

Special

Canada’s Clean50

They are champions – the 50 award winners whose efforts had the largest impact in advancing sustainability and clean capitalism over the previous two years.

Celebrating our sustainability leaders

What began as an idea scribbled on the back of a restaurant napkin in 2011 has developed into a sought-after award for sustainable development in Canada that is changing and inspiring leadership across the sector.

Canada’s Clean50 celebrates outstanding sustainability achievements across 16 categories, selecting 50 individuals or small teams from well over 500 nominations. The work of these sustainable development and clean tech leaders is making a difference and driving others to make big and small changes to benefit the environment.

The impact of the 2015 Clean50 announced in September is impressive: Collectively over the past two years, honourees who actually measured their impact contributed to their employers’ efforts across North America to cut 1.3 million tonnes of carbon dioxide equivalent, saved or produced 2.9 billion kWh green electricity, reduced 1.6 billion litres of water use, conserved 126,100 hectares of land in perpetuity and diverted 2 million tonnes of waste.

lion kWh (roughly equivalent to turning Toronto “off” for 39 days) and reduced water use by 1.6 billion litres (turning off Niagara Falls for 50 minutes). Combined with additional outcomes, they achieved the equivalent of taking all the cars in B.C. and Saskatchewan off the road for six months a year.

ABOUT CANADA’S CLEAN50

Canada’s Clean50 honourees each year are chosen from over 500 nominees across 16 different sectors, by sustainability and clean tech search firm Delta Management Group, with advice from industry advisors, and based on the nominees’ submissions.

Delta founder Gavin Pitchford created the award in 2011 to bring together leaders from numerous sectors with a view to encouraging cross-community learning and collaboration that could inspire others.

Honourees commit to participate in sharing knowledge with each other and to attending the Clean50 Summit, held each fall in Toronto.

Sector categories include Advocates (ENGOS), Angels (clean tech investors), Buildings, Cities, Clean tech, Consultants, Education, Financial & Services, Manufacturing & Transportation, Primary resources, Public sector, R&D, Renewable energy, Retail & Consumer, Technology, and Traditional energy.

Clean50 awards also recognize 15 leading sustainability projects and 10 emerging leaders under the age of 35.

More information at clean50.com.

At the same time, they transformed their businesses into more profitable, resilient companies.

“This impact proves that we don’t just need to adapt to climate change. We can actually beat it back if we take the steps that some of these organizations have taken,” says Gavin Pitchford, founder of Canada’s Clean50 awards and chief talent officer at Delta Management Group.

Recipients come from a wide range of public and private organizations across Canada in sectors such as retail, telecom, financial services and energy, and range in age from 20 to over 65.

Mr. Pitchford says organizations often pursue sustainability because they’re interested in saving money and passionate about protecting the environment. There’s usually a business case showing a return on investment within three to four years, but often in as little as four to six months, he says.

“Smart organizations recognize that it’s not something that needs to cost them a lot of money, and in the end it will save them money and reduce risk,” says Mr. Pitchford. “It also helps attract the best employees.”

Gordon Hicks, president of real estate management company Brookfield Johnson Controls (BJC), is a 2015 Clean50 honouree, awarded for his work helping to reduce energy use among the company’s building portfolio.

Clean50, Page C 3

INSIDE

Business gains through sustainability. Page C 3

Net-zero homes in harsh conditions. Page C 5

Responsible resource management. Page C 7

The impact of the 2015 Clean50:

1.3 million tonnes of carbon dioxide equivalent cut

+ 2.9 billion kWh green electricity saved or produced

+ 1.6 billion litres of water use reduction

+ 126,100 hectares of land conserved in perpetuity

+ 2 million tonnes of waste diverted

+ much more

Collectively over the past two years, Clean50 honourees contributed to their employers’ sustainability efforts across North America to save the equivalent of taking all the cars in B.C. and Saskatchewan off the road for six months a year.

This content was produced by Randall Anthony Communications, in partnership with The Globe and Mail’s advertising department. The Globe’s editorial department was not involved in its creation.

Clean50

Outstanding Contributors to Clean Capitalism

An open letter to Prime Minister Stephen Harper, Thomas Mulcair, Justin Trudeau, Elizabeth May, our Premiers, Canadian business leaders, and all Canadians

IT’S TIME TO ACT

Leading climate scientists overwhelmingly agree that our climate is changing - and that most of the change is the result of human activity.

We have all witnessed the impact of climate change on Canada’s ecosystems, communities and businesses. This will only accelerate and amplify.

Addressing climate change head-on will not only restore our planet and improve our health, it will create new jobs for Canadians, new markets and opportunities for businesses to innovate and excel, in a global economy hungry for our expertise in clean technology and sustainability.

In advance of a federal election and the upcoming Premier’s conference on Climate Change, we, the undersigned members of Canada’s Clean50, call on all our political parties to speak with Canadians about the impacts of climate change, and engage business leaders and the public in collaborating to find solutions that provide investment certainty, innovation and jobs.

We believe that one solution is to develop a well thought out framework that includes setting a price on carbon at some specific date in the future, that would reduce other taxes, and provide an incentive for businesses and individuals to take steps to reduce their use of carbon.



Row 1: Kerry Adler, CEO, Skypower Global; Jane Ambachtsheer, Partner, Mercer; Celine Bak, President, Analytica Advisors; Paul Blanchard, CEO, ARTEX Environmental; Kevin Brady, President, Sustainable Enterprise Consulting; Kent Brown, CEO, BluEarth Renewables; Lloyd Bryant, Managing Director, HP Canada; Chris Campbell, Executive Director, Marine Renewables Canada; Row 2: Howard Chang, CEO, Top Drawer Creative; John Coyne, VP, Legal & External Affairs, Unilever; Elisabeth (Lisa) DeMarco, globally ranked, leading energy and climate change lawyer; Ron Dembo, CEO, ZeroFootPrint Software; Audrey Depault, National Manager, Climate Reality Project Canada; Frank Dottori, President, White River Forest Products; Frances Edmonds, Director Environmental Programs, HP Canada; Tyler Elm, Managing Partner, TJ Elm & Assoc. Row 3: Alexis Esseltine-Scoon, SCS Global, Blair Feltmate, University of Waterloo; Mike Gerbis, CEO, The Delphi Group; Peter Gibel, Senior Vice President, Staples Canada; John Grace, Emeritus Professor, University of British Columbia; Tom Heintzman, Managing Director, JCM Capital; Chris Henderson, President, Lumos Energy; Gord Hicks, CEO, Brookfield JCI; Row 4: Celesa Horvath, Principal, Ventus; Mark Jaccard, Professor, Simon Fraser University; Brent Kopperson, Executive Director, Windfall Ecology Centre; David Labistour, CEO, MEC; Julia Langer, CEO, Toronto Atmospheric Fund; Judith Lipp, TREC Renewable Energy Co-op; Bruce Lourie, President, Ivey Foundation; Peter Love, President, Love Energy Consultants; Row 5: Sandy Marshall, Chairman, BioIndustrial Innovation Canada; Joe Miranda, CEO, Canada Fibers, Mike Morrice, Executive Director, Sustainability CoLab; Chad Park, Executive Director, The Natural Step; Leigh Pearson, Director, Staples Canada; Gavin Pitchford, CEO, Delta Management; Francisca Quinn, Managing Partner, Quinn & Partners; Marlo Reynolds, Vice President, BluEarth Renewables, Row 6: Paul Richardson, Renewal Funds; Don Roberts, CEO, Nawitka Capital Advisors (formerly Vice-Chair Wholesale Banking, CIBC World Markets Inc.); Andre Rochette, President, Ecosystem; Merran Smith, Director, Clean Energy Canada; Esther Speck, Principal, Speck Consulting; Coro Strandberg, Principal, Strandberg Consulting, Bruce Taylor, President, Enviro-Stewards, Michael van Aanhout, Chairman, Stratos; Row 7: John van Leeuwen, CEO, EcoSynthetic; Wal van Lierop, CEO, Chrysalix EVC; Anthony Watanabe, CEO, Innovolve; Doug Webber, Executive Vice President, Halsall & Loop Initiatives; Jonathan Webster, CEO, EnvAerospace. The following Clean50 Honourees have signed this document as individuals – not as representatives of their organizations: Keleigh Annau, Jim Burpee, Ray Cote, Row 8: Tom Ewart, Marcus Goodick, Martin Janowitz, Diane Kilcoyne, Brian Montgomery, Muhammad Qureshi, Andrew Telfer, Kate Whalen, Carolyn Sedgwick.

