

Canada's Sustainability and Clean Tech Heroes

Canada's 2023 Clean50 Honourees

The Canada's Clean50 Awards are presented annually to the 50 individual leaders (or small teams), 20 Emerging Leaders, and 25 sustainability projects that have contributed the most to enhancing sustainability and the low carbon economy in Canada over the prior 2 years. Those pictured today join 800+ remarkable individuals and 170 projects that have been recognized for their significant and measurable accomplishments, impact and leadership since 2011.

Each fall, the annual **Clean50 Summit** brings together sustainability, policy and clean tech experts from disparate Canadian endeavors, seeking to enhance opportunities for these leaders to find new and innovative ways to collaborate. These individuals collectively

Winners represent 16 categories that include every field of endeavour in Canada. The majority of individuals, drawn from commercial enterprises, are professionals who possess a deep understanding of sustainability and how to adapt those learnings to the benefit of their organizations. And in the process, help their employers increase profit and resiliency - and thus become more attractive to both employees and investors.

But to be successful, those organizations' efforts need government and energy utility support, clean technology to drive down emissions, and the technical knowledge shared by academics and environmental NGOs (ENGOS). Hence the need for a Clean50 Summit – where, through a Delta curated, extraordinary networking process, these diverse exemplary individuals can learn from each other and accelerate Canada's progress through ongoing collaboration.

Amongst many other things, individual Clean50 honourees this past year have led organizations or efforts that have:

- led the charge in attracting over \$10 Billion in new investment that will help Canada become one of the leaders in the manufacture of electric vehicles and batteries, creating over 17,000 jobs
- Accelerated the growth of 100s of clean & blue tech companies
- Built Renewable Energy: In the heart of oil country, on Indigenous territories, and around the world, different honourees have built or enabled grid-scale wind and solar deployments
- Led Canada's largest Crown Corporation onto a clear and achievable path to net zero
- Transitioned investments worth over \$100 billion into more sustainable and ESG focused companies
- Persuaded the citizens of Halifax to vote for the tax increase needed to take the meaningful climate action needed to cut emissions city-wide by 75% by 2030, and to zero by 2050.
- Begun executing a comprehensive plan to make Canada's largest – and one of the oldest – downtown university campuses GHG negative by 2050
- Helped companies avoid 1,500 MT of CO2 emissions whilst avoiding over \$73 million in energy costs over the past year
- Led a major telecom service provider to cut its network GHG emissions by 55% over the past 2 years, with a plan to get to GHG neutral operations by 2025

ELIZABETH ALVES
COGECO

HON. FRANÇOIS-PHILIPPE CHAMPAGNE
MINISTER, INNOVATION, SCIENCE, AND INDUSTRY

JENNIFER CLIPSHAM
ANTHESIS GROUP

DOUG ETTINGER
CANADA POST TEAM

CHERYL HODDER & KIM RAPAGNA
CANADA POST TEAM

CATHERINE GRENIER
NATURE CONSERVANCY OF CANADA

MARTIN GROSSKOPF
AGF MANAGEMENT

IBRAHEEM KHAN
EXTRACT ENERGY

JEFF MACDONALD
ECOSYNTHETIX

JOE MAZZA
FORTISBC

SHANNON MIEDEMA
HALIFAX REGIONAL MUNICIPALITY

BRIANNE MILLER
NADA

GREG NUTTALL
WOODLAND BIOFUELS

DAVE ROGERS
AMP ENERGY

RON SAPORTA
UNIVERSITY OF TORONTO

DR. INGRID WALDRON
THE ENRICH PROJECT

MIKE WINTERFIELD
ACTIVE IMPACT INVESTMENTS

MAIKE ALTHAUS
CANADA CLEANTECH ALLIANCE

COLIN ARMSTRONG
HTEC

JOHN BAI, CFA
NEI INVESTMENTS

DAN BALABAN
GREENGATE POWER

ALAIN BERGERON
IA FINANCIAL GROUP

CURTIS BERLINGUETTE
MIRU SMART TECHNOLOGIES

MICHAEL BERNSTEIN
CLEAN PROSPERITY

ROY BROOKE
MUNICIPAL NATURAL ASSETS INITIATIVE

MARISA CARPINO
CITY OF PICKERING

JASON CHEE-ALOY
POWER ADVISORY

DR. SEAN CLEARY
INSTITUTE FOR SUSTAINABLE FINANCE

FABIAN DE LA FUENTE
SOLAIRES ENTREPRISES

KATIE DUNPHY
KPMG

KYMM GIRGULIS
BC HYDRO

CATHERINE GOYER
BELL CANADA

JENNIFER HENRY
PERK ECO

JEREMY HEWITT
BC CLIMATE ACTION SECRETARIAT

JAMES LARSEN
E-ZINC

REBECCA LOYO MAYO
ARITZIA

JEFFREY MAXWELL
TRAK INT'L GREEN ENERGY RESOURCES

STEPHANIE MEDEIROS
ABB

RAMEE MOSSA
FTEX

JESSICA NIXON
COWESSSES FIRST NATION

PAUL PELE
CARBONIX

TIM REEVE
REEVE CONSULTING

DR. DAVID RISK
ST. FRANCIS XAVIER UNIVERSITY

ELIZABETH SHIRT
GLOBE SERIES

GRANT SMITH
POND TECHNOLOGIES

ELIZABETH STRASZYSKI
UNIVERSITY OF TORONTO SCHOOLS

BERNARD TAN
RE ROYALTIES

DR. REBECCA TURPIN
GOVERNMENT OF YUKON

LINDSEY WALTON
PRINCIPLES FOR RESPONSIBLE INVESTMENT

TAYBER YASTREMSKI
SUSTAINABLE PROJECTS GROUP

GAVIN PITCHFORD
DELTA MANAGEMENT
CLEAN50 EXECUTIVE DIRECTOR

To learn more or make a nomination:
www.Clean50.com

Follow us on **LinkedIn**

Special Clean50 Award Winners: **HP Sustainable Procurement Champion: Finalist** ● Winner ●● Brienne Miller & Nada | **Quadreal Best Net Zero Action Plan: Finalist** ● Winner ●● Doug Ettinger & Canada Post Team
Resolute Net GHG Reduction Champion: Winner ●● Catherine Goyer & Bell Canada | **TELUS Community Service Award: Finalist** ● Winner ●● Brianne Miller & Nada

The Clean50 Awards would not be possible without the generous support of our champions:



