

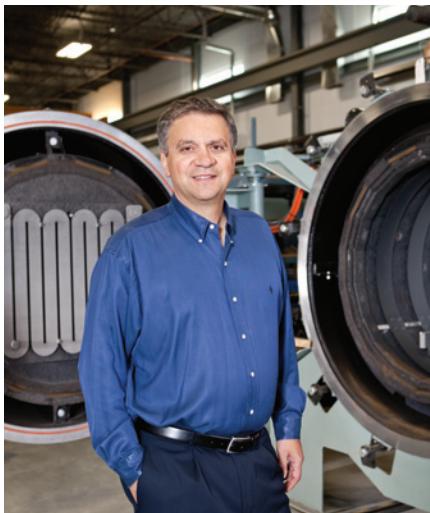
**Climate Change and Emissions Management (CCEMC) Corporation**  
**2010/2011 Annual Report**



**SETTING THE  
MOMENTUM FOR  
CHANGE.**



Considering Alberta's role as a global energy supplier, there are significant greenhouse gas emissions challenges ahead of us. But for the CCEMC, with challenges come great opportunity.



From inception, the objective has been to uncover good ideas, and this year it became apparent that brilliant ideas can come from unexpected places.



Many of the projects funded by the CCEMC have achieved international recognition and, in some cases, are setting the standard for worldwide use of clean technology.



## CCEMC Mandate

The CCEMC is an Alberta based not-for-profit, independent corporation with a mandate to reduce greenhouse gas emissions and adapt to climate change by supporting the discovery, development and deployment of clean technologies.

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## ► MESSAGE FROM THE CHAIR



**Our second year of operations has been a very busy one for the Climate Change and Emissions Management (CCEMC) Corporation. Between June 2010 and June 2011 we announced funding for 27 projects at all stages of innovation.**

We are helping to reduce emissions. The projects that we've announced to date are estimated to reduce greenhouse gas emissions by a total of approximately eight megatonnes over the next ten years and that does not include the potential leverage as these technologies are deployed into the marketplace.

We are helping to build a lower carbon economy. For those 27 projects, the CCEMC's total planned investment of more than \$126 million is supporting projects valued at more than \$632 million. In other words, for every dollar the CCEMC invests in a clean tech project, about another four dollars are also invested.

We are building a balanced portfolio with strong projects at all stages of innovation. The portfolio reflects Alberta's climate change strategy, which has three focus areas – conserving and using energy efficiently, implementing carbon capture and storage, and greening energy production. The CCEMC allocates 20 per cent of its funding to conservation and efficiency, 30 per cent to carbon capture and storage and 50 per cent to greening energy. A small proportion of funds are also set aside to support climate adaptation and knowledge.

We are supporting a broader dialogue on reducing GHG emissions. In May 2011, we hosted leading thinkers at the CCEMC GHG Reduction Summit. In addition to thought-provoking keynotes and panel discussions, everyone in attendance participated in breakout sessions. The Summit focused on three areas: the clean tech innovation system, finance and human capital and public policy. A report from the GHG Reduction Summit will soon be available, posted on our website at [ccemc.ca](http://ccemc.ca), as a companion piece to this annual report.

I want to thank the Board and our management team for their constant engagement and passionate leadership. Our team has done good work to support efforts to reduce emissions in Alberta. We're on the right track. We still have far to go.

**Eric Newell**  
Chair, Climate Change and Emissions Management (CCEMC) Corporation

## ► BOARD OF DIRECTORS



**ERIC NEWELL**  
Chair



**DOUG BEEVER**  
Fertilizer Industry



**JIM CARTER**  
Mineral Manufacturing



**PAUL CLARK**  
Chemical Producers



**AARON FALKENBERG**  
Public at Large



**CHARLES FISCHER**  
Conventional Oil and Gas



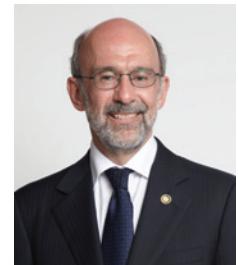
**PAUL GALACHIUK**  
Oil Sands



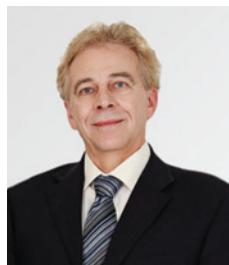
**DR. BRENDA KENNY**  
Pipeline Industry



**DR. DAVID LEWIN**  
Electricity Generation



**DR. DAVID LYNCH**  
Academic



**DR. ROBERT MANSELL**  
Public at Large



**PATRICE MERRIN**  
Public at Large



**ROY NEEHALL**  
Municipal



**ALEASA TASKER**  
Forestry Industry

## ► RISING TO THE CHALLENGE

Over the next 40 years, our global population will grow from seven to nine billion people. With that, our energy demand will increase substantially. Today, fossil fuels still supply the majority of the world's energy needs, and in Canada alone, 80 percent of the total national greenhouse gas emissions are associated with the use of fossil fuels<sup>1</sup>. Alberta is the largest provincial emitter of greenhouse gases (GHGs) in Canada, and to make impactful change we need to cut our emissions in half by 2050.

The potential impacts of climate change are far-reaching, affecting our economy, infrastructure, health, and environment. The need to shift to a lower carbon economy in Alberta is a solution that requires immediate action. Considering Alberta's role as a global energy supplier, there are significant challenges ahead of us. But for the CCEMC, with challenges come great opportunity.

The CCEMC was created to be a key part of Alberta's movement toward a lower-carbon economy and a greener environment. The CCEMC technology funding model will play a role in turning the challenge of controlling GHGs into massive opportunity, potentially transforming our economy while addressing the world's climate change challenges.

## THE CCEMC'S GOALS ARE:

- Goal 1: To fund clean technology projects that achieve actual and sustainable reductions in GHG emissions.**
- Goal 2: To support the research, development and deployment of transformative technology.**
- Goal 3: To improve the knowledge and understanding of climate change impacts, mitigation strategies, adaptation, and technological advancements.**
- Goal 4: To demonstrate full accountability to all Albertans.**

## ► GOVERNANCE AND FAIRNESS

As an independent, not-for-profit corporation, the CCEMC is governed by a Board of Directors. The Board has the primary responsibility to provide effective leadership in establishing measurement and monitoring systems to evaluate the success of CCEMC's strategies and projects in achieving its goals and objectives.

The Audit and Investment Committee is responsible for overseeing the annual audit, financial controls and for optimizing the return on CCEMC investments within the limitations imposed through the grant agreement with the province. The Governance and Accountability Committee is responsible for monitoring corporate governance developments and the effectiveness of the CCEMC's governance practices.

The CCEMC contracts a group of independent service providers to conduct the operational activities of the corporation.

Projects submitted to CCEMC are subjected to a rigorous two-staged review process. Process guidelines and decision criteria are made available to all applicants in advance. Third parties contracted to CCEMC are responsible for the project adjudication process. Adjudicators are required to have the requisite technical skills necessary for project evaluation. Other independent third parties are required to validate greenhouse gas reduction assertions. In addition, a Fairness Monitor is contracted to ensure that all proponents are treated equally and objectively during project reviews. The Fairness Monitor reports directly to the Board.

# ► CCEMC PERFORMANCE

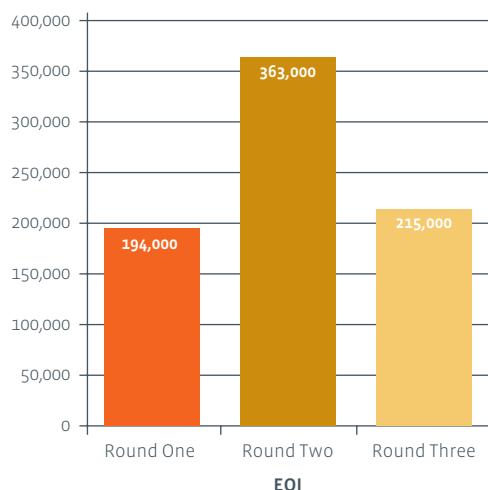
## A LOOK AT YEAR TWO

**Since its inception, the CCEMC has allocated \$126.15 million to 27 technology projects that are at the leading edge of impacting and reducing energy emissions.**

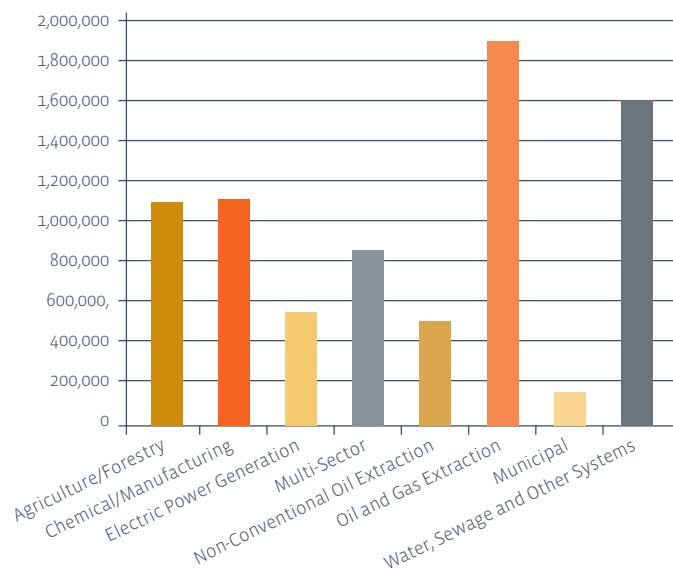
Supporting and building on the strategic direction established in Alberta's 2008 Climate Change Strategy will make significant contributions to a more efficient and cleaner energy industry. By applying these guidelines, the CCEMC will grow its portfolio of projects that develop cleaner and more efficient energy production.