IT’S OUR TURN TO LEAD

Canadians: Ask your political representatives what they will do to address climate change. Let’s get moving on a real plan to keep our economy strong AND build a sustainable, prosperous future.

Our politicians need to know: Climate action is a priority.

For more information, please visit www.clean50.com

CANADA'S CLEAN50

Q&A

Sustainability plus leadership expertise – a winning combination



Interview with Gavin Pitchford, Chief Talent Officer at Delta Management Group

How are clean initiatives and employee engagement connected?
The expectation that organizations in both the private and public sector will tangibly demonstrate corporate social responsibility (CSR) have never been higher than today, and leaders are facing unprecedented pressure from key constituents such as customers, investors, regulators, suppliers and employees to reduce their environmental footprint. The good news is that companies that consistently measure and report on corporate citizenship earn sparkling reputations that improve their bottom line and also attract – and engage – top talent.

How does a good sustainability strategy pay off with employees?
I see it all the time that employ-

ers with a good sustainability strategy have increasingly more job applicants and attract better, more engaged employees – many of whom are actually willing to work for less money if they believe in the company. Research shows a strong correlation between engaged employees and financial results. When employees are proud of their employer, this translates to cost savings by reduced voluntary turnover, lower training and recruiting costs, and improved productivity.

Do you believe this is an upward trend?
Yes – since it is especially pronounced in the younger generation. Millennials, in particular, do their research and prefer to work for – and buy from – companies that are committed to CSR and environmental sustainability. Delta recently did a survey of a wide swath of highly educated millennials and identified that cohort's three leading criteria in selecting employers: Work-life balance was number one. But the company's values, sustainability and CSR performance was a close second.

Above-average compensation actually came fourth.

How do you promote employee engagement?
It is much talked about – but companies struggle to make it work. Employees are actually often prepared to volunteer their time for projects that enhance the organization's sustainability performance – everything from identifying opportunities to reduce or reuse waste, to relandscaping the grounds. As a bonus, when you've invested personal hours, worked on teams doing good things, put some heart into the organization, it's a lot harder to leave.

What role does leadership play?
There are significant opportunities for companies to save money and transform the way they do business, but to do so, they need the right talent. Embedding sustainability throughout the organization is a good concept, and volunteer green teams often have the right intentions, but without the necessary expertise, there is a greater chance for inadvertently doing harm or missing opportunities to go fur-

ther. It's incredibly important that sustainability is part of the overall strategy of the organization and that it's led by a qualified chief sustainability officer. Everyone uses spreadsheets, but organizations still have subject matter experts in corporate IT departments. In the same way, to maximize results, sustainability initiatives need to be led by experts in the field.

Any advice for someone embarking on a sustainability career?
We are seeing an oversupply of graduates from world-leading Canadian MBA and ES/MES programs – which means this is a tough market. The trend to attempt to embed sustainability throughout the organization requires that grads need to be prepared to integrate their sustainability learnings into job descriptions that are focused on other things. Of course, introduction of a price on carbon – or increased environmental regulations – would dramatically improve that outlook.

This interview has been edited and condensed.

IN HER OWN WORDS



Rachel Parent
Founder, Kids Right to Know

When a person learns about the many issues affecting our planet, it brings forth a natural response: a desire to make things better.
Translating that response into becoming a sustainability leader begins with passion. To find your passion, think carefully about what issue bothers you the most. Finding the passion within is a necessary first step. Without it, you'll find it difficult to stay focused and motivated.
The next step is to educate yourself about the cause behind your passion. Dig deep; don't believe everything you see on TV or hear in the media. Track down the research, read the studies, talk to people on both sides and keep an open mind.
When you've taken those first two steps, you are ready to take action.

Taking action means taking charge, finding your voice, having a clear message and speaking up at every opportunity.
For me, being a sustainability leader means connecting with seed and food producers, speaking with governments, meeting with educators, supporting local and organic markets and other organizations that care about how our food is produced from seed to plate. It means educating people about the impact that every purchase they make can have on the environment and the future of our planet.
Having the passion, commitment and courage to create change, to make a difference no matter how difficult, is what transforms us from a concerned person into a sustainability leader.

ENVIRONMENTAL RESPONSIBILITY

Demonstrating brand authenticity

A firm commitment to sustainability practices can help to build brand authenticity as well as ensure long-term business health, says Esther Speck, a 2015 Clean16 honouree who founded Vancouver-based Speck Consulting two years ago. She cautions that firms that want to make a difference must “integrate sustainability within their strategy and culture” and not only create environmental “side projects.”
“This is important if you want a strategy that drives value and

has a lasting impact,” says Ms. Speck, who adds that Mountain Equipment Co-op (MEC) is a good example of a company that has realized a brand advantage from its emphasis on business practices that are good for the planet.
Before starting her consulting business, Ms. Speck served as MEC's head of sustainability for six years. She explains that the 17-store chain, founded in 1971 by a group of west coast mountaineers, has built trust and is recognized for its com-

mitment to offering responsible products, reducing carbon emissions, constructing environmentally friendly stores and supporting the conservation of ecologically important spaces such as the Nahanni National Park Reserve in the Northwest Territories.
These sustainability efforts are “critical to business success” not only because they help win and keep customers, but because they help to position for the future by reducing risks and costs, fostering inno-

vation and attracting employees, says Ms. Speck.
“People want to connect with brands that offer the products and services they need, but also stand for something: brands that reflect their values. For companies like MEC, investments in this area prioritize real business issues like climate change and allow them to demonstrate their brand authenticity by acting on what their members and customers care about,” she adds.



Gildan employees in the Dominican Republic, October 2014

OUR PRODUCTS DEFINE WHAT WE DO.
OUR ACTIONS DEFINE WHO WE ARE.

