



Canada as a Global Energy Leader

TOWARD GREATER PAN-CANADIAN COLLABORATION: A Progress Report

Energy and Mines Ministers' Conference
September, 2012
Charlottetown, PEI



Common principles to support a Collaborative Approach to Energy were established in 2011...

Acknowledge the need for an adequate and reliable supply of energy

Recognize the importance of socially and environmentally responsible development, transportation and use of energy

Pursue a market-oriented approach to energy policies governed by effective, efficient and transparent regulatory systems

Recognize that federal, provincial and territorial cooperation is essential while respecting distinct constitutional jurisdictions and government authorities

Strong progress was made on collaborative priorities in 2012...

Priority	Collaborative Work Objectives	Progress in 2012
Regulatory Reform	Early Warning System to flag issues on major resource project reviews	✓
	Mechanisms to strengthen collaboration on Aboriginal consultation	✓
	Harmonized Federal-Provincial Project Agreements to align timelines	✓
	Pilot projects to implement alignment mechanisms	✓
	Process maps to inform discussions on substitution and equivalency	✓
Energy Efficiency	Updated Model Energy Code	✓
	Implement ISO 50001 Energy Management Standard	✓
	Next generation EnerGuide Rating System	✓
	Launch SmartWay Transport Partnership	✓
	Continuous development of product standards	✓
Electricity	Data Sharing Principles to support electricity reliability	✓
	Dialogue with the US on the integration of renewable energy	✓
Smart Grid	Report on status of smart grid across Canada	✓
	Define opportunities for supporting smart grid development	✓
Markets and International Trade	Inventory of international export and investment attraction events	✓
	Energy export development and diversification report	✓
Energy Information	Inventory of energy data and information products	✓
	Assessment of energy information and data gaps in Canada	✓

CANADA AS A GLOBAL ENERGY LEADER: TOWARD GREATER PAN-CANADIAN COLLABORATION

INTRODUCTION: STRENGTHENING CANADA'S POSITION IN THE WORLD

To build on Canada's energy strengths, in 2011 federal, provincial and territorial Ministers of Energy endorsed a Collaborative Approach to Energy. The approach was grounded on a shared vision of Canada as “*a recognized global leader in secure and sustainable energy supply, use, and innovation.*” This collaborative approach is supported by shared principles and objectives to guide federal, provincial and territorial work going forward. Since the inception of the workplan, federal, provincial and territorial governments have already made progress in a number of priority areas to reinforce Canada's position as a global energy leader:

- **Regulatory reform** – implementing greater alignment between the federal and provincial regulatory processes for major resource projects to drive towards “one project, one review”.
- **Energy efficiency** – delivering real benefits for Canadians by moving forward on collaborative energy efficiency actions targeted across homeowners, consumers, industry and communities.
- **Electricity** – engaging with the US to maintain the reliability of our integrated electricity grid and maintain access to the US market for Canada's electricity.
- **Smart grid technology** – collaborating on development and adoption of technologies for a more efficient grid and to support the integration of renewable energy sources.
- **Markets and international trade** – focusing shared efforts to capture new markets and promote trade opportunities for energy and energy-related technology and services.
- **Energy information and awareness** – improving the quality and accessibility of energy information in Canada.

Few countries compare to Canada in both quantity and diversity of its energy endowments. These resources, and our standing, are critical to the country's economy, competitiveness and society — driving jobs, growth, investment and commercial opportunities. What counts in our favour is an international reputation as a politically stable country with strong economic fundamentals, a highly educated labour force and a robust innovation system with a positive trade and investment climate. This position as a stable and reliable energy supplier allows Canada to be a major contributor to North American and global energy security.

Canada is a Global Energy Leader

- 3rd largest oil reserves and 6th largest producer.
- 3rd largest producer of natural gas.
- 3rd largest producer of hydro power.
- 2nd largest producer of uranium.
- Over 75% of power generation non-emitting.
- Vast renewable and clean energy potential.

Regional diversity in energy resources, supply and demand is also a source of strength that continues to shape our economy and society. Several provinces and territories are endowed with large hydroelectric resources and are significant exporters of electricity. Others have abundant fossil fuel resources and are large producers and exporters of oil, natural gas and coal. Nuclear energy makes a significant contribution to the electricity system in some jurisdictions and one province is a world leader in the production of uranium. As well, there is growing development of other renewable resources, with vast potential across the country.