The CCEMC's inaugural year was dedicated to getting its feet firmly planted in the cleaner energy sector. Now, the CCEMC is emerging as a leader in stimulating clean technology development in the province. Through transformative change, the CCEMC will play a part in enhancing Alberta's competitiveness, and enhance the economic and environmental value of the province's energy resources. More importantly, this momentum is helping Alberta facilitate the growth of clean technologies that can be exported around the world. New economic opportunities in various sectors are becoming available through the CCEMC's funded projects and Alberta will soon emerge as a leader in the creation of highly skilled jobs that advance transformative energy technologies.

**Emission Reductions by Call for Proposals\***  
(average tonnes CO<sub>2</sub>e/year)



**Emission Reductions by Industry Sector\***  
(tonnes CO<sub>2</sub>e/decade)



\* The CCEMC strengthened its process for estimating greenhouse gas emissions reductions after the first round of funding. The new methodology improves data integrity, documentation and justification of baselines, and use of lifecycle and market-based information. While the emissions reductions estimated for the first round of projects are considered good estimates, the values are not comparable to other CCEMC funded projects. Figures included in this annual report reflect the corresponding adjustments to the projects funded in Round One.

Based on these validated numbers, the average cost to reduce a tonne of CO<sub>2</sub>e emissions is \$100. This does not include research and development, carbon capture or programmatic projects. Cost is relevant to market demonstration and commercialization projects. The \$100 includes both the CCEMC and the proponent contributions (total costs).

NOTE: Figures presented above for Round One do not include associated emission reductions related to carbon capture projects.

\* NAICS Coding

NOTE: Figures presented above do not include associated emission reductions related to carbon capture projects.

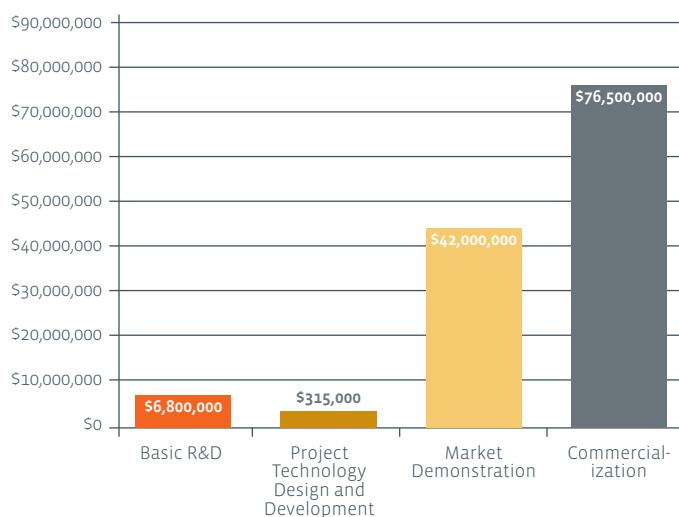
NOTE: Graphs report aggregate total from May 2009 to May 2011.

## STEPPING UP TO CLEAN INNOVATION

In May 2010, a Conference Board of Canada<sup>2</sup> report concluded that CCEMC funding efforts will make a meaningful contribution to Alberta's environment by promoting clean innovation and reducing greenhouse gas emissions. More than \$6 billion is expected to be spent on climate-friendly technology in Alberta between 2010 and 2014 – more than all other provinces combined. Pivotal to the CCEMC's contribution is project leverage; for every dollar CCEMC invests in a project approximately another four dollars are also invested.

The CCEMC anticipated a steep learning curve in its first year of operation, and is applying some of the lessons learned to a more targeted approach in its sophomore year. During the past year, the CCEMC refined its approach and began to invite proposals for more targeted investment in projects throughout the innovation chain that have the possibility of breakthrough success. From inception, the objective has been to uncover good ideas and this year it became apparent that brilliant ideas can come from unexpected places.

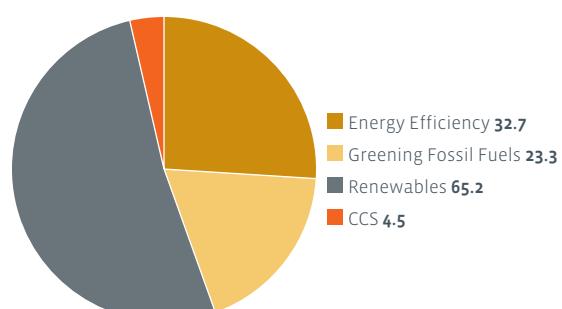
### CCEMC Funding by Innovation Step



## NEW PROJECTS

With a new approach in mind, June 2010 brought a targeted call for expressions of interest that focused on industrial energy efficiency projects. Soon after, the CCEMC made another call in September 2010 directed at renewable energy projects. These areas were under represented in the portfolio and offered immediate potential for greenhouse gas reductions. In total, 115 proposals were received and 34 candidates were invited to submit full proposals. After a robust review, six energy efficiency projects and five renewable projects were selected for their game-changing approaches to reducing Alberta's energy emissions.

### CCEMC Funding by Strategic Investment Area (\$ millions)



NOTE: Graphs report aggregate total from May 2009 to May 2011.

<sup>2</sup> The Conference Board of Canada.

*The Economic and Employment Impacts of Climate-Related Technology Investments.* May 2010.

## 11 GAME-CHANGING PROJECTS

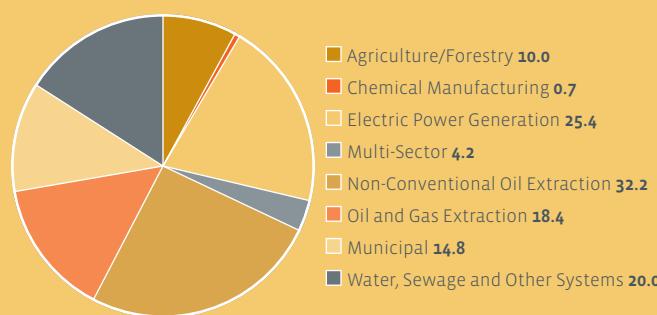
The 11 projects receiving CCEMC funding make a statement for Alberta, and to the world. Some of the greatest innovators are working in our province and their technologies are transformative in nature. Projects selected for the most impact are focused in two key areas:

- Renewable energy – \$27.65 million
- Industrial energy efficiency – \$27.2 million

Project proponents estimate that all of the CCEMC projects to date will cut emissions by a combined total of 772,000 tonnes a year. You can learn more about these projects throughout this report.

### CCEMC Funding by Industry Sector\*

(\$ millions)



\* NAICS Coding

## BIOLOGICAL PROGRAM ADVANCEMENT

Knowledge is crucial to identifying emission reduction opportunities in biological systems and management – particularly agriculture, forestry, waste to energy and landscape level/large scale integrated management. In December 2010, the CCEMC brought approximately 45 of Canada's leading climate change thinkers together to discuss Canada's biological management needs.

The CCEMC recognizes the significant potential to manage Canada's GHGs through biological opportunities. In fact, more than 30% of our emissions can be potentially eliminated through this approach<sup>3</sup>. The December workshop provided the foundation to launch CCEMC's biological project.

The need to manage GHGs through biological methods is apparent, and Alberta is prepared to lead the way in its development. With this in mind, the CCEMC commissioned a comprehensive report to identify what the GHG potential could be and where the opportunities for improvement are. The report assesses each opportunity area and the gaps or barriers that limit its potential.

A conceptual biological program was developed and the CCEMC Board approved to proceed with business plan development. The biological program is expected to be implemented in the next operating year.

NOTE: Graphs report aggregate total from May 2009 to May 2011.

## KNOWLEDGE NETWORK INVENTORY WORK

To tackle climate change issues, the CCEMC strongly believes in continually enhancing its knowledge on climate change issues and technology. This year, the CCEMC established an inventory of key knowledge networks within North America that will help the CCEMC expand climate change knowledge and support technology advancement.