CANADA'S CLEAN50





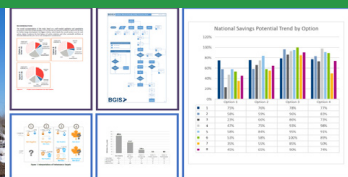
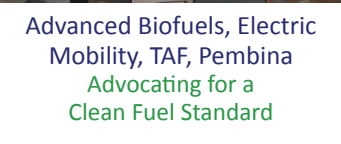

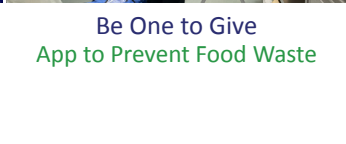

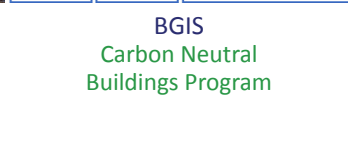
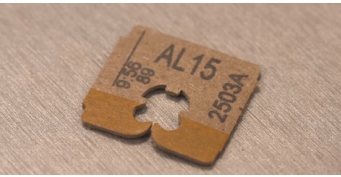
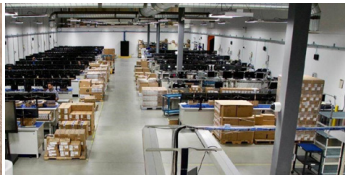



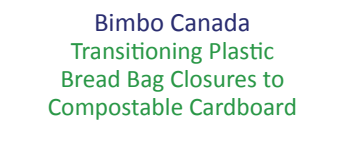






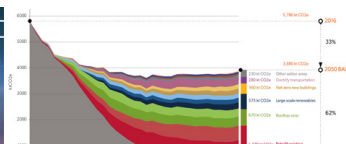


FIGHTING CLIMATE CHANGE

2023 Clean50 exceptional contributors to the clean economy contributeurs exceptionnels à l'économie propre TOP PROJECT

The Canada's Clean50 Awards are given annually to the 50 individual leaders who have done the most to advance the low-carbon economy and sustainable development in Canada over the prior 2 years. The full list of Clean50 individual honourees for 2023 appears on the previous page.

The Clean50 also recognizes 25 Top Sustainability Projects, 20 Emerging Leaders, and Lifetime Achievements by 5 inductees each year, as listed below. For more information, or to make a nomination, visit www.clean50.com

Projects selected based on their innovation and impact, and their ability to inform and inspire other Canadians to replicate.

 Clean Fuel Standard Advocates Coalition	 Balls 4 Eyeballs Tennis Ball Recycling for Eye Research	 Be One to Give App to Prevent Food Waste	 Bell Canada & Bell Mobility Solar Energy Powers Remote Cell Towers	 BGIS Carbon Neutral Buildings Program
 Advanced Biofuels, Electric Mobility, TAF, Pembina Advocating for a Clean Fuel Standard	 Carbon Neutral Technology Sustainable Technology Finance	 Clean Foundation Clean Energy Financing for Homeowners	 erthos Creating Compostable Plant Based Plastics	 Foresight Canada Identifying Canada's 50 Most Investable Cleantech Companies
 Bimbo Canada Transitioning Plastic Bread Bag Closures to Compostable Cardboard	 Goodwill Industries of Alberta A Sustainable Action Plan for GOOD	 Green Economy Canada Advancing Sustainable Procurement in Canada	 Halifax Regional Municipality & Sustainability Solutions Group HalifACT – a Coastal City's Climate plan regions	 Kite Mobility A New Way to Access Sustainable Transportation
 Municipal Natural Assets Initiative & Gibsons, BC Leveraging Natural Assets for Coastal Resilience	 National Zero Waste Council, Metro Vancouver, FCM et al Accelerating Canada's Circular Economy	 Nature Conservancy of Canada Protecting Boreal Wildlands	 Project Neutral Talk Climate to Me	 Relocalize Hyper-localizing CPG With Autonomous Micro-Factories
 SecondMuse Helping Climate Tech Start-ups Achieve Scale	 Solas Energy Consulting Mapping Solar Potential for Calgary Residents	 Thompson Rivers University & Solar Earth Technologies The Solar Compass	 University of Toronto Schools "Bee the Change" Pollinator Project	 Wataynikaneyap Power Connecting 17 First Nations to the Provincial Power Grid

2023 Clean50 exceptional contributors to the clean economy contributeurs exceptionnels à l'économie propre EMERGING LEADER

Sponsored by
DELTA MANAGEMENT
Corporate Sustainability & Clean Tech Search

The best of the next generation of Canada's Clean50 Leaders. Each with extraordinary accomplishments measured against their years of experience.

 KATHRYN BAKOS INTACT CENTRE ON CLIMATE ADAPTATION	 DEVESH BHARADWAJ PANI	 JACK BRUNER CARBON NEUTRAL CLUB	 MICHAEL CARLSON CARBONET	 CLARA CARRIERE HP CANADA	 NIKI CESTA THE WASTELAND PLAN FOUNDATION	 SHIVANI CHOTALIA NRSTOR	 TRUZAAR DORDI UNIVERSITY OF WATERLOO	 ALEX IP CERT SYSTEMS	 MOE KABBARA THE TRANSITION ACCELERATOR
 CHRIS KALLAL WILD + PINE	 GEETANJALI KANWAR MKB & CO.	 TAYLOR MCCARTEN BINBREEZE	 ARMAN MOTTAGHI PROPERATE	 LIZ O'CONNELL AROLYTICS	 KELLY O'NEIL LAURENTIAN BANK	 NATHAN RENAUD GREEN ECONOMY CANADA	 JEFF ROBERTSON BIMBO CANADA	 CLAIRE SEABORN GOVERNMENT OF CANADA	 TOMAS VAN STEE ENPOWERED
 2023 Clean50 Lifetime Achievement				 JEAN ANDREY UNIVERSITY OF WATERLOO	 MITCHELL BEER ENERGY MIX PRODUCTIONS	 PAUL BUBELIS SUSTAINABILITY NETWORK	 STEPHANIE CAIRNS WRANGELLIA CONSULTING	 ROB KEEN FORESTS ONTARIO	

Special Award Winners: Voted Clean50 | Top Project of the Year ●● HalifACT | TELUS Community Service Award: Finalists ●


The Clean50 Awards would not be possible without the generous support of our champions:



CANADA'S CLEAN50


PART 1 OF 3: TACKLING CARBON FOOTPRINTS

READ PART 2 ON APRIL 21: Future-proofing society; READ PART 3 ON APRIL 22: Celebrating climate action on Earth Day




CATHERINE GOYER

As director, Corporate Responsibility and Environment, Bell Canada, she applied the vision of digital technology-enabled transformation to Bell's decarbonization strategy. The result? A 55 per cent reduction in GHG emissions per network usage between 2019 and 2021, plus the recovery of 2.5 million e-devices from customers, resulting in a 63 per cent waste diversion.