Sustainability is woven into the very fabric of our company, because people want more than just quality from the clothes they buy and love.
Our vertically integrated manufacturing - central to our business model - allows us to see the big picture, while caring for every detail of our operations. By pursuing continuous improvement and by investing in technology and innovation, Gildan strives to be a world leader in the apparel industry.
Along with our 43,000 dedicated employees worldwide, we remain committed to doing things the right way and earn all of our stakeholders' trust every day.



www.genuinegildan.com

MEMBER OF

Dow Jones Sustainability Indices

In Collaboration with RobecoSAM



Canada's
GREENPOWER leaders
the
bullfrogpowered' leaders green index

company	rank	volume	location
 DIAGEO	1	Visionary	🌿 Crown Royal Distillery in Gimli, MB and bottling and distillation in Valleyfield, QC
 Unilever	2	Visionary	Unilever Canada head office, all sales offices, and 2 ON manufacturing sites
 Walmart	3	Vanguard	11 stores in B.C., AB, SK, ON, QC, N.B. and N.S.
 Ivanhoe Cambridge <small>Caisse de dépôt et placement du Québec</small>	4	Vanguard	Toronto regional office and 13 shopping centres: 9 ON (64% of common areas), 2 AB (20%), 1 B.C. (35%) and 1 N.S. (64%)
 BMO Financial Group	5	Vanguard	99 branches in ON, AB and B.C. & all facilities in N.S., N.B. and P.E.I.
 RBC	6	Vanguard	All Canadian ATMs (4,620) and all in-branch digital displays (8,212)
 Toronto Port Authority Administration Portuaire de Toronto	7	Ambassador	Entire operations
 OLG	8	Ambassador	Casino Brantford and Slots at Georgian Downs (60%, LEED)
 the co-operators	9	Ambassador	Co-operators Life Insurance Company offices in Regina, The Sovereign General office in Calgary and 4 Co-operators General Insurance Company offices in AB and N.B.
 STAPLES <small>MAKE IT OR HAPPEN</small>  BUREAU EN GROS <small>ENTREPRENEURS</small>	10	Ambassador	Staples Canada Head Office, Staples Advantage Head Office, Staples Copy & Print Production Centres, and 10 stores in B.C., AB, ON, QC and N.S.
 Shaw	11	Ambassador	Shaw Campus, Corporate Headquarters, and National Distribution Centre
 Ontario	12	Emissary	🌿 Ontario Ministry of the Environment and Climate Change Head Office (135 St. Clair Ave W) and Main Lab Facility
 THE KEG <small>STEAKHOUSE • BAR</small>	13	Emissary	🌿 10 restaurants in B.C. and ON
 LoyaltyOne <small>Enriching Relationships</small>	14	Emissary	Toronto Office 🌿 Mississauga & Calgary Office

View our complete list of more than 1,100 bullfrogpowered organizations at bullfrogpower.com/greenindex
For more information on volume rankings, please visit bullfrogpower.com/greenindex

🌿 indicates both green electricity and green natural gas products

bullfrogpower.com
1.877.360.3464

Green index tiers are based on financial commitment to green energy through Bullfrog Power. All listings are bullfrogpowered with green electricity only, unless otherwise indicated.



* As of November 11, 2014

IN HER OWN WORDS



Frances Edmonds
Director of Environmental Programs, HP

There is no recipe to becoming a sustainability leader – it is “experimental cooking.” But here are a few things I’ve learned along my journey up “Mount Sustainability.”

There’s only one way to get started – get started. Don’t wait for someone to tell you it’s OK. While this is uncharted territory for many companies, there is opportunity to integrate sustainability measures in almost every aspect of a business.

On the other hand, don’t become paralyzed because you feel you need to be a master of everything. Make a commitment, set a goal, then come to the table with an implementation plan. Find the experts you need. Learn from them and collaborate with them. It’s important to not reinvent the wheel (frankly, we don’t have time). Share and leverage, but always give credit. Remember to do some reverse mentoring in addition to your usual mentoring – no one has all the answers.

I rarely turn down an offer to try something new – these opportunities always pay back, often in unpredicted ways. For example, HP and WWF teamed up to create the Living Planet @ Work program. The program, championed by HP, provides guidance and tools to drive sustainability practices at work. Some guest lecturing about the program resulted in an Ivey case study about the relationship between HP & WWF as a best practice example.

Once you’ve started, remember to measure your progress.

LEADERSHIP

The business case for going green

“Sustainability” has become somewhat of a buzzword lately. But if it’s done right – and integrated into a company’s structure at every level rather than viewed as an add-on – it can be powerful tool for generating tangible results. A business that has an impressive track record in sustainability initiatives is the Canadian National Railway Company (CN).

“We believe sustainability needs to be completely embedded into the corporate culture,” says Chantale Després, CN’s director of sustainability. To that end, the transportation firm launched its EcoConnexions program in 2011 with the goals of conserving energy, reducing waste and improving housekeeping at its CN yards and offices across North America. More than 7,000 of its 24,000 railroader employees have attended corporate EcoConnexions events that serve to engage them in environmental action and stewardship. CN has also trained 550 “EcoChampions” within its ranks to act as leaders on green initiatives. “EcoChampions are the heart and soul of our sustainability program – they are the natural leaders who can influence large groups of people,” says Ms. Després.

In addition to getting employees on board, CN has also had success working with utility providers to eliminate energy waste and improve energy efficiency.



The goals of CN’s EcoConnexions program include conserving energy, reducing waste and improving housekeeping at CN yards and offices across North America. CN

For example, by working with BC Hydro, CN achieved a 20 per cent reduction in energy consumption at its Thornton Yard in Surrey, B.C. This represents an annual savings of \$182,000 and a reduction of 3,000 tonnes of greenhouse gas emissions.

“We scaled this program out to other major yards in the organization, and this served as the blueprint for even more savings,” says Ms. Després.

Another company that has turned corporate social responsibility into a competitive advantage is Gildan Activewear.

A leading Canadian clothing manufacturer with facilities around the world, Gildan owns and operates large-scale, vertically integrated manufacturing facilities and boasts 39,000 employees worldwide who are collectively committed to industry-leading labour and environmental practices in all their facilities.

“At Gildan, sustainability is a key component of our overall business strategy; it is integrated into virtually everything that we do,” says Peter Iliopoulos, senior vice president of public and corporate affairs.

The company began its sustainability journey in 2000, long before most textile manufacturers. The results of its most recent work speaks for itself, reducing waste by 25 per cent and reducing greenhouse gas emissions by 32 per cent compared to the 2010 baseline. Through transitioning to biomass energy sources to operate textile and hosiery facilities, 52 per cent of Gildan’s 2013 total energy consumption originated from renewable sources.

In recognition of those outstanding achievements, Gildan’s corporate sustainability manager Julie Cournoyer was honoured with a Clean50 award.

Ms. Després, another Clean50 honouree, believes reinvesting earnings from sustainability initiatives can boost outcomes. Last year, CN created a \$5-million revolving “EcoFund” to invest savings generated by its green program into new capital projects that support employee ideas for energy conservation and waste reduction.

The success of CN’s EcoConnexions initiative proves that “what’s good for the environment is good for business,” says Ms. Després. “Our wide-scale sustainability efforts not only build pride among our employees, they’ve also helped with our recruiting and retention efforts. Being a sustainable organization has helped us attract a whole new generation of railroaders.”

FROM PAGE C 1

Clean50: Taking steps to address climate change

Mr. Hicks oversees the management of over 134 million square feet of Canadian real estate and engages clients regularly on the issue of climate change. He has helped to reduce BJC’s own greenhouse gas building intensity by 16 per cent in the past two years alone.

Mr. Hicks says the first big change the company made, when he took on the role in 2006, was to ban pesticide uses across his client portfolio.

“We started to change the perception that weeds on lawns were a bad thing,” says Mr. Hicks.

BJC has since focused on the reduction of waste, as well as water and energy consumption. For instance, low-flush toilets were installed in several buildings, and clients are encouraged to embrace zero-waste programs.