The CCEMC intends to pursue pivotal working relationships with four “super networks”: the National Renewable Energy Laboratory (“NREL”), National Energy Technology Laboratory, Joint Institute of Strategic Energy Analysis (led by NREL) and CanmetENERGY, Natural Resources Canada.

The relationships with these super networks will enhance the CCEMC’s knowledge base, maintain currency in science and business applications and track the evolution and development of key technologies.

## THE GHG REDUCTION SUMMIT FOSTERING A CLIMATE FOR CHANGE



CCEMC Chair Eric Newell



Breakout Facilitator Ray Luchkow  
CCEMC Operations Management Committee

The CCEMC GHG Reduction Summit concluded on May 17 after bringing together an audience of 200 from industry, policy and research and development fields to discuss opportunities to reduce greenhouse gas emissions. CCEMC Chair Eric Newell and then Alberta Environment Minister Rob Renner opened the Summit on May 16. Keynote speakers such as Jeremy Rifkin, Josh Linkner and Sean Wise challenged the audience to act quickly and creatively.

Conversations were sparked that cross the boundaries of industry and profession. By bringing together industry leaders, technologists, policy-makers, financers and key stakeholders from diverse backgrounds, the aim was to develop recommendations to move toward a world-class system.

The program addressed topics and issues that are relevant to the industry while the networking activities focused on building connections between delegates. By providing a forum for such frank discussion, we dug into the core issues currently affecting the system.

Panel discussions included speakers such as Bob Page, Chair of the National Roundtable on the Environment and the Economy, Roger Gibbins from the Canada West Foundation, University of Alberta Dean of Engineering Dr. David Lynch, entrepreneur Joey Hundert and James Chepyha, Vice President of Investments, Alberta for Chrysalix.

Following panel discussions, participants were divided into smaller facilitated breakout groups to discuss issues and recommendations.

A report, including recommendations, will be made available Fall 2011.

## CCEMC SUPPORTS CLEAN TECHNOLOGY THROUGHOUT ALBERTA



In addition to the projects noted on the map, there are an additional eight projects at multiple locations province-wide.

# ► CCEMC PROJECTS

## LEGEND

- Greening of Fossil Fuels Project 2010
- Carbon Capture and Storage Project 2010
- Renewable Energy Project 2010
- Energy Efficiency Project 2010
- Energy Efficiency Project 2011
- Renewable Energy Project 2011

## ROUND ONE - JUNE 2010

Organization	CCEMC Funding	Project	Location	Total Project Value
E-T Energy Ltd.	\$6,862,000	Poplar Creek Project, ET-DSPTM for Development of Athabasca Oil Sands	Poplar Creek	\$26.89 million
ESEIEH Consortium	\$16,474,810	Enhanced Solvent Extraction Incorporating Electromagnetic Heating.	Alberta	\$32.95 million
HTC Purenergy Inc.	\$315,000	HTC Purenergy CO2 Capture FEED Study for Devon's Jackfish SAGD Facility	Conklin	\$630,000
GE Company	\$1,677,919	Ceramic membrane-based technology for H <sub>2</sub> production with CO <sub>2</sub> capture and sequestration	Edmonton	\$3.36 million
Suncor Energy Inc.	\$2,500,000	OTSG Oxy-fuel Demonstration	Christina Lake	\$5 million
Enerkem Inc.	\$1,800,000	Reduction of GHG Emissions through Greening Biofuel Production and CO <sub>2</sub> Utilization: From Pilot Plant to Commercialization	Edmonton	\$5.46 million
City of Medicine Hat	\$3,000,000	Medicine Hat Concentrating Solar Thermal Power Project	Medicine Hat	\$9 million
Lethbridge Biogas General Partnership	\$8,200,000	Lethbridge Biogas, Biogas Cogeneration Project	Lethbridge	\$40.5 million
Plasco Central Alberta Project Co. Inc.	\$10,000,000	Plasco Alberta Renewable Energy and Waste Conversion Project	Horn Hill Transfer Station, Red Deer County	\$96.5 million
Enmax Corp.	\$14,518,000	Home generation	Alberta	\$65.42 million
Evergreen Energy Technologies Inc.	\$150,000	Reliable Power for Remote Locations	Calgary	\$300,000
May-Ruben Technologies Inc.	\$569,704	BFE Thermally Driven Refrigeration System	Alberta	\$1.27 million
Nova Chemicals Corp.	\$700,000	Energy Footprint Reduction for Ethylene Manufacturing	Joffre	\$1.48 million
Suncor Energy Inc.	\$790,905	Alberta Oil Sands Energy Efficiency and GHG Mitigation Roadmap	Fort McMurray	\$1.94 million
Great Northern Power Corp.	\$1,570,000	Conversion of waste heat from reciprocating engines into electricity, using Great Northern Power's Expander System	Alberta	\$11.14 million
Genalta Power Systems Inc.	\$1,849,000	Waste Energy to Power Utilization within an Amine Facility	Ram River	\$3.77 million

Complete project descriptions can be found at [ccemc.ca](http://ccemc.ca)

# ► CCEMC PROJECTS

## LEGEND

- Greening of Fossil Fuels Project 2010
- Carbon Capture and Storage Project 2010
- Renewable Energy Project 2010
- Energy Efficiency Project 2010
- Energy Efficiency Project 2011
- Renewable Energy Project 2011

## ROUND TWO – FEBRUARY 2011

Organization	CCEMC Funding	Project	Location	Total Project Value
Weyerhaeuser Company Ltd.	\$5,000,000	Weyerhaeuser Grande Prairie Evaporator Project	Grande Prairie	\$72.6 million
Encana Corp.	\$2,400,000	Vent Gas Capture for Engine Fuel Use	Alberta	\$5.45 million
ConocoPhillips Canada	\$7,000,000	Company-Wide Rollout of a Systematic Energy Efficiency Program Leading to Significant GHG Reductions in Alberta's Oil and Gas Industry	Alberta	\$14.05 million
Cenovus Energy Inc.	\$3,600,000	REMVue/Slipstream Air/Fuel Ratio Control and Vent Capture Project.	Alberta	\$10.37 million
NRGreen Power Ltd.	\$7,000,000	Whitecourt Recovered Energy Project	Whitecourt	\$63.21 million
Quantiam Technologies Inc.	\$2,225,000	Catalyzed-assisted manufacture of olefins (CAMOL) Generation-(2) for Energy and GHG Reductions in High-severity Ethane Crackers.	Alberta	\$4.45 million

## ROUND THREE – JUNE 2011

Organization	CCEMC Funding	Project	Location	Total Project Value
Coastal Hydropower Corp.	\$2,648,650	Carseland Very Low Head (VLH) Small Hydro Project	Carseland	\$6.3 million
West Fraser Timber	\$5,000,000	Slave Lake Pulp Bio-Methanation Project	Slave Lake	\$25 million
High North BioResources L.P.	\$5,000,000	High North Rapid Thermal Processing Project	High Level	\$44.9 million
Growing Power Hairy Hill L.P.	\$5,000,000	GPHH Integrated BioRefinery™	Hairy Hill	\$60 million
BioRefinex Canada Inc.	\$10,000,000	Lacombe Biorefinery	Lacombe	\$31.8 million

## ► PROJECTS SELECTED FOR 2010/2011 FUNDING

The CCEMC funded projects have the potential to export their technology around the world, competitively positioning Alberta as a leading GHG management jurisdiction and a leader in the development of clean technologies. Projects funded by the CCEMC have achieved international recognition and, in some cases, are setting the standard for worldwide use of clean energy.

### RENEWABLE FUNDING

For Alberta, producing renewable energy is no longer just a possibility – it's a reality. Our province is blessed with an abundance of rich energy resources and the CCEMC believes that with this advantage comes a responsibility to help transition to a lower-carbon economy. Creating and utilizing renewable resources are integral components of a sustainable energy future, and the CCEMC is committed to expanding the fledgling renewable energy sector in this province.

In February 2011, the corporation announced plans to fund six renewable energy projects that are not only game changers for the industry in Alberta, but may also have a huge global impact. These projects match Alberta's growing demand for electricity with a supply drawn from the province's vast renewable energy resources. These innovators believe clean, renewable and transitional energy resources in Alberta are more than capable of meeting future energy demands.

The CCEMC shares this belief that the clean and renewable energy resource sector can and will make a significant contribution to this province's energy supply – while at the same time emerging as a long term solution for reducing GHG emissions.