DOUG ETTINGER

The president and CEO, Canada Post Corporation, supports a comprehensive plan to get to net zero by 2050 by increasing measurement and disclosures and meeting science-based targets. Focus areas include transforming the fleet to electric, decarbonizing buildings, phasing out single-use plastics and empowering employees through a \$5-million Sustainability Innovation Fund.



SHANNON MIEDEMA

Spearheading HalifACT, the city's climate action plan, the director, Environment and Climate Change, Halifax Regional Municipality, has created and steered through council a comprehensive response to the climate emergency: a seven-pillar plan to get the city to net zero by 2050.

MORE CARBON REDUCTION LEADERS AT CLEAN50.COM

BUILDING A COMMUNITY OF CHANGE-MAKERS

The Canada's Clean50 awards were founded by Delta Management Group in 2011 as a means to identify, recognize and – most importantly – connect Canada's climate action leaders so they might meet, share best practices and collaborate to achieve an even greater impact. Twelve years later, between the core 50 individual award winners, emerging leaders, lifetime achievement honourees and project teams, the Clean50 now has over 800 members and nearly 200 project award winners working in every corner of the country and just about every possible form of climate action.



Q&A WITH GAVIN PITCHFORD

Clean50 Executive Director and CEO of Delta Management Group

OVER THE 12 YEARS OF CLEAN50, HOW HAVE THINGS CHANGED?

I would say the list of accomplishments – and quality of the accomplishments needed to make our list – have steadily increased. The things we asked about in 2011 barely register on our current list. Most CEOs and boards are now vastly more engaged and thinking about decarbonization. Reporting on environmental, social and governance (ESG) issues is now the norm instead of the outlier. Today, any organization not internally conscious of its carbon footprint – and with some form of public plan to address it – is on the brink of becoming uninvestable. We're seeing circularity and sustainable procurement becoming increasingly important.

The single biggest change in Canada has been driven by a nationwide implementation of a carbon tax, with the expectation of a steady and predictable increase, and a strong backstop mechanism to protect those who invest from any future government repealing carbon taxes. With those policies in place, we are seeing more than incremental improvement.

IN HINDSIGHT, IS THERE ANYTHING YOU'D DO DIFFERENTLY?

For sure. We have recognized individuals for taking meaningful steps within organizations that may be doing enough in just that one spot but are overall not moving forward – or not moving fast enough. Some have been quick to hide behind a Clean50 award as a sign they are doing enough.

Those days are over. We've changed our policies so we're no longer recognizing individuals working for firms that lack a consistent company-wide commitment to climate action. You can no longer win an award for your bank's renewable energy investments when it is simultaneously funding more fossil fuel extraction on unceded Indigenous lands.

I sometimes think we would have driven more behaviour change with a Canada's Dirty50 list; we're still considering it (although sponsors are harder to find for this kind of award!)

WHAT ARE THE BIGGEST THINGS YOU'VE LEARNED?

I've learned too much from the people we have recognized over the years to articulate a short answer. But in one word, our members are simply "extraordinary." They bring a strong desire to solve problems and collaborate. Two of my biggest personal insights relate to how hard it is to embed a culture of change in an organization – and from that, what makes a great leader is ongoing innovation.

Very few Clean50 members think inside a box. They have figured out how to manage around the status quo, rather than within it – and such traits are invaluable in driving systems change. And they have been endlessly creative in embedding new ways of doing things within their organizations.

While this can make it difficult to get these individuals to follow our process, these qualities make them so valuable to their organizations and to Canada.

WHAT'S NEXT FOR CLEAN50?

Our website has become a repository of wisdom and insights from our Clean50 community: there are already hundreds of articles on a wide variety of topics on the site. Sharing their expert knowledge is one of the commitments our members make, and one of our objectives is to have someone curate and seek out more of that expertise. We envision creating a position for a full-time Clean50 executive director if we can drive the funding.

We also have a collection of experts in several specific areas who could work together to develop new frameworks. For example, I'd love to convene a group of experts in transportation to create a clean freight standard that could allow companies to achieve various levels of certifications based on the carbon intensity of their shipping.

A third objective is to convene local networking events in addition to our regular gatherings in Toronto and Vancouver. We now have a big enough member base to consider Calgary, Edmonton, Montreal and Halifax.

I'm still thinking about the Dirty50 list. Just imagine if naming the worst banks, retailers and telecommunication service providers could make these organizations toxic to investors and cause their leadership and boards to change the way they operate.

We all know that urgent action is required to address climate change. The core message is that humanity is out of time, so let's not waste any of it.

CONTINUED ON April 22



Canada's top cleantech innovators coming together with industry and investors at the 2022 Foresight 50 event in Vancouver, B.C. SUPPLIED

HARNESSING THE TRANSFORMATIVE POWER OF TREES AND TECH FOR ENVIRONMENTAL BENEFITS

As Canada takes action to achieve its 2030 Paris Agreement and reduce greenhouse gas emissions, a Certified B Corp based in Edmonton, "at the heart of the energy transition," is helping companies move towards attaining net-zero carbon in their operations.

Wild + Pine, founded in 2011, has earned a stellar reputation working with the energy sector to reclaim natural habitat and restoration of industrial disturbances, such as well sites, pipelines, seismic lines and oil sands. Chris Kallal, its CEO, says, "Environmental restoration is the backbone of our business."

There are immense environmental and social impacts associated with reforestation, which ultimately captures and stores carbon dioxide from the atmosphere, improves air and water quality, and combats biodiversity loss, explains Mr. Kallal. Drawing from more than a decade of experience and expertise in landscape restoration, Wild + Pine builds projects on behalf of clients that nurture "resiliency in our businesses, forests and future."

An example is the StoneWoods Forest Carbon project, led by Wild + Pine, Western Canada's first and largest nature-based afforestation carbon removal project. "Client's partner with Wild + Pine, and we aggregate our efforts and restore landscapes that are typically unproductive or marginal lands. We replant forests and native habitat," says Mr. Kallal. The aim is to reinvigorate thousands of acres of Alberta's sensitive ecosystems.

The StoneWoods Forest Carbon project is registered, validated and verified with the voluntary carbon market, offering clients an option for "high-quality, transparent Canadian carbon removal offsets," says Mr. Kallal, adding that projects like these are "the best shot at addressing global climate challenges at scale, right here in Alberta."

