources of capital through private investment, helping to reduce the cost of capital, lower financial risk, and minimize environmental impacts while stimulating community economic development. Several studies have noted that locally-owned wind generation in particular creates five to fifteen times more economic activity in the local community than typical commercial developments, particularly in rural economies. Community ownership also serves to bolster public support for renewable energy technologies by engaging more stakeholders in new projects, while bringing the benefits of distributed generation to bear more rapidly. Distributed generation and community power are synergistic and mutually reinforcing; for one to grow, the other must also flourish.

When supported by progressive policies, community power has been a driver of rapid renewable energy growth in Denmark, Germany and throughout the world. In Denmark, 175,000 households own 80% of all the wind turbines in the country. Canada can replicate this model by building on the successes of community power elsewhere, and by removing the barriers to the development of community power through the implementation of proven policy mechanisms that are being increasingly adopted throughout the world to level the playing field between highly subsidized centralized generation and community-owned, distributed renewable generation.

Recommendations for Joint Provincial and Federal Strategies:

Develop renewable energy mechanisms that facilitate community power:

- ▶ Provincial governments must implement Advanced Renewable Tariffs (ARTs), with the central support of the federal government, to provide long term fixed contracts for community power projects. ARTs provide opportunities for diverse participation in energy programs along with the fiscal confidence necessary to finance community power projects. ARTs must provide sufficient contract length along with sufficient, stable prices to give confidence to investors.
- ▶ Through ARTs and other policy support mechanisms, provincial governments must guarantee a streamlined interconnection process for distributed generation to connect to the grid to enable community participation and a fair energy market for all generators.

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To foster novel approaches to financing community power projects, provinces and the federal government must come together to:

- ▶ Provide financing support for community power projects through a central fund that provides up front development dollars for communities to deliver projects through low or forgivable interest loans and grants.
- ▶ Provide tax incentives to support community power growth and encourage energy conservation and efficiency, a model successfully applied in Denmark and Sweden, where each member of a cooperative or partnership is not taxed on their share of the income from the turbine's production as long as the income (or the amount of electricity produced) does not exceed that member's annual expenditure on (or consumption of) electricity.
- ▶ Support the streamlined development of new co-operatives through increases in the upper limit of co-operative share offerings that can be made independently of registration with provincial regulating bodies, and extend additional resources through federal or provincial resources such as the Co-operatives Secretariat, community economic development groups, and local civil society actors to help new co-operatives through the start-up and incorporation phases.

To build community and technical capacity to make community power happen, provinces and the federal government must come together to:

- ▶ Deliver or support the delivery of a coordinated community power capacity building program to develop skills in communities, to engage Canadians in energy issues, and to communicate the benefits of community power to Canadians, through both local actors and central institutions.
- ▶ Educate and empower Canadians with respect to energy choices and community power opportunities, including programs on renewable energy technologies, and distributed generation. Governments must provide support for local actors, including civil society, to educate not only the public, but also professionals, tradespeople and decision-makers, particularly politicians and government agency staff.
- ▶ Provide adequate training opportunities for skilled labourers and technicians to meet the demand of a growing renewable energy market. Retraining and transitional programs should be provided through the Power Workers' Union and other trade unions with support from provincial and federal government.

Recommendations for Municipal Strategies:

- ▶ Streamline the planning and permitting processes for community power projects, simplifying the planning process, and reducing project lead time and cost.
- ▶ Partner with community power projects where opportunities arise, engaging communities with their local representatives, while providing a source of revenue for community members and the municipality.
- ▶ Develop community energy plans and land-use policies that support distributed generation, including integrated energy plans, by-laws and strategies that encourage the siting of distributed generation technologies, to help improve energy security, and enable communities to benefit from the revenue streams provided by community power and distributed energy technologies.

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