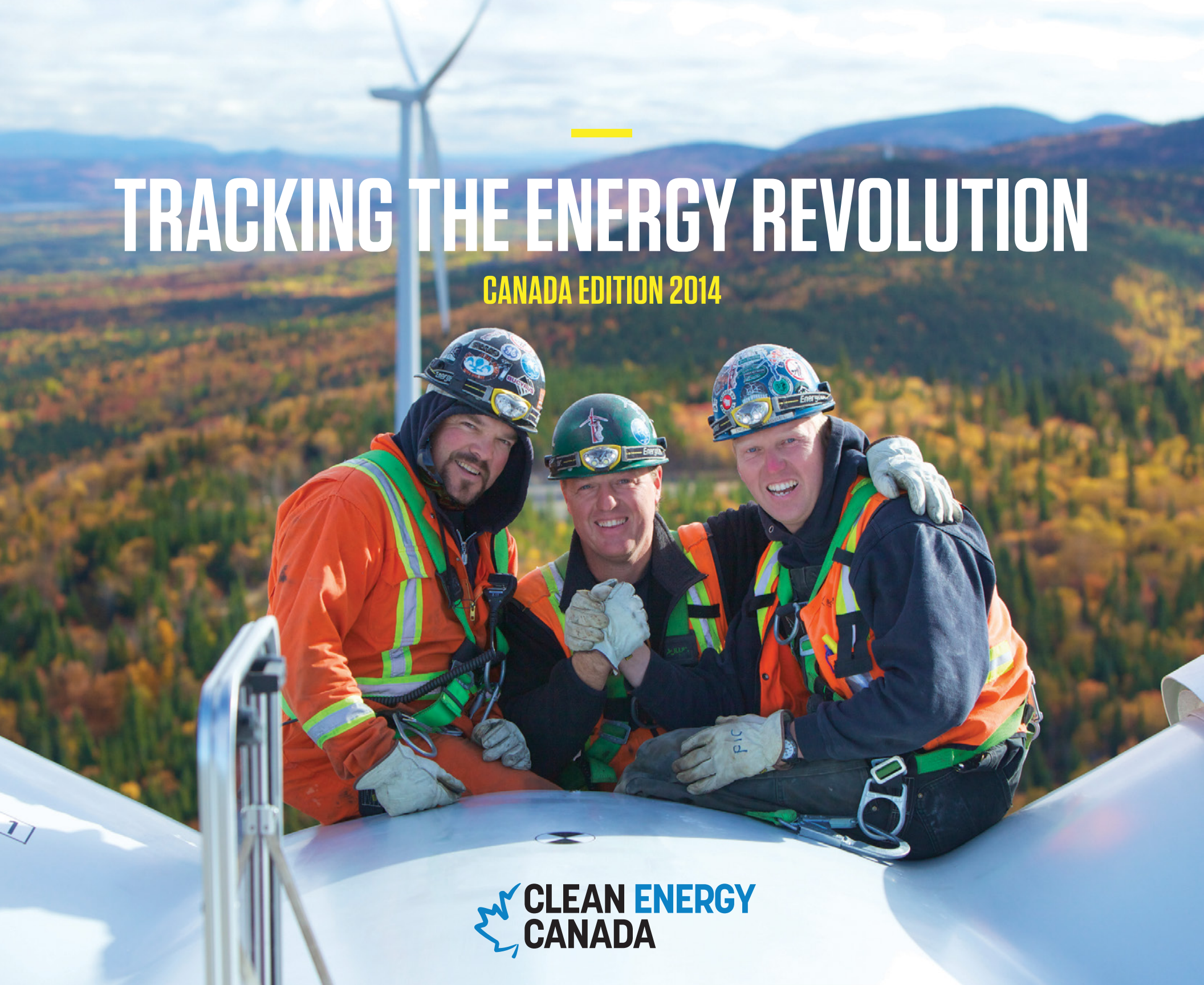
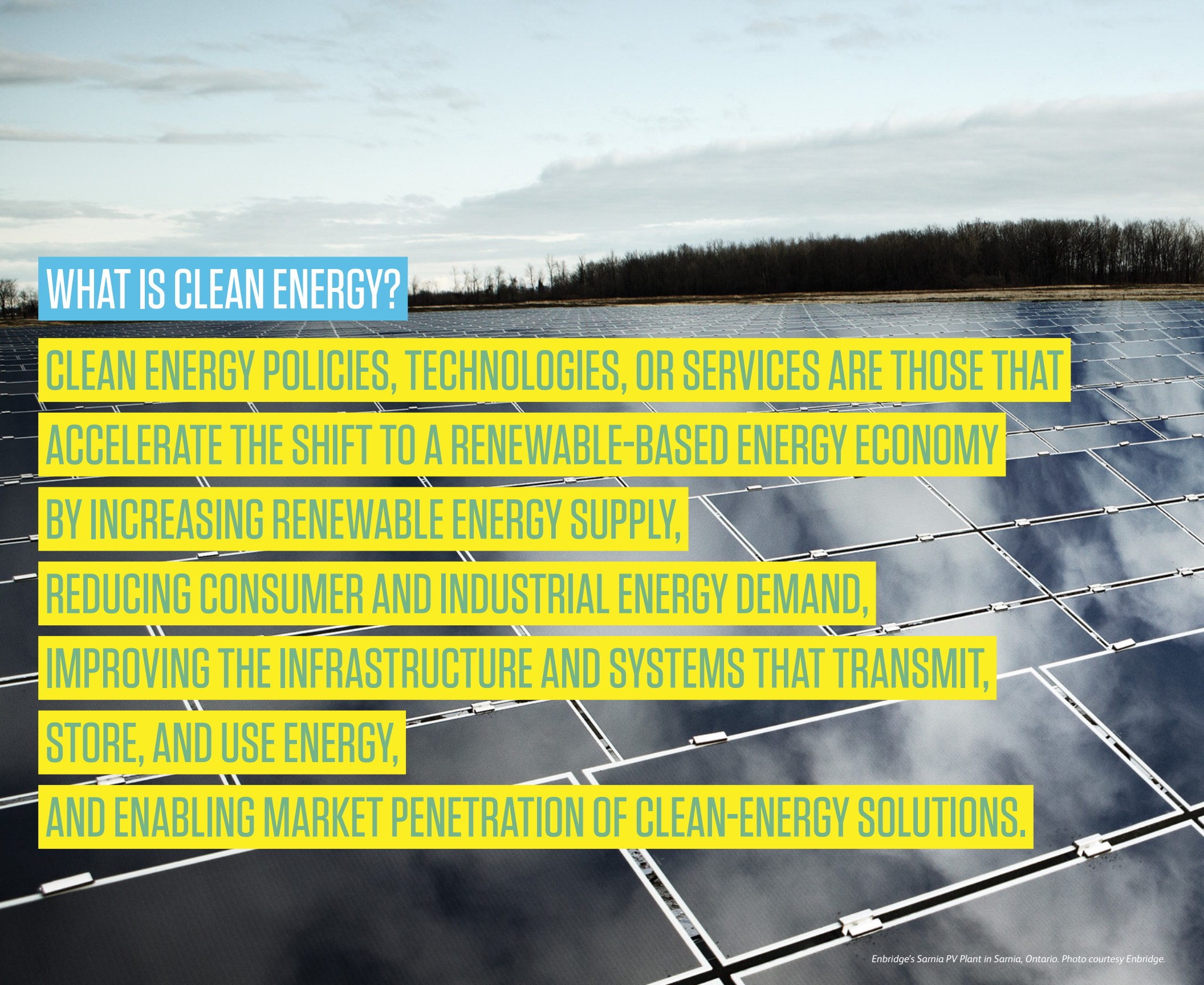


TRACKING THE ENERGY REVOLUTION

CANADA EDITION 2014

CLEAN ENERGY CANADA



WHAT IS CLEAN ENERGY?

CLEAN ENERGY POLICIES, TECHNOLOGIES, OR SERVICES ARE THOSE THAT ACCELERATE THE SHIFT TO A RENEWABLE-BASED ENERGY ECONOMY BY INCREASING RENEWABLE ENERGY SUPPLY, REDUCING CONSUMER AND INDUSTRIAL ENERGY DEMAND, IMPROVING THE INFRASTRUCTURE AND SYSTEMS THAT TRANSMIT, STORE, AND USE ENERGY, AND ENABLING MARKET PENETRATION OF CLEAN-ENERGY SOLUTIONS.

Enbridge's Sarnia PV Plant in Sarnia, Ontario. Photo courtesy Enbridge.

SURGING AHEAD

Canada is moving up the clean energy ranks.
But some jurisdictions deserve more credit than others.

This is a public-service announcement: An energy revolution is underway. From Shanghai to San Francisco to Surrey, B.C.—and many points between—nations and leading companies are working to reduce their dependence on fossil-based energy sources and increasingly power their economies and industries with energy from wind, sun, water, the heat of the earth, and wood waste.

Last year, global investment in clean power generation approached that of fossil-fuel generation. China and the United States led the world for both clean energy investment and installation. A record 6.5 million people worldwide worked in the sector.

Here in Canada, we uncovered some very encouraging action across the country—but also plenty of unrealized potential. Thanks largely to provincial leadership in Ontario and Québec, and some mightily-determined business leaders, we're steadily reducing our dependence on fossil fuels, and attracting investment to build out renewable energy and the infrastructure needed to support it.

Here are the numbers behind the good news:

- In 2013, Canada jumped from 12th to seventh place in the G20 for clean-energy investment.
- Wind, solar, run-of-river, and biomass have grown by 93 percent since 2009, and in 2013 Canada hit a record high, building one new wind turbine every 10 hours!
- Cumulative investment in Canada's clean energy sector amounted to $24 billion over the past five years.
- Clean energy jobs are growing incredibly fast. Thirty-seven percent more Canadians worked in the renewable energy industry in 2013 than in 2009.
- As a result, by 2013 the clean energy sector—encompassing manufacturing, energy efficiency, and biofuels—accounted for more direct Canadian jobs than the oil sands.

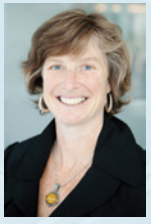
But despite that incredible track record, in some respects Canada is still swimming upstream. Unlike our American friends, where the clean-energy opportunity is clearly a national priority, our federal government's approach could only be described as indifferent.

In hockey, the best players head to where the puck is going. When it comes to the clean-energy revolution, Ottawa is still lacing up its skates.

To really get in the game, the federal government needs to start to level the playing field for clean energy through effective tax support. We also recommend that Ottawa invest infrastructure dollars in building clean energy and, yes, put a price on carbon pollution.

We produced *Tracking the Energy Revolution — Canada* to identify and commend public and private clean-energy leadership, while nudging others to more aggressively chase their prospects. We outline where Canada stands relative to our southern neighbour and the rest of the world, where the energy revolution is seeing traction inside our borders, and where it could go next.

This document is the first of an annual series, and the companion to *Tracking the Energy Revolution — Global*, which we released in September 2014. We hope you find it useful, and welcome your feedback on how it might better serve your needs.



Merran Smith
Director, Clean Energy Canada
merran@cleanenergycanada.org

Sources: IRENA, Pew/Bloomberg New Energy Finance. Cover photograph by Joan Sullivan. Report design by Erika Rathje.

BIG GROWTH

A survey of clean-power and transportation production, investment, and growth

Panel by panel and garage by garage, home and business owners, communities, and utilities are steadily greening Canada's energy systems.

In the past five years, our clean energy capacity created by wind, solar, run-of-river and biomass plants has grown 93 percent, and investment followed a similar path. Credit Ontario's and Québec's wind and solar efforts for the lion's share of this accomplishment. Meanwhile, in British Columbia, run-of-river hydro might not be generating the most electrons in Canada, but it is by a wide margin generating the most jobs.

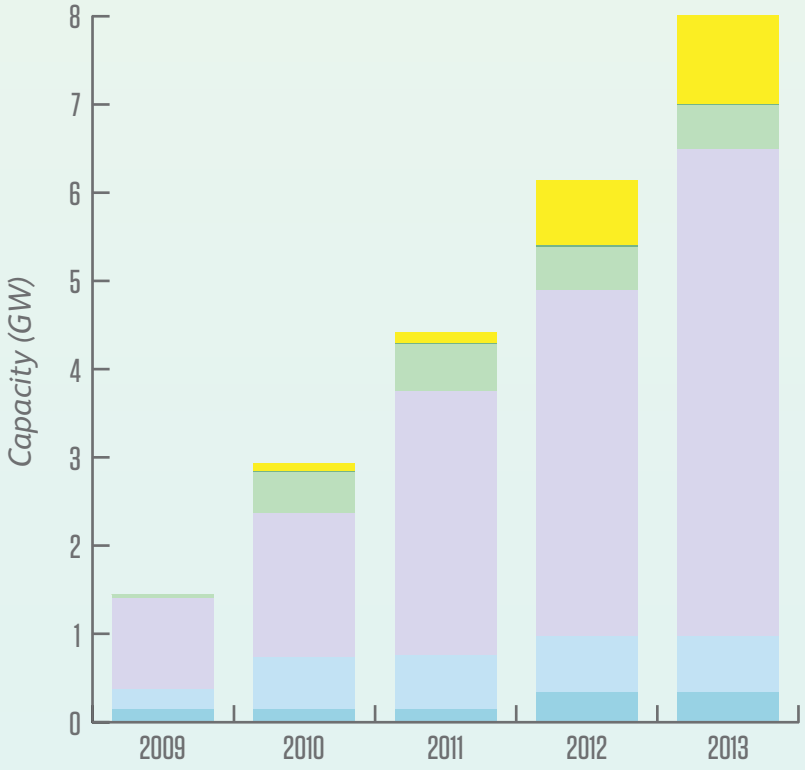
The energy revolution isn't just about how and where we produce clean power. It's also about being innovative in how we use it. Although electric vehicles have not yet taken off in significant numbers in Canada, these are early days. As more models come available and charging infrastructure expands—and governments introduce and strengthen policies to support both—we anticipate electrified transportation powered by renewable energy sources will play a big role in Canada's energy shift.