Energy Sector* Contribution to Canada's Economy

		2008	2009	2010	2011
GDP** (Current prices)	\$B	\$180.5	\$123.9	\$141.6	\$165.2
	% of Total	12%	8.6%	9.3%	10.2%
Employment (Direct)	1,000s	281	264	270	294
	% of Total	1.9%	1.8%	1.8%	2.0%
Capital Expenditures	\$B	\$82.2	\$61.2	\$77.8	\$87.9
	% of Total	23.5%	20%	22.4%	23.7%

* includes coal and uranium

**GDP in current prices

Source: NRCan, Statistics Canada

Canada has an enviable energy resource advantage. Global economic and environmental volatility as well as technology shifts and geopolitical instability are all factors that impact the Canadian context and inform actions both now and into the future. Given this context, there is a recognized need for Canada to continue to diversify its energy sources, ensuring secure access to global markets by meeting the growing demand for energy at home and abroad as a responsible resource supplier. Federal, provincial and territorial governments must make smart decisions in order to seize opportunities and meet the resource challenges of the future.

Federal, provincial and territorial governments remain committed to deepening our collaborative efforts. Over the next year, officials will work together to move forward in the priority areas identified by ministers:

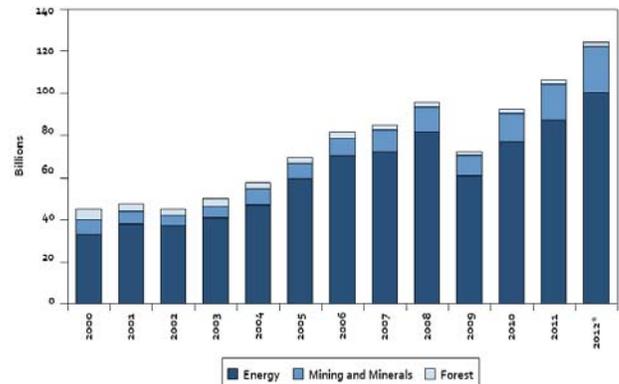
- Regulatory Reform
- Labour Markets
- Energy Efficiency and Innovation
- Markets and International Trade

MAKING REGULATIONS WORK

Resource developments around the world will implicate Canada, marked by an ever increasing demand for energy and other natural resources. The global drive to secure natural resources points to a potential for massive investments in the energy and mining sectors in every part of our country. It is estimated that there could be more than 600 major natural resource projects representing \$650 billion in potential investment over the next decade.

Given global competition, federal, provincial and territorial governments are working to improve Canada's business climate in order to attract investment and more fully realize the potential of our energy and natural resources for all Canadians. Efficient and effective regulatory review processes are a foundational element of a sound business climate.

Canadian Natural Resources – New Capital Investment 2000 - 2010 (in \$ billions)



Source: Statistics Canada

To this end, federal, provincial and territorial governments are working together to modernize regulatory reviews, so that our resources can be developed in a responsible and timely way for the benefit of all Canadians. This objective is directly supported at the federal level, through a plan for Responsible Resource Development that supports: more predictable and timely reviews; reduced duplication for project reviews; strengthened environmental protection; and, enhanced consultations with Aboriginal peoples.

The ultimate goal of federal, provincial and territorial governments' efforts on regulatory reform is to achieve "one project, one review". In support of this, governments are working together to establish concrete tools and mechanisms that will improve the alignment of federal-provincial review processes for major resource projects and increase the overall efficiency and effectiveness of the regulatory system. These changes will enable substantive benefits for Canada through generating wealth and jobs from increased resource investment.

Federal, provincial and territorial governments are improving regulatory efficiency and effectiveness through collaborative efforts...

- Implementing an Early Warning System to proactively flag significant issues that may arise during the review of a major resource project.
- Applying Aboriginal Consultation mechanisms to improve federal-provincial coordination of consultation processes and issue resolution.
- Developing Harmonized Federal-Provincial Project Agreements to improve alignment of federal and provincial review processes.
- Mapping federal and provincial project review processes to demonstrate areas of alignment and to facilitate substitution and equivalency.
- Implementing alignment mechanisms through pilot projects.