# NOT ALL BIOENERGY IS CREATED EQUAL.

**BIOREFINEX CANADA INC.  
LACOMBE BIOREFINERY (\$10,000,000)**

**In addition to tackling the climate change agenda, some biotechnologies also address critical human and animal waste issues that create significant pollution risks for our land, air and water. And one emerging player in this arena – recognized by the World Organization for Animal Health – is situated in the small Central Alberta city of Lacombe.**

Located about halfway between Alberta's largest cities of Calgary and Edmonton, the Lacombe Biorefinery will serve as the first full demonstration facility for the BioRefinex technology. This innovative technology, developed by Biosphere Technologies Inc., transforms organic waste into products that are safe and valuable. With the help of thermal hydrolysis – a process that breaks down complex molecules with high-temperature saturated steam and pressure – the Alberta technology is the only one recognized by the World Organization for Animal Health as a safe alternative to incineration, chemical destruction, or landfilling of risk animal by-products and food waste.

The technology denatures all organic material and puts it into liquid form using saturated steam. It effectively breaks apart the chemical components and destroys any pathogenic material or any disease agents while preserving the nutrients. Ultimately, the material produced from this complex process is used as organic fertilizer or converted into biogas.

Chris Thrall, President & CEO of BioRefinex Canada, explains that at a basic level the innovative technology is an elegant solution to a problem that impacts the livestock industry. But the impact could be even broader.

According to Thrall, the integrated process facility will promote sustainable use of land and soils by

using purely organic materials to replenish nutrients. The facility will also generate renewable electricity, divert organic waste now being sent to landfills and incinerators, and reduce greenhouse gas emissions.

"From an environmental perspective, the technology avoids the need to landfill material or destroy it through combustion," explains Thrall. Although it's a common solution to dealing with organic waste, landfilling produces methane – a greenhouse gas that's even more potent than carbon emissions. The BioRefinex process sidesteps this, and also yields an important health benefit. "From a health perspective, the material produced is free from all disease agents and at the same time we can transform it into valuable renewable energy and organic fertilizer products. Through this sustainable approach BioRefinex can also deliver economic benefits to the overall agriculture industry."

The CCEMC funding is helping to propel the Lacombe Biorefinery project into its final stages of development – a major step that isn't going unnoticed. "The help from the CCEMC is really significant to the overall project. It acknowledges not only the credibility of the BioRefinex technology as a means to reduce GHGs but also the broader environmental, health, and economic benefits this innovative project will bring to Alberta."

## RENEWABLE PROJECTS SELECTED FOR 2010/2011 FUNDING

### **COASTAL HYDROPOWER CORPORATION CARSELAND VERY LOW HEAD (VLH) SMALL HYDRO PROJECT (\$2,650,000)**

Unconventional hydropower technologies are becoming increasingly evident around the world. But in North America, poor access to finance is a major barrier preventing these unique technologies from being utilized. While there are 19 Very Low Head (VLH) turbines – a technology developed to alleviate high cost and environmental impact – operating on a commercial basis in Europe, none have been deployed into North America. But the CCEMC funding recipient Coastal Hydropower Corporation, an Alberta company founded to develop small-scale hydro facilities using this VLH technology, plans to change this dismal record.

The company is developing a program to adapt VLH technology for use in North America, starting with a demo project at Alberta Environment's Carseland weir on the Bow River. With funding help from the CCEMC,

Coastal plans to install two VLH units into the existing Carseland weir.

"The CCEMC funding is essential to the Carseland project to offset the high cost of developing and operating the prototype project. It is doubtful that this project would be built without support," explains Neil Anderson, founder and president of Coastal Hydropower.

Anderson says there are currently no other turbine designs available that can operate economically in the Carseland weir structures. According to Anderson, installation of this technology will also lead to many environmental benefits. "The VLH turbine projects produce virtually no GHG emissions. Also, there will be no new structure built, no effect on river flow, no new transmission line, and negligible effect on fish habitat."

### **WEST FRASER TIMBER SLAVE LAKE PULP BIO-METHANATION PROJECT (\$5,000,000)**

In a town striving to rebuild itself, the local pulp mill's efforts may soon be bringing \$5 million into the economy. West Fraser's Slave Lake Pulp Mill biogas project will benefit from funding by the CCEMC and signify a big step forward for the local economy and the environment.

The project involves the integration of an energy efficient anaerobic digestion system into the mill's existing wastewater treatment system. Waste activated sludge is generated in large quantities at pulp mills and is usually either incinerated, land filled or land applied. With the integration of the new system, the treatment facility will be able to generate a methane rich biogas to generate electricity and heat for use in the pulping process.

"There are actually multiple opportunities to extract energy throughout the pulping process and this system will now allow us to actually take advantage of some of this lost energy, while also reducing our consumption," explains Rod Albers, Manager of Energy and Bio-Product Development with West Fraser.

The CCEMC has agreed to fund 20 per cent of the capital costs of this project, but the project is just one piece of the puzzle. "We're continually improving our GHG reductions and the CCEMC funding should really help us continue the process," says Albers.

## RENEWABLE PROJECTS SELECTED FOR 2010/2011 FUNDING

### HIGH NORTH BIORESOURCES LIMITED PARTNERSHIP HIGH NORTH RTP PROJECT (\$5,000,000)

Tolko Industries Ltd., a leading manufacturer and marketer of a broad range of forest products, and Ensyn Technologies, the global leader in the production of pyrolysis oil, have formed a partnership to build the world's largest commercial fast pyrolysis plant right here in Alberta.

Pyrolysis oil is a renewable liquid fuel derived from waste wood, and Ensyn's Rapid Thermal Processing (RTP) technology is the only proven, commercial process that can convert wood and other solid biomass into high yields of renewable liquid fuel. This valuable liquid is then used to produce Renewable Fuel Oil (RFO) for renewable electricity and heat.

The Ensyn and Tolko partnership, called High North BioResources Limited, will come to life at the Tolko-owned sawmill in High Level. Currently, the mill's daily operations produce 400 tonnes of sawmill residual biomass that is being incinerated with no energy recovery. The new facility will be capable of producing 75 million litres of pyrolysis oil annually – enough renewable energy to help power and heat the sawmill.

The renewable energy produced will significantly reduce greenhouse gas emissions by reducing the need for fossil fuel based energy. As a bonus, the facility will also be capable of producing a renewable resin ingredient that can be used in the manufacture of wood panel products.

### GROWING POWER HAIRY HILL (GPHH) GPHH INTEGRATED BIOPROCESSING™ (\$5,000,000)

In the tiny hamlet of Hairy Hill, approximately 100 kilometres east of Edmonton, GPHH is developing the first Integrated BioRefinery™ in Canada. The refinery, also the world's first carbon neutral biofuel plant, utilizes a unique system that processes a number of raw biomass products into high-value products such as fuel ethanol, green power, and bioFertilizer.

The GPPH Integrated BioRefinery™ is powered by IMUS™, another Alberta technology, that extracts useful energy from agricultural waste, while destroying all potentially harmful pathogens and reclaiming water. The plant will produce ethanol based on local cattle feed wheat and will also produce a high-nutrient byproduct that will supply

food to a local cattle feedlot. The GPPH BioFuel plant will have an energy balance of 1:7, far higher than conventional ethanol at 1:1.4.

GPPH representatives say that the due diligence of the CCEMC speaks volumes to the outside world about the quality achievements of the company's technology: "It's a real Alberta success story. Using home-grown technologies, you end up with a project like GPPH, where you're producing food plus fuel and you're getting ethanol that's best in class."

It's a technology that can be bragged about worldwide, and GPPH attributes that to the credibility of being affiliated with the CCEMC.

## ► PROJECTS SELECTED FOR 2010/2011 FUNDING

### INDUSTRIAL ENERGY EFFICIENCY FUNDING

Supporting industry's efforts to improve energy efficiency is key to reducing greenhouse gas emissions in Alberta. As the provincial economy continues to prosper and expand, businesses should strive to ensure that this strong economic growth is also energy efficient. This past year the CCEMC funded six significant projects valued at more than \$161 million. These larger efficiency projects are important not only because of their impact on reducing Alberta's emissions, but also because they represent a significant financial contribution by industry leaders across the province.



# RECYCLING HEAT.



**NRGREEN POWER LIMITED**  
**WHITECOURT RECOVERED ENERGY PROJECT (\$7,000,000)**

**CCEMC funding recipient NRGreen Power is entering Alberta's clean energy scene with an ambitious goal of matching energy demand with environmental responsibility. With backing from partner Alliance Pipeline, one of North America's largest pipeline companies, it's a goal that seems closer every day.**

Using a proven, innovative waste heat technology, the nine-year-old company plans to generate up to 14MW of electricity – enough energy to power 14,000 homes – from Alliance Pipeline's natural gas compressor station near Whitecourt, Alberta. Waste heat recovery units capture the exhaust from natural gas turbines and convert it into emissions-free electricity.

Utilizing this type of technology provides a two-fold benefit. "The technology will convert waste heat into electricity to feed the Alberta power grid but it also produces significant GHG offsets," explains Troy Randall, Business Development Manager with NRGreen Power.