PRICE DROP:
SOLAR-POWER EQUIPMENT PRICES HAVE PLUNGED 60 PERCENT IN CANADA SINCE 2009.

Similarly, low-carbon fuel standards in British Columbia are spurring a small but growing market for renewable liquid fuels that are mixed in with the gasoline and diesel Canadians are already using. These policies reduce emissions without requiring people to change their habits. For instance, British Columbia's fuel standard reduced greenhouse gas emissions by 900,000 tonnes in 2012, a quarter of the province's emissions reductions since 2007.

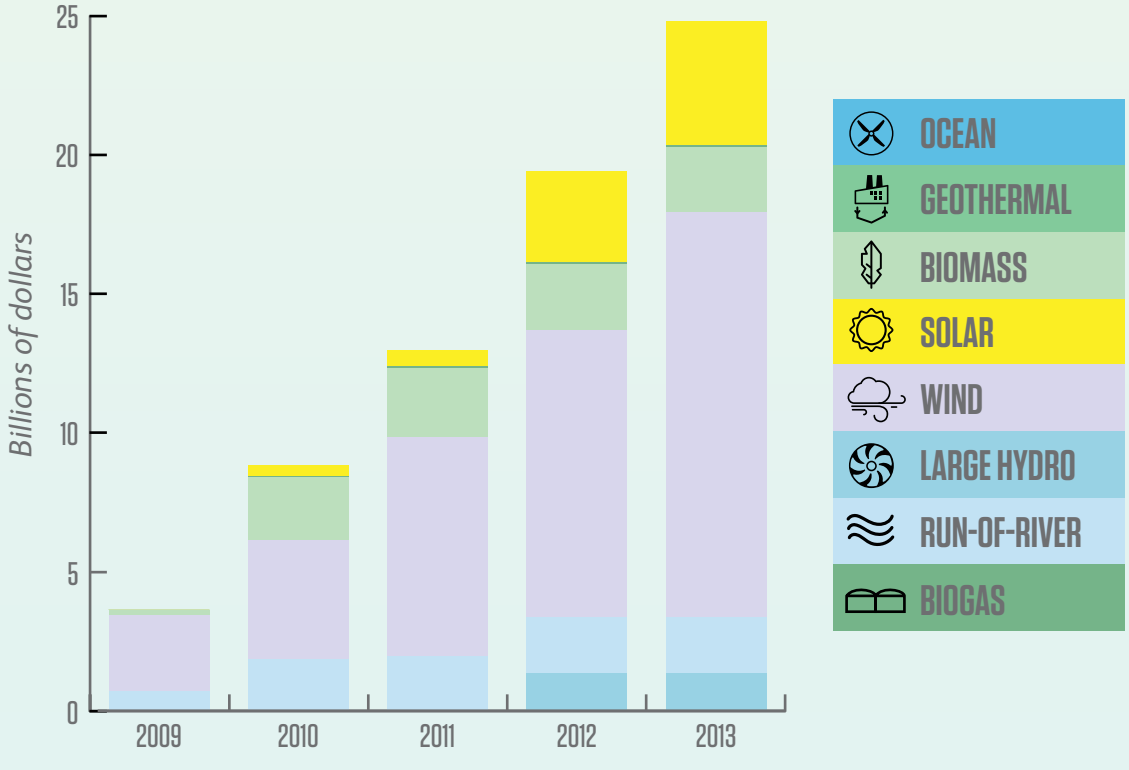
FIVE YEARS OF CUMULATIVE NATIONAL GROWTH

8% increase in total renewable energy capacity since 2009



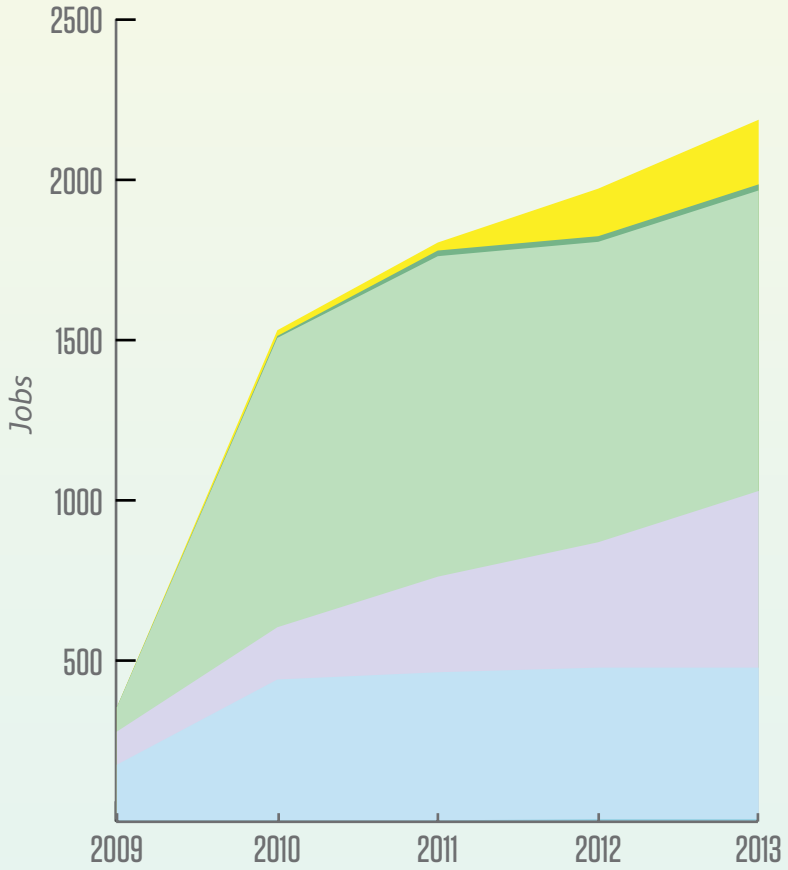
FIVE YEARS OF CUMULATIVE NATIONAL INVESTMENT

$24 billion invested since 2009



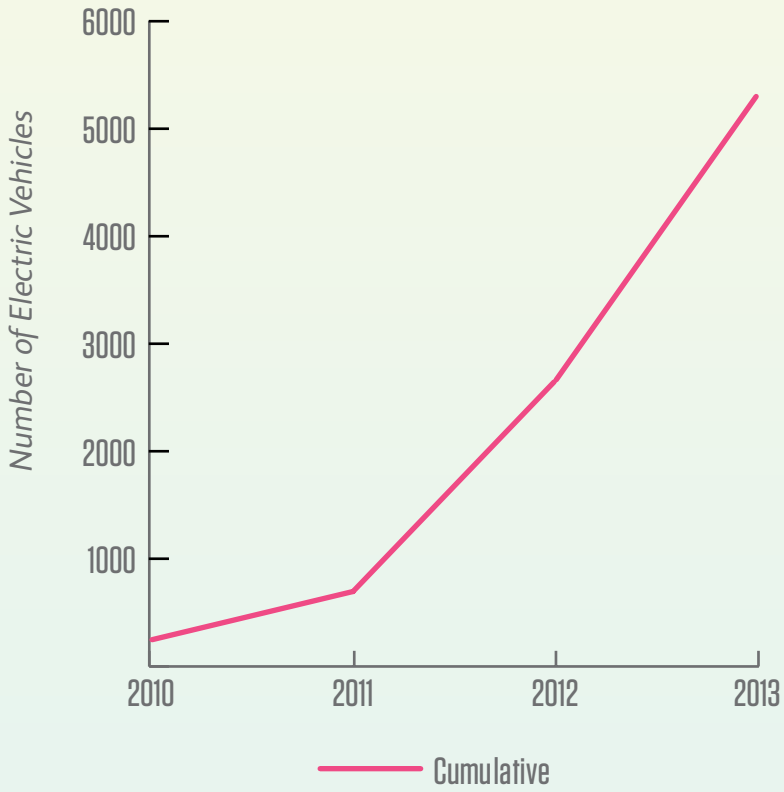
NEW DIRECT OPERATION JOBS IN RENEWABLE ENERGY

2,200 new jobs since 2009



ELECTRIC VEHICLES ON THE ROAD IN CANADA

2,022% increase since 2010



TOTAL DIRECT CLEAN ENERGY JOBS, 2012*

23,700

TOTAL DIRECT OIL SANDS JOBS, 2012

22,340

5,300
electric vehicles on the road in Canada

1,850
available public charging stations

OPPORTUNITY ALERT

CANADA IS THE ONLY G7 ECONOMY WITHOUT A FEDERAL ELECTRIC VEHICLE REBATE.

** Note: Clean energy job categories include clean power production and equipment manufacturing, energy efficiency technologies and services (such as smart grids and building envelope technologies), clean transportation, and bioenergy.*
Sources: Analytica Advisors, British Columbia Ministry of Energy and Mines, CIEEDAC, International Energy Agency, Petroleum Human Resources Council of Canada, Plug 'n Drive, WWF Canada.

ROOM FOR IMPROVEMENT: OTTAWA'S CLEAN ENERGY TRACK RECORD

The key federal programs, funds, and rules keeping carbon in the ground and innovation in the air

Constitutionally, megawatts are the domain of provinces. So if we want to evaluate the federal government's progress on clean energy, we need to instead look at investment, support, and avoided greenhouse gases. On the latter metric, we've analysed Environment Canada data to determine exactly how much carbon pollution various federal clean energy policies will prevent from heading skyward.

The result? Ottawa has laid some of the groundwork, with its efforts to cut energy waste and support clean energy demonstration and research projects. The federal government has also adopted regulations to discourage the construction of conventional coal plants.

But here's the rub: Only three of Ottawa's seven most effective clean energy policies are actually in effect today.

- Sustainable Development Technology Canada is growing its portfolio at a rapid clip.
- Ottawa's renewable fuel regulations have been in effect since 2011.
- EcoENERGY Efficiency program of standards and labelling remains up and running until 2016.

In contrast, Ottawa's coal regulations don't come into force until next July, and the three direct investment programs are now fully committed and closed to new applicants.

So our snapshot of Ottawa's clean energy efforts (seen at right) shows as many lapsed programs as live ones. The conclusion? Ottawa has laid a foundation for clean energy, but has done very little to build on it.

A welcome exception to that rule is the federal government's ongoing support for Sustainable Development Technology Canada, an arms-length agency that provides critical funding for clean technology projects and companies. Nicolas Morgan, VP Business Development at Morgan Solar, called it "one of the most successful cleantech funding programs in the world." Last year, Ottawa committed $325 million to support eight more years of its work.

"The conclusion? Ottawa has laid a foundation for clean energy, but has done very little to build on it."

BY THE NUMBERS: OTTAWA'S CLEAN ENERGY EFFORT

RANKING	STATUS	POLICY	DESCRIPTION	ESTIMATED GHG (MT CO_2e IN 2020)
1	*Live*	ECOENERGY EFFICIENCY	Supports efforts to provide efficiency information and increase efficiency standards	6.5
2	*Fully Allocated*	ECOENERGY FOR RENEWABLE POWER PROGRAM	Offers an incentive of $0.01/kWh of electricity produced, for 10 years, for 104 projects built before March 2011	6.2
3	*Coming Soon*	GREENHOUSE GAS REGULATIONS ON COAL-FIRED ELECTRICITY GENERATION	These regulations covering new facilities and facilities at the end of their economic lives will take effect in July 2015	3
4	*Fully Allocated*	CLEAN ENERGY FUND	Supported carbon capture and storage, renewable energy, and other R&D projects between 2009 and this year	2.8
5	*Live*	SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA	This arms-length foundation funds Canadian clean-technology development and demonstration	2.1 AS OF 2012
6	*Live*	RENEWABLE FUEL REGULATIONS	Require gasoline and diesel producers to blend biofuels into their products	2
7	*Fully Allocated*	PULP AND PAPER GREEN TRANSFORMATION PROGRAM	Supported efficiency and renewable energy investment in the forestry sector between 2009 and 2012	1.4

*Sources: Environment Canada (*Canada's First Biennial Report*) supplemented with estimates from Sustainable Development Technology Canada. Estimated emission reductions are presented in millions of tonnes of carbon-dioxide equivalent (Mt CO2e) reduced in 2020. The list excludes federal initiatives not directly relevant to clean energy, federal policies below 0.1 Mt in size, and federal policies with emission reductions that have not been estimated.*

PUNCHING ABOVE OUR WEIGHT

Thanks to provincial leadership (merci, Québec, and kudos, Ontario), Canada is holding its own in the global clean energy revolution

Last year, Canada ranked seventh in the G20 for clean energy investment — a jump up from a middle-of-the-pack 12th the previous year, but still far short of global leaders China, the United States, Japan, and others. Clean-energy investment clocked in at $6.5 billion nationally, a 45 percent increase over the previous year, and the second-biggest such jump behind Japan.

