

ACCESS WEST

WESTERN ECONOMIC DIVERSIFICATION CANADA

April - June 2004

The Changing Climate of Our Environment

Greenhouse gases. Climate change. What are they and why are they so important?

Water vapour, ozone, carbon dioxide, methane, nitrous oxide and halocarbons — without these naturally occurring “greenhouse” gases (GHGs) the sun’s heat would escape and the earth’s temperature would be too cold to support life. But, human activities have resulted in the release of significant quantities of GHGs that are adding to the warming effect of the natural atmospheric greenhouse.

The main contributor of these heat-trapping gases is carbon dioxide, especially through the burning of fossil fuels. Fossil fuels are used in every aspect of our lives — from powering cars, airplanes, trains and ships, to fuelling industrial manufacturing processes and providing heat, light, air conditioning and energy for homes and businesses. These activities are changing the atmosphere at a greater rate than humans have ever experienced.

In 2001, Canadians emitted GHGs equivalent to approximately 720 megatonnes of carbon dioxide alone into the atmosphere — that’s over 6,100 times the weight of the CN Tower.

While Canada contributes only about two per cent of total global GHG emissions, we are one of the highest per capita emitters, largely the result of our resource-based economy, climate and size.

Globally speaking, climate change refers to changes in the climate of the earth and understanding its potential consequences — social, economic and environmental — is vital. Warming of the atmosphere could significantly alter the earth’s climates and result in unstable weather conditions, violent and more frequent storms, hurricanes and floods, threats to food and water supplies, and more. Canada’s agriculture, forestry and energy sectors could all be significantly affected.

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Western Economic
Diversification Canada

Diversification de l'économie
de l'Ouest Canada

Canada

Access West

April - June 2004

Access West is published quarterly
by Western Economic Diversification
Canada.

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Disponible aussi en français

*Canadian Publication Mail
Agreement No. 40063159*

ISSN 1495-6802 (Print)
ISSN 1495-6543 (Online)

Taking Advantage of Opportunities in the West

Continued from cover

Climate change is already a growing concern in many western Canadian industry sectors. Warmer conditions alter forest growth and distribution patterns, and have been linked to the increased spread and frequency of forest fires and pest infestations. The implications for our everyday lives, including our health, the industries we rely on and our economy are enormous.



The Government of Canada is charting a path that will allow the economy to grow while reducing GHGs. This new direction means introducing initiatives that will pay longer-term dividends, such as the development of new, cleaner technologies. Western Economic Diversification Canada (WD) is helping to facilitate this in the West.

At WD, we believe that knowledge, innovation and collaboration are the foundation of economic prosperity. The Department is working with western Canadians to meet the Kyoto challenge by playing a central role in facilitating the development of innovative new environmental technologies that address climate change.

These technologies will not only help to lower costs and increase the competitiveness of western businesses, but also create jobs and international exporting opportunities.

WD initiated discussions in each of the four western provinces with business, academia, not-for-profits and government decision makers on how to develop and commercialize the environmental technology sector. Key opportunities for this promising sector were identified, and these ideas formed the agenda for the **Western Canadian Environmental Technology Forum** held in Vancouver in December 2003.

For more information, visit the federal climate change website at: www.climatechange.gc.ca, or the WD website for information about the forum: www.wd.gc.ca. ♣

Sustainable, Eco-Efficient, Economical

...PTAC Helps the Energy Industry and the Environment

by Heather Traub

PTAC Petroleum Technology Alliance Canada

Pump more oil! Produce more natural gas! Do it cheaper, faster and safer. And, while you're at it, reduce the environmental impact!

Hydrocarbon energy-producing companies have a tall order to fill. Oil and gas fields are maturing, while research and development dollars to maximize those resources are shrinking. At the same time, oil and gas producers are under pressure to reduce greenhouse gas (GHG) emissions. New hydrocarbon energy technologies can help producers balance these multiple demands.

Headquartered in Calgary, **PTAC Petroleum Technology Alliance Canada** is a not-for-profit association created in 1996 to facilitate innovation, technology transfer and collaborative research and development in the pre-refinery oil and gas industry. Its objective is to improve the environmental, safety and financial performance of the industry and, as a result, act as a matchmaker for hydrocarbon energy technology providers and end users.

PTAC's technology for emissions reduction and eco-efficiency project is the brainchild of its hydrocarbon energy industry members who asked the association to expand its mandate to include sustainable, eco-efficient and economical greenhouse gas-reducing technologies.

Western Economic Diversification Canada (WD) provided \$738,000 to PTAC in January 2003 to undertake a three-year project focused on encouraging the adoption of GHG-reducing technologies in the hydrocarbon energy industry.

WD funding enables PTAC to facilitate the search for new or improved technologies and best practices, and to help develop them through pilot testing if required.