MOVING FORWARD ON ENERGY EFFICIENCY

As with the rest of the world, Canada’s energy demand is expected to increase in the coming decades, albeit at a slower rate. According to the National Energy Board, total end-use energy demand in Canada is projected to increase at an average rate of 1.3 percent per year to 2035, which is lower than the historical rate of 1.4 percent between 1990 and 2008. While Canada’s per capita energy use is high amongst OECD countries, this is related in large measure to our cold climate, vast geography, a widely dispersed population and an energy-intensive industrial sector. With these challenges, continued improvement in energy efficiency is critical to the competitiveness of the economy and the standard of living and quality of life of Canadians.

Federal, provincial, territorial and local governments have been making concerted efforts to promote energy efficiency and conservation across the country. As a result, Canada is making real gains. In 2009 alone, energy efficiency advancements across the entire economy, as a result of measures taken by governments, industry, and individuals, translated into an annual saving of \$27 billion in energy costs for Canadians and an estimated 81 megatonnes of avoided greenhouse gas emissions. A portion of the progress in reducing energy demand is attributable to jurisdictions working together, making a larger, more significant, impact on the Canadian economy and environment than working alone.

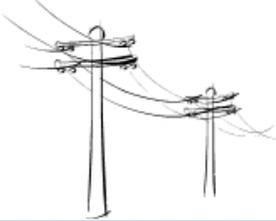
This past year marked yet another milestone in newly adopted standards, codes and training measures that build on our shared successes and set Canada on a path for greater improvements in the future. One example is recent changes to the National Energy Code of Canada for Buildings where the new 2011 standard is 25 percent more stringent than the previous 1997 code, making Canada a leader in North American building codes.

In recent years, governments have collaborated to improve energy efficiency	
Homeowners and Consumers	Home retrofits were undertaken in over 600,000 households, saving participants over \$400 million in estimated annual energy costs.
	The National Energy Code of Canada for Buildings (2011) (25% more stringent) was published and eleven provinces and territories have agreed to adopt or adapt.
	Ongoing collaboration on standards and labelling is increasing efficiency of products available within the Canadian market.
Industry	SmartWay Transportation Partnership –certification for the transportation industry - is improving fuel efficiency, beginning with on-road freight.
	Canada was the first country to adopt the voluntary ISO 50001 national energy management standard for use by Canadian organizations.
Communities	An Integrated Community Energy Solutions roadmap was produced to provide strategies and tools to improve energy performance at the community level.

Canada is a global leader in implementing a range of energy efficiency policies and programs. In 2011, the International Energy Agency (IEA) ranked Canada fifth among 28 member countries in implementing the IEA's recommendations for best practices in energy efficiency. However, Canada must realize further improvements. The key to continued material energy savings is the collaborative implementation of targeted actions for home owners, consumers, industry and communities.

As federal, provincial and territorial governments move forward collaboratively, our policies and programs will have significant impacts by 2020. If federal, provincial and territorial measures approved at EMMC 2011 continue, Canadians could save over \$2 billion in energy costs in 2020 alone, or over \$12 billion from 2012 to 2020. To effectively communicate this to Canadians, federal, provincial and territorial officials have prepared a document, *Moving Forward on Energy Efficiency in Canada: Achieving Results to 2020*, which outlines key measures being undertaken by governments and illustrates the impact these will have over the coming years.

By 2020...

<p>Industry saves \$80 million per year through standards for efficient energy use</p> <p><i>Annual energy savings in the industrial sector could produce enough cement to build 12 CN towers</i></p> 	<p>Federal, provincial and territorial energy efficiency measures can help Canadians save \$12 billion in energy costs from 2012 to 2020!</p>	 <p>Consumers save \$1 billion with more efficient products (from toasters to furnaces)</p> <p><i>Energy savings represent the energy used to light over half of Canada's homes in 2009</i></p>
		<p>Continuous building code improvements save \$350 million in energy costs per year</p> <p><i>Energy savings are equivalent to 5 times the energy use of all Canadian Tim Hortons</i></p>
<p>Home owners save \$810 million per year in energy costs</p> <p><i>Energy savings equivalent to average energy use of all homes in Winnipeg & Saskatoon</i></p>		<p>Trucks improve fuel efficiency, saving \$70 million per year</p> <p><i>Fleets will save 60 million litres of fuel a year – enough to move 20,000 transport trucks from coast to coast</i></p>