Where did the money go? Investors moved $3.6 billion into Canada's wind sector to build out a series of big projects, such as Ontario's South Kent and Alberta's Blackspring Ridge wind farms. Others took a shine to Canada's solar sector, to the tune of $2.5 billion. The balance went into run-of-river hydro and biomass.

Canada's share of the global opportunity grows larger when we widen the lens to include manufacturers of renewable generation equipment, electric vehicle parts, efficient building materials, and so on. Canada's share of this global market is worth about $6.1 billion — about 0.8 percent of the global market.

When compared with the investment going into Canada's fossil fuel sector, these numbers aren't huge. But they aren't trivial, either. They underscore that clean energy is no longer a niche, but is fast emerging as the "new business as usual." The opportunity will only grow larger as demand for both clean electrons and clean energy innovations soars in the coming years.

We're off to a good start and, thanks to Ontario and Québec, we're even punching above our weight. But with targeted support — particularly at the federal level and in Alberta, where it is noticeably absent — we could accomplish even greater things.

CANADA'S GLOBAL RANK

6TH* GLOBAL RANK
OVERALL POWER PRODUCTION

3RD GLOBAL RANK
HYDROPOWER PRODUCTION

5TH GLOBAL RANK
NEW WIND POWER CAPACITY

**Power production from all sources: clean and renewable, fossil fuels, and nuclear.*

WHICH NATION IS MORE ATTRACTIVE TO INVESTORS INTERESTED IN RENEWABLE ENERGY?*

2ND

5TH

Rank from 1 to 40, with one being the "most attractive"

WHICH NATION'S GOVERNMENTS AND COMPANIES ARE DRIVING MORE INNOVATION?**

1ST

9TH

** Global Ranking in Renewable Energy Investment Attractiveness (2014)*
*** Global Ranking in U.S. Clean Energy Patent Filings (2013)*
Sources: Analytica Advisors, Ernst & Young, Pew/Bloomberg New Energy Finance, PriceWaterhouseCooper, Heslin Rothenberg Farley & Mesiti P.C.

THE POWERHOUSE NEXT DOOR

When it comes to clean energy, our biggest customer is also our biggest competitor. Decoding our three-pronged relationship with the United States.

COMPETITOR

Under President Barack Obama, the United States has positioned itself as a global clean-energy power player. The country has increased solar generation more than tenfold and tripled electricity production from wind. The world's second-largest carbon polluter is now also the world's second-biggest clean energy producer — trailing only China, the world leader in both categories.

But American clean energy companies aren't just investing domestically: they are increasingly looking to grow both within and beyond North America. The U.S. International Trade Administration flags Canada as the top market for American renewable energy and energy efficiency exporters. President Obama has prioritized clean energy exports, setting the ambitious goal of doubling American exports between 2010 and 2015.

COLLABORATOR

Our energy diplomacy is a study in contrasts: While Canada talks up the high-carbon Keystone XL pipeline proposal in Washington, our American friends emphasize the bilateral Clean Energy Dialogue they pushed Ottawa to create in 2009.

The Clean Energy Dialogue has helped spur important cross-border research and collaboration. That includes studies into the role that hydropower can play in backing up variable sources of renewable power, like wind and solar, and opportunities to better integrate Canadian and American power grids to greatly increase the use of renewable energy.

And we're beginning to see real examples of this cross-border potential on the ground: Minnesota Power and Manitoba Hydro recently signed an agreement in which the province could store excess North Dakota wind power in its hydro reservoirs, and then sell that energy back to the midwest market at times when the winds lessen.

CUSTOMER

For Canada's 119 clean energy companies, U.S. support for clean energy represents a huge opportunity. It's our top clean energy export market today, and with new power plant regulations scheduled to come into effect this coming year, American demand for Canadian clean electrons, technologies and services looks poised to grow.

In the northeast, the governors of Massachusetts and Connecticut are backing a project that would access Québec hydropower to help their states meet their clean-energy targets. A few months ago, Vermont, New Hampshire, Rhode Island and Maine joined them, and agreed to share the costs of a proposed $1 billion transmission line to boost imports from Québec.

"A LOW-CARBON, CLEAN ENERGY ECONOMY CAN BE AN ENGINE OF GROWTH FOR DECADES TO COME. AND I WANT AMERICA TO BUILD THAT ENGINE."

— President Barack Obama, June 2013

"OUR RELATIONSHIP WOULD GET DEEPER AND STRONGER AND PUT US IN A POSITION TO REALLY BE GLOBAL LEADERS IN ENERGY AND CLIMATE CHANGE IF WE WORKED MORE CLOSELY TOGETHER."

— Former U.S. Secretary of State Hillary Clinton, June 2014

TOP FIVE CLEAN ENERGY FINANCIERS FOR THE PAST FIVE YEARS*

Notice anything unusual here? With one exception, foreign banks are funding Canada's clean-energy revolution. It's great to see overseas investors have flagged us as a promising market, but Bay Street really needs to get with the program.

$1.2 BILLION
MITSUBISHI UFJ FINANCIAL GROUP INC.
TOKYO, JAPAN

$750 MILLION
MANULIFE FINANCIAL CORP.
TORONTO, CANADA

$660 MILLION
MIZUHO FINANCIAL GROUP INC.
TOKYO, JAPAN

$470 MILLION
DEUTSCHE BANK AG, FRANKFURT
FRANKFURT, GERMANY

$360 MILLION
NORDDEUTSCHE LANDESBANK GIROZENTRALE
HANOVER, GERMANY

TOP FIVE CANADIAN UTILITIES BUYING AND PRODUCING CLEAN POWER IN 2013

46,700 MW
HYDRO QUÉBEC

14,400 MW
BC HYDRO

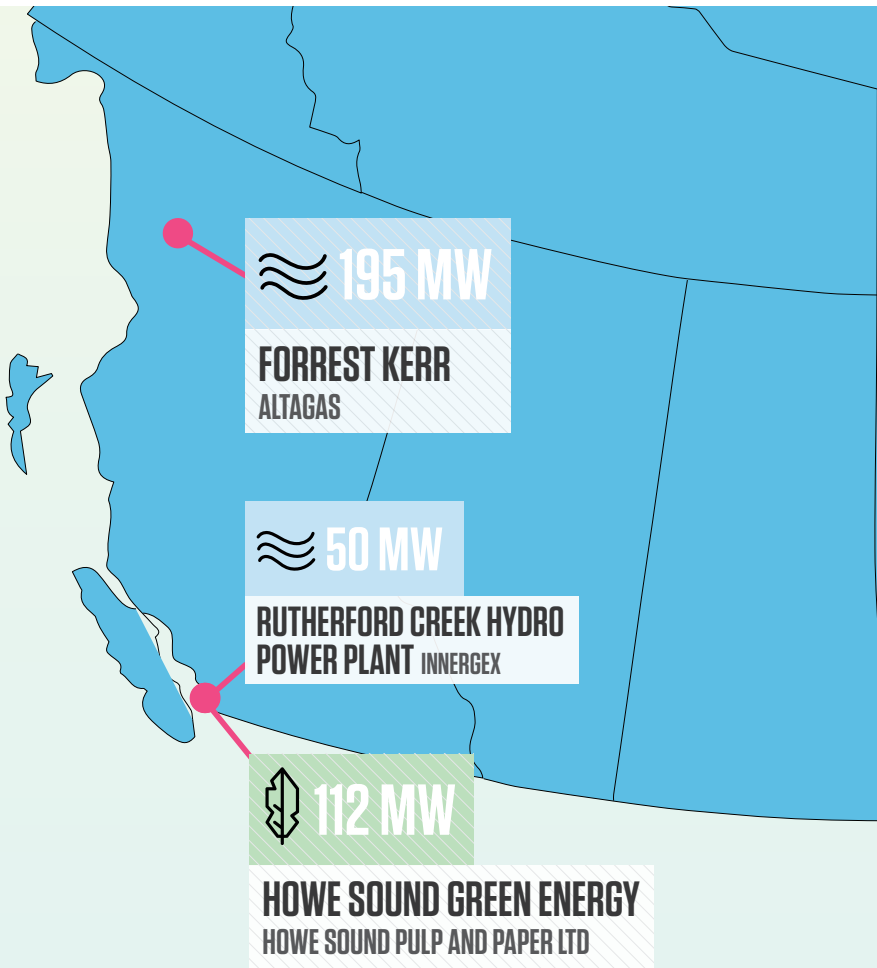
7,000 MW
ONTARIO POWER GENERATION

5,500 MW
MANITOBA HYDRO

5,400 MW
ONTARIO POWER AUTHORITY

GETTING THE JOB DONE

The nation's largest operating and soon-to-be-operating renewable energy plants and the power they produce

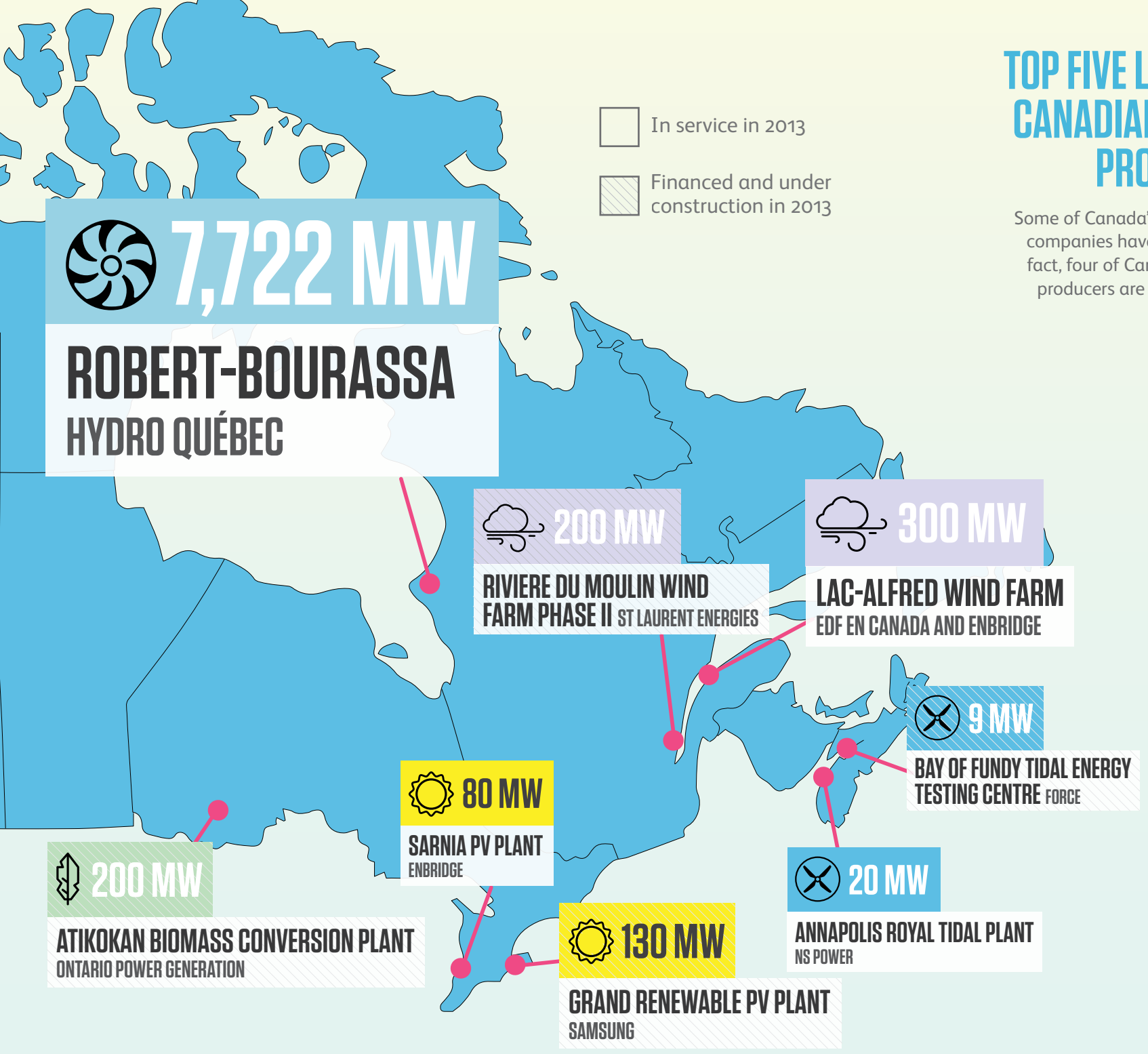


ENOUGH CLEAN ENERGY IS PRODUCED IN CANADA TO POWER 37 MILLION

** Dollar values converted from USD to CAD using the Bank of Canada's conversion rate from December 30, 2013.*
Sources: AltaGas, Bloomberg New Energy Finance, CIEEDAC, Hydro Québec, Enbridge.