Dr. Vicky Sharpe, the founding president and CEO of Sustainable Development Technology Canada (SDTC) and one of only

four two-time Clean50 honourees, says the awards help bring together leaders across different sectors who are committed to growing sustainability.

What she finds encouraging is that there are 50 honourees each year.

“That speaks to sustainability, that not one entity or organization can do this alone. This is about powerful grassroots,” says Dr. Sharpe, who is now strategic advisor to the board of directors

of SDTC. “One of the real values of the Clean50 activity is that it brings together a diversity of viewpoints and knowledge.”

Dr. Sharpe believes Canada ranks well on the global stage when it comes to providing clean tech sustainability solutions.

“We have some great companies with some great products; now we need more investment from capital markets and greater uptake by industry.”



EDMONTON IS SERIOUS ABOUT SUSTAINABILITY.

The City of Edmonton thinks that every city should be striving for environmental sustainability and resiliency. It’s about leaving a better place for future generations.

Edmonton now has:

- the largest composting facility on the continent and a Materials Recovery Facility that recycles 40,000 tonnes of waste a year
- a new waste to biofuels facility that will enable an increase in diversion rate from 60 to 90% by 2016
- civic buildings that meet high energy conservation standards
- a world-class wastewater treatment plant that protects the ecological health of the North Saskatchewan River
- programs to double the size of the city’s urban forest
- initiatives to transform the city into a bike-and walk-friendly place
- a long-term commitment to environmentally friendly public transit
- over 460 parks and a preserved 48-kilometer stretch of river valley right through the heart of the city

To learn more about our environmental initiatives, visit edmonton.ca/thewaywegreen.



CANADA’S CLEAN50

PARTNERSHIPS

Building a clean energy community

As a champion of clean energy, Brookfield Johnson Controls Canada is greening the energy used by three of its offices across the country through a deal with Bullfrog Power, Canada’s leading green energy provider.

Brookfield, which manages 134 million square feet of commercial real estate in Canada, is one of more than 1,200 businesses and 10,000 homes that have signed up with Bullfrog, greening the energy they use while supporting the development of new renewable energy projects. And in its role as a channel partner for Bullfrog, the company is promoting green power among its many clients, helping them make the switch to pollution-free energy in addition to other efforts to bring about a cleaner, healthier world.

“Our vision is to be a role model for sustainable operating practices for our industry,” says Brookfield CEO Gordon Hicks, who hosts an annual industry

event bringing together more than 400 real estate leaders to discuss sustainability and inspire change.

Bullfrog CEO Peter Melanson says that companies that sign on with Bullfrog reduce their environmental impact while contributing to a social good that will positively benefit their communities. They are also motivated by a number of business considerations, such as marketing and brand-building initiatives, differentiation in the market and employee engagement strategies.

“Doing the right thing is also good for business,” he says, pointing out that Bullfrog can tailor a solution to an individual company and its needs.

Having Brookfield as a channel partner is especially helping to spread the word about green power to Brookfield’s own customers and extending its reach among larger businesses, Mr. Melanson says. Staples, meanwhile, is a small-business channel

partner, selling a Bullfrog package to SME customers. “It’s a way for us to reach thousands of companies across Canada.”

All of Bullfrog’s corporate clients “become part of the Bullfrog community,” Mr. Melanson says, for example participating in panel discussions on sustainability and engaging with Bullfrog’s residential customer base.

“We have a lot more than a vendor-client relationship,” he says, adding that companies that sign up with Bullfrog “join the movement of individuals and organizations building a more sustainable Canada. We are in every sense of the word a social enterprise.”

“We are in every sense of the word a social enterprise.”

Peter Melanson
is CEO of Bullfrog Power

Mr. Hicks says the partnership between Brookfield and Bullfrog has widespread benefits. These range from improving the health of the population and reducing the environmental impact of the building sector to helping new community-based clean-energy producers and encouraging a “fault-tolerant” distributed power system.

By supporting a green energy provider such as Bullfrog, companies can help Canada become a centre of expertise and excellence in clean energy globally, he adds, which can also be good for the country’s bottom line. “The future is in green power.”

RENEWABLES

Bright prospects for solar power

Imagine a day when the sun becomes the world’s largest source of electricity, ahead of fossil fuels, wind, hydro and nuclear.

It’s not that far off, according to the International Energy Agency (IEA), which cites solar as the world’s fastest-growing renewable power technology. The IEA forecasts that renewable energy is expected to make up one-third of global electricity output by 2035 and that solar photovoltaic (PV) systems could generate up to 16 per cent of the world’s electricity by 2050.

Canada’s solar industry is contributing to this global shift. Installed capacity for solar PV power is expected to hit the 2,000 megawatt (MW) mark in 2014 and will approach 3,000 MW by the end of 2015, making Canada a leading jurisdiction for solar energy.

The growth, almost all of which is in Ontario, has been driven by investment-friendly provincial government policies and the dramatic drop in the price of solar technology, from about \$4 per watt for a solar panel in 2008 to around 69 cents today.



The drop of price in solar technology and investment-friendly government policy can encourage solar energy growth. ISTOCKPHOTO.COM

“The renewable energy market is already overtaking the traditional energy part, and solar will continue to be a big part of that.”

John Gorman
is president and CEO of the Canadian Solar Industries Association

“Canada is a contender in the global boom in solar electricity,” says John Gorman, president and CEO of the Canadian Solar Industries Association (CanSIA).

“The renewable energy market is already overtaking the traditional energy part, and solar will continue to be a big part of that,” says Mr. Gorman, recently named one of Canada’s 2015 Clean50 honourees.

He says it’s now time for other provinces, with leadership from the federal government, to introduce similar policies to encourage further growth in solar energy.

For example, Mr. Gorman wants Ottawa to offer the renewable industry the same tax incentives provided to the conventional energy sector, such as oil and gas. Ottawa should also take a more market-based approach to export opportunities for renewables and increase accessibility to solar power for Aboriginal communities.

These are some of the issues Mr. Gorman says will be discussed at Solar Canada 2014, a major industry conference hosted by CanSIA in Toronto December 8 to 9.



Providence Bay wind farm on Manitoulin Island, Ontario. BULLFROG POWER

Scotiabank's EcoLiving Awards

If you have a unique approach to realizing home energy efficiency, apply for the Scotiabank EcoLiving Awards

Call for entries open from Dec. 15, 2014 - March 31, 2015

Business Leadership Award
\$50,000

Innovation Award
\$15,000

Student Leadership Award
\$10,000

Information available: ecoliving.scotiabank.com/awards

© Registered trademarks of the Bank of Nova Scotia.

CANADA'S ADVANCED BIOFUELS NETWORK

01
UNIVERSITY

02
INDUSTRY

03
GOVERNMENT

04
INVESTMENT

SUSTAINABLE INNOVATION THROUGH TEAMWORK

Join our growing network

info@biofuelnet.ca
514-508-2884
www.biofuelnet.ca

RÉSEAU
BIOFUELNET
CANADA

IN HER OWN WORDS



Merran Smith
Director, CLEAN ENERGY CANADA

Sustainability leaders are a unique breed. You can't become one by completing a particular degree, or by attending a retreat with the "right people." Leaders in my line of work rise to the top because they possess certain characteristics: vision, openness and tenacity.