Pan-Canadian approach to energy efficiency saves money, reduces waste and benefits all Canadians

INCREASING THE DIVERSITY AND THE RESILIENCE OF THE ELECTRICITY SYSTEM

Fostering collaboration of cross-border power outage investigation

The Canada-US blackout of 2003, which affected an estimated 10 million people in Ontario and 45 million people across eight North-Eastern and Mid-Western US states, underscored the need for improved coordination to support the reliability of the integrated North American electricity grid. Federal, provincial and territorial officials have worked diligently with US authorities since that time and have made considerable progress. Despite this progress, some challenges remain, including difficulties collecting and sharing data across Canada and the US to fully understand what occurs in the event of a cross-border outage. For example, investigation into a 2007 power outage affecting 6000 people across Manitoba, Saskatchewan, North Dakota and Minnesota was significantly delayed due to confidentiality concerns with sharing commercially sensitive data across jurisdictions and between countries.

To expedite future power outage investigations, this year, federal, provincial and territorial officials, with the US Federal Energy Regulatory Commissions (FERC), have developed and endorsed a set of non-binding data and information sharing principles, which rest on the understanding that government authorities have a fundamental interest in:

- ensuring that a cross-border event is analyzed and investigated expeditiously;
- understanding the results of analyses and investigations arising from such an event;
- protecting confidential information to the extent permitted by their respective laws and regulations; and
- ensuring appropriate public dissemination of information relating to a cross-border event.

These principles will ensure coordinated action in the event of a cross-border disturbance, thereby supporting Canada's continued, unimpeded access to US electricity markets, which was worth approximately \$2 billion for Canada in 2011.

Integrating Renewable Sources of Electricity

Since 2011, governments have begun to make progress to support easier integration of renewable sources of energy into the bulk power system, while maintaining grid reliability. In May 2012, Canadian governments (including regulators) and US counterparts, along with academics and industry representatives, held a forum on the Integration of Renewables, with a focus on reliability associated with intermittent power and potential tools and solutions to the challenges this presents. The forum enabled sharing of cutting-edge developments and lessons learned on integrating renewables and ensuring reliability from both sides of the border.

Key lessons from Canada-US Renewable Integration Forum:

- Intermittent energy creates operational and market challenges for system operators (e.g., mismatch between peak demand and output).
- Technology can allow greater integration of renewables (e.g., smart grid, energy storage).
- Market rules and price signals are needed to ensure reliable dispatch order, investment, and ancillary services.
- Active consumer participation is being encouraged through demand-side management (e.g., time-of-use pricing) and consumer education.

Building the electricity grid of tomorrow

As we shift over time towards a lower-carbon economy, Canada's reliance on electricity produced from renewable sources, including, hydro, wind, solar, and marine, will increase. This means, in part, that the electricity sector faces ongoing technological transformation to ensure that these sources (some of which are by their nature intermittent) are integrated effectively onto the grid. Smart grid technology is the means through which this transition can be made.

Smart grid is the integration of modern control and communication technology into an electricity grid. This two-way flow of energy and information can also offer considerable environmental and economic benefits. Not only does smart grid enable the power grid to be used more efficiently and provide higher reliability, it could provide consumers with the ultimate flexibility to control their energy use, and to manage their daily lives, through for example using a smart phone to control their lighting and appliances. More specifically, smart grid technologies can:

- Better integrate variable and renewable energy sources;
- Increase transmission efficiency, which will help to reduce greenhouse gas emissions;
- Reduce the frequency and duration of power outages;
- Optimize use of current electricity infrastructure and decrease the need for new peak generators, lowering developmental impacts and decreasing electricity costs; and
- Enable consumers to respond directly to electricity price signals, thereby controlling their costs.

Over the course of 2011-12, officials undertook an analysis of best practices, technological gaps and other barriers to the adoption of smart grid technologies. This analysis included an evaluation of costs and benefits, as well as an assessment of policy drivers and regulatory issues. This work will help to position federal, provincial and territorial governments and utilities to make shared progress on bringing Canada's electricity infrastructure into the future.