TOP FIVE LARGEST PRIVATE CANADIAN CLEAN-ENERGY PRODUCERS, 2013**

Some of Canada's biggest conventional energy companies have jumped into clean energy. In fact, four of Canada's five biggest renewables producers are also in the fossil fuel business.



1,510 MW
TRANSALTA

1,270 MW
BROOKFIELD ASSET MANAGEMENT

890 MW
ENBRIDGE

770 MW
FIERA AXIUM INFRASTRUCTURE

650 MW
TRANSCANADA

*** Capacity number denotes MW of generation under active management.*

HOW TO MOVE THE NEEDLE: OUR POLICY RECIPE FOR ENERGY TRANSFORMATION

Lessons from Canadian jurisdictions working to clean up their energy systems

A close look at the provinces that are steadily reducing their fossil fuel reliance reveals a consistent pattern. Call it a policy recipe for a clean-energy transition.

STEP 1: CUT COAL

If you have coal power on your grid, pick a target year to shut it down. If you're fortunate enough to not have coal plants in the first place, prevent them from being built.

STEP 2: RENEWABLES ON THE GRID

Implement either a renewable portfolio standard or a feed in tariff to gradually increase the share of renewables on the grid. The former policy directs utilities to source an increasing share of their power from clean sources, while the latter requires them to pay renewable energy producers a fixed, long-term price for power.

STEP 3: TRANSPORT CLEAN ELECTRONS

Invest in infrastructure as needed to ensure new renewable sources smoothly feed into the grid.

At right, we've highlighted five standout provincial examples of how and where good policy is cleaning up Canada's energy systems.

	POLICY	ENACTED	OUTCOME
	CLEAN ENERGY ACT, ENERGY PLAN	JUNE 2010	Helped stimulate 800 MW worth of clean energy projects. Banned coal-fired power plants without CCS.
	ENERGY JOBS FUND	APR 2012	Allocates $30 million to support local clean-energy technology firms.
	CLEAN ENERGY ACT WITH FEED IN TARIFF, CESSATION OF COAL USE REGULATION	OCT 2009	As of 2013, the province has installed 480 MW worth of renewable electricity capacity. The government has approved an additional 940 MW of generation. Ontario has closed and banned all coal-fired power generation.
	ENERGY PLAN	ANNOUNCED 2006	The province built 400 MW of clean energy between 2006 and 2013.
	RENEWABLE ENERGY REGULATION, RENEWABLE ELECTRICITY STANDARD, FEED IN TARIFF	OCT 2010	Established a target of 40 percent renewable-sourced electricity by 2020. Since September 2011, the province has approved 200 MW renewable electricity capacity for installation.

Sources: Mark Jaccard / Simon Fraser University, Ontario Ministry of Energy, Nova Scotia Department of Energy, Manitoba Hydro.

LEADING THE CHARGE

Rebates, plug-in points, and other incentives driving electric-vehicle adoption across Canada

The clean energy transition isn't just about how we generate energy; it's about how we use it, too. Since Canada lacks a federal electric-vehicle rebate, we've been closely tracking provincial EV incentives, which have been shown to drive adoption in jurisdictions such as California and Norway. Plug-in electric vehicles offer an unbeatable opportunity to reduce pollution and fossil fuel dependence, and add storage to the grid. Electric cars are particularly well-suited for jurisdictions where renewable power dominates the grid or is expanding its role. As with renewable energy build-out, Ontario and Québec are leading the way. Who's next? British Columbia and Manitoba, we're looking at you.

BRITISH COLUMBIA

CEVforBC

Between November 2011 and March 2014, the province offered rebates of up to $5,000 on clean-fuel vehicles. The program has since expired and not been renewed.

QUÉBEC

Drive Electric Program

Purchasers of eligible vehicles receive rebates between $5,000 and $8,000. The province also provides up to $1,000 for charging station installations.

Transportation Electrification Strategy

The province has committed $512 million for EV awareness, infrastructure, and R&D.

ONTARIO

Electric Vehicle Incentive Program

Since launching in July 2010, the program has evolved to offer rebates of up to $8,500 on the purchase of eligible electric vehicles, plus $1,000 for home or fleet charging stations.

Green Licence Plates

Eligible EV owners can apply for a green licence plate, which grants them access to HOV lanes and public charging at transit stations.

Education and Awareness

Public outreach and events across Ontario, website and factsheets.

A CLIMATE FRIENDLY CANADIAN ENERGY STRATEGY?

After several false starts, provincial leaders outlined the start of something big

In recent years, provincial and territorial leaders have landed on the same page: Canada needs an energy strategy. But the premiers' earlier efforts were largely focused on getting more oil and gas out of the ground and off to market.

That changed this past summer at the Council of the Federation meeting in Charlottetown, P.E.I. There, the leaders of Québec and Ontario signalled that they were looking for something different. Under their leadership, the premiers effectively hit the reset button, agreeing to an updated set of objectives that will move clean energy to the heart of the effort.

By the summer of 2015, premiers plan to deliver a *Canadian Energy Strategy* built on principles like:

- **"Addressing climate change"**
- **"Transition to a lower-carbon economy through appropriate initiatives, such as carbon pricing"**
- **"Increase and diversify the supply and distribution of clean as well as low carbon energy."**

If all goes as hoped, the Council of the Federation's *Canadian Energy Strategy* could prove a catalyst for Canada's clean-energy transition. Stay tuned.

Provincial leaders at the 2014 Council of the Federation in Charlottetown, Prince Edward Island. Photo: Reuters.

BRITISH COLUMBIA

Welcome to the land of falling water

British Columbia not only boasts one of the cleanest power grids in North America, it also has legislation—the *Clean Energy Act*—that will (mostly) keep it that way. The 2010 law requires the provincial utility to source at least 93 percent of its power from clean or renewable energy sources, though the government has since given would-be LNG producers a free pass to power their operations on natural gas. The law also directs provincial utility B.C. Hydro to meet two-thirds of the province's incremental electricity needs through efficiency and conservation by 2020.

In recent years, B.C. Hydro has held back on new contracts with independent power producers—indicating that it has enough power for the foreseeable future. However, it is considering a controversial 1,100 MW dam—the Site C Clean Energy Project—which would be located in the province's northern Peace River region.

Finally, the province also has a permanent legislated ban on coal-fired power generation without carbon capture and storage.

NUMBERS AT A GLANCE

95%
of grid is clean and renewable

950
registered electric vehicles in 2013

$5.3 BILLION
renewable energy investment (2009–2013)

700
available public chargers in 2013

0.5 GW + 1 GW + 12.1 GW + 0.8 GW = TOTAL CLEAN ENERGY CAPACITY 14.4 GW = 6.7 MILLION 2013

LARGEST PROJECTS BY POWER SOURCE IN BRITISH COLUMBIA

W.A.C. BENNETT DAM
B.C. Hydro,
Hudsons Hope
2,730 MW = 1,498,418

BRILLIANT
Columbia Power,
Castlegar
149 MW = 107,309

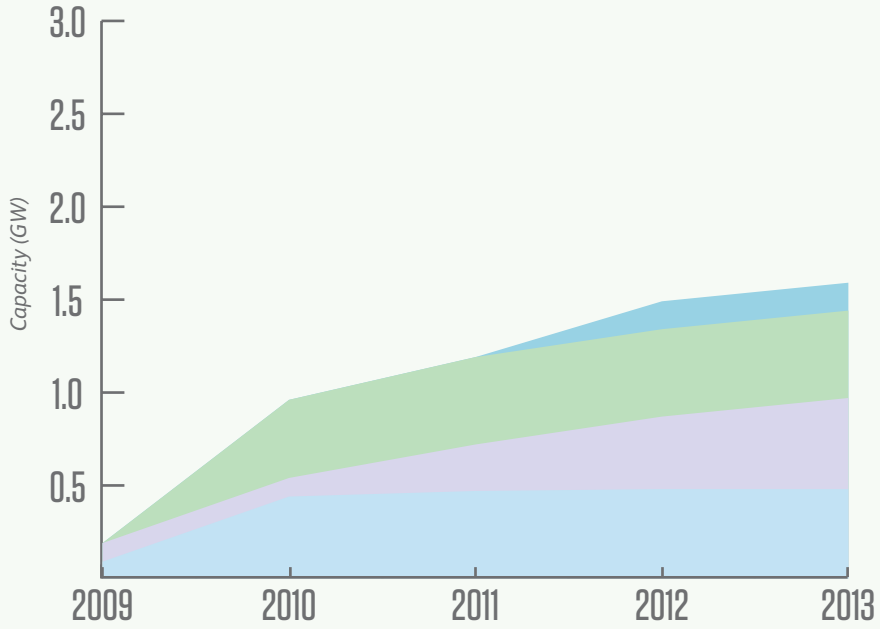
DOKIE WIND PROJECT
Alterra Power and
GE Financial Services,
Chetwynd
144 MW = 30,920

CANFOR PRINCE GEORGE PULP & PAPER MILL
Canfor, Prince George
135 MW = 79,583

Sources: CIEEDAC, Clean Energy BC, Fraser Basin Council, Plug n' Drive, Seabreeze power, WWF-Canada.

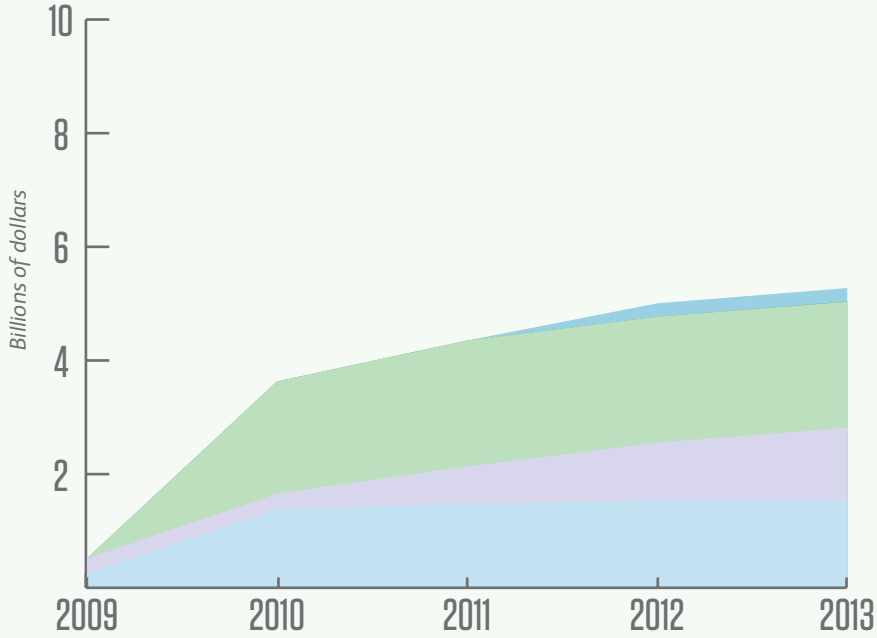
5 YEARS OF CUMULATIVE GROWTH

11% increase in total capacity since 2009



5 YEARS OF CUMULATIVE INVESTMENT

$5.3 billion invested since 2009



BIOMASS | WIND | LARGE HYDRO | RUN-OF-RIVER

PACIFIC COAST ACTION PLAN

In October 2013, BC, Washington, Oregon, and California committed to work together to cut climate pollution and accelerate the shift to a low carbon economy.

Innergex owns and operates the 50 MW Rutherford Creek project, near Pemberton, British Columbia.

ALBERTA

With demand poised to surge and a dynamite resource, this could be Canada's next clean energy hotspot

With abundant sunshine and rock-steady winds—not to mention biomass, hydro, and geothermal potential—Alberta can claim some of the best renewable energy resources in Canada. Unfortunately, its grid is about 85 percent powered by fossil fuels, mostly coal. The province's power plants are a nationally significant source of carbon pollution.

Our recent *Power to Change* report, produced with the Pembina Institute, demonstrates that Alberta could reduce its heavy reliance on these fuels and instead generate its electricity from cleaner sources—a mix of renewable sources with some natural gas—within 20 years. Doing so would slash carbon pollution, improve air quality, ignite a new industry, and ultimately save ratepayers money. Public support for such a plan is strong and growing.

For clean-energy producers and enthusiasts, Alberta remains the province to watch.