Confronting issues – such as the lack of commercial growing space available to fulfill the demand coming from the marketplace for tree seedlings – is where the company really shines, says Mr. Kallal. Wild + Pine has developed the Bioprism Advanced Vertical Greenhouse, Canada's first fully artificial vertical greenhouse for the commercial production of tree seedlings. Within a controlled environment, seedling growth is optimized, using less space and fewer resources, he explains.

The facility currently generates three times the number of crops compared to conventional growing methods, annually producing hundreds of thousands of trees. Wild + Pine continues to test hypotheses and conduct trials with the aim of achieving an even greater increase in production.

"We know what we do best is develop technology," says Mr. Kallal. "We're really good at innovating, and that's our contribution to our ecosystem." Wild + Pine, positioned "at the core of the energy industry and industrial development in Canada," is hoping to inspire other companies through "contagious innovation."

"We're proud to represent the ingenuity of Alberta-based businesses and demonstrate how sustainability and climate action is good for business," he says. "There's never been a greater opportunity to utilize sustainability as a competitive advantage."



Wild + Pine, led by CEO and founder Chris Kallal and director, Projects and Sustainability, Kaithlyn Scaber, has developed the Bioprism Advanced Vertical Greenhouse, where seedling growth is optimized to use less space and fewer resources. SUPPLIED

CLEANTECH INVESTMENT ACCELERATING NET-ZERO GOAL

In March, the Intergovernmental Panel on Climate Change (IPCC) released its Synthesis Report for the Sixth Assessment Report, providing an integrated review of climate change science and an assessment of efforts to reduce greenhouse gases by 50 per cent by 2030 to limit climate change within 1.5 degrees Celsius of pre-industrial levels. The report does not paint a rosy picture.

"The climate time-bomb is ticking," said António Guterres, secretary-general of the United Nations, commenting on the study. "Humanity is on thin ice – and that ice is melting fast."

Foresight Canada, a cleantech ecosystem accelerator, is working relentlessly towards building a low-carbon future and ensuring that Canada can meet and exceed its commitment to the Paris Climate Agreement, says CEO Jeanette Jackson.

The national organization, with offices in British Columbia, Alberta and Ontario, is intent on addressing the question: "How can we quickly decarbonize Canadian industry and be the first G7 country to reach net zero?"

To accelerate this transition and stave off the potentially catastrophic consequences of rising temperatures, climate solutions need to be rapidly launched, commercialized and scaled, explains Ms. Jackson. Foresight Canada, celebrating its 10th anniversary in April, brings together innovators, industry, investors, government and academia to tackle the climate emergency.

"We've supported almost 500 ventures through our accelerator programming and an additional 500 Canadian ventures through other programs, such as our innovation challenges, and access to capital activities," reports Ms. Jackson. "In

the last two years, 40 of these ventures that feature low carbon footprint technologies, freshwater reclamation and emission reduction technologies have secured over a billion dollars in capital."

The organization co-ordinates a significant amount of "curated matchmaking" between industry and municipalities. This ideally results in a pilot project or commercial opportunity for domestic adoption, says Ms. Jackson.

Building strength in ecosystems by sector and region, says Ms. Jackson, is another way that Foresight Canada helps "move the needle towards Canada reaching its net-zero climate targets."

An example is carbonNEXT, a carbon-tech commercialization hub, established by Foresight and Carbon Management Canada to "drive development and scaling of Canadian carbon capture, utilization and storage (CCUS) ventures."

"We fundamentally believe that we are better together," says Ms. Jackson.

"We need problem-driven innovation. We need adoption of solutions, and we need to celebrate those wins."

Foresight Canada shines a light on cleantech innovators while directly connecting companies with investors, customers and partners through its Foresight50 project.

"We profile Canada's 50 most investable cleantech companies. The first year alone, those ventures raised nearly \$600-million."

"We're into year two, and I can't wait to showcase Canadian talent and help attract investment in those ventures" that will ultimately make a difference in tackling the climate crisis, she says.





Our community is proud to support new wind and solar generation like the Rattlesnake Ridge Wind Farm in one of Canada's most carbon-heavy grids.

Choose high-quality renewable energy

Bullfrog Power offers green energy solutions that meet or exceed standards of performance and accountability set by certification groups including:



Whether you're looking for a turnkey green energy package or your organization is ready to bring a new wind or solar farm to life with a power purchase agreement, we have a sustainability solution for you.

Accelerate the renewable energy transition at bullfrogpower.com/impact








Measured as of April 1, 2023

CANADA'S CLEAN50


PART 2 OF 3: FUTURE-PROOFING SOCIETY

READ PART 3 ON APRIL 22: Celebrating climate action on Earth Day




JACK BRUNER

The co-founder of Carbon Neutral Club is empowering organizations to achieve their climate commitments by engaging workforces to take climate action. The platform helps employees calculate, understand and access incentives to reduce their carbon footprints. To date, the community of thousands has eliminated 15,000+ tonnes of CO2 from the atmosphere.



CHRIS KALLAL

By developing nature-based carbon removal projects via restoring Canada's forests, the founder and CEO of Wild + Pine has propelled his business into a climate action leadership position. The technology for growing tree seedlings in a vertical greenhouse achieves three times the crops per square foot while using 80 per cent less water compared to conventional methods.



CLAIRE SEABORN

As chief of staff to Canada's Minister of Natural Resources, she has been at the forefront of executing green infrastructure initiatives that are central to the government's climate plan: including the \$2.75-billion Zero-Emission Transit Fund, the \$200-million Natural Infrastructure Fund and Canada's first National Infrastructure Assessment.

PRIORITIZING HIGH-IMPACT RENEWABLE ENERGY CERTIFICATES

Allowing electricity customers to shrink their environmental footprint by participating in the development and growth of renewable energy was a laudable goal when Bullfrog Power started in 2005.

The Canadian company offered electricity from renewable sources such as wind, solar and low-impact hydro facilities. Rather than developing parallel distribution systems to supply green energy directly to corporate and residential buyers, Bullfrog issued renewable energy certificates (RECs) to ensure the electricity being added to the grid on their behalf was from such sources.

Today, RECs are a globally accepted instrument for tracking how much renewable energy is produced and recording the environmental benefits for users. But the concept is at a crossroads given changes in the power-generation landscape, variations in definitions of green energy and the imperative for corporate power users to reduce and disclose their impact on the environment. "This is not just a nice-to-have anymore," says Andrew Yang, director of market strategy and innovation at Bullfrog Power in Toronto. The private company is Canada's leading green energy provider, with a customer base of more than 1,500 businesses and 10,000 homes.

