Toward a Low-Carbon Future

If you were asked to name a Canadian company with more than $5 billion in renewable energy assets that will soon generate enough power to meet the needs of more than one million homes, which company would first come to mind?

What if you were told this company has been in the renewable energy business for almost 15 years, is Canada's largest distributor of low-carbon natural gas, and plans to double its renewable generation capacity in the next five years?

The company we're talking about: Enbridge.

Surprised? You're probably not alone—the Enbridge most people know operates the world's longest oil and liquids pipeline network.

But the Enbridge people are getting to know is a diverse, integrated energy company that is also fast-emerging as a low-carbon and green energy leader. For Enbridge President and CEO Al Monaco, it all comes down to fulfilling the company's purpose.

"Governments, industry, environmental organizations—all citizens—share a common future. That means we also share in the responsibility to shape that future."

Al Monaco
PRESIDENT & CEO

Enbridge President and CEO Al Monaco points to five specific areas where action and collaboration can lower carbon emissions.

"Enbridge helps fuel people's quality of life. It's why we exist," says Monaco. "And as the energy needs of our customers change, we change too, investing in the technologies and services that can meet this demand."

Monaco says success in the new energy landscape means working collaboratively with everyone involved in the energy business, from producer to customer.

"Governments, industry, environmental organizations—all citizens—share a common future. That means we also share in the responsibility to shape that future."

Monaco points to five specific areas where action and collaboration can lower carbon emissions. "First, we need to implement carbon pricing strategies aimed at both supply and consumption. Second, we need to invest and incent the development of more renewable energy. Enbridge's renewable portfolio has grown to $5 billion in only 10 years. We want to double our renewable generating capacity in the next five years.

"Third, we can reduce emissions by generating electricity and fueling heavy-duty transportation with natural gas. As a major natural gas distributor, Enbridge is well-positioned to lead in that effort.

"Fourth, we should encourage policies that incent investment in innovation and new technologies that improve the environmental performance of all forms of energy.

"And finally, we need to take further steps to encourage conservation through new approaches to energy efficiency and conservation." Taken together, Monaco believes these actions underpin a strong emissions strategy—a practical plan that can achieve meaningful results. He also credits leadership at the federal and provincial level—including the Alberta Government's

TIMELINE

Path to a sustainable future.

1987

The **UN Brundtland Commission** introduces the concept of **"sustainable development"**, defining it as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

1992

The first **UN Conference on Environment and Development** in Rio de Janeiro **(the "Earth Summit")** develops a framework for multilateral agreements on global goals related to sustainable development and climate change, establishing the foundation for the:

- **UN Framework Convention on Climate Change,**
- **1997 Kyoto Protocol, and**
- **2015 Paris Agreement.**

GLOBAL ACTIONS / MILESTONES

ENBRIDGE ACTIONS / MILESTONES

On the cover: Enbridge's 300 MW Blackspring Ridge Wind Project in southern Alberta is one of the largest in western Canada.

recently announced Climate Leadership Plan—for taking action on each of these fronts."

"To fulfill our purpose, grow our business and secure our future, we can show that economic prosperity and a lower-carbon future is possible and achievable if we work together," Monaco adds.

Collaborating with diverse interests to achieve lasting change has long been at the forefront of Linda Coady's work.

Linda Coady
CHIEF SUSTAINABILITY OFFICER

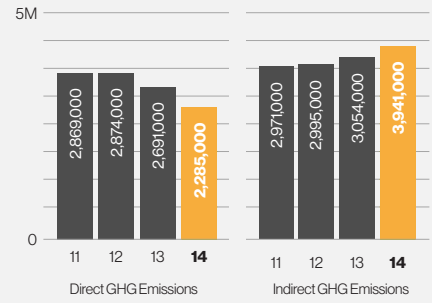
A former vice president for Weyerhaeuser, World Wildlife Fund and the Vancouver 2010 Winter Olympics, Coady has been recognized as an innovator in corporate sustainability in Canada.

She has worked with industry, government and environmental organizations to achieve sustainability solutions. Coady joined Enbridge in 2013 to take on the newly-created position of Chief Sustainability Officer.

"Everyone agrees on the need for energy sustainability," Coady says. The key is to bring people together to find common ground on new solutions.

Enbridge GHG Emissions*
Tonnes of carbon dioxide equivalent (t CO_2e)

"It's critical that Enbridge is transparent and accountable for the actions it is taking to reduce its own emissions."