Although not a new concept, waste heat power technology is just now gaining acceptance in the clean energy arena, creating a few challenges for the company. "Capturing waste heat is now starting to be recognized as being green, just like geothermal and wind power. But there are some obstacles to gaining widespread acceptance for green waste heat energy that are slowly being overcome," says Randall.

For proof that it works, look no further than next door. Four NRGreen waste heat units are in operation at Alliance compressor stations across Saskatchewan, with each unit producing five megawatts of power to be fed into the provincial grid. NRGreen couldn't pass up the opportunity of recycling the massive amounts of energy that were being lost. "As the heat would otherwise be released into the atmosphere, capturing the released heat is just really efficient. Twenty to thirty times more efficient," explains Jim Walsh, Vice President of Canadian Operations with NRGreen Power.

The Whitecourt Recovered Energy Project signals NRGreen's first venture into Alberta. It is also the company's first step in helping to bring more green power into Alberta's electricity grid. Starting with Alliance's facilities in Alberta, the company hopes to see more projects embracing the technology.

But NRGreen admits that goal would not have been possible without support from CCEMC. "Without the CCEMC funding, the project would not go. There's a lot of risk involved in green energy projects and the funding bridges this gap," Randall says.



# SMALL CHANGES CAN CREATE MASSIVE OPPORTUNITY.

## CONOCOPHILLIPS CANADA

COMPANY-WIDE ROLLOUT OF A SYSTEMATIC ENERGY EFFICIENCY PROJECT (\$7,000,000)

**Many believe that the titans of the oil and gas industry would be shocked to discover that energy efficiency can be economically viable. But at one of the country's largest oil and natural gas companies, not even a brow is furrowed.**

CCEMC funding recipient ConocoPhillips is on the verge of demonstrating an economically favourable solution to improving industrial energy efficiency. The ConocoPhillips project will focus on ten different technologies to improve energy efficiency in about 400 of its facilities. The net reduction in annual greenhouse gas emissions could amount to more than 48,000 tonnes – the equivalent of taking about 9,700 cars off the road.

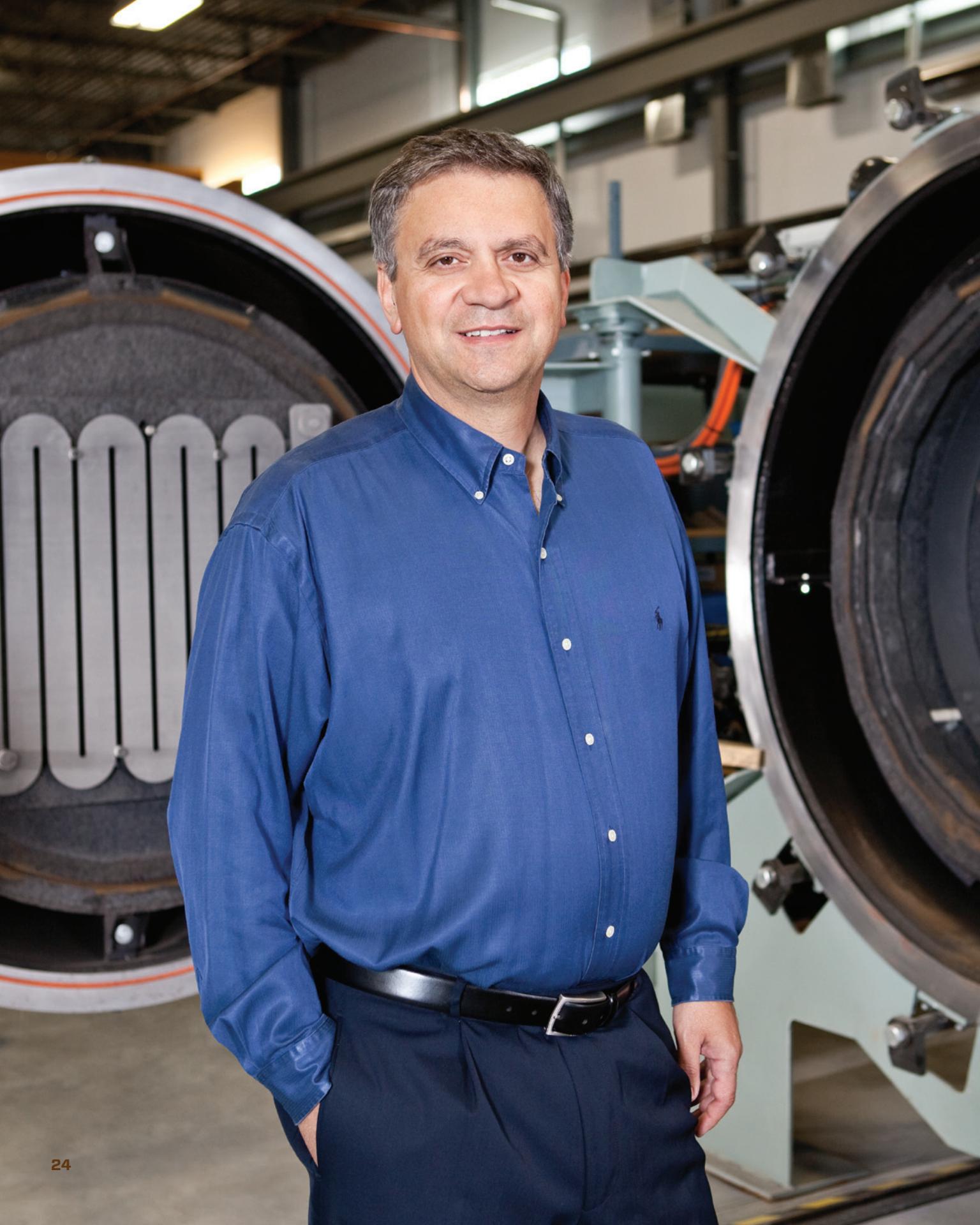
This startling statistic may seem unattainable, but for ConocoPhillips it's simply a case of mastering the math.

"Our energy efficiency technologies are on a typically smaller scale, but we're doing a lot of them. That's what leads to significant reductions," explains Paul Slobodnik, who leads ConocoPhillips' Operations Energy Efficiency team. The selected technologies will be applied to small installations that can be replicated, but the company will also include large new-technology projects in the energy efficiency campaign.

"Completing one massive efficiency project may not make economic sense but by bundling small projects and having a consistent approach, energy efficiency and achieving significant reductions in greenhouse gas becomes feasible," says Slobodnik.

Pivotal to the project is knowledge-sharing – a component being leveraged by the CCEMC funding. "It's important to share our results with the rest of the industry for demonstrative purposes and the CCEMC support has not only leveraged funding but also our knowledge-sharing component," says Slobodnik, adding that the hope is to encourage the industry to complete similar projects.

By funding ConocoPhillips' rollout of their energy efficiency campaign, the CCEMC wants to demonstrate that economic impediments to reducing emissions can be overcome. And by showcasing how a major energy player can combine energy and economic efficiency, the CCEMC hopes to see other large corporations launch their own strategic initiatives.



# BRINGING ENERGY EFFICIENCY HOME.

## ► QUANTIAM TECHNOLOGIES INC.

CATALYZED-ASSISTED MANUFACTURE OF OLEFINS (CAMOL) GENERATION-(2) FOR ENERGY AND GHG REDUCTIONS IN HIGH-SEVERITY ETHANE CRACKERS (\$2,225,000)

### Devising ways to become energy efficient in the petrochemical sector is quickly becoming an international obsession for global operators.

And one solution is coming from right here in oil country.

Headquartered in Edmonton, Quantiam Technologies has developed a world-class nanomaterials-based coating technology enabling the Catalyzed-assisted Manufacture of Olefins (CAMOL). The olefins (ethylene and propylene) industry consumes approximately 3 billion gigajoules of energy per year and emits more than 125 million tonnes of carbon dioxide worldwide. The production of ethylene is classified as one of the most energy intensive processes in the chemical industry.

The CAMOL coating technology developed by Quantiam targets the inner wall surfaces of olefin furnaces and significantly improves them, effectively providing 6-10% lower energy consumption. This energy saving translates to potential emissions reductions of up to 390,000 tonnes of CO<sub>2</sub> a year in Alberta, and 18,000 KTonnes of CO<sub>2</sub> a year globally.

The Quantiam technology has been shown to be effective as a catalyst coating in a full furnace trial in Europe, demonstrating major reductions in the energy required to produce olefins.

“The groundbreaking technology is developed here but Europe is light years ahead of us in expanding our technology,” explains Steve Petrone, CEO of Quantiam. The CCEMC-funded project will advance CAMOL technology to Generation-2 in olefins production – but this time it will be applied in our home province.