Vision means knowing where you want to go. A visionary leader does not only paint an inspiring picture of the future, but also possible paths to get there. A leader "walks the talk" and takes steps to make that future tangible and accessible. In my field, that doesn't necessarily mean she's bolting solar panels to her roof or trading in her gas-guzzler for an electric vehicle (although those things impress me). Instead, she makes decisions based on evidence and expert counsel, not ideology or dogma.

Openness means sustainability leaders spend a lot of time outside their comfort zone. With emotional intelligence, they are able to build bridges between diverse interests. They make an extra effort to reach beyond the "friendlies" and seek the views of those who don't agree with them, or even actively oppose them.

Finally, such leaders possess a combination of passion, innovation and grit – they keep at it. Trying to change the world is a tough slog. Progress is typically glacial; there are few sweeping victories, just a long series of small engagements. But leaders surround themselves with great teammates, keep laughing and keep at it without compromising their values.

COMMUNITIES

Join the green-energy revolution

"A green-energy revolution is underway that most people don't even know about," says David Dodge, the producer of Green Energy Futures (GEF), a multimedia project that travels across Canada telling the stories of Canadians engaged in the implementation of clean-energy solutions in their homes, businesses and communities.

A former journalist, Mr. Dodge is an enthusiastic champion of net-zero homes, which attempt to produce as much energy as they consume. Sponsored by Suncor Energy Inc. and Shell Canada, GEF is based in Edmonton, which Mr. Dodge calls, "a virtual centre of net-zero energy in Canada."

He notes that Edmonton built its first net-zero home in 2007, an undertaking that required a team of 145 people from a myriad of disciplines, many of whom were volunteers determined to prove that it could be done.

By 2014, Mr. Dodge says, the process had been incredibly simplified and much more affordable. "We have one Alberta company, Landmark Group of Builders, that builds a thousand

"The cost of utilities is just escalating in Ontario. The beauty of sustainability is that it's an excellent long-term investment."

Karen Jalon
is director of sustainability for The Cadillac Fairview Corporation Limited

homes a year and is aiming to have all of them net-zero ready by 2015."

Many of the homes built by Landmark are already almost net-zero – and delivered at virtually the same cost as homes that consume much more energy right next door – an accomplishment driven by the vision of the company's CEO Reza Nasser, who received a Clean16 award in 2013.

If anyone wonders whether homes powered primarily by solar energy can withstand the rigours of a harsh Canadian winter, Mr. Dodge points to Edmonton as proof. "We are the most northern large city in North America," he says. "If we can do it here, it can be done anywhere."

There are two main reasons why net-zero homes are becoming more prevalent: the employment of air-source heat pumps, which transfer heat from the outside to the inside of a building and vice versa, depending on the season, and the drop in costs for solar energy, says Mr. Dodge.

The green-energy revolution is not confined to homebuilders, however.

The Cadillac Fairview Corporation Limited, one of North America's largest developers, owners and managers of commercial real estate (including Toronto's Eaton Centre), "has an extremely proactive energy-reduction approach," says Karen Jalon, the company's director of sustainability.

The commercial landlord sets annual energy-reduction targets for its portfolio of 2.5 per cent, she says. As of its October 2014 year end, "we achieved 5.7 per cent in addition to our reduction of 16 per cent from 2008 to 2013."

A key component of Cadillac Fairview's reduction initiatives is its collaborative engagement with its sophisticated tenants, she says. "They always say that buildings don't use energy; people do. We collaborate with our clients to implement energy-reduction programs that can be as simple as turning off your lights and computers at the end of the day."

Each of Cadillac Fairview's managed properties has a team that builds "a sustainability roadmap for the property that deals with how to improve the efficiency of the building. We then bring people together in different roles to implement industry best practices," Ms. Jalon says.

As example of the latter, she says, is that Cadillac Fairview's premier office properties aim to meet the LEED (Leadership in Energy and Environmental Design) standards.

Both Mr. Dodge and Ms. Jalon point out that the green-energy revolution is gaining acceptance not just for altruistic reasons, but also because it makes good business sense. "The cost of utilities is just escalating in Ontario," Ms. Jalon says. "The beauty of sustainability is that it's an excellent long-term investment."

Mr. Dodge says that with the price of solar now affordable, "farmers in southern Alberta – which was not always the warmest place towards renewable energy – are seeing that solar energy can deliver electricity for 30 years, protecting them from future cost increases. They're realizing that it's a good investment."



Shafraaz and Serena Kaba with their three-storey, near-net-zero home that is super energy efficient and tailor-made for the climate of Edmonton, Canada's most northerly big city. DAVID DODGE, GREEN ENERGY FUTURES

RESOLUTE ON ENERGY AND CLIMATE

RESOLUTE INVITES ALL BUSINESSES TO JOIN US IN DRAMATICALLY REDUCING OUR COLLECTIVE CARBON FOOTPRINT.

SOUND INVESTMENTS

FROM 2011 TO 2013, RESOLUTE SAVED \$60 MILLION IN OUR EFFORTS TO IMPROVE ENERGY EFFICIENCY.

2000

2015

65%

REDUCTION IN ABSOLUTE GHG EMISSIONS BELOW 2000 LEVELS BY 2015.

100%

OF OUR GOAL COMPLETED*

- INDUSTRY-LEADING
- EQUIVALENT OF TAKING 1.62 MILLION CARS OFF THE ROAD

* 54% OF THIS WAS ACHIEVED BY REDUCING PRODUCTION TONNAGE, WHILE 46% WAS ACHIEVED BY REDUCING GHG INTENSITY OF THE EXISTING OPERATIONS.

2015 **Clean50**
Outstanding Contributors to Clean Capitalism

CLEAN50 RECOGNIZES LEADERS WHO HAVE MADE THE GREATEST CONTRIBUTIONS TO SUSTAINABLE DEVELOPMENT OR CLEAN CAPITALISM IN CANADA.

A COAL-FREE FUTURE

IN 2015, RESOLUTE'S OPERATIONS WILL BE 100% COAL-FREE*

* EXCLUDING COAL USED IN BOILERS NOT OWNED BY RESOLUTE, I.E., ELECTRICITY PROVIDERS

OTHER SOURCES*

STEAM

RESOLUTE MILLS PRODUCE 99% OF THEIR OWN STEAM.

ELECTRICAL POWER

WE MAKE ELECTRICITY AT OUR HYDROELECTRIC DAMS AND COGENERATION FACILITIES.

ALTERNATIVE SOURCES*

WE RECOVER THEIR ENERGY VALUE TO REDUCE CONSUMPTION OF FOSSIL FUELS.

* ALTERNATIVE SOURCES OF ENERGY INCLUDE: METHANE FROM LANDFILLS; USED OILS; TIRE-DERIVED FUEL AND WASTE PLASTICS; CONSTRUCTION AND DEMOLITION DEBRIS; AND WOOD RESIDUALS RECLAIMED FROM LANDFILLS.

75%

TOTAL ENERGY NEEDS FROM RENEWABLE SOURCES

71%

FUEL ENERGY USAGE FROM BIOMASS

9%

ELECTRICITY WE PRODUCE OURSELVES

DID YOU KNOW?

SUSTAINABLY-SOURCED FOREST PRODUCTS ACT AS AN ADDITIONAL GLOBAL CARBON RESERVOIR FOR MITIGATING CLIMATE CHANGE. THIS IS ESPECIALLY TRUE WHEN FOREST PRODUCTS ARE USED INSTEAD OF MORE CARBON-COSTLY MATERIALS LIKE STEEL AND CEMENT.

WHAT'S NEXT?