NUMBERS AT A GLANCE

18%
of grid is clean and renewable

141
registered electric vehicles in 2013

$1.6 BILLION
renewable energy investment (2009–2013)

83
available public chargers in 2013

1.1 GW + 0.1 GW + 0.8 GW + 0.4 GW = TOTAL CLEAN ENERGY CAPACITY 2.4 GW = 730,000 2013

LARGEST PROJECTS BY POWER SOURCE IN ALBERTA

BRAZEAU
TransAlta, Drayton Valley
355 MW = 36,103

HALKIRK WIND
Capital Power, Halkirk
150 MW = 50,000

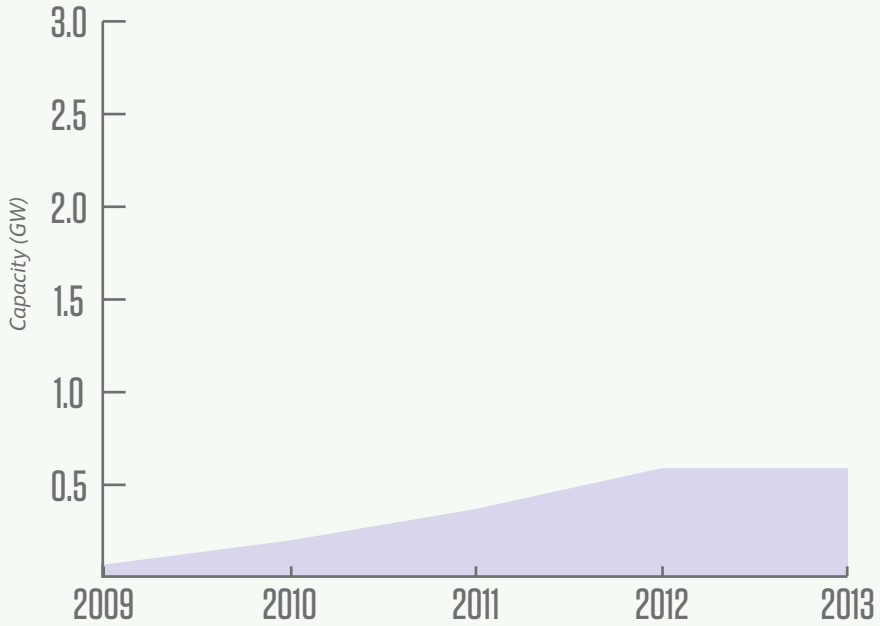
ALBERTA PACIFIC FOREST INDUSTRIES
Alberta Pacific, Boyle
92 MW = 54,235

KANANASKIS PLANT
TransAlta, Seebe
19 MW = 8,500

Sources: CIEEDAC, Clean Energy Canada, The Pembina Institute, The Pembina Foundation, Plug n' Drive, TransAlta, WWF-Canada.

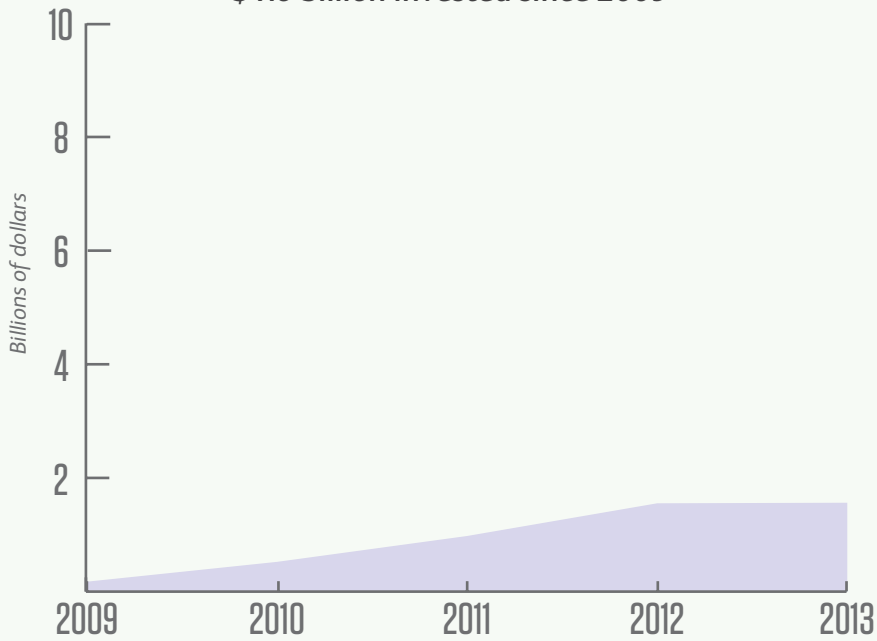
5 YEARS OF CUMULATIVE GROWTH

25% increase in total capacity since 2009



5 YEARS OF CUMULATIVE INVESTMENT

$1.6 billion invested since 2009



WIND

The Eastgate Office Building, a 153 KW project in Edmonton, Alberta developed by Great Canadian Solar.

SASKATCHEWAN

Canada's breadbasket has a terrific renewable resource; all that's missing is leadership

Owing to a deep reliance on coal and natural gas, Saskatchewan's power sector releases more carbon pollution per capita than that of any other province. Fossil fuels supply provincial utility SaskPower with three-quarters of its electricity—some scattered hydro and wind pick up the balance. There is no utility-scale solar, and no provincial clean-energy policy in place. Instead, the province has chosen to focus on carbon capture and storage (CCS) to cut emissions from its coal sector via projects like Boundary Dam, which came online in 2014.

But with a world-class solar and wind resource, Saskatchewan's clean power opportunity remains immense. On the plus side, in 2014 municipal utility Saskatoon Light and Power opened a 1.3 MW landfill-gas recovery plant that averts the release of 40,000 tonnes of greenhouse gas each year.

NUMBERS AT A GLANCE

25.7%
of grid is clean and renewable

20
registered electric vehicles in 2013

$70 MILLION
renewable energy investment (2009–2013)

18
available public chargers in 2013

0.2 GW + 0.9 GW = **TOTAL CLEAN ENERGY CAPACITY** 1.1 GW = 440,000 homes 2013

LARGEST PROJECTS BY POWER SOURCE IN SASKATCHEWAN

E.B. CAMPBELL DAM
SaskPower, Tobin Lake
288 MW = 135,364 homes

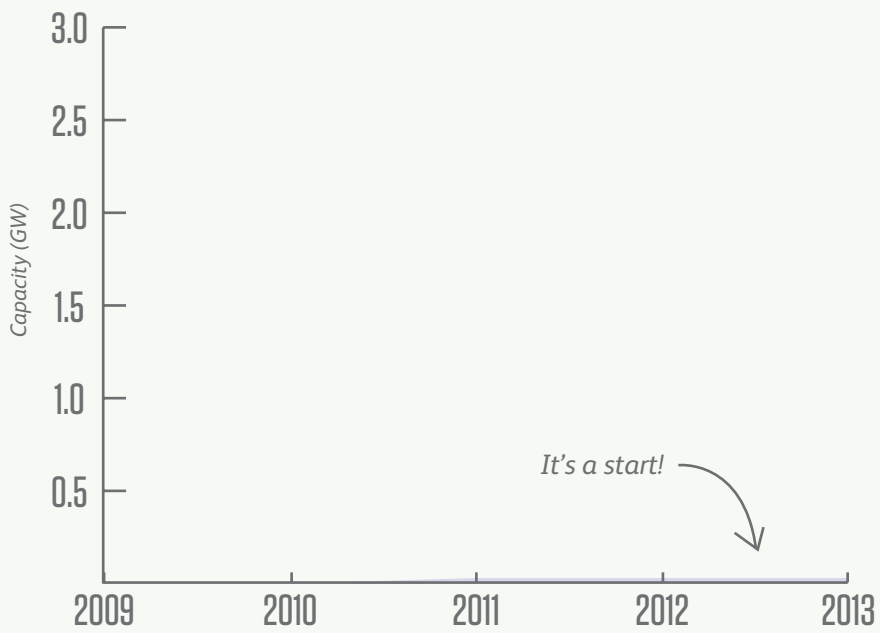
CENTENNIAL WIND POWER FACILITY
SaskPower, Swift Current
150 MW = 69,000 homes

WEYERHAEUSER SK*
Weyerhaeuser, Prince Albert
63 MW = 30,208 homes

**This facility was mothballed in August 2014 due to a lack of economically available feed stock.*
Sources: CIEEDAC, SaskPower, Environment Canada National Inventory Report, Plug n' Drive, Statistics Canada, WWF-Canada.

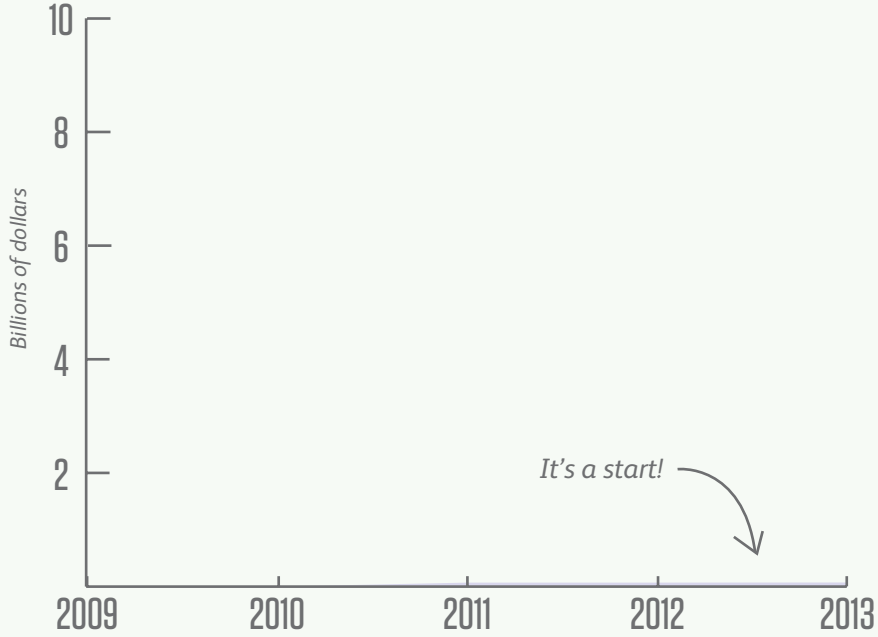
5 YEARS OF CUMULATIVE GROWTH

2% increase in total capacity since 2009



5 YEARS OF CUMULATIVE INVESTMENT

$70 million invested since 2009



WIND

Something is missing from this photograph. Can you identify what it is?

MANITOBA

This great hydroelectric powerhouse is increasingly looking to play the role of battery for its neighbours

Manitoba's grid stands in stark contrast to its western neighbour: it's powered by 99.7 percent renewable energy, a mix of hydro and wind. As it expands its capacity, the provincial crown utility is also exporting surplus power into the midwestern United States, with its vast hydroelectric dams serving as backup batteries for the region's burgeoning wind farms. Meanwhile, the province has set a target to produce a total of 1 GW of wind power by 2016, but without supportive policy, few expect it will attain it.

NUMBERS AT A GLANCE

99.7%
of grid is clean and renewable

41
registered electric vehicles in 2013

$1.8 BILLION
renewable energy investment (2009–2013)

21
available public chargers in 2013

0.3 GW + 5.2 GW = **TOTAL CLEAN ENERGY CAPACITY** 5.5 GW = 3 MILLION 2013

LARGEST PROJECTS BY POWER SOURCE IN MANITOBA

LIMESTONE GENERATING STATION
Manitoba Hydro, Nelson River
1,340 MW = 629,819

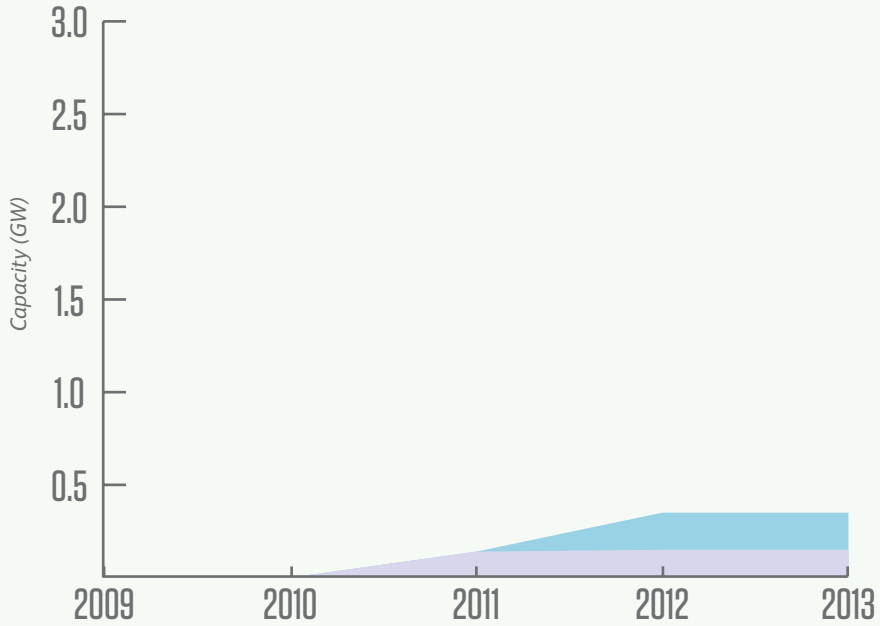
ST. JOSEPH WIND FARM
Pattern Energy, Montcalm
138 MW = 50,000

TOLKO MANITOBA KRAFT PAPERS
Tolko, The Pas
23 MW = 13,560

Sources: CIEEDAC, Centre for Energy, The Climate Group, Government of Manitoba, Manitoba Hydro, Manitoba Clean Energy Plan, Plug n' Drive, Saskatchewan Community Wind, WWF-Canada.