Mr. Yang notes that when renewable energy is put into the grid, it mixes with the power generated from fossil fuels and other sources. "Tracking the electricity from a wind or solar farm would be like tracking a glass of water poured into a river," he explains.

Through the REC mechanism, every time one megawatt-hour of energy is injected into the system from a clean, renewable source, one



As the 130-megawatt Rattlesnake Ridge Wind Power Project is located in southeast Alberta, it helps to advance Bullfrog Power's goal to increase the adoption of renewables in places with high carbon intensity. SUPPLIED

“... we're in a situation now where we can be much more targeted and focused on where we support continued renewable development.”

Andrew Yang
Director of Market Strategy and Innovation at Bullfrog Power



REC is produced, attributing to the buyer the accompanying environmental and social benefits. Bullfrog customers buy RECs to match the electricity they at the same time buy from their utility, with the premium going to support renewable-energy generators and to fund community-based projects like the installation of solar panels on schools and in Indigenous communities.

However, the function and impact of RECs are changing, Mr. Yang notes, and they're not all created equal, especially given variations in the renewable energy source, the age of the generating facility and its location. Bullfrog sources the highest quality RECs that have the most positive environmental impact, publicly stated and audited by Deloitte.

There's a need for more transparency in the reporting of deals and the definition of renewables, he says.

The Globe and Mail reported last autumn that Microsoft would buy RECs from Ontario Power Generation's hydroelectric dams and nuclear reactors. It noted that was contentious because nuclear energy, while considered by Microsoft to be low carbon, creates radioactive waste. And REC sales to customers outside of Ontario can end up going to places where electricity is generated by burning coal.

This disparity in carbon intensity between different regions puts a spotlight on the fact that electricity grids are aging "and are not as interconnected as previously understood," Mr. Yang points out. When RECs were first introduced, they were useful "because anywhere you were building renewables, you were meaningfully reducing the carbon footprint," he recalls. "But we're in a situation now where we can be much more targeted and focused on where we support continued renewable development."

There's a debate in the industry around "additionality," Mr. Yang says, whether a dollar spent on a REC "really goes to change the makeup of the grid." The key is the pedigree of a renewable energy facility and where it and the customer are located. He says it's tempting for companies to buy RECs at low prices from a jurisdiction that has a friendly regulatory

environment or incentives.

There's a need for quality vendors with green-energy solutions that can withstand scrutiny and reliably bring on renewable capacity, Mr. Yang says. "Is a dollar spent on a REC actually going to take a proportional amount of carbon off the grid, or is it just displacing another unit of clean electricity somewhere?"

It especially doesn't make sense to build up renewables in jurisdictions that are already highly renewable powered and export the power to paces with "dirtier" grids, he says. Bullfrog focuses on "demonstrably additional" developments in places with high carbon intensity. For example, if a company has operations in British Columbia and Alberta, it would be better if its RECs were mostly sourced from Alberta, which lags behind other provinces on the adoption of renewables. (Bullfrog has signed two large deals in Alberta specifically in support of this approach.)

Bullfrog wants to ensure that RECs are used "to support renewable development in renewable generation-scarce areas," while jurisdictions look at ways to improve the wider electric transmission system, Mr. Yang adds. "Let's do the best that we can to tie consumption to renewable development in a very clear way."

wild + pine

WE DON'T SELL OFFSETS.

We develop nature-based carbon removal assets for Canada's climate leaders.

wildandpine.ca





Carbon Neutral Club

Embedding climate action into company culture

www.carbonneutralclub.com




Certified B Corporation






Clean50

Proud recipients of Clean50's Emerging Leader award 2023




DEVESH BHARADWAJ

Treating the world's water to achieve clean water, or pani in Hindi, often requires energy-intensive and expensive processes. The CEO of Pani applies machine learning to power digital solutions that balance the need for high-quality water and energy-smart processes. A digital data analysis platform enables the move toward net-zero carbon water treatment.



SHIVANI CHOTALIA

By championing a partnerships-first approach at NRSfor Incorporated, the director, Development and Partnerships, is leading the development of 750MW+ of energy storage projects across Canada. The goal? To achieve more resilient developments and demonstrate how communities can use clean energy infrastructure for economic empowerment.



HON. FRANCOIS-PHILIPPE CHAMPAGNE

Canada's Minister of Innovation, Science and Industry is a champion for the domestic cleantech industry, attracting a string of multibillion-dollar, multinational investments into the industry, with a particular focus on manufacturing electric vehicles and batteries to position Canada for a low-carbon manufacturing future.

MORE NEXT GENERATION LEADERS AND CLIMATE-CONSCIOUS POLITICIANS AT CLEAN50.COM

BOLSTERING CANADA'S LEGACY AS A FORESTRY LEADER

When it comes to stabilizing our climate, few solutions can match the powerful potential of forests. Beyond helping to regulate ecosystems and protecting biodiversity, forests play a key role in the carbon cycle. Globally, approximately 2.6 billion tonnes of carbon dioxide – one-third of the CO2 released from burning fossil fuels – are absorbed by forests every year, according to the International Union for Conservation of Nature.

"Everybody recognizes the importance of a healthy forest for producing oxygen, cleaning the air and providing clean water and healthy soil," says Rob Keen, registered professional forester and CEO of Forests Ontario, the leading charity dedicated to increasing forest cover and improving forest conditions in Ontario and across Canada. "Sustainably managed forests are an effective climate change solution, and increasingly, many countries around the world are setting new tree planting targets to expand their forest cover."

As a nation, Canada's history is linked to forestry and "the best managed forests in the world," says Mr. Keen. Yet while he regards this heritage as a source of pride, he believes more efforts are needed to keep forest landscapes intact, ensure they are managed sustainably and restore those that have been lost.

"Crown forests in northern Ontario are extensive and sustainably managed," he explains. "But in the southern part of the province, 95 per cent of forests are privately owned. Here, we have an average forest cover of 26 per cent, with some areas as low as 4 per cent. It has been recognized that we need at least 40 per cent forest cover to safeguard their sustainability."

In response, for more than 20 years, Forests Ontario has led ambitious tree planting programs, extensive education initiatives and community outreach programs, resulting in millions of trees planted and new forests created each year. "We work with our many partners, including First Nations, conservation authorities, stewardship groups, forestry consultants and municipalities, to get trees planted," says Mr. Keen.

Subsidies provided by Forests Ontario help to reduce landowner costs. "Every day, we engage with landowners to create awareness about the benefits of increasing forest cover, ensuring trees are planted for the benefit of society," he adds.