The G-2 technology will be tested in a world-class ethylene furnace here, and with success, will position Alberta to lead the world in energy efficiency and greenhouse gas emissions reductions.

“The CCEMC contribution is pushing this project into reality. To be able to do a full petrochemical field trial is a big deal. The CCEMC funding allows us to do a full trial of the technology in a world-class ethylene furnace for the first time in Canada,” says Petrone.

For Quantiam, the goal for this ambitious field trial is to exceed the greenhouse gas reductions that have already been realized internationally. And part of the CCEMC’s mandate is to showcase the fact that Alberta is not only a leader in clean technology innovation but also action.

## INDUSTRIAL ENERGY EFFICIENCY PROJECTS SELECTED FOR 2010/2011 FUNDING

### WEYERHAEUSER COMPANY LIMITED

#### WEYERHAEUSER GRANDE PRAIRIE EVAPORATOR PROJECT (\$5,000,000)

The old adage ‘the whole is greater than the sum of its parts’ will soon ring true for CCEMC funding recipient Weyerhaeuser Company Limited. The Grande Prairie Evaporator Project will be the final addition to a clean energy overhaul at the pulp mill.

This high efficiency evaporator system is able to gather an additional 100,000 pounds of steam per hour – the amount the mill is losing now – to generate 23 megawatts of electricity. Together with the mill’s new recovery boiler and recently

completed turbine, the combined project will put 27 megawatts of green power into the Alberta power grid.

“Without the evaporator system, the combined project really isn’t efficiently compatible,” explains Wayne Roznowsky, Manager of Public Affairs with Weyerhaeuser. The CCEMC funding allows the project to finally come to fruition. “The CCEMC funding has really given us the key to unlock the whole project, as well as allow us to surpass our reduction goals.”

### ENCANA CORPORATION

#### VENT GAS CAPTURE FOR ENGINE FUEL USE (\$2,400,000)

In addition to being a North American leader in unconventional natural gas production, Encana is looking to drive more energy efficiency into more than 50 of its compressor engines, right here in Alberta.

The CCEMC has agreed to help fund Encana’s installation of the SlipStream® technology, which captures methane currently being vented into the atmosphere. This process will redirect the natural gas and use it to help fuel the compressor – meaning more fuel will be recovered and less greenhouse gases will be emitted.

In the pursuit of greater efficiency, costs are always a challenge and third-party funding helps this kind of project’s viability. “Like in any new technology, there are a lot of risks in implementation. The CCEMC funding helps offset these risks,” says

Stephen Skarstol, Lead of Corporate Environmental Stewardship with Encana. Skarstol explains that one of the top risks is the project’s economics. “This project has to compete with a number of other projects in the rest of the corporation. Often energy efficiency projects aren’t as competitive, so funding such as this enables the project to move ahead.”

With funding to mitigate the risks, Encana can do its part to help reduce the effects of climate change. This project is expected to be one of the first field implementations of this technology, resulting in an estimated reduction of about 61,000 tonnes of carbon dioxide equivalents (CO<sub>2</sub>e). If successful, and a wider application of the technology is implemented, it could make a significant impact on North America’s GHG emissions.



**CENOVUS ENERGY INC.**

**REMVUE/SLIPSTREAM AIR/FUEL RATIO CONTROL AND VENT CAPTURE PROJECT (\$3,600,000)**

As one of Canada's largest oil producers, it's not a surprise that Cenovus Energy knows the importance of energy efficiency to the bottom line. But in an industry that's driven by economics, the issue of being energy efficient comes down to a matter of feasibility.

Cenovus staff identified two technologies that could be used in their operations to increase energy efficiency but these specific technologies weren't given as high a priority as some other efficiency opportunities within the company. In June 2010, the CCEMC became the sole funding partner for this Cenovus Energy efficiency project, marking a significant step forward for the company's ability to apply clean energy technology.

"We usually fund our projects internally, but with the CCEMC, we can pursue a broader scope of

opportunities than would be possible acting on our own. This type of collaborative approach is essential for all of industry to achieve energy efficiency goals," explains Dave Hassan, Team Lead of Environmental Technology Investments with Cenovus.

The project involves installing two distinct efficiency technologies in select engines: the REMVue air/fuel ratio controllers and a Slipstream vent-gas injection controller. Combined, the technologies will significantly reduce fuel usage, natural gas and GHG emissions.

"Vented natural gas is actually 21 times worse than CO<sub>2</sub> in terms of global warming potential," Hassan notes. "Collecting natural gas through this project will have a huge benefit, and we're really happy to have the CCEMC funding to help us do so."

## ► EMERGING DIRECTIONS

### LOOKING AHEAD



Achieving Alberta's emission reduction targets is a long-term undertaking that will take dedication and significant human and financial resources. The CCEMC has developed a vision that positively positions the CCEMC as a powerful and productive enterprise known worldwide for progressive climate change technology and leadership that enhances Alberta's performance and reputation.

## A FUTURE OF BRIGHT IDEAS

### **CLEANER ENERGY PRODUCTION AND CARBON CAPTURE CALL FOR EXPRESSION OF INTEREST**

On May 1, 2011, the CCEMC made \$60 million in funding available for cleaner energy production and innovative carbon capture projects. Qualified projects will provide opportunities to transform the way we extract, produce and use energy from more traditional energy sources like coal, oil, gas and oil sands and improve carbon capture methods.

For the foreseeable future, fossil fuels are going to continue to play a major role in addressing global energy demand, even as we transition to other energy sources. By providing funding to support cleaner energy and carbon capture projects, the CCEMC is helping to reduce emissions while helping Alberta strengthen a growing lower-carbon economy. Alberta invests more in climate related technology funds than any other province in Canada, but the results are seen worldwide.

### **SMALL AND MEDIUM-SIZED ENTERPRISES CALL FOR EXPRESSION OF INTEREST**

On July 15, 2011, the CCEMC announced \$10 million in funding available to support small and medium sized businesses that are in the early stages of developing new clean technology. Eligible projects include proof-of-concept, research and development and small pilot scale initiatives. The CCEMC knows that small and medium sized businesses are historically very strong innovators. With this Expression of Interest (EOI), the CCEMC is inviting these innovators to give their very best ideas to help reduce greenhouse gas emissions in Alberta and support our transition to a lower carbon economy.

The CCEMC recognizes that small companies often find it difficult to access the capital required to advance their technologies. That's why the CCEMC called this EOI for small and medium sized organizations with creative ideas to address greenhouse gas reductions.

The focus of this EOI is on product and market challenges that if resolved, could lead to significant greenhouse gas reductions. The maximum the CCEMC will contribute to projects responding to this EOI is 50 per cent of eligible project costs to a maximum of \$500,000.

## Independent Auditor's Report

To the Board of Directors of  
Climate Change and Emissions Management (CCEMC) Corporation

We have audited the accompanying financial statements of the Climate Change and Emissions Management (CCEMC) Corporation, which comprise the statement of financial position as at May 31, 2011, and the statements of changes in net assets, operations and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

### *Management's responsibility for the financial statements*

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### *Auditor's responsibility*

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained in our audit is sufficient and appropriate to provide a basis for our audit opinion.

### *Opinion*

In our opinion, the financial statements present fairly, in all material respects, the financial position of the Climate Change and Emissions Management (CCEMC) Corporation as at May 31, 2011, and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

*Deloitte & Touche LLP*

Chartered Accountants

September 27, 2011

► CLIMATE CHANGE AND EMISSIONS MANAGEMENT (CCEMC) CORPORATION

**STATEMENT OF FINANCIAL POSITION**

As at May 31, 2011

	<b>2011</b> \$	<b>2010</b> \$
<b>Assets</b>		
<b>Current assets</b>		
Cash	13,868,011	123,930,119
Short-term investments	170,000,000	–
Accounts receivable	164,564	70,015
Interest receivable	634,589	–
Prepaid expenses	1,927	1,927
	<b>184,669,091</b>	<b>124,002,061</b>
<b>Liabilities</b>		
<b>Current liabilities</b>		
Accounts payable and accrued liabilities	1,082,556	695,222
<b>Commitments and guarantees</b> (note 7)		
<b>Net Assets</b>		
<b>General Fund</b> – unrestricted	–	–
<b>Restricted Fund</b> (note 3)	183,586,535	123,306,839
	<b>183,586,535</b>	<b>123,306,839</b>
	<b>184,669,091</b>	<b>124,002,061</b>

Approved by the Board of Directors

Eric Newell, Chair

Dr. David Lewin, Director

► CLIMATE CHANGE AND EMISSIONS MANAGEMENT (CCEMC) CORPORATION

**STATEMENT OF CHANGES IN NET ASSETS**

For the year ended May 31, 2011

	General Fund \$	Restricted Fund \$	2011 \$	2010 \$
<b>Balance – Beginning of year</b>	–	123,306,839	123,306,839	–
Excess of revenue over expenses	(82,552)	60,362,248	60,279,696	123,306,839
Transfers to (from) fund (note 3)	82,552	(82,552)	–	–
<b>Balance – End of year</b>	–	<b>183,586,535</b>	<b>183,586,535</b>	<b>123,306,839</b>