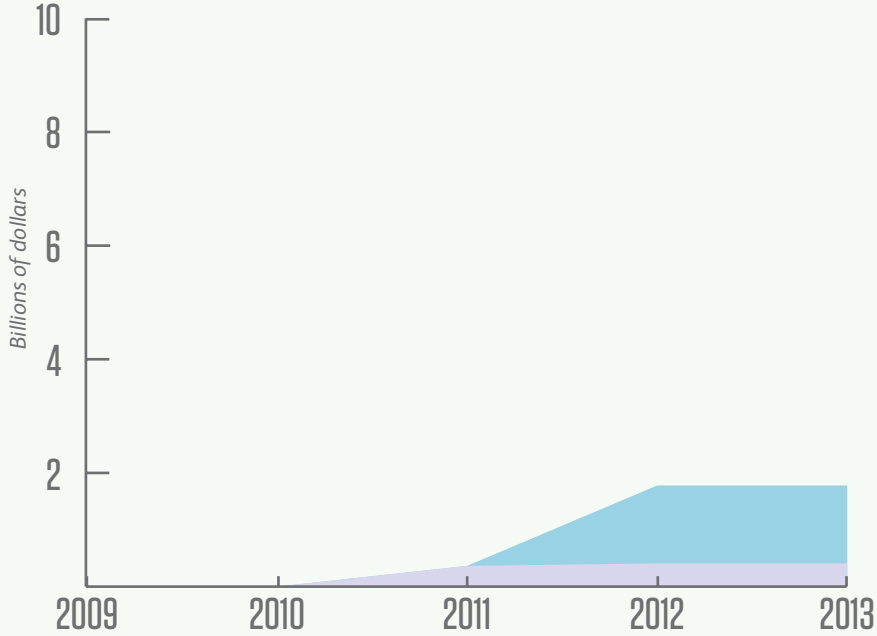
5 YEARS OF CUMULATIVE GROWTH

7% increase in total capacity since 2009

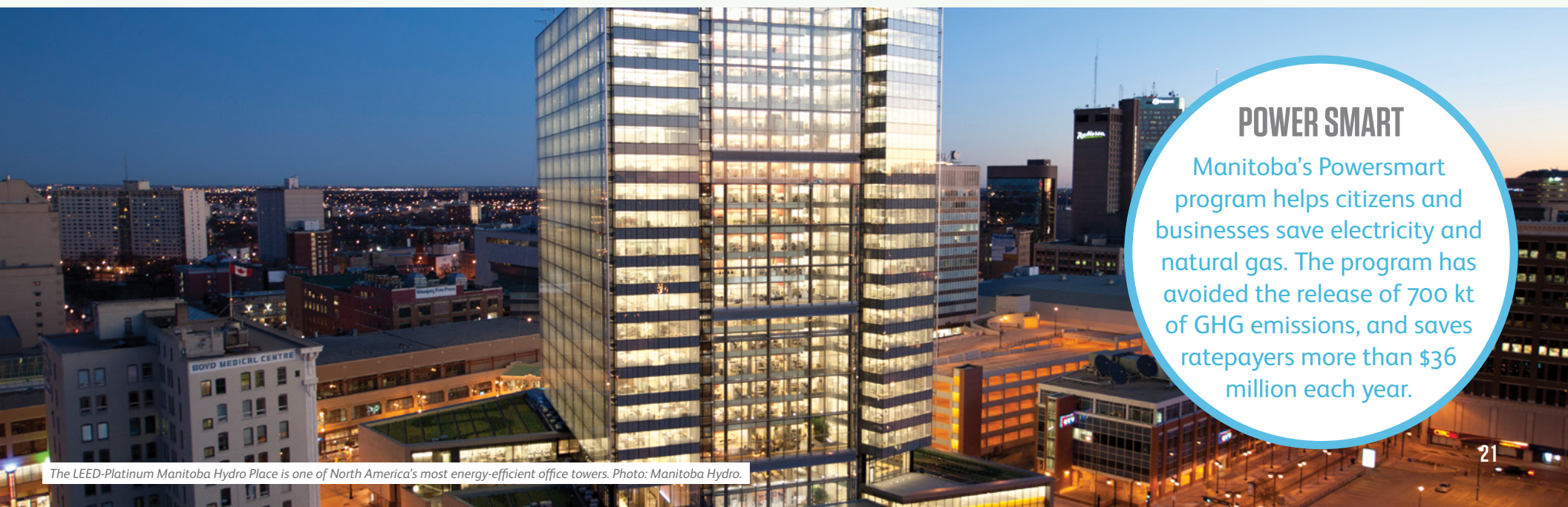


5 YEARS OF CUMULATIVE INVESTMENT

$1.8 billion invested since 2009



WIND | LARGE HYDRO



The LEED-Platinum Manitoba Hydro Place is one of North America's most energy-efficient office towers. Photo: Manitoba Hydro.

POWER SMART

Manitoba's Powersmart program helps citizens and businesses save electricity and natural gas. The program has avoided the release of 700 kt of GHG emissions, and saves ratepayers more than $36 million each year.

FINDING OPPORTUNITY IN CLEAN-ENERGY CHALLENGES

Meet three startups and the innovations they're shopping to the world

ENERGY STORAGE

TEMPORAL POWER

Mississauga, Ontario

Electrical grids are getting smarter and carrying more renewable power. That's a welcome change, obviously, but also one that makes it trickier to balance supply and demand. The sun doesn't always shine, the wind doesn't always blow, and power demand can shift sharply — but fortunately, this variability is largely predictable. Enter Temporal Power, which is creating affordable and reliable energy storage to ensure grids are as responsive as they need to be.

Temporal Power has developed an efficient mechanical battery in the form of a flywheel — a magnetically levitating steel rotor that can store electricity in the form of kinetic motion for short periods. Flywheels don't contain harmful chemicals, they operate for years without maintenance, and can charge and discharge thousands of times without deterioration.

CEO Cam Carver says the worldwide appetite for short-term energy balancing is growing in lockstep with the rise of renewable power. "Temporal Power offers the lowest total cost of ownership solution with the highest energy flywheels in the world," he says.

LIGHTING

LED ROADWAY LIGHTING

Halifax, Nova Scotia

The roughly 35 million streetlights across Canada and the United States collectively consume enough electricity to light up four million homes. For the budget-strapped municipalities that operate them, that's a big invoice.

Cue LED Roadway Lighting. Since 2007, the company has manufactured high-efficiency LED streetlights; they're now illuminating roads in more than 35 countries.

Demand is soaring as more learn about the potential energy savings that come from transitioning to LED systems. The lights consume up to 60 percent less power. They're also designed to last for 20 years, which reduces maintenance costs.

With more than 275 million streetlights globally, the opportunity for this Canadian firm is immense. No surprise the company has enjoyed average annual sales growth of 48 percent for the past three years. As CEO Charles Cartmill says, "Business is taking off."

DISTRICT ENERGY

INTERNATIONAL WASTEWATER SYSTEMS

Port Coquitlam, British Columbia

The common urban sight of steam billowing out of sewer grates is a sure sign of energy just waiting to be harnessed, and International Wastewater Systems has come up with an economical way to do just that.

This is important, explains president Lynn Mueller, because the waste heat in our sewer pipes represents an untapped supply of renewable energy, created when buildings heat water that ends up getting flushed down the drain. Every person yields roughly 380 litres of 21-degree C sewage daily.

The company's sewage heat recovery system takes raw sewage generated from buildings and extracts and recirculates the residual heat. Energy savings and emissions reductions can be as high as 85 percent.

The system has been installed in townhouse developments, condominium buildings and entertainment complexes around Vancouver. "Because we are innovators in the waste heat recovery market we're in a great position," says Mueller. "The market size is incredibly vast."

Photo: Flywheel vessel created by Temporal Power. Source: Bloomberg New Energy Finance.

Photo: Brent Mykytyshyn

THE CALGARY CONNECTION

BluEarth Renewables CEO Kent Brown is our Canadian Innovator of the Year

"We've built a large business in a short period of time in a challenging market," says BluEarth Renewables CEO Kent Brown.

Clearly, he's doing something right.

Last year, under Brown's leadership, the company added nearly $400 million worth of PV and hydro-electric projects to its portfolio — including five plants that together bring 48.5 MW of clean solar power onto Ontario's grid. By the end of 2015, BluEarth expects to have close to $650 million worth of hydro, solar and wind plants online, and it's on track to have $1 billion of operating assets by 2017.

Brown's firm does more than simply consult and accommodate First Nations; it partners with them. This past year BluEarth and the Batchewana First Nation — its 50-50 partner — broke ground on the 60 MW Bow Lake Wind Project northwest of Sault Ste. Marie, Ontario. It will be operational in the coming year, generating not only clean electrons for the province, but revenue for the nation. The company also awards annual $3,000 Aboriginal Clean Energy Scholarships to students pursuing post-secondary education.

As this report went to press, Brown had just closed on $81 million in equity financing from Ontario Teachers' Pension Plan and ARC Financial — the firm's two lead backers.

"We do things differently," says the born-and-raised Calgarian, who began his career as an oil-patch bean counter. "We're in communities for generations." He certainly acts like it.

ONTARIO

Canada's most populous province kicks coal to the curb

As the first jurisdiction in North America to phase out coal power, supported by a robust feed-in-tariff (FIT) policy to spur clean power development, Ontario is a Canadian energy-transition leader. The province's Long Term Energy Plan lays the groundwork for its shift to a renewable energy system, and seeks to balance cost-effectiveness, reliability, clean energy, community engagement, and conservation. The FIT program has been reformed several times over the years in response to changing market conditions, but remains a pillar of Ontario's energy and climate policy.

Having cemented its position as a North American leader in generation, Ontario now has an opportunity to tap into the huge renewable energy opportunities that it has in transportation, heating and cooling of buildings, storage, and smart-grid integration.

NUMBERS AT A GLANCE

30%
of grid is clean and renewable

1,500
registered electric vehicles in 2013

$8.7 BILLION
renewable energy investment (2009–2013)

400
available public chargers in 2013

2.7 GW + 0.3 GW + 7.9 GW + 1.0 GW + 0.2 GW + 0.1 GW = TOTAL CLEAN ENERGY CAPACITY 12.2 GW = 4 MILLION 2013

LARGEST PROJECTS BY POWER SOURCE IN ONTARIO

SIR ADAM BECK GENERATING STATION II
Ontario Power Generation, Niagara River
1,418 MW = 666,480

ATIKOKAN RENEWABLE ENERGY GENERATION
Ontario Power Authority, Atitkokan
205 MW = 120,849

WOLFE ISLAND ECOPOWER CENTRE
TransAlta, Wolfe Island 1
98 MW = 54,018

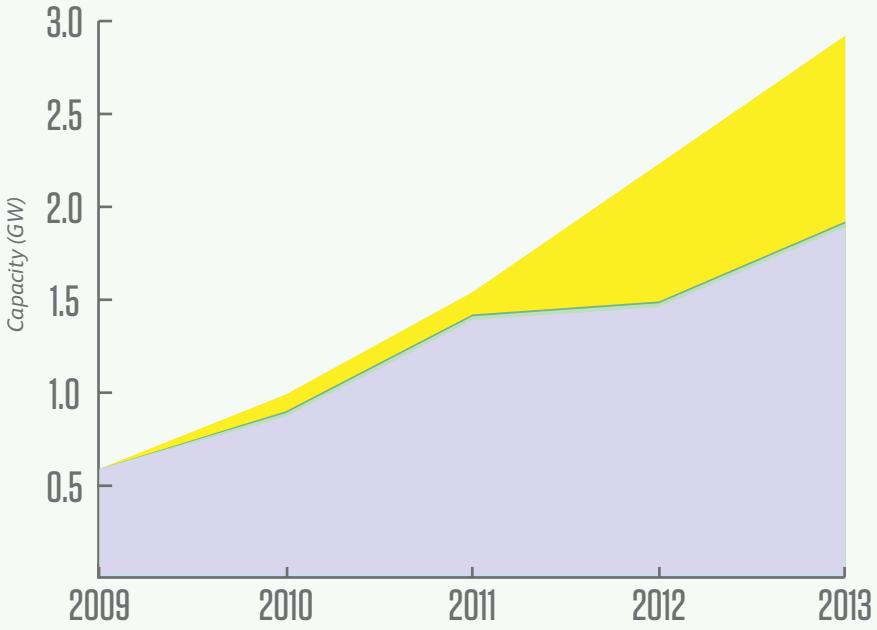
LONG SAULT RAPIDS
Algonquin Power, Cochrane
18 MW = 1,370

SARNIA SOLAR PROJECT
Enbridge, Sarnia
80 MW = 12,800
See back cover photo

Sources: CIEEDAC, Ontario Ministry of Energy, Plug n' Drive, WWF-Canada.