Together with its national division, Forest Recovery Canada, Forests Ontario's unique infrastructure and expertise tracks planting projects from seed to healthy forest. This includes working with skilled partners to assess



Forests Ontario's goal is to increase forest cover. SUPPLIED

planting sites to determine what species are best suited for the location, securing the right trees, planting trees professionally – and then following up to monitor growth and manage challenges.

The objective is twofold: one, to leverage the benefits of large and diverse forests to mitigate climate change; and two, to ensure future forests are healthy and resilient enough to withstand climate impacts.

"We can also embrace the benefits of sustainably produced wood products as alternatives to more carbon-intensive building materials," says Mr. Keen, noting that third-party certification organizations such as

the Forest Stewardship Council or the Sustainable Forestry Initiative can help consumers make informed choices regarding sustainably produced materials.

"Individuals and businesses can make a difference by being conscious consumers and choosing or specifying wood products from sustainably managed forests," he says.


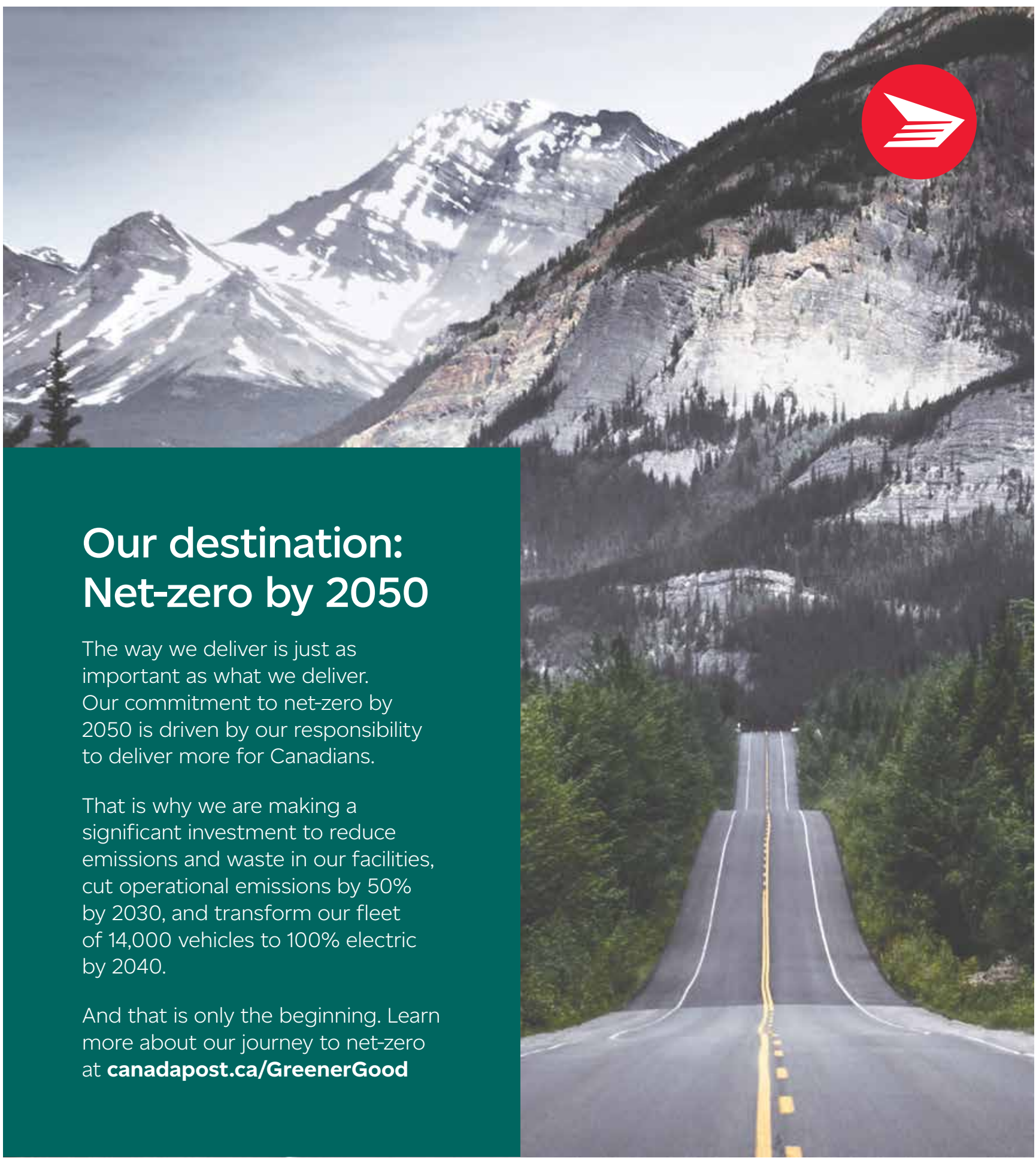
"Whether it is by planting trees on your property, purchasing sustainably produced forest products or supporting the creation of new, healthy forests for future generations, we need to realize that we can't just leave this work to a few – we all have a role to play."

AMPLIFYING IMPACT At \$100-million, the TELUS Pollinator Fund is one of the world's largest corporate impact funds. As part of an ongoing commitment to social capitalism, TELUS invests in for-profit startups, companies and founders committed to driving innovation and transformative solutions that make the world a better place. TELUS's portfolio companies are using tech for good to create solutions focused on sustainability, responsible agriculture, transformative health care and enabling

inclusive communities. Each one uniquely addresses a critical challenge of our time – from utilizing drone-based technology to accelerating post-wildfire reforestation, enabling sustainable agricultural production through agroforestry, transforming waste into upcycled materials to fight climate change, and more. Leveraging the position as a corporate impact fund, TELUS engages the strength of its entire network to support the growth of portfolio companies.

Learn more at TELUS.com/pollinatorfund.





Our destination: Net-zero by 2050


The way we deliver is just as important as what we deliver. Our commitment to net-zero by 2050 is driven by our responsibility to deliver more for Canadians.

That is why we are making a significant investment to reduce emissions and waste in our facilities, cut operational emissions by 50% by 2030, and transform our fleet of 14,000 vehicles to 100% electric by 2040.

And that is only the beginning. Learn more about our journey to net-zero at canadapost.ca/GreenerGood


CANADA'S CLEAN50

PART 3 OF 3: CELEBRATING CLIMATE ACTION ON EARTH DAY




MAIKE ALTHAUS

The executive director of the Canada Cleantech Alliance/Ontario Cleantech Industry Association works to create an environment where cleantech companies can thrive through raising awareness among political decision-makers. The 2021 Canada Cleantech Week on the Hill, for example, drew government and cleantech leaders, helping to create three major tax incentives.