- INVESTING IN TECHNOLOGIES THAT ALLOW US TO REDUCE OUR SCOPE 2 GHG EMISSIONS
- INVESTING IN MORE CLEAN ENERGY PROJECTS
- FURTHER ENHANCING EFFICIENCY AT OUR OPERATIONS
- TRACKING SCOPE 3 GHG EMISSIONS

CANADA’S CLEAN50

BIOFUEL

Fuelling Canada’s emerging bio-economy

According to Dr. Donald Smith, one of Canada’s leading minds on the subject of the bio-economy and a professor at McGill University, we are only scratching the surface in terms of Canada’s potential to lead in the emerging global bio-economy.

A Clean50 winner and the CEO and scientific director of BioFuelNet Canada, Dr. Smith has spent years mobilizing and connecting Canadian researchers with private industry, investors and government bodies to shape a greener future. Collectively, their focus is to help get our

“If we do this correctly, our work will lead to significant reductions in greenhouse gases while engaging industry and investors who see the significant opportunity this presents.”

Dr. Donald Smith
is a professor at McGill University

country on the fast track to innovation and pursue new strategies to reduce dependency on non-renewable fossil fuels.

“Sometime in this century, we are just going to run out of fossil fuels. The ramifications of increasing greenhouse gas emissions are alarming, so we must think long term,” says Dr. Smith.

One key solution is biofuel. Solid, liquid or gas-based fuels – such as ethanol and biodiesel that can be produced from renewable biomass like corn, grass, forestry and agricultural waste and food waste – can provide an alternative to fossil fuels

such as coal, petroleum and natural gas.

Blessed with a massive wealth of renewable natural resources, Canada is uniquely positioned to become a global leader in advanced biofuels with the potential to generate thousands of new jobs and offer a long-term energy solution.

Dr. Smith sees a lot of interesting activity in the advanced biofuel sector right now. “If we do this correctly, our work will lead to significant reductions in greenhouse gases while engaging industry and investors who see the significant opportunity this presents,” he says.

Over the past 10 years, the U.S. and Canada have collectively invested nearly \$37-billion in the biofuel, bio-energy and bio-products sector. In the last 18 months, four large biofuel plants have opened in the U.S. – a trend that is sure to spur on similar facilities across Canada.

An example of how Canadian innovation is making headlines comes from Adam Noble, a 20-year-old genius from Peterborough, Ontario, who was recognized as the youngest ever recipient of the Clean50 awards.

Mr. Noble is the president, CEO and founder of Noble Purification and Noble Reliance Inc. based at Trent University. While he was still in high school, he spent two years researching with his partner, Andressa Lacerda, trying to figure out how to prevent algae blooms in a nearby lake. Mr. Noble ultimately developed a brilliant and lucrative solution using a unique protist, euglena, that helps protect the environment, creates biofuel and may potentially treat cancer.

He has developed a patented wastewater treatment filter with potential applications for the oil sands, oil fracking, mining waste and municipal wastewater. A demonstration trial of his technology, presently underway in Peterborough, Ontario, is expected to filter 100,000 litres of wastewater a day, eliminate large volumes of carbon dioxide and generate some 13,000 kilograms of euglena filtrate for biofuel.

Better yet, Mr. Noble’s discovering of the cause of lake water algae blooms – called silver nanoparticles – are being studied as a treatment for childhood leukemia.

GROWTH

Providing solutions with clean tech

They come up with new ideas that solve pollution and efficiency problems and generate revenues of \$11.3-billion annually, but Céline Bak, president of Analytica Advisors, believes this is just the beginning of an upward trajectory for Canada’s 800 clean tech companies.

The sector’s growth is also reflected in the number of employees, which has increased to 41,000. “Plus the supply chains, we are talking about a 200,000 person industry,” she says, adding that clean tech is also a field where many want to build careers – 20 per cent of the workforce is made up of the under-30 age group.

Clean tech firms are part of what Ms. Bak calls the “new real economy.” By launching the first national independent research on the Canadian clean technology industry and global markets, Analytica Advisors promotes better understanding of the opportunities. It also builds bridges between investors, entrepreneurs and government, aiming to create a \$50-billion clean technology industry by 2020.

The focus on sustainability boosts the sector’s strength as it makes it less vulnerable to market whims. One example is consumer perception – a factor that



Clean tech innovations help to facilitate the shift to a lower carbon economy. ISTOCKPHOTO.COM

“Clean tech isn’t just a science project. This is an industry that is very much aligned with Canadian values.”

Céline Bak
is president of Analytica Advisors

can negatively affect returns on investments in fields like the auto sector – that works in favour of clean tech because “the industry is solving problems,” says Ms. Bak.

A problem prompting a number of recent innovations is the need for energy storage.

Solutions can be applicable for projects of different scale, for example data centres that need backup or large utility companies integrating renewable energy components that come with the need for storage or “power conditioning” – increasing the quality of the power so it can go into the grid without causing problems, Ms. Bak explains.

Technologies that are providing answers – and that Canadian companies are active in advancing – are lithium-ion batteries, hydrogen-based storage and flywheel energy storage systems.

“Clean tech isn’t just a science project,” Ms. Bak says. “This is an industry that is very much aligned with Canadian values.”

The potential for innovation is immense, says Ms. Bak, adding, “The move to a less polluting and lower carbon economy is not about what we can’t do anymore. It’s about what we can do now and the things we’ll be able to do in the future.”



Research efforts at facilities like JML Lab are advancing Canada’s potential for the development of biofuels. SUPPLIED

TO BE A LEADER IN
SUSTAINABILITY
TAKES TEAMWORK.
IT ALSO TAKES
SOME REALLY GREAT
TENANTS.

CADILLAC FAIRVIEW CORPORATION IS PROUD TO HAVE WON TWO SUSTAINABILITY AWARDS.

We are honoured that our GREEN AT WORK™ program has been recognized by Clean50 and Top15.

<http://cadillacfairview.com/sustainability>

GREEN AT WORK™
Building sustainability together™

www.solarcanadaindustriesassociation.ca

Canadian SOLAR Industries Association

Annual Conference & Exposition

December 8–9, 2014

Metro Toronto Convention Centre
Toronto | Ontario

The most **COMPREHENSIVE SOLAR ENERGY** event in Canada
and Canada’s **ONLY ANNUAL** solar energy **EXPO**

Use this registration code: **SOLAREXPO**

To register for Tuesday, December 9th EXPO passes for **FREE**

Limited to the first 1000 people who redeem | Expires Dec. 5th

Sustainability
is good for business

“Reliable and economical thermal energy services demonstrates the City’s continuing commitment to supporting the success of local business.”

Ernie Sweeney, President and CEO, Würth Canada

Guelph offers competitive advantage in a changing market.

guelph.ca/energy

World Leader in
Primary Battery Recycling

Do you know if your disposable batteries are being recycled?

In North America, most batteries that are collected for recycling are actually burned in smelters or in furnaces where only a small part of the battery is actually recovered for recycling. These processes release pollutants into the atmosphere and needlessly generate greenhouse gases.

Raw Materials Company (RMC) has an award-winning patented process that mechanically separates and recycles over 92% of the contents of a disposable battery. This made-in-Canada sustainable approach to battery recycling has 80% fewer total emissions and generates 82% less greenhouse gases than today’s conventional approach of burning batteries.

The need to mine metals like zinc, manganese and iron is reduced when these metals are recovered in the RMC recycling process, which helps preserve our natural resources for future generations and reduces the environmental footprint of primary batteries.