*2015 GHG emissions data will be available in mid-2016.

"It's critical that Enbridge is transparent and accountable for the actions it is taking to reduce its own emissions."

In 2011, Enbridge reduced GHG emissions for its Canadian operations by 21 per cent below 1990 levels. In 2014, the company's Gas Distribution business cut its emissions by five per cent below 2011 levels.

Good progress, says Coady, but more work needs to be done. From eliminating fugitive emissions to finding opportunities to power pipelines with renewable energy, Coady's team is working with all of Enbridge's business units to develop multi-year plans for emissions reduction and energy efficiency.

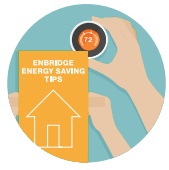
"The point to understand is this: in today's world, strong sustainability measures and goals make good business sense," Coady says. "It translates into access to capital, people and markets."

Few understand that connection between business and the environment better than Lino Luison. CONTINUED >

Variable speed drive electric motors at pump stations help to reduce the emissions profile of Enbridge's liquids pipelines business.

1995

Enbridge Gas Distribution establishes its first energy conservation and efficiency program providing education, incentives and other resources that help consumers reduce their energy consumption and save money over time.



1999

Enbridge forms its **"Pathfinders Group"** charged with finding new energy-related technologies that make strategic, long-term sense for investment. Enbridge's current investments in renewable energy—as well as the company's investments in emerging technologies—were all incubated within the Pathfinders Group.

2000

The UN launches three new initiatives that help frame a new global agenda for sustainability: **the UN Global Compact (UNGC),** the **Millennium Development Goals (MDGs)** and the **UN Millennium Ecosystem Assessment**. The UNGC is the world's largest corporate citizenship initiative.

2002

Enbridge invests in the **SunBridge Windfarm** in Saskatchewan, launching the company's renewable energy investment portfolio.

Enbridge is included for the first time in the **Dow Jones Sustainability Index (DJSI)**. The DJSI is a family of indices that evaluate the systems companies have in place to manage sustainable development issues.

Dow Jones Sustainability Indexes

Partners in Innovation

Morgan Solar

What's the future of solar-generated electricity? More energy at a reasonable cost.

Morgan Solar has developed solar technology—called Sun Simba™—that captures and concentrates sunlight in a process that is 100 per cent more efficient than conventional solar panels. It's also 50 per cent smaller for a given power rating, and a fraction of the cost. When the panels are paired with Morgan Solar's revolutionary dual-axis sun tracking system—the Savanna Tracker—they are able to track both the east-west path of the sun and the seasonal changes in the sun's elevation. Together, the two technologies increase energy yields per acre by 25–50 per cent. Enbridge is a partner in commercializing this new technology, helping to bring more cost-effective renewable electricity to the grids that power homes.

Temporal Power

The intermittent nature of wind and solar energy is a challenge for power grids, since an unstable grid is an unreliable grid.

With an investment from Enbridge, Temporal Power's energy storage technology can help put more renewable energy into the homes and businesses of consumers. The intermittency of renewable energy increases the challenges of operating a reliable grid network because grids require perfect balance of supply and demand at all times. Temporal's flywheels use a motor to draw excess electricity from the grid, store it as kinetic energy, and then inject it back onto the grid when required. This technology can respond within milliseconds and output steady power for minutes at a time—ensuring fluctuations in the grid can be managed effectively as renewable generation capacity increases.

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Lino Luison
VP, GREEN POWER, TRANSMISSION AND EMERGING TECHNOLOGY

A 33-year Enbridge veteran, Luison says it's not just about good intentions. It's about the business case for renewable power.

As Vice President for Green Power, Transmission and Emerging Technology, Luison and his team spend a great deal of time on the road, travelling the world in search of leading-edge green companies, solutions and opportunities that deliver strong financial returns.

"Ten years ago, it was tough to make a business case for renewables," says Luison. "They were expensive, heavily subsidized and often unreliable. Renewable opportunities that delivered good returns to shareholders were few and far between."

Today, that's all changed, says Luison. Growing market demand has triggered a technological revolution in renewables that has brought down costs to the point where they are competitive with the company's traditional business.