Sharing knowledge with US counterparts

Canada will continue working with the US to share knowledge and technology on renewable electricity, and to put in place the policies and infrastructure needed to support the cross-border flexibility of our shared electricity grid. This will include active monitoring of developments in the US, such as their work on Clean Energy Standards, which may have an impact on Canadian interests.

Governments are taking action to support the development and adoption of smart grid technologies...

- Prioritizing research, development & deployment funds to support the integration of renewable sources of energy.
- Encouraging all jurisdictions and the private sector to share information on the SmartGrid Canada smart grid repository.
- Continuing to collaborate across jurisdictions and internationally when participating in smart grid conferences.

Canada-US Clean Energy Dialogue (CED) Phase II

Federal, provincial and territorial governments will continue to coordinate on efforts under Phase II of the Canada-US CED. Electricity priorities for the next phase include:

- Offshore renewable energy.
- Smart grid.
- Power storage.
- Clean electricity trade.

SEEKING ENERGY MARKETS AND INTERNATIONAL TRADE OPPORTUNITIES

The pursuit of new markets for Canada's energy is critical to our competitiveness and position as a global energy leader. The diversification of Canada's export position will benefit Canadians in many ways, including direct and indirect economic benefits of supplying resources to other markets, as well as helping to attract global investment into the energy sector, fuelling further development of our energy resources. Efforts to diversify Canada's energy markets also brings with it an additional opportunity to communicate the importance of energy exports and energy-related investments to all Canadians.

The US will remain the primary energy export market for the foreseeable future. Our integrated electricity grid enables an open market for electricity, with 7 percent of our electricity production headed south. In 2011, 97 percent of Canada's oil exports were destined for the US, predominantly via our shared pipeline network.

Canada's Energy Exports (2011)

	Total	to US	% to US
Petroleum*	\$92.6B	\$89.5B	97%
Natural Gas	\$13.5B	\$13.5B	100%
Electricity	\$2.0B	\$2.0B	100%
Coal**	\$8.5B	\$0.8B	10%
Uranium	\$2.7B	\$1.1B	41%
Total Energy	\$119.3B	\$106.9B	90%
Energy as % of Total Canadian Exports	26.7%	32.4%	

* includes crude, refined petroleum products, and LPGs

** includes coal products

Source: Statistics Canada

Increasing Asia-Pacific Energy Cooperation

Key developments over 2011-12 include:

- Canada-China Joint Working Group on Energy Cooperation; Asia-Canada Unconventional Resources Forum (China, Japan, and Korea).
- Canada-China Memorandum of Understanding on Energy Co-operation renewed by the Canadian and Chinese governments.
- Supplementary Protocol to the Canada-China Nuclear Cooperation Agreement, announced in February 2012.
- Liquefied Natural Gas (LNG) trade mission to China, Japan and South Korea in June 2011.

However, there are new opportunities emerging to diversify Canada's energy resource, product, and service markets beyond our traditional customers. In particular, the expanding economies of the Asia-Pacific region present strong growth potential. The emergence of 3 billion middle-class consumers will fuel future demand – the global car fleet is estimated to double to 1.7 billion by 2030 and China and India could every year add floor space totalling 3.5 times the residential and commercial square footage of the city of Chicago. This potential underlines the need to develop the necessary infrastructure and policies to support the growth and development of interprovincial and international energy markets.

Recognizing the need to work together to achieve export growth in energy, federal, provincial and territorial governments are developing a strategic approach that lays out foundational elements for an energy export development and diversification work plan, with the objectives of increasing energy exports, diversifying export markets, promoting investment and optimizing the economic impacts from the energy sector in all of Canada's regions.

The focus of efforts will be in a number of targeted geographic areas — including the Americas (US and beyond), Asia (including India) and the Atlantic Basin — as growth markets for five energy sub-sectors that cut across the energy supply chain:

- oil and natural gas (from conventional and non-conventional sources);
- refined petroleum products and bio-fuels;
- electricity from clean and renewable energy sources;
- uranium; and,
- energy products, technologies and services.