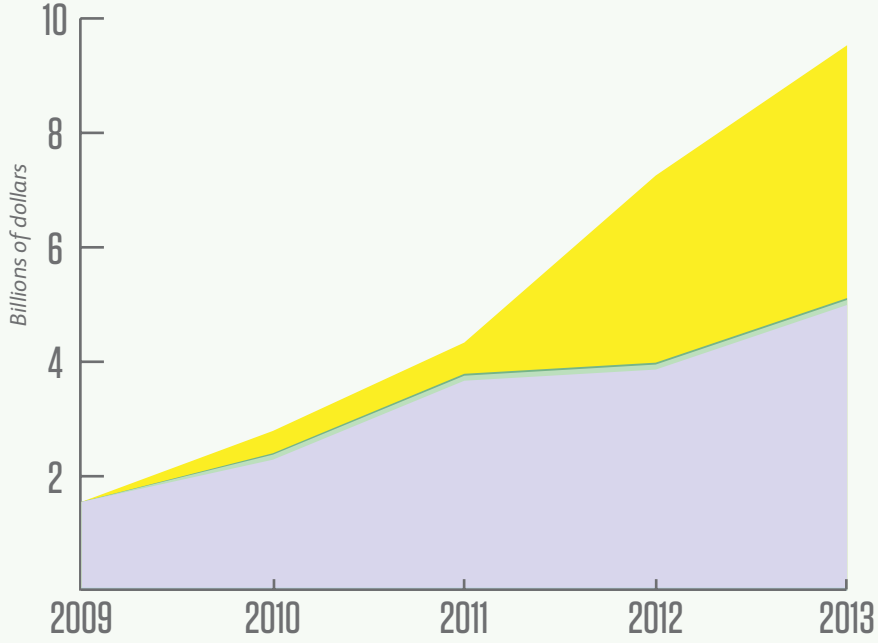
5 YEARS OF CUMULATIVE GROWTH

24% increase in total capacity since 2009

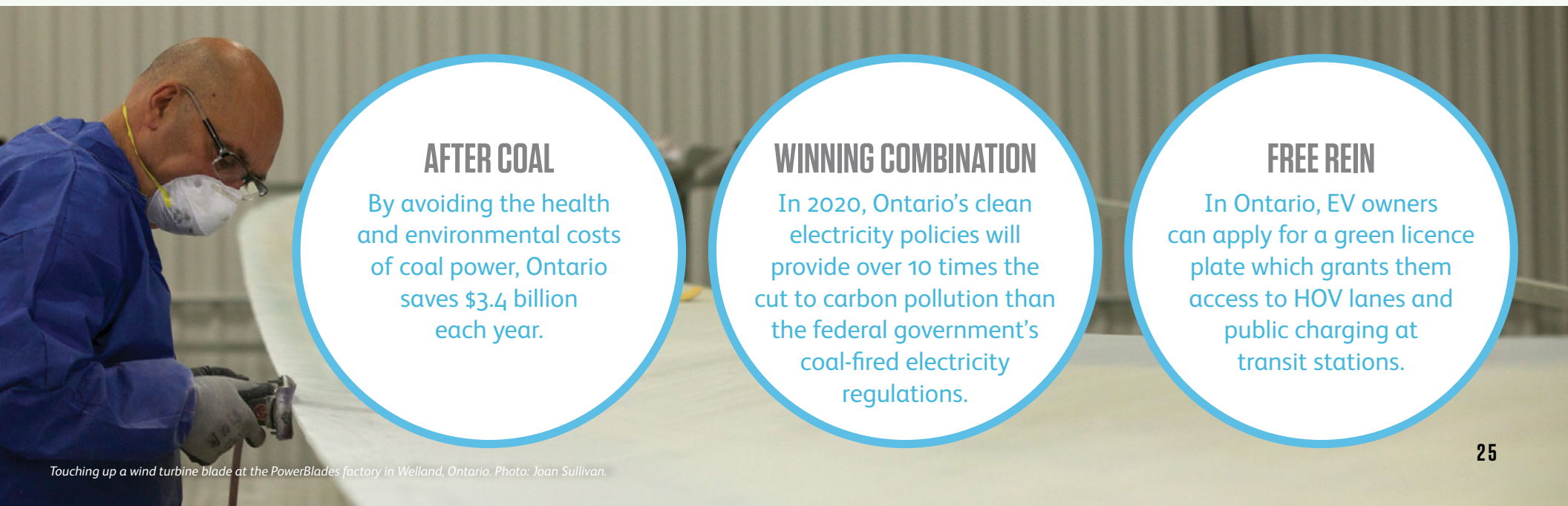


5 YEARS OF CUMULATIVE INVESTMENT

$8.7 billion invested since 2009



BIOMASS | SOLAR | WIND | RUN-OF-RIVER | BIOGAS



AFTER COAL

By avoiding the health and environmental costs of coal power, Ontario saves $3.4 billion each year.

WINNING COMBINATION

In 2020, Ontario's clean electricity policies will provide over 10 times the cut to carbon pollution than the federal government's coal-fired electricity regulations.

FREE REIN

In Ontario, EV owners can apply for a green licence plate which grants them access to HOV lanes and public charging at transit stations.

Touching up a wind turbine blade at the PowerBlades factory in Welland, Ontario. Photo: Joan Sullivan.

QUÉBEC

Canada's clean energy revolution has a decidedly French accent

An economic-revitalization policy here has sprouted a forest of wind turbines on the Gaspé Peninsula. All five of the top new clean energy projects that came online in 2013 are Québec wind farms—the province has brought enough wind onto the grid to light up more than a half-million homes. In 2013, Québec managed to retire its aging nuclear plant. Today, the synergy of wind and hydro power now provide almost every watt of Québec's electricity.

Awash in surplus power, the province is looking to increase its electricity exports to neighbouring provinces and the United States while courting industries and manufacturers seeking steady, low-carbon power. The province is also pursuing electric vehicles, and promoting liveable urban density to lessen the need for driving. It's also encouraging clean-energy space heating in homes, businesses, and factories to reduce natural gas use.

All in all, Québec is demonstrating an impressive commitment to the clean-energy revolution.

NUMBERS AT A GLANCE

99%+
of grid is clean and renewable

2,075
registered electric vehicles in 2013

$6.1 BILLION
renewable energy investment (2009–2013)

530
available public chargers in 2013

2.4 GW + 0.8 GW + 43.3 GW + 0.1 GW = **TOTAL CLEAN ENERGY CAPACITY** 46.7 GW = 21 MILLION 2013

LARGEST PROJECTS BY POWER SOURCE IN QUÉBEC

ROBERT-BOURASSA
Hydro-Québec, James Bay
7,722 MW = 6,134,084

LAC-ALFRED WIND FARM
EDF, Rimouski
300 MW = 238,990

LEBEL-SUR-QUEVILLON
Fortress Global, Thurso
50MW = 29,475

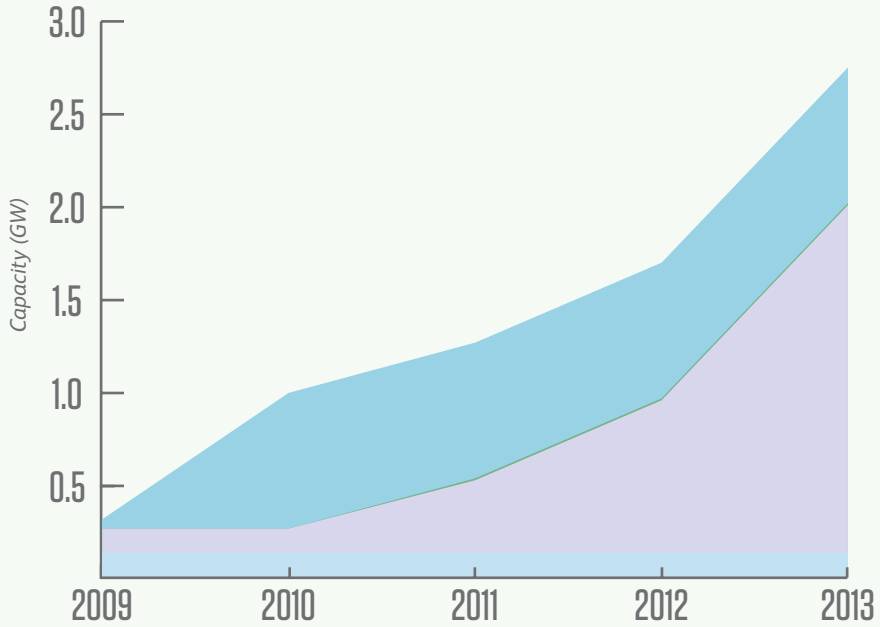
MAGPIE PLANT
Riviere-St-Jean, Québec
40 MW = 31,865

ECO-CENTRE
City of Montreal, Riviere des Prairies
.0015 MW = 2

Note: Québec's renewable energy capacity calculations include the Churchill Falls Dam, located in the Province of Newfoundland and Labrador, as the project is majority-owned by Hydro Québec and the majority of its power flows onto the Québec grid. Sources: Bloomberg New Energy Finance, CIEEDAC, Government of Quebec, Plug n' Drive, WWF-Canada.

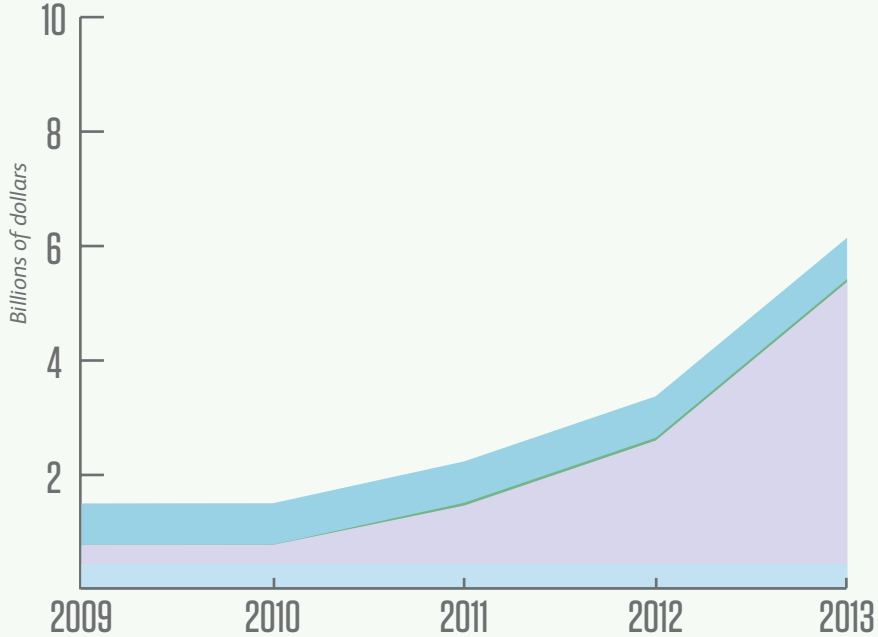
5 YEARS OF CUMULATIVE GROWTH

5% increase in total capacity since 2009



5 YEARS OF CUMULATIVE INVESTMENT

$6.1 billion invested since 2009



WIND | LARGE HYDRO | RUN-OF-RIVER | BIOGAS

UN TRÈS BON PLAN

Québec's *Energy Plan*, supported by requests for clean energy proposals, spurred almost half of all clean energy investment in Canada between 2006 and 2013.

FORESTS OF STEEL

Four of the nation's five largest clean energy projects commissioned in 2013 were wind farms in Québec.

Québec's Electric Circuit is one of Canada's largest public charging station networks for plug-in vehicles. Photo: Hydro Québec.

THE ATLANTIC PROVINCES

Fossil fuels still keep the lights on in several east-coast provinces. But that's about to change.

Here on the edge of the Atlantic, the clean-energy conversation revolves around the Maritime Link — a federally-backed $7.7 billion hydroelectric generation and transmission project that stands to transform the region's electricity system. When complete in 2017, the link will allow participating provinces to more easily share power and develop their own clean energy sources, sharply reducing fossil fuel dependence.

That said, you don't have to be big to make a difference. As one example, tiny Prince Edward Island has made tremendous progress harnessing its wind resource. Publicly-owned wind turbines provide between 18 and 30 percent of the province's power.

Meanwhile New Brunswick has cemented its reputation as a regional leader in smart grid research and development. In 2012, the province announced a partnership with Siemens to develop a Smart Grid Centre of Competence and a comprehensive smart grid program.

In Nova Scotia, community and marine feed-in tariffs hold the promise of spurring new projects. Despite this progress, this year the province slashed funding to Efficiency Nova Scotia, hamstringing the agency.