Please visit our website to find a location where you can recycle your batteries.
www.rawmaterials.com

IN HIS OWN WORDS



Mike Morrice
Executive Director, Sustainability CoLab

As in other fields, it takes a mix of factors to become a sustainability leader: some of which we can fully control, some we only partially control, and some we don't control at all.

Of those we can control, passion is the classic example: we can each choose to lead in a field we're deeply passionate about. And it's this passion – the kind that can't be faked – that captures others' attention and is worthy of following.

Of those we can only somewhat control, these are traits that are difficult to be taught. Like an ability to get others excited about a vision. Knowing whom to hire. Keeping a group of people focused on a common goal. These can be learned over time, though.

Lastly, those factors we can't control at all, like luck – the right timing, connection, conversation. The synchronicity of life. And there's privilege, for example related to gender, upbringing and race, which loads the dice unfairly. And naming this privilege is part of what it takes to be a leader, as we all join in levelling the playing field in Canada.

“...it's this passion – the kind that can't be faked – that captures others' attention and is worthy of following.”

STEWARDSHIP

Responsible resource management and awareness key to resiliency

On the global scale, Canada is blessed with one of the richest reserves of extractable energy and is the fifth largest food exporter. It also possesses upwards of 20 per cent of the world's fresh water. This wealth of resources – in a country of only 35 million – might be the envy of other nations, but also comes with responsibility, says Jon Fennell, vice president of geosciences and water security at Integrated Sustainability Consultants Ltd.

Dr. Fennell believes that while a lot of the discussion has focused on greenhouse gas (GHG) emissions, more awareness and maturity is needed on how climate change will affect Canada's energy, food and water security.

“Understanding the critical importance of water to the continued delivery of energy and food is the lynch-pin,” he says. “Environment Canada indicates that approximately 60 per cent of Canada's GDP is directly connected to water. Those sectors reliant on water of sufficient volume and quality – when and where they need it – should prepare themselves.”

Since water use varies across the sectors – and is not necessarily proportional to their contributions to the GDP – Dr. Fennell advocates for more transparency.

A company that is looking closely at its “water footprint” is Resolute Forest Products, says Seth Kursman, Resolute's vice president, corporate communications, sustainability and government affairs. The desire to actively seek out and implement environmentally sound solutions – especially in light of the water-intensive nature of the paper-making process – has prompted Resolute's participation in the Carbon Disclosure Project's Water Disclosure program that aims to measure and improve water use.

Mr. Kursman explains that water conservation is not the only area in which Resolute is making a difference.

“Our resiliency will depend on the level of understanding and maturity Canadians have regarding the connection between energy, food, water and climate change.”

Jon Fennell
is vice president of geosciences and water security at Integrated Sustainability Consultants Ltd.

At first, the shift to sustainable practices happened organically, but it was the leadership of Richard Garneau, Resolute's CEO since 2010, that took it to the next level, says Mr. Kursman. “Richard made it clear that he wanted to differentiate the company within the business community and within the paper and forest products industry.”

The accomplishments that earned Mr. Garneau his 2015 Clean50 award include that 100 per cent of Resolute's managed woodlands meet one or more of the three internationally recognized sustainable forest management standards. And the company meets 71 per cent of its total energy needs from renewable sources and derives 75 per cent of fuel energy usage from biomass.

“We've also made some of the most aggressive GHG reduction commitments by global standards,” says Mr. Kursman,

explaining that the company pledged to reduce absolute GHG emissions by 65 per cent by 2015, compared to 2000 levels – amounting to the equivalent of taking 1.62 million cars off the road. “And we've achieved that target two years ahead of schedule,” he adds.

Resolute has also introduced – and developed – a brand of eco-friendly papers that require up to 50 per cent less wood fibre and have a carbon footprint up to 85 per cent lower than the average competing product.

While some changes required significant investments, the rewards don't stop at environmental benefits – conservation efforts have also reduced the company's energy bill and earned the loyalty of employees, says Mr. Kursman.

Speaking about the three pillars of sustainability – economic, social and environmental – Mr. Kursman says, “I challenge the old paradigm that improvement in one area must come at the expense of another. All three are inextricably linked together, and mutual benefit and balance is at the heart of what a sustainable approach is all about.”

While Dr. Fennell sees a growing awareness in the natural resource sector regarding sustainability and the importance of water to Canada's future, he believes that this needs to trickle down to consumers so that they can make informed decisions.

“Climate change will create stress on existing societal structures given its influence on gross domestic product (GDP) and costs related to extreme weather events,” he says.

“Our resiliency will depend on the level of understanding and maturity Canadians have regarding the connection between energy, food, water and climate change,” Dr. Fennell explains. “We need to be informed and ask our government officials to enact laws and policies that will secure our nation's future.”



Canada's wealth of resources comes with a responsibility, says Jon Fennell, vice president of geosciences and water security at Integrated Sustainability Consultants Ltd., who advocates for greater awareness about the connection between energy, food, water and climate change. SUPPLIED

Together

We deliver responsibly





Sustainable transportation solutions www.cn.ca

CANADA’S CLEAN50

RESILIENCY

Measures to reduce – and prepare for – climate change are adding up

As the world’s climate is changing, momentous sustainability efforts are underway across Canada to not only reduce our society’s carbon footprint, but also make our communities more resilient.

Green initiatives send the message that a “company has a role to play in climate change,” says Karen Mulchinock, senior manager of corporate social responsibility at Scotiabank, which launched its online Scotiabank EcoLiving program four years ago. The website (ecoliving.scotiabank.com), which has 30,000 unique visitors every month, provides information on how to improve residential energy efficiency and includes a calculator that makes recommendations on how to reduce home operating costs – from small changes such as installing low-flow toilets to major renovations such as insulating an attic. The bank is currently redesigning the Scotiabank EcoLiving website, scheduled for launch in March 2015, and is partnering with Canadian Tire to provide how-to videos and product recommendations for green home projects.

The Scotiabank EcoLiving Awards, which generate public interest in residential energy efficiency, offer a combined \$75,000 annually to recognize businesses, entrepreneurs and students who are advancing business and residential energy innovation. “We want our Scotiabank EcoLiving website to be a comprehensive resource that raises awareness of the benefits of energy efficiency and sustainable practices, influ-



Workers install pipes at Guelph’s Sleeman Centre, which will be part of North America’s first city-wide district energy network. In addition to bringing massive savings in fuel, equipment and maintenance costs, this initiative will lead to a much smaller environmental footprint. SUPPLIED

ences behaviour by enabling Canadians to save money by saving energy and reward individuals and companies for their unique energy efficiency ideas,” says Ms. Mulchinock.

On a community level, the city of Guelph has earned wide recognition for implementing sustainability measures. It launched its award-winning Community Energy Initiative eight years ago, and the achievements of the mid-size city of 120,000 speak for themselves: a 10 to 15 per cent reduction in per capita greenhouse gas (GHG) emissions and energy use, water conservation efforts that have resulted in residents using 20 per cent less water than the average Ontarian and nearly 70 per cent of solid waste diverted

from landfills, the highest rate in Ontario.

“These reductions point to millions of dollars that could potentially stay in the local economy rather than leave the community to pay for infrastructure,” says Rob Kerr, Guelph’s corporate manager of community energy.