PTAC's Technology Transfer Director Denis Gaudet (L) and President Eric Lloyd (R). WD's support for the TERE project opened doors for PTAC and its hydrocarbon energy stakeholders to develop and implement GHG emission-reducing technologies.

Photo courtesy of PTAC.

Working with partners, stakeholders and supporters, the association will ensure hydrocarbon energy technology users, researchers and providers apply an integrated approach to developing and implementing new technologies.

Representatives from industry, government regulators and other organizations make up the project's steering committee. Committee members provide strategic direction for demonstration projects, working groups, workshops and other events to deliver project results.

Western Economic Diversification Canada's financial support for this project opens doors for PTAC and hydrocarbon energy stakeholders to develop and implement sustainable, eco-efficient and economical GHG reducing technologies.

For more information on PTAC's greenhouse gas and emissions reduction project, contact Denis Gaudet, Director of Technology Transfer, at (403) 218-7710 or visit www.ptac.org. ♦

Environmental Flipping the “On” Switch

by Caroline Hickton

Canada has a tremendous opportunity to take knowledge from its resource-based history and apply it to a promising future. With a well-educated and dynamic workforce, excellent research and educational institutions, and citizens who welcome technological change, Canada has the potential to capitalize on the commercialization of environmental technologies.

To help put Western Canada on the path to realizing this potential, Western Economic Diversification Canada (WD) hosted the **Western Canadian Environmental Technology Forum** on December 5, 2003, at Vancouver’s Morris J. Wosk Centre for Dialogue. The forum brought together more than 130 westerners from the private sector, First Nations bands, related researchers and government to discuss how to maximize opportunities in the environmental technology sector.

The forum included interactive breakout and plenary sessions, and questions and answers with government representatives. With a diverse agenda, several key themes surfaced throughout.

There was a consensus among forum delegates that there is a large potential for Canada to expand into international markets. In 2000, Canada exported more than \$1.6 billion in environmental technology, and the West was a large contributor to this success.

A few examples of Western Canada’s growing expertise in environmental technologies include: the University of British Columbia’s Clean Energy Research Centre, the Northern Alberta Institute of Technology’s Fuel Cell and Interpretive Centre, the University of Manitoba’s cutting-

edge engineering research facilities, and the University of Regina’s Greenhouse Gas Technology Centre.

Discussions on international markets developed into a dialogue about the importance of cost-effective environmental technologies. After environmental disasters, such as oil spills, governments pay large sums on clean-up and recovery. But, proactive investment in environmental technologies could save governments from such unexpected and expensive expenditures.

“We are beginning to see the importance of being cost effective and this could be a turning point in Western Canada,” said forum co-chair John MacDonald, chairman and CEO of Day4 Energy.

Climate change is a serious global issue that deserves attention. Canadians have seen the effects of global warming with declining water levels in the Great Lakes, insect infestations in B.C.’s forests, and extreme weather events such as droughts on the Prairies, ice storms in eastern Canada and flooding in Manitoba and Quebec.

Finding solutions to global climate change requires collaborative discussions and commitment among citizens engaged worldwide. The forum stimulated collaborative planning to realize the potential of new environmental technologies through partnerships, both those existing and those cultivated at the forum.

“The Government of Canada will rely heavily on industry and academia as partners to do what is required for future success in the modern Canadian economy,” said WD Deputy Minister and forum co-chair Oryssia Lennie.

Technologies... to a Sustainable Future

It was evident at the forum that while the Government of Canada is supportive of efforts to carve a new niche for environmental technologies in Canada, these efforts cannot succeed without partnerships. As Lennie stated, “Western Economic Diversification Canada will work to continue this dialogue, but the future is in the hands of industry and academia.”

At the end of the day, participants from Saskatchewan and B.C. described what they got out of the forum. It was clear to all that working together in a municipal, provincial or national manner is key to the future success of environmental technologies in Canada. Participants recognized the Environmental Technologies Forum as a great push in the right direction — bringing individuals together to start forms of collaboration.

MacDonald said, “The forum today has exceeded my expectations. In my own case, I met a lot of people I didn’t know and I heard a lot of things I didn’t know. I think this is the beginning of a network and if we continue the momentum for Western Canada, we can build economic wealth around sustainable, cost-competitive environmental technologies.”

Western Economic Diversification Canada will continue to partner to advance the goals and strategies initiated at



Over 130 people attended Western Canadian Environmental Technology Forum at the Morris J. Wosk Centre for Dialogue in Vancouver.

the Western Canadian Environmental Technology Forum and to support the overall vision that recognizes environmental technologies as a vital component of sustainable economic development in the West, and in Canada.

For more information about environmental technologies, visit: www.wd.gc.ca/innovation.

Providing Tools that Work at the Grassroots Level

by Jody Simonson

Senior Business Officer, WD Edmonton

Business-to-business, town-by-town, there are 90 volunteer-based, non-profit organizations across Western Canada working to build stronger communities by creating local solutions to local challenges.