NUMBERS AT A GLANCE

70%
of grid is clean and renewable

39
registered electric vehicles in 2013

$1.5 BILLION
renewable energy investment (2009–2013)

105
available public chargers in 2013

0.76 GW + 0.06 GW + 2.81 GW + 0.02 GW + 0.13 GW = TOTAL CLEAN ENERGY CAPACITY 3.75 GW = 1.4 MILLION 🏠 2013

LARGEST PROJECTS BY POWER SOURCE IN THE ATLANTIC PROVINCES

CHURCHILL FALLS GENERATING STATION
Nalcor Energy, Churchill Falls
5,428 MW = 3,091,960 🏠

KENT HILLS
TransAlta and Natural Forces Technologies, Kent Hills
150 MW = 39,433 🏠

EDMUNDSTON PULP MILL
Twin Rivers Paper Company, Edmundston
38 MW = 23,644 🏠

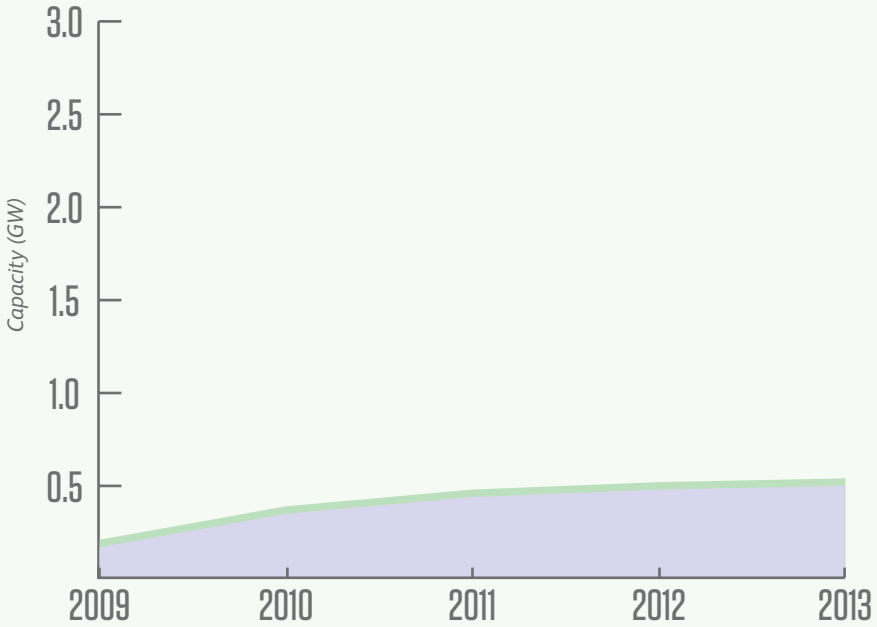
TINKER HYDRO STATION
Aristook, New Brunswick
35 MW = 16,730 🏠

ANNAPOLIS TIDAL STATION
Nova Scotia Power, Annapolis Royal
20MW = 2,728 🏠

Note: The Churchill Falls Generating Station, located in the Province of Newfoundland and Labrador, has been in Québec's renewable energy capacity calculations as the dam is majority owned by Hydro Québec, and the majority of the power it generates flows onto Québec's grid. Sources: CIEEDAC, Centre for Energy, NB Power, Nalcor Energy, Plug n' Drive, WWF-Canada.

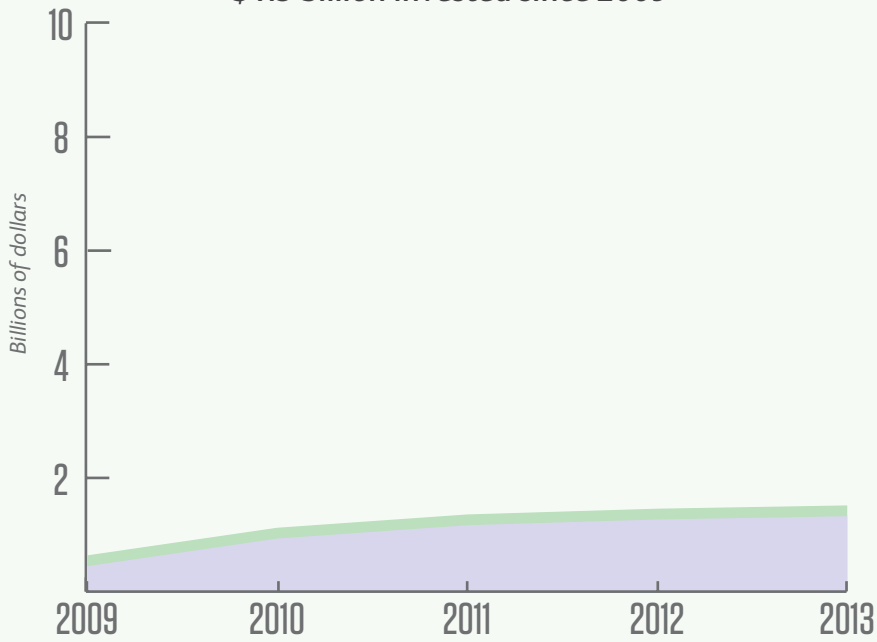
5 YEARS OF CUMULATIVE GROWTH

10% increase in total capacity since 2009



5 YEARS OF CUMULATIVE INVESTMENT

$1.5 billion invested since 2009



BIOMASS WIND

A REAL TURN-OFF

Efficiency Nova Scotia, the nation's first "efficiency utility," has reduced demand by 5.5 percent in four years. It's on target to cut carbon pollution by over a million tonnes a year by 2020.

ON THE RIGHT TRACK

Nova Scotia is on track to source 40 percent of its electricity from renewable sources by 2020.

MOON POWER

The Fundy Ocean Research Center for Energy, an hour south of Amherst, Nova Scotia, is a world-leading tidal turbine testing facility.

CITIES LEADING THE WAY

Three municipalities slashing emissions, cutting waste, and boosting quality of life for their residents

GUELPH, ON

By the year 2013, renewable energy sources will help Guelph reduce energy use in buildings, industry and transportation by 50 percent per capita, and carbon emissions by 60 percent per capita, below 2006 levels by the year 2031. The city also plans to use combined heat and power and waste heat recovery. This past winter, the city brought online the first of two district energy systems — a second is planned for the coming year. It's the first community in North America to establish and announce a plan for an interconnected thermal grid to serve industrial, commercial and residential buildings across an entire city.

YELLOWKNIFE, NWT

When launched back in 2006, Yellowknife's Community Energy Plan set in motion a number of municipal clean-energy initiatives — from biomass, to waste heat capture, to building retrofits — that are still making an impact today. This year the city met its target to reduce corporate carbon emissions 20 percent below 2004 levels. It also reduced community-wide carbon emissions six percent. Within three years, Yellowknife cut its corporate emissions 38 percent, exceeding its target by 18 percent. The city oversees a biomass district energy system that reduces carbon emissions 800 tonnes per year.

VANCOUVER, BC

The Greenest City Action Plan, launched in 2012, seeks to reduce greenhouse gas emissions 33 percent below 2007 levels, and reduce energy use and carbon emissions in existing buildings by 20 percent below the same benchmark. Further, the plan sets a goal that residents will eventually make the majority of trips by foot, bicycle, and public transit. The fingerprints of the plan can be seen all over town, including a well-used and growing network of separated bike lanes. A city-owned neighbourhood energy utility harvests heat from sewage to help warm homes in a nearby residential district — reducing carbon pollution from heating in the area by 60 percent.

Photo: Paul Krueger via Flickr

THE NORTH

Nothing comes easy north of 60, but if there's one thing northerners know how to do, it's improvise

With vast distances, frigid temperatures, and thin populations, Canada's northern territories face profound energy challenges—and innovative solutions.

Sky-high fuel prices are prompting many communities to explore alternative heating sources. Yellowknife's Dene First Nation leaders in the village of N'dilo, in the Northwest Territories, have installed a wood-pellet boiler at a seniors' home, and plan to connect the system into the nearby gym and community services building.

Industry is similarly rising to the challenge. In 2012, the Diavik Diamond Mine began powering its operation with the world's most northern large-scale wind-diesel hybrid power facility. This $31 million project is the first large-scale wind farm in the Northwest Territories. With 17 GwH in annual production, this project has reduced the mine's yearly diesel fuel consumption by 3.8 million litres, and has proven that wind energy is possible in the Arctic.

This year, the Québec provincial government granted $3 million to develop a cutting-edge energy-storage system at Glencore's Raglan Mine site, in Nunavik—Québec's far-north region. The off-grid system will combine wind turbines with batteries, flywheel, and hydrogen storage. The company expects to reduce annual diesel consumption by 2.5 million litres.

NUMBERS AT A GLANCE

65.9%
of grid is clean and renewable

$32 MILLION
renewable energy investment (2009–2013)

0.01 GW + 0.02 GW + 0.12 GW = TOTAL CLEAN ENERGY CAPACITY 0.15 GW = 62,000 2013

LARGEST PROJECTS BY POWER SOURCE IN THE NORTH

WHITEHORSE
Yukon Energy
40 MW = 18,916

SNARE FORKS
Northwest Territories Power Corporation, Snare River
11 MW = 5,258

DIAVIK MINE WIND FARM
Rio Tinto, Lac de Gras
9.2 MW = 1,546

Note: Québec's renewable energy capacity calculations include the Churchill Falls Dam, located in the Province of Newfoundland and Labrador, as the project is majority-owned by Hydro Québec and the majority of its power flows onto the Québec grid. Sources: CIEEDAC, Federation of Canadian Municipalities.

Bombardier's light-rail manufacturing plant in Derby, U.K. Photo: Getty Images.

WHERE WE CAN GO NEXT

Our long-term success here at home depends to a large extent on our success abroad

Canada has more than enough renewable energy to provide all the energy needs of its citizens and industry today and in 2050, according to the Trottier Energy Futures Project, which in 2013 completed an inventory of Canada's renewable energy potential.

Should we choose to revolutionize our energy systems, Trottier estimates that wind and solar could affordably and reliably provide half of Canada's electricity needs by 2050 — more than 10 times the amount generated today. This would involve an investment of around $400 billion over the next 40 years.

But pursuing renewable energy here in Canada is not just about cleaning up our own power grids, but also about developing technologies and services and marketing them around the world.

A 2012 Natural Resources Canada analysis from global consultants McKinsey offered an upbeat assessment of our nation's clean-energy competitiveness. In addition to our clear advantage in conventional hydropower, the report flagged Canada's potential to take the lead in a number of emerging clean energy markets — think solar photovoltaics, marine energy, efficient buildings and industrial processes, and bioenergy.

That lines up with the findings of the National Round Table on the Environment and the Economy. In 2012, the think tank surveyed experts across Canada to get a handle on our low-carbon strengths, and flagged a laundry list of core competences including:

- British Columbia's smart meter expertise, emerging cleantech cluster, and carbon pricing policy.
- Ontario's vehicle manufacturing and cleantech capacity, and financial expertise
- Québec's transportation equipment manufacturing capacity, cleantech sector, and near zero-carbon electricity
- Atlantic Canada's marine renewables expertise and research capacity

Conclusion? Canada's clean energy opportunity spans the nation. It's time we unlocked that potential.

Sources: Analytica Advisors, Foreign Affairs, Trade and Development Canada, Natural Resources Canada, National Round Table on the Environment and Economy, Trottier Energy Futures Project.

FEDERAL POLICY RECOMMENDATIONS

We kicked off this report by characterizing Ottawa's current approach to clean energy as indifferent. But change is in the air both at home and abroad, and the opportunity looms larger than ever. Here's how we can capture a bigger slice of it.

Like virtually every national government around the world, Ottawa could be doing more to support clean energy and cut carbon pollution.

But unlike some of our peers, the evidence shows that Ottawa needs to be doing a *great deal* more. So far, federal efforts on climate and clean energy simply aren't getting us where the government said we would go.

According to the federal government's own public forecasts, all climate and clean energy policies adopted in Canada to date will still leave this country well short of its 2020 climate target. In October 2014, Canada's environment watchdog concluded that although the government is considering further measures, they will not be enough "to reverse the increasing trend in Canada's total emissions."

As Ottawa seeks out new markets and trade agreements, it needs to pay close attention to the immense opportunities in the global clean energy marketplace. With $44 trillion of investment in clean energy needed between now and 2050 to to avoid the worst impacts of climate change, Canadian businesses can contribute environmentally, and benefit economically.

At right, we propose three steps the federal government could take to help accelerate Canada's clean energy transition.

START TO LEVEL THE PLAYING FIELD FOR CLEAN ENERGY.

When Ottawa wanted to boost the oil sands sector in the early 1990s, the federal government provided the industry tax incentives and research support. It's time to give a similar level of support to clean energy, starting with favourable tax treatment for power storage and solar technologies in Budget 2015. Currently, Canada accounts for 2.5 percent of global trade, but only 0.4 percent of the global clean energy market.

HELP BUILD CLEAN ENERGY INFRASTRUCTURE.

The federal government has a long tradition of supporting nation-building infrastructure in partnership with Canada's provinces and municipalities. A new Building Clean Energy Fund would speed up Canada's clean energy transition by supporting transmission lines, smart grids, infrastructure for electric vehicles, and cutting-edge clean energy projects across Canada.

PUT A PRICE ON CARBON POLLUTION.

Carbon pricing may have become the policy that dares not speak its name in Ottawa, but the rest of the world is moving to internalise the costs that carbon pollution imposes on all of us. **Jurisdictions that account for more than 42 percent of global GDP have already adopted some form of carbon pricing.** In September 2014, the World Bank announced a massive show of support for carbon pricing that included 73 countries, 22 subnational jurisdictions, covering over USD $33 trillion worth of global GDP—with Alberta, Québec, British Columbia, and Vancouver among them—and more than 1,000 companies and investors. Carbon pricing will make clean energy choices more competitive and give fossil fuel users an incentive to be more efficient.

With 1.3 million thin film panels, Enbridge's Sarnia Solar facility produces enough renewable energy to power more than 12,000 Ontario homes. Photo courtesy Enbridge.