**STATEMENT OF OPERATIONS**

For the year ended May 31, 2011

	General Fund \$	Restricted Fund \$	2011 \$	2010 \$
<b>Revenue</b>				
Grant revenue (note 4)	–	62,781,105	62,781,105	126,157,000
Interest income	–	1,711,549	1,711,549	371,255
Conference revenue and sponsorship	251,530	–	251,530	–
	<b>251,530</b>	<b>64,492,654</b>	<b>64,744,184</b>	<b>126,528,255</b>
<b>Project expenses (note 7)</b>	–	142,601	142,601	–
<b>Excess of revenue over project expenses</b>	<b>251,530</b>	<b>64,350,053</b>	<b>64,601,583</b>	<b>126,528,255</b>
<b>Operating expenses</b>				
Program management	–	3,208,263	3,208,263	2,654,100
Conference costs	334,082	–	334,082	–
Consulting contracted services	–	296,671	296,671	185,166
Professional fees	–	173,713	173,713	113,766
Corporate costs	–	134,062	134,062	97,425
Board remuneration and expenses (note 5)	–	114,583	114,583	90,513
Outreach	–	48,800	48,800	70,660
Insurance	–	11,713	11,713	9,786
	<b>334,082</b>	<b>3,987,805</b>	<b>4,321,887</b>	<b>3,221,416</b>
<b>Excess of revenue over expenses for the year</b>	<b>(82,552)</b>	<b>60,362,248</b>	<b>60,279,696</b>	<b>123,306,839</b>

► CLIMATE CHANGE AND EMISSIONS MANAGEMENT (CCEMC) CORPORATION

**STATEMENT OF CASH FLOWS**

For the year ended May 31, 2011

	<b>2011</b> \$	<b>2010</b> \$
<b>Cash provided by (used in)</b>		
<b>Operating activities</b>		
Excess of revenue over expenses for the year	60,279,696	123,306,839
Net change in non-cash working capital items		
Increase in prepaid expenses	–	(1,927)
Increase in accounts receivable	(94,549)	(70,015)
Increase in interest receivable	(634,589)	–
Increase in accounts payable and accrued liabilities	387,334	695,222
	<hr/>	<hr/>
	59,937,892	123,930,119
<b>Investing activities</b>		
Purchase of investments	(170,000,000)	–
<b>(Decrease) increase in cash</b>	<hr/>	<hr/>
<b>Cash – Beginning of year</b>	123,930,119	–
<b>Cash – End of year</b>	<b>13,868,011</b>	<b>123,930,119</b>
<b>Supplementary information</b>		
Interest received	<b>1,076,960</b>	<b>371,255</b>

# ► CLIMATE CHANGE AND EMISSIONS MANAGEMENT (CCEMC) CORPORATION

## NOTES TO FINANCIAL STATEMENTS

May 31, 2011

### 1. Organization

The Climate Change and Emissions Management (CCEMC) Corporation ("CCEMC") is an Alberta-based, independent, not-for-profit organization incorporated under the Canada Corporations Act on February 17, 2009, whose operations commenced on June 1, 2009. CCEMC's mandate is to reduce greenhouse gas emissions and adapt to climate change by supporting the discovery, development and deployment of clean technologies. The Climate Change and Emissions Management Fund (the "Fund") was established under the Climate Change and Emissions Management Act by the Government of Alberta to support investment in innovation and clean technologies that will reduce Alberta's greenhouse gas emissions and improve its ability to adapt to climate change. The Fund provides the primary source of revenue for the CCEMC. As a not-for-profit organization, CCEMC is exempt from tax under Part I of the Income Tax Act.

### 2. Significant accounting policies

These financial statements have been prepared by management in accordance with accounting principles generally accepted in Canada. These financial statements have, in management's opinion, been properly prepared within reasonable limits of materiality and within the framework of the accounting policies summarized below.

#### a) Fund accounting

For financial reporting purposes, the accounts have been classified into the following funds:

##### i) General

The General Fund includes all resources available for immediate purposes and accounts for the Corporation's general administrative activities. The General Fund includes all unrestricted monies received that are available for use at the Corporation's discretion.

##### ii) Restricted

The Restricted Fund includes those funds whose resources are to be used for an identified purpose as specified by the donor, by funding initiative or as determined by the Board of Directors (the "Board").

#### b) Revenue recognition

These financial statements have been prepared using the restricted fund method of accounting for contributions, the key elements of which are:

- i) Unrestricted contributions are recognized as revenue in the General Fund when received or upon becoming receivable if the amount to be received can be estimated and collection is reasonably assured.
- ii) Externally restricted contributions are recognized as revenue in the Restricted Fund when received or receivable if the amount received can be estimated and collection is reasonably assured. Externally restricted amounts can only be used for the purposes designated by external parties.
- iii) Investment income earned on contributions subject to external restrictions is recorded as revenue in the Restricted Fund in the year it is earned.

#### c) Financial instruments

CCEMC's financial assets include cash, accounts receivable, interest receivable and investments. Cash and investments are classified as held-for-trading and are recorded at fair value with realized and unrealized gains and losses reported in the statement of operations for the period in which they arise. Accounts receivable are classified as loans and receivables and are accounted for at amortized cost using the effective interest rate method. Accounts receivable are initially recorded at fair value. Due to the short-term nature of CCEMC's receivables, the carrying amount approximates fair value.

CCEMC's financial liabilities include accounts payable and accrued liabilities. These are classified as other liabilities and are accounted for at amortized cost using the effective interest rate method. Financial liabilities are initially measured at fair value. Due to the short-term nature of CCEMC's payables, the carrying amount approximates fair value.

The fair value of a financial instrument on initial recognition is normally the transaction price, which is the fair value of the consideration given or received. Subsequent to initial recognition the fair values of financial instruments that are quoted in active markets are based on bid prices for financial assets. Purchases and sales of financial assets are accounted for at trade dates. Transaction costs on financial instruments are expensed when incurred.

All derivative instruments, including embedded derivatives, are recorded at fair value unless exempted from derivative treatment as a normal purchase and sale. CCEMC does not currently have any derivative instruments and is not anticipated to enter into any hedge transactions.

#### d) Measurement uncertainty

The financial statements, by their nature, contain estimates and are subject to measurement uncertainty that affect the reported amounts of assets and liabilities, revenue and expenses at the date of the financial statements.

Significant estimates include accrued liabilities, commitments and fair value of financial instruments. Actual results could differ from estimates.

#### e) Cash

Cash consists of cash on deposit.

#### f) Short-term investment

The short-term investment is a redeemable flexible guaranteed investment contract with an annual interest rate of 1.25% that will mature on February 10, 2012.

### 3. Restricted Fund

The Restricted Fund consists of funds that are externally restricted by the Government of Alberta for the purpose of investing in various initiatives and projects relating to one of the four strategic investment areas: conservation and efficiency, carbon capture and storage, greening energy production and adaptation and knowledge. The funds are also restricted for the purpose of administering CCEMC which includes fees, expenses, liabilities and other costs.

During the year, \$82,552 was transferred from the Restricted Fund to the General Fund for the purpose of supporting the GHG Reduction Summit held in May 2011. This expenditure was approved in the annual CCEMC business plan.

### 4. Grant revenues

Funds are granted from the Government of Alberta to CCEMC on an annual basis through the Grant Agreement dated March 31, 2009 ("Grant Agreement"), which is effective through to September 1, 2014. The Grant Agreement was amended on March 30, 2010. The Annual Grant amount is determined each provincial year-end and is based on the amount contributed to the Fund in the previous compliance year.

Annual Grant Amount	2011	2010
	\$	\$
March 31, 2008	–	43,000,000
March 31, 2009	–	83,157,000
March 31, 2010	62,781,105	–
	<b>62,781,105</b>	<b>126,157,000</b>

## ► CLIMATE CHANGE AND EMISSIONS MANAGEMENT (CCEMC) CORPORATION

### 5. Board and management remuneration

Total honorariums and expenses related to the directors of the Board were \$114,583 (2010 - \$90,513) in the fiscal year. Remuneration paid to directors includes honorariums totalling \$69,941 (2010 - \$60,242) as follows:

	2011	2010
	\$	\$
D. Beever	4,346	2,624
J. Carter	1,763	5,776
P. Clark	4,782	2,800
A. Falkenberg	7,958	5,952
C. Fischer	2,961	1,564
R. P. Galachiuk	3,526	1,534
G. Holden	656	-
B. Kenny	4,182	2,624
D. Lewin	9,901	8,404
D. Lynch	4,674	8,360
R. L. Mansell	3,362	3,556
P. Merrin	4,830	4,926
E. Newell	9,087	-
R. Neehall	2,829	5,538
A. Tasker	5,084	6,584
	<b>69,941</b>	<b>60,242</b>

Of these amounts, \$5,107 (2010 - \$21,574) is included in accounts payable and accrued liabilities. The remaining expense balance of \$44,642 (2010 - \$30,271) relates to reimbursements for meals, travel and accommodations.