TIMELINE

2003

Enbridge begins publicly disclosing its own greenhouse gas emissions through the **Canadian Standards Association GHG Voluntary Challenge and Registry.**

Enbridge becomes a signatory of the UN Global Compact.

2005

Enbridge is included for the first time on the **Global 100 listing of the 100 Most Sustainable Corporations in the World**, which ranks corporations based on their performance on sustainable development indicators.

GLOBAL100

2006

Enbridge adopts the **Global Reporting Initiative (GRI) Guidelines for Sustainability Reporting** in its Corporate Social Responsibility Report. The GRI is an international not-for-profit organization that developed the world's most widely used framework for sustainability reporting.

Enbridge submits its first response to the **Climate Change Questionnaire of the CDP** (formerly Carbon Disclosure Project). In 2014 Enbridge also began filing an annual submission to **CDP Water** that outlines actions being taken by the company to safeguard water resources.

2007

Enbridge establishes its first **Climate Change Policy,** under which the company commits to reducing its own greenhouse gas (GHG) emissions and energy use, and to working with external stakeholders and decision makers to advance new climate solutions.

"We look at renewable opportunities in exactly the same way we look at pipelines—as low-risk, long-term investments."

Luison is also responsible for looking at new and innovative technologies that will help the energy transition, with investments in companies like Temporal Power. The Mississauga-based company has developed a flywheel storage technology that will help with the reliability of renewable power.

"The sun isn't always shining, the wind isn't always blowing, but Temporal's flywheels are always working. There are real challenges with renewable energy supply and storage that Canadian companies like Temporal are working to solve on an international scale," says Luison.

While investing in turbines and technology is an important way the company is helping make a difference, consumers of energy are increasingly looking for ways to reduce their own energy use and costs—something

In November 2015, Enbridge announced its $750-million investment in the UK Rampion Offshore Wind Project.

This **24.9% stake** in the project marks a strategic entry point into the European offshore wind sector for Enbridge.

Enbridge Gas Distribution has been championing since 1995.

With more than two million customers, Canada's largest natural gas utility is already contributing to emissions reductions by delivering a lower-carbon fuel to homes and businesses. It is also using its reach to make inroads into conservation, enabling its customers to play a more active role in a sustainable energy future.

"Back in the 1990s, Enbridge Gas was one of the first companies to invest in conservation programs in Canada," says Enbridge Gas Distribution Vice President of Market Development and Customer Care, Jamie Milner. CONTINUED >

Enbridge's renewable investments since 2002

Enbridge has invested nearly $5 billion in renewable and alternative energy generation projects that are either in operation, planned or under construction. Together, they have the capacity to generate more than 2,700 MW (gross) of zero-emission energy—enough to power more than one million homes.

16 Wind Farms
2,568 MW

4 Solar Energy Operations
150 MW

1 Geothermal Project
23 MW

5 Waste Heat Recovery Facilities
34 MW

1 Hydroelectric Facility
2 MW

All megawatt figures are gross capacity

2008

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The UN launches the **Principles for Responsible Investing (PRI)** to provide a set of guidelines for investors wishing to use environmental, social and governance (ESG) criteria in their investment decision making. By 2015, PRI signatories represented $59 trillion USD in investments.

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Enbridge sets its first **GHG reduction target** aimed at reducing direct emissions in its Canadian operations by 20 per cent below 1990 levels by 2010. In 2011, Enbridge reported it had achieved a 21 per cent reduction below 1990 levels, primarily through upgrading facilities and equipment.

2009

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Enbridge accelerates the **expansion of its renewable energy portfolio** in North America with acquisitions in wind, solar and geothermal projects and facilities in the Canadian provinces of Ontario and Alberta, and the U.S. states of Colorado, Oregon, Texas and West Virginia.

2013

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Enbridge Gas Distribution (EGD) reaches two million Ontario residents and businesses, serving customers in more than 100 Ontario communities. EGD is now the largest natural gas distribution utility in Canada, and one of the fastest growing in North America, **providing a low carbon source of energy** that can help replace coal-fired electricity and support improved energy sustainability at the community level.

Renewable Natural Gas

Canada has the potential to green our natural gas grids by supplying communities with renewable natural gas via our existing pipeline networks.