The specific work priorities under the plan include:

- Facilitating market-enabling infrastructure;
- Encouraging regional energy partnerships;
- Overcoming foreign discriminatory energy import policies;
- Assisting new technology exporting companies; and
- Developing common messaging and coordinated outreach.

There are important benefits to be gained by all Canadians, including jobs and income, from developing new markets for Canada's energy. Jurisdictions will continue to collaborate over the next year to advance the specific priorities outlined in the work-plan.

IMPROVING ENERGY INFORMATION IN CANADA

The availability of high quality energy data and information is essential to ensuring that policy makers, industry and individuals have reliable information in managing Canadian resources effectively and to make the most of our energy resource advantage. The relative importance of energy information was recognized at last year's Energy and Mines Ministers' Meeting in Kananaskis when Ministers agreed to make intergovernmental collaboration on energy information a priority.

Since that time federal, provincial and territorial officials conducted a comprehensive scan of existing energy data and information across all Canadian jurisdictions. The findings of this scan establish a new baseline of knowledge on the current state of energy information and helps to frame possible forward action for future years.

The scan identified that Canada has a wealth of energy-related data and information products largely generated by governments, regulatory authorities, industry associations, think tanks and non-governmental organizations. In addition, there are a number of important foreign and international organizations, such as the International Energy Agency, that provide valuable energy data and information. While much of these products are of high-quality, federal, provincial and territorial officials working in energy-related information fields have identified that there are on-going challenges, including:

Pan-Canadian Scan of Government Energy Data and Information

- Over 600 products identified across three types: primary data; analytical reports; and, awareness products.
- Products include raw data tables, market forecasts and reviews, provincial energy plans, benchmarking studies, fact sheets, guides for consumers, websites, and others.
- Topics covered include a range of supply (e.g., oil & gas, electricity) and demand (e.g., energy efficiency) products, that reflect regional diversity.

- issues of comparability due to different sources of data or different definitions;
- gaps in existing data and issues of consistency; and
- some jurisdictions raised concerns that there is no single repository for key energy information.

To respond to these gaps and to ensure that Canadians have access to high quality energy information, federal, provincial and territorial governments have proposed ways by which information sharing and data systems could be improved. Future work will address integration of data sources, data gaps, as well as awareness.



PRIORITIES FOR 2013 AND BEYOND

Over the past year, progress has been made by federal, provincial and territorial governments to improve collaboration across a range of energy issues. It is recognized that more remains to be done collaboratively, especially in consideration of several key trends, which include:

- growing world-wide energy demand, led by emerging economies such as China and India;
- lessened dependency of US over the medium to long-term on energy imports due to modest energy demand growth and increasing domestic energy supplies;
- increasing need for skilled labour in expanding natural resource sectors; and,
- ongoing efforts to improve energy efficiency, enhance environmental performance, and advance energy innovation and uptake of new technologies.

These dynamics present both challenges and opportunities and accentuate the need for federal, provincial and territorial governments to work together to strengthen Canada's position as a recognized global energy leader. In light of this, Energy Ministers are committed to build on the outcomes of the past year, and have identified the priorities below for further collaborative work leading to the 2013 Energy and Mines Ministers Conference in the Northwest Territories.

Federal, provincial and territorial Ministers have set a shared direction for further collaborative action in the coming year...

Regulatory Reform

- Recognizing the significant progress made in 2011-12, work collaboratively to achieve the objective of "one project, one review", including through measures to capitalize on the federal government's Responsible Resource Development plan.

Labour Markets

- Work collaboratively to assess future workforce needs of the energy sector, as well as leading practices and programs by government, industry and other organizations to improve labour mobility, attract and retain skilled labour, and increase participation of Aboriginal peoples.

Energy Efficiency and Innovation

- Continue to collaborate on energy efficiency, including measures expanding the uptake of 2011 building codes and efficiency standards, as well as developing new measures such as innovative financing mechanisms for home energy retrofits. Sustain efforts to advance energy innovation through sharing knowledge on best practices and opportunities to increase commercial success and technology adoption.

Markets & International Trade

- To advance the shared objective of growing existing and developing new energy markets, develop an analysis of market opportunities for Canadian energy resources, technologies and services, and key steps in realizing them, including through cooperative actions.