COLIN ARMSTRONG

Hydrogen is often hailed as clean energy of the future, and the president and CEO of HTEC has been working to create critical infrastructure: hydrogen supply solutions and a network of stations supporting the deployment of fuel cell electric vehicles. In 2018, HTEC opened Canada's first retail hydrogen fuelling station, which has since delivered 14,000 kilograms of hydrogen.



STEPHANIE MEDEIROS

Heading Emobility Global Accounts at ABB, she is leading the largest ABB electric vehicle charging infrastructure deployment globally. In Canada, ABB partnerships have resulted in the installation of hundreds of fast DC EV chargers, including fuelling stations and distribution centres, infrastructure that helps save hundreds of tonnes of CO2 emissions each year.

MORE CLEANTECH AND INNOVATION LEADERS AT CLEAN50.COM

CONTINUED FROM APRIL 20 INSTALMENT:

A COMMITMENT TO DIVERSITY AND INCLUSION



Q&A WITH GAVIN PITCHFORD
Clean50 Executive Director and CEO of Delta Management Group

WHEN IT COMES TO DRIVING SUSTAINABILITY, WHAT ARE THE CHANGES YOU ARE MOST HOPING TO SEE?

Fighting climate change can only work if all of society is engaged, so how can we ensure the choices that lead to better outcomes are available to everyone?

There are two changes that I am hoping to see and help to drive. First, a far greater ambition in the changes corporations and governments are willing to embrace; and second, a dramatic increase in the diversity of those who manage ESG and sustainability within corporations and who drive policy within governments.

On the former, we know the advantages that will go to the early movers. They may make a few more mistakes, but as climate change accelerates, they'll be ready. Those putting off change in the hopes of becoming "fast followers" may learn from others' mistakes, but they risk being left behind, or worse, becoming road kill. But most critically, the reality is that humanity simply doesn't have the time to kick this can down the road any longer.

On the latter, we desperately

need to pay attention to diversity, equity and inclusion (DEI), both from the perspective of seeing more BIPOC professionals assume leadership positions and in creating a level playing field through socio-economic equity.

We need to ensure the solutions we adopt are accessible to everyone, and to make the ongoing transition equitable. For example, while electric cars are far cheaper to operate over their lifetime, the upfront costs can be higher. That's why "everyone should go electric," can only be the answer if socio-economic inequities are being addressed simultaneously.

HOW CAN WE ADVANCE DIVERSITY AMONG PROFESSIONALS LEADING SUSTAINABILITY EFFORTS?

In speaking with two young Black sustainability professionals, I learned that they saw a cultural component as one of the greatest obstacles to greater DEI amongst sustainability professionals.

Anecdotally, they shared that their parents – and many of their peers' parents – encouraged their children to pursue roles that didn't require "standing out." Parents have an understandable concern that their children should achieve professional success and stability – but Black parents may see roles that include driving controversial corporate change as more risky for their children than, for example, a career in accounting. I believe we need to start changing the image of sustainability professionals – and acknowledge their critical role in corporations and society. Not just as change agents – but as agents essential to corporate survival in a rapidly changing world.

By conducting an informal study

of several masters in environmental studies and masters of sustainability programs in Canada, I found that Black and Indigenous students are still considerably under-represented relative to population. We need to

start earlier in promoting sustainability careers to under-represented groups – and encourage a wider diversity of students with scholarships, education grants and mentorship.

At the Clean50, we will continue to do our best to identify BIPOC professionals to be recognized – to increase the visibility of such role models to students and their parents, and to celebrate their success.

CATALYZING EMPLOYEE-DRIVEN IMPACT

As the world races towards a low-emissions future, businesses are struggling to deliver on their ambitious net-zero targets. A Toronto-based company, Carbon Neutral Club, is helping organizations achieve their climate commitments by mobilizing the most powerful but often ignored force for climate action: their employees.

"We're seeing billions of dollars being invested in net-zero plans, but in many organizations there's a total disconnect between the operational change goals and the value shifts needed to support them," says Jack Bruner, one of the three co-founders of the Carbon Neutral Club, which launched two years ago. "Carbon Neutral Club provides companies with the tools to achieve their sustainability targets by mobilizing a climate movement within their four walls."

Co-founders and longtime friends Jack Bruner, Jeff Packer and Roee Eidan built a membership-based platform that motivates and rewards employees for taking actions that contribute to their company's goals for Scope 3 greenhouse gas emissions, as well as their personal category emissions that are not directly produced by the organization.

"Equipping employees with accessible educational resources is key to empowering them to take effective climate action," says Mr. Bruner. Carbon Neutral Club does this by providing tools for calculating personal and work-related emissions, by offering personalized insights, tips and challenges for reducing carbon-emitting activities, and by tracking progress.

For instance, employees who drive to work might be incentivized to work from home more often, take public transit or cycle, while department leaders could be rewarded for rethinking their team's practices and prioritizing videoconferencing. "Based on an employee's footprint, we offer a personalized journey of reduction and team-based actionable challenges to change habits in and outside of work," says Mr. Bruner. "Our educational content uses plain language and helps employees at all levels of climate awareness understand the problem space and identify tactical reduction opportunities."

To ensure employees remain committed to achieving their individual and team-wide climate objectives, Carbon Neutral Club links incentives to actions. Depending on the employer, these incentives could take various forms, such as bonuses, vacation days, trees planted, discounts with their 100+ sustainable brand partners or other types of recognition.

To mitigate the impact of emission-generating activities that can't be avoided, Carbon Neutral Club offers employees the opportunity to invest in high-quality carbon offsets through science-backed climate projects. For instance, one portfolio

project, CarbonCure Technologies, injects captured carbon dioxide into cement to trap emissions from being released into the atmosphere.

To date, thousands of employees from hundreds of organizations across Canada and the United States use Carbon Neutral Club. "The community is growing rapidly," says Mr. Bruner, "as more companies and employees realize that successful and lasting climate action must happen from the bottom up."

"Just because a net-zero strategy exists doesn't mean it will work – organizations need to have a plan that will empower employees to understand and deliver on the strategy," he says. "When you boil it down, it's all about aligning corporate climate goals with employees' incentives and experience – and that's exactly what we're doing at Carbon Neutral Club."



Co-founders and longtime friends Jack Bruner, Jeff Packer and Roee Eidan built a membership-based platform that motivates employees to take action on sustainability. SUPPLIED

FORESIGHT⁵⁰

From direct lithium extraction to fog harvesting, meet Canada's most investible cleantech ventures leading us to net zero.