Hydrogenics is working with Enbridge Gas Distribution to develop new Power-to-Gas technology as an innovative renewable energy conservation and storage solution. Power-to-Gas technology uses electrolysis to convert surplus renewable electricity into green hydrogen—or renewable natural gas. This gas can then be compressed and stored in existing natural gas pipelines. Once stored in Enbridge's existing pipeline network, this renewable natural gas can be delivered to consumers as heating fuel, transportation fuel or electricity. Together, Enbridge and Hydrogenics are opening new pathways for the use of renewable energy for consumers.

CONTINUED ∨

Jamie Milner
VP, MARKET DEVELOPMENT AND CUSTOMER CARE

"We showed our customers that there were real savings to be made in reducing both their energy consumption and their carbon footprint."

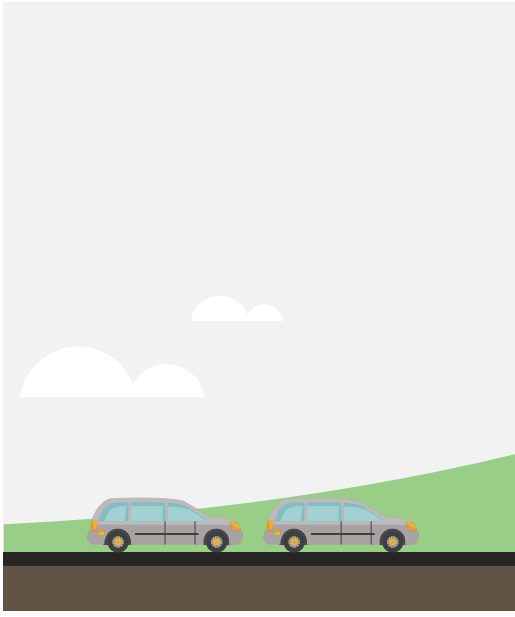
The result: 9.6 billion cubic meters of natural gas has been saved through the programs delivered to customers, reducing emissions by 18 million tonnes.

"That's the equivalent of taking 3.5 million cars off the road for a year, or enough energy to heat 4 million homes for an entire year," says Milner.

Enbridge Gas Distribution provides conservation programs to residential, commercial and industrial customers.

Commercial customers like KI—a global manufacturer of metal office furniture headquartered in Pembroke, Ontario—partner with Enbridge Gas Distribution on projects to improve their energy efficiency.

In conjunction with one of Enbridge's Energy Solutions Consultants, KI was able to identify improvements that resulted in a 60 per cent reduction of their natural gas consumption. This included undertaking projects that help adjust exhaust flow in their drying ovens, and implementing a new cleaning stage that enables them to eliminate previously required heating energy.



"Significant reductions in process heating requirements made positive contributions to KI's bottom line and reduced energy consumption. It's an example of how both business and the environment can be equally successful," says Milner.

Enbridge's Executive Vice President of People, Planet and Partners, Karen Radford takes pride in those results.

TIMELINE

2014

Between 1995 and 2014, **energy efficiency programs at Enbridge Gas Distribution** save about 9.6 billion cubic metres of natural gas and 18 million tonnes of carbon dioxide emissions. These reductions would be similar to taking about 3.5 million cars off the road for a year or serving approximately 4 million homes for a year. They result in net energy savings to homeowners and small businesses of nearly $2.5 billion over time.