Program management expenses include remuneration to contract management who report directly to the Board, totalling fees of \$3,208,263 (2010 - \$2,552,714). Of this amount, \$519,295 (2010 - \$444,746) is included in accounts payable and accrued liabilities.

### 6. Capital disclosures

CCEMC defines capital as its general and restricted funds. The majority of CCEMC's funds are granted by the Government of Alberta and paid through the Fund in periodic installments during the year. CCEMC's objectives for managing capital are to ensure that there are sufficient funds to support its expenses and approved project funding.

To meet this objective, CCEMC develops and monitors annual and long term budgets. Commitments are based on existing Contribution Agreements, budgets and accumulated reserves. Refer to note 7 for information on commitments.

### 7. Commitments and guarantees

Prior to year- end, contribution agreements for CCEMC funding were executed for sixteen projects (2010 - nil). Two of the executed projects commenced and were partially funded by CCEMC during the year. Commitments are the difference between the total funding for executed contribution agreements and project expenses as follows:

	2011	2010
	\$	\$
Total funding for executed projects	71,399,477	-
Project expenses	(142,601)	-
	<b>71,256,876</b>	<b>-</b>

Fourteen of the sixteen executed projects have not commenced. Funds allocated to the executed contribution agreements are subject to CCEMC's review and approval prior to disbursement to ensure full compliance with the terms of the contribution agreement. The actual financial commitment could therefore differ materially from \$71,256,876, but will not exceed this amount.

There are also eleven additional projects, totalling \$54,873,650, that have been approved for funding by CCEMC's Board of Directors but for which contributions agreements have not yet been executed.

CCEMC indemnifies its directors against claims reasonably incurred and resulting from the performance of their services to the CCEMC. No amounts are reflected in the financial statements related to these indemnifications,

### 8. Financial instruments

CCEMC's financial instruments are exposed to certain financial risks, including credit risk, market risk and liquidity risk.

**Credit risk** Credit risk is the risk of financial loss to CCEMC if a party to a financial instrument fails to meet its contractual obligation and arises principally from the cash, short-term investments and accounts receivable. The maximum amount of credit risk exposure is limited to the carrying value of the balances disclosed in these financial statements.

Management monitors these accounts regularly and does not believe that CCEMC is exposed to significant credit risk at the Statement of Financial Position date.

**Market risk** Market risk is the risk that changes in market prices such as interest rates will affect the CCEMC's earnings or the value of the financial instruments held. CCEMC is subject to interest rate risk arising primarily from fluctuations in interest rates applied to its cash balance.

**Liquidity risk** Liquidity risk is the risk that CCEMC will not be able to meet its financial obligations as they become due. Management reduces liquidity risk by monitoring forecasted and actual cash flows to ensure sufficient liquidity to meet its liabilities. Accounts payable and accrued liabilities and project holdbacks payable are due within the current operating period.

### 9. Economic dependence

100% of CCEMC's grant revenue is received from the Fund. The loss of this funding would have a material adverse impact on CCEMC's operations and financial position. Should a loss of funding occur, all approved project commitments would remain in effect.

## ► ABOUT CCEMC

The CCEMC is a not-for-profit organization committed to expanding climate change knowledge, developing new clean technologies and exploring practical ways of implementing them.

### CCEMC MANDATE

The CCEMC is an Alberta based not-for-profit, independent corporation with a mandate to reduce green house gas emissions and adapt to climate change by supporting the discovery, development and deployment of clean technologies.

### CCEMC MISSION

The mission of the CCEMC is to achieve actual and sustainable reductions in greenhouse gas emissions and facilitate climate change adaptation by stimulating transformative change through investments in climate change knowledge, clean technology development and operational deployment.

## **CCEMC VALUES**

**The CCEMC's inaugural year was a time for launching and learning. The second year produced evidence of our impact: the investments made across the province took flight and showcased the commitment of Albertans. With that, the CCEMC solidified its values:**

### **LEADERSHIP**

We act as a catalyst in the development and deployment of clean technology.

### **TECHNOLOGICAL INNOVATION**

We believe the development of clean technologies will drive transformative change. The CCEMC will pursue leading edge opportunities and is prepared to invest in bold new ideas.

### **LEVERAGE**

We intend to leverage finances, human resources, and technology to deliver optimal value.

### **ACHIEVING RESULTS**

We are focused on identifying, measuring and achieving actual and sustainable GHG reductions, generating greater environmental and economic value from energy resources, maintaining or enhancing our competitiveness, and supporting growth in Alberta's economy.

### **INTEGRITY**

We will be fair and professional in all our administrative and operational processes. The organization upholds the highest standards of governance and operational management excellence.

### **TRANSPARENCY**

We strive to be transparent in our operations wherever practical and encourage knowledge and technology transfer at the earliest stages possible.

### **OBJECTIVITY**

We objectively consider the merits of all ideas, proposals and technology.

### **SERVING THE PUBLIC INTEREST**

We are committed to delivering results that serve the public interest.

## **PROJECT PROCESS**

Big thinking is needed to conceive and develop transformative technologies that enable achievement of the CCEMC mandate. The process ensures funding is directed towards projects that will have an actual and sustainable benefit. The CCEMC considers funding projects at all levels of the innovation chain, from bright ideas to commercialization. Funds will be made available to the best projects through a deliberate and structured selection process. An independent and technically competent panel reviews and assesses proposals against a standard and transparent set of criteria. The Board approves project selections. The CCEMC's funding is directed to clean energy production, carbon capture and storage, and conservation and efficiency. To ensure all submissions receive an in-depth review, the CCEMC requires that project reviewers have the requisite technical, business and policy acumen required to fairly and professionally evaluate each submission.

## **PROJECT VALIDATION**

To be eligible for funding, the CCEMC requires all projects to be validated by third-party validation on assertions made regarding GHG emissions reductions. In addition, during and after the term of the project, proponents will be required to verify the GHG reductions arising from the CCEMC funded project.

As possible GHG reductions are crucial to project selection, the CCEMC ensures the Validation/Verification Bodies meet a variety of requirements. Firstly, Alberta Environment requires that the lead validator/verifier must be an accountant registered under the Alberta Regulated Accounting Profession Act, or professional engineer in good standing and be trained in acceptable standards. Secondly, the validation team must have data expertise and have relevant technical expertise in the industry or in determining GHG reductions. Lastly, Validation/Verification Bodies must operate independently, ethically, fairly, and with due professional care.

## **FAIR APPROACH**

Projects submitted for funding consideration are subjected to a rigorous multi-step process. The process ensures that the funds entrusted to the CCEMC are invested in accordance with its mandate to reduce greenhouse gases and invest in a balanced portfolio of projects. In addition, the services of a Fairness Monitor (an individual independent of the evaluation/technical review bodies) is contracted to ensure that all proponents are treated equally and objectively during project reviews and that any process issues are identified and amended. The Fairness Monitor will assess the funding process, provide advice on its structure and operation, and prepare a report to the CCEMC indicating whether the procedure was properly managed and fairly implemented.

## **PERFORMANCE MEASURES**

Thorough performance evaluation is an integral part of demonstrating that the Corporation is delivering results consistent with its mission, strategic directions, established goals and core values. The discovery, development and deployment of clean technologies require an immense investment of intellectual capacity, money and time. In some cases, short-term results may be modest. But ultimately, sustainable reduction in greenhouse gases will be realized as technologies mature, applications broaden and sufficient time is made available for commercialization and deployment to occur. The CCEMC has established a broad range of performance tools to measure this evolution and will track and report on the following metrics:

### **GHG REDUCTIONS**

Amount of GHG emissions predicted to be reduced from a business as usual scenario. Because projects are in their early stages of development, the CCEMC cannot report on actual reductions until projects are completed and operational.

### **FUND ALLOCATIONS**

CCEMC is dedicated to ensuring that funds are allocated to targeted sectors and strategic investment areas, as well as areas that demonstrate opportunities for leverage. The CCEMC ensures that its funds are allocated to the sectors and areas that are set out in Alberta's climate change plan.

### **PROJECT SUCCESS**

This metric monitors successful, challenged or incomplete projects (status), and the extent projects span or progress along the innovation spectrum.

### **CORPORATE EFFICIENCY**

Put simply, this metric is the ability of CCEMC to run operations as efficiently as possible.



**CCEMC**

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