Within the next couple of decades, the city aims to reduce its energy use by 50 per cent and GHG emissions by 60 per cent. Perhaps most ambitious of all, it plans to build North America’s first city-wide district energy network, an underground connection of pipes installed alongside water, electricity and other utilities, which will replace the need for individual furnaces, air conditioning units and water heaters – resulting

in massive savings in fuel, equipment and maintenance costs and a much smaller environmental footprint. Mr. Kerr adds that the Corporation of the City of Guelph saved approximately \$300,000 in energy costs on its last budget that totalled \$8-million a year.

The city’s focus on sustainability is not just “a one-time project or an altruistic contribution to global issues,” says Mr. Kerr. Rather, it’s intended to stimulate the local economy by attracting like-minded companies – such as Canadian Solar Solutions, one of the world’s largest solar panel manufacturers, which is based in Guelph – and help both the city and its residents realize savings.

As leader of Canadian Urban Development & Infrastructure and Global Sustainable Cities at Golder Associates, and a Clean50 2014 honouree, Jeanette Southwood believes that addressing environmental concerns is only part of creating resiliency – economic and social considerations are also important.

With Golder teams supporting revitalization and resilience for

public- and private-sector clients across the world, Ms. Southwood noted the work of the Federation of Canadian Municipalities and the Canada Mortgage and Housing Corporation, among others, in identifying commonalities in sustainable communities.

“One is land use mix on a human scale – residential, commercial, institutional, recreational, industrial – and good transportation options, including healthy alternatives, to reduce fossil fuel use,” she says. “Another is efficient use of resources, including waste.”

In addition to energy-efficient buildings, Ms. Southwood advocates minimizing the use and disposal of water and reducing impacts on watersheds. “We also want buildings that are resilient in terms of ability to withstand climate vulnerabilities,” she adds.

In a recent study, Golder looked at Ontario buildings and assigned vulnerability scores. The findings underscore the need to be prepared and draw on best practices to make Canadian communities more resilient.

RECYCLING

Closing the loop on spent batteries

In 2015, Canadians will buy and discard over 745 million single-use AAA, AA, C, D and nine-volt batteries that contain, in total, almost 20,000 tonnes of recyclable materials, such as steel, zinc, manganese and potassium.

What happens to those batteries after they’re depleted? In Canada, much depends on where they’re sold, says James Ewles, president of Raw Materials Company (RMC).

“Despite many efforts, national battery collection and recycling rates remain low,” says Mr. Ewles, explaining that less than 15 per cent of single-use batteries sold in Canada are recovered for recycling, and of those, many are managed in a way where much of the value of the material is lost.

He believes the poor performance partly stems from the passive collection system – where consumers drop off batteries at retail locations – that most Canadian battery stewardship efforts rely on.

Ontario has taken a different approach with the Battery Incentive Program (BIP), which rewards companies that collect and recycle single-use batteries.

“As a result, 3,500 battery collection points across the province have been established, and some municipalities have curbside collection,” Mr. Ewles says.

Rather than shipping batteries to smelting operations designed to process non-battery materials – that typically recover less than 40

per cent of the content – Ontario’s battery recycling regulations require that at least 80 per cent of the material is returned as reusable commodities.

At RMC’s facility in Port Colborne, Ontario – where all single-use batteries collected in the province are processed – a patented mechanical system separates the steel, plastic and paper casings from the batteries’ contents.


Steel is recycled into steel; the non-recyclable paper and plastic portion goes to an energy-from-waste facility – the only part of the battery that is not “up-cycled,” says Mr. Ewles, adding that the energy created by the conversion offsets up to 80 per cent of the energy consumed by the entire RMC process.

The contents of the batteries – a mix of zinc, manganese, potassium and carbon compounds – are then blended to a specification required by manufacturers of agricultural micro-nutrients.


“A total of about 92 per cent of each battery by weight is recycled into ‘technical nutrients’ for manufacturing new products and ‘biological nutrients’ that increase crop yields in a process that generates very few greenhouse gases,” says Mr. Ewles.

Mr. Ewles sees combining higher battery collection rates with an effective recycling process as a way of “closing the loop.”

“One day, the spent AAA batteries in your remote control will not be a waste but a fully recovered resource,” he predicts.



INTEGRATED
SUSTAINABILITY



Our passion is water
Our project solutions are courageous

WATER | WASTE | ENERGY

CONSULTING & ENGINEERING

IntegratedSustainability.ca

By the numbers

Over the past two years, Clean50 honourees’ initiatives achieved:

6.5 million litres of spent chemicals recycled

7.5 million litres of used oil recycled

1.1 million tonnes of recycled paper used

128,000 tonnes of paper saved

Honouring Canada’s Clean50 champions and their achievements



Wade Barnes
President and CEO, Farmers Edge Precision Consulting Inc.

Wade pioneered the commercial application of Variable Rate Technology (VRT) that improves fertilizer use efficiency and positively impacts air, water and soil quality while maintaining high yields and improving net returns. To date, Farmers Edge’s achievements amount to an estimated net reduction of 75,000 tonnes of CO₂ emissions.



Todd Melendy
Vice President, Sustainability and Compliance, Celestica

Under Todd’s leadership, sustainability is quickly becoming an integral part of Celestica’s business model. With a passion for strong corporate citizenship, employees are becoming highly engaged in innovative carbon footprint and waste reduction initiatives, as well as community giving activities such as the donation of solar panels to a hospital in Haiti.



Howard Chang
CEO, Top Drawer Creative

A commitment to 100 per cent green energy. A paid bike-to-work program. A client roster strong in social cause, health, nutrition, green energy, adventure sports, fitness and active lifestyle categories. All these factors led to Howard’s Clean50 recognition, and to Top Drawer Creative becoming the first Canadian full-service advertising agency to be certified as a B Corporation earlier this year.



Joe Miranda
CEO, Canada Fibers Ltd.

Joe and his team built the largest material recycling facility in North America, creating 250 new jobs. Sorting dry commercial/industrial and municipal waste, the 27-acre, 420,000-square-foot facility diverts 700 million pounds from landfill each year with the goal to become fully integrated and recover 97 per cent of all incoming materials.



Art Sterritt
Executive Director, Great Bear Initiative

Protecting our coast. Building our economy. Clean energy is the foundation for a sustainable coastal economy. Great Bear’s carbon credit project and aquaculture businesses provide income and economic renewal to local communities while conserving the largest temperate rainforest in the world. Great Bear expects the LNG industry to do its part too, and use clean energy.



Bruce Taylor
P.Eng., President, Enviro-Stewards Inc.

Bruce founded Enviro-Stewards, an engineering firm and Certified B Corporation that helps clients increase their profits, sustain the environment and compellingly benefit society. These measures average 100 per cent return on investment. In 2014, Enviro-Stewards was recognized by B lab as one of the “best companies for the world” due to its overall impact.



Tony Van Bommel
Senior Managing Partner, BDC Capital

A champion of the clean tech sector for 13 years, Tony shapes BDC Capital’s investment direction. He oversees the \$152-million Clean and Energy Technology Venture Fund (ICE). Since 2012 alone, ICE has invested or reserved over \$70-million in 18 transactions in 14 technology companies that employ over 700 employees and generate revenues of \$100-million.



Working with Great Clients for Continued Success

Golder Associates congratulates all of our clients recognised as Clean50 honourees.

With over 50 years of experience, Golder provides a wide range of independent consulting, design and construction services around the world in our specialist areas of earth, environment and energy.

Engineering Earth’s Development, Preserving Earth’s Integrity.

solutions@golder.com
www.golder.com