2015

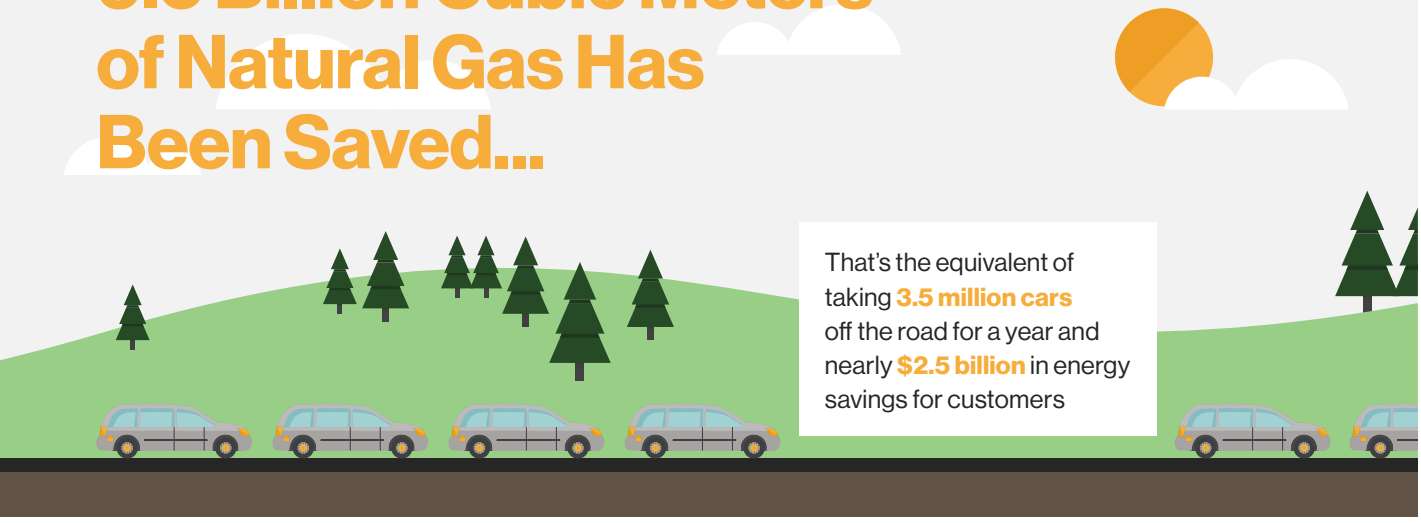
Enbridge enters the European wind market with the **Rampion Offshore Wind Project** in the UK, bringing total investments in renewable energy to nearly $5 billion.

The government of Alberta announces a new **Alberta Climate Leadership Plan.** The plan commits to phasing out coal-fired electricity, expanding renewable electricity, improving energy efficiency, reducing methane emissions and putting a price on carbon production and consumption. It also introduces a cap on emissions from Alberta's oil sands; Enbridge is one of several major Alberta-based energy companies that publicly supports the new plan.

2016

The Government of Ontario invests $100 million in an **Ontario Energy Retrofit Program** partnership with Enbridge Gas Distribution and Union Gas that will help homeowners conduct audits and undertake retrofits that improve energy efficiency. Funding for the program comes from Ontario's new Green Investment Fund, which is recycling revenue from the province's new carbon pricing system back into initiatives that further reduce emissions.

9.6 Billion Cubic Meters of Natural Gas Has Been Saved...



That's the equivalent of taking **3.5 million cars** off the road for a year and nearly **$2.5 billion** in energy savings for customers

Karen Radford
EVP, PEOPLE, PLANET & PARTNERS

"Our goal is a win-win-win for customers, for our company and for our environment," says Radford. "It's one more piece in the larger effort to tackle climate change."

A biologist by training, Radford joined Enbridge after holding roles in the telecommunications sector. She is responsible for human resources and corporate social responsibility. Radford believes that the skills and talents of Enbridge's people are the company's most important assets.

"People are the bedrock of our business," says Radford. "To become a sustainable energy leader, we need to invest in them and their capacity to innovate and create."

Enbridge needs to deepen its relationship with customers, Indigenous people, landowners and regulators, she says.

"And we need to stay focused on our shared ambition for a more prosperous, secure and sustainable future."

"We are rising to the challenge of this generation, building the energy systems of tomorrow."

But adapting to that future doesn't mean abandoning the past, says Radford. The success of Enbridge's traditional business provides the financial and operational foundation to advance new technologies and systems.

Radford's optimism and passion for the work ahead is palpable. Like CEO Al Monaco, there is purpose in her words.

For more than 65 years, Enbridge has built its business on one simple premise: that the energy it delivers allows people to live their lives to the fullest. Today, as our world confronts the challenge of climate change, those energy needs are changing. But Enbridge's purpose endures.

"Guided by the principles and values that have always driven us to succeed and grow," says Monaco "we are rising to the challenge of this generation, building the energy systems of tomorrow."

"If we stay focused on our business fundamentals, if we invest in new technologies and long-term solutions, and if we rise above polarization and seek common ground, I believe the sustainable energy future we all seek is within our reach."

ENBRIDGE
Life Takes Energy™

Soaring to new heights. We didn't use it to fly a kite. Or spend an afternoon at the beach with the family. But we did recognize the potential of wind as a source of renewable energy. That's why we invest in renewable energy that helps generate enough electricity to power more than 750,000 homes. When our energy meets the energy from the wind, harnessing the future happens.

ENBRIDGE®

Life Takes Energy™