FORESIGHTCAC.COM/FORESIGHT-50





APRIL 22 IS EARTH DAY

A TIME TO CELEBRATE AND INVEST IN OUR PLANET.

Healthy forests clean our air and water, protect and conserve biodiversity, and are one of the most effective nature-based solutions in combatting climate change. At Forests Ontario, we are dedicated to the creation, preservation and maintenance of forest and grassland habitats.

This Earth Day, please join us in celebrating our natural environment and investing in greener, healthier communities. Your donation to Forests Ontario will support the planting of millions of trees, ensuring our efforts today thrive and grow into tomorrow's diverse, healthy, and resilient forests.

DONATE TODAY AT FORESTSONTARIO.CA



FORESTS ONTARIO
The voice for our forests





CATHERINE GRENIER

As president and CEO of the Nature Conservancy of Canada (NCC), she works to accelerate efforts to conserve critical natural areas. To date, NCC has helped to conserve more than 15 million hectares, and recently completed Canada's largest private land conservation project, the Boreal Wildlands, encompassing 1,500 square kilometres of forests and peatlands.



ROB KEEN

As CEO of Forests Ontario, he leads efforts to develop and manage large-scale afforestation and restoration projects, with a focus on increasing forest cover on private land. Results include extensive partnerships that have led to over 39 million trees being planted, with annual economic benefits in ecosystem services estimated at over \$82-million.



GRANT SMITH

Under the leadership of its president and CEO, Pond Technologies has developed and advanced ground-breaking technology that uses two tonnes of CO2 to grow one tonne of different kinds of algae, which can be used in helpful ways, for example, as algae-based animal feed.

MORE NATURE-BASED SOLUTION LEADERS AT CLEAN50.COM

CREATING A PLATFORM FOR CHANGE

Canadians value the ease and convenience of e-commerce. They also have high expectations of the organizations they choose to do business with, especially when it comes to social and environmental leadership.

Doug Ettinger, president and CEO, Canada Post, welcomes the challenge of increasing the capacity to deliver for Canadians while reducing environmental impacts. He sees it as an opportunity "to assume a leadership role across Canada."

With a presence in thousands of communities across the country – big and small, urban and remote – the organization aims to become "a platform for change," he says. Canada Post's climate plan, launched in 2021, is part of a comprehensive transformation focused on increasing capacity, improving service and meeting the changing needs of Canadians.

Following an unprecedented number of parcels moving across the country during the pandemic, e-commerce is expected to keep growing over the long term. This means Canadians are looking to Canada Post to deliver more, and to do so as a responsible corporate leader.

"We set the goal of achieving net-zero emissions by 2050 and reducing our emissions by 50 per cent



Canada Post aims to convert 50 per cent of the vehicles in its fleet to electric by 2030. SUPPLIED

by 2030," says Mr. Ettinger. "To get there, we have to look at the impact of everything we do, from our fleet and our buildings to all aspects of packaging and our supply chain."

Transforming an organization with nearly 68,000 employees, a real estate portfolio of about 3,000 properties and a fleet of approximately 14,000 vehicles required a plan that

is aligned with climate science, he says. "We worked with experts with global experience to calculate our greenhouse gas (GHG) emission numbers, and we've done pilot studies on how to go forward."

Canada Post's carbon inventory helped to identify three areas for action: transitioning to a low-emission fleet, using renewable energy and greening its real estate portfolio, according to Mr. Ettinger. "We created a 10-year plan that's based on reasonable assumptions about how things will change over time, including the cost and emergence of new technology."

"We have definitive targets, definitive timelines and clear amounts of funding support," he says. "And our internal dashboards show us, quarter by quarter, how we're measuring up to ensure we can meet our long-term goals."

DECARBONIZING TRANSPORTATION AND BUILDINGS

Significant emission reductions are expected to come from transitioning Canada Post's fleet, which drove 104.1 million kilometres in 2021 – the equivalent of circling the globe more than 2,500 times. "Our goal is to convert 50 per cent of those vehicles to electric by 2030, and 100 per cent by 2040," says Mr. Ettinger. "This

also means building charging infrastructure at approximately 350 depots across the country – and ensuring that we're powering our fleet with green grids where possible."

A recent milestone was the launch of its first depot using an all-electric corporate fleet in Nanaimo, B.C., he notes. "We started with locations using the clean grids of B.C. and Quebec. We have 14 electric vehicles in Nanaimo, and we are going to roll out more across the country."

Another key component of Canada Post's climate plan relates to decarbonizing its extensive real estate portfolio. For existing buildings, the organization is looking to implement retrofits and upgrades, such as LED lighting, solar panels, electrification of energy sources, and system upgrades like automation and sensor-controlled heating and cooling.

In addition to reducing emissions and increasing the energy efficiency of its existing buildings, "any new facilities will be net-zero buildings that meet the Zero Carbon Building standard of the Canada Green Building Council," says Mr. Ettinger. An example is the new Albert Jackson Processing Centre in northeast Toronto, which can process a million parcels a day, boosting the organization's capacity.

"This net-zero building – named after Albert Jackson, our first Black letter carrier in the late 1800s – is an important step towards improving customer experience in the Toronto area, where about 60 per cent of our parcels pass through," he says. "And we have plans to augment our facilities in other big cities with the same ESG lens."

FROM PILOT PROJECTS TO SOCIETAL TRANSFORMATION

The response to such measures has been very positive, notes Mr. Ettinger. "Many customers and partners tell us they'll choose our shipping options due to our commitments to ESG, since this is becoming an important consideration for everybody."

"We're also talking to our suppliers and subsidiaries to ask them to establish science-based targets by 2025, and this is built into our procurement process," he says. "We have a broad span of influence and see it as our duty to set an example. We embrace the fact that we need to act now for a sustainable future."

"With our transformation plan, we support 'A Stronger Canada – Delivered.'"

Canada Post achieved the 2023 Canada's Clean16 award.



Investing in startups that do a world of good.

It takes creativity, vision and commitment to make a lasting positive impact. That's why our \$100-million TELUS Pollinator Fund for Good supports innovative entrepreneurs courageously driving social and environmental change.

We've invested in companies like Flash Forest, a Canadian reforestation company harnessing drone technology to fight climate change and wildfires. By planting trees faster and more efficiently than conventional methods, they're accelerating wildfire recovery and helping organizations achieve their climate targets.

Let's make the future friendly.

telus.com/PollinatorFund