Funded largely by Western Economic Diversification Canada, Community Futures Development Corporations (CFDCs) take a grassroots approach to the delivery of programs and services that provide valuable expertise and opportunities in their communities.

The **Pan West Community Futures Network** was established in 1996 as an informal network supporting Community Futures (CF) offices to address common issues.

Through collaborative efforts involving the four provincial CF associations, the Pan West Network helps to strengthen the profile of the Community Futures initiative and access additional resources for community economic development initiatives at the local and regional levels. Here are just a few of the network's accomplishments to date:

- Pan West website has evolved into a Pan Canadian website
- Developed CF Best Practices website initiative — now national in scope
- Needs/gaps analysis of high-speed Internet capabilities in northern and remote communities

- Study on the impact of the Community Futures program across Western Canada

Of particular note is the Community Futures Board Development (CFBD) program, originally known as the Community Futures Achievement Program. The program was developed in response to a growing demand for a standardized orientation program to help Community Futures board members better understand their role in providing leadership to their local organizations.



In partnership with the Credit Union Institute of Canada, the network designed the CFBD tool to provide western Canadian CFDC offices with skills and knowledge needed to build strong, sustainable organizations. It has evolved into a

comprehensive training program that covers everything from board roles and responsibilities, to financial management, liability issues, leadership and community economic development. In fall 2003, three new modules were launched focusing on board accountability, credit and audit processes, and management recruitment and leadership. Each module is a valuable tool for anyone actively involved in volunteer board activities.

For further information about Community Futures program and services in your area, visit www.communityfutures.ca/provincial/index.html. For information about the CFBD program, contact: cfbd@telus.net. ❁

Working Together to Compete in the Global Tourism Industry

by Marcus Miller

SARS, mad cow disease, forest fires, the slowing of the U.S. economy, uncertainties about security — these and other challenges have all contributed to a weakened tourism industry in the West.

In response to these challenges and a corresponding 5-10 per cent decrease in international visitors, the **Tourism Alliance for Western Canada Inc.** has developed a marketing campaign to offset the downturn in tourism revenues, revitalize the industry and improve western competitiveness internationally.

The Tourism Alliance — consisting of industry associations in B.C., Alberta, Saskatchewan and Manitoba — are pooling their energies and resources to develop a targeted regional campaign to highlight the tremendous tourism opportunities available.

Overall, the tourism recovery strategy will promote the West as a safe and affordable travel destination that offers a variety of interesting experiences. For U.S. travellers, it will highlight that they needn't travel overseas in order to have an enjoyable holiday, and will capitalize on changing U.S. travel patterns, such as the recent preference for shorter getaways that are closer to home.

The campaign's pan-western component will focus on attracting tourists interested in visiting any of the western provinces, whereas four targeted components will focus on those most likely to visit a specific western location.

B.C. and Alberta will concentrate largely on priority U.S. markets, such as Seattle, San Francisco and Los Angeles, in addition to Asia/Pacific markets like Japan, Australia and Taiwan. Manitoba will focus on the U.S. Midwest, Europe and Asia/Pacific markets. And, highlighting

Saskatchewan as an "intimate" and "natural" destination, the provincial association will concentrate on attracting Americans from states such as North Dakota and Montana, in addition to overseas visitors from the U.K., Germany and Japan.

The campaign began in fall 2003 and will continue to the end of March 2005. The Tourism Alliance will also investigate partnerships with the Canadian Tourism Commission and the private sector during the campaign to secure more funding.

Western Economic Diversification Canada (WD) provided \$5 million in support of this campaign; the four western provincial governments have also provided a total of \$5 million. WD has also supported past Tourism Alliance programs that yielded an economic benefit of \$110 million, primarily to small and medium-sized businesses in the West. ♣

Cellex Fuel Cell Demonstration Project a Success



The Cellex Power Unit powering a forklift.

Photo courtesy of Cellex Power Products.

Forklifts and other industrial vehicles used in thousands of warehouses and industrial sites could be the earliest adopters of fuel cell technology after a series of successful test trials by Richmond-based **Cellex Power Products, Inc.**

Fuel cells generate electricity by reacting hydrogen with oxygen in a

simple electrochemical cell. This efficient reaction occurs at low temperatures, making it a unique way to produce power. Its only by-products are heat, water and electricity.

Cellex is taking advantage of these unique characteristics to provide new functionality to conventional industrial vehicles — extended range, improved performance and clean and quiet operation.

The company recently completed trials of its fuel cell power units across Canada and the U.S. The power units provide improved lift truck performance, including indoor refuelling and compliance with all safety codes and regulations. They are designed to replace industrial lead acid battery and charger systems and deliver enhanced power to customers who operate large fleets of lift trucks in distribution centres. Lead acid batteries typically last only four to eight hours, requiring recharging two to three times a day — resulting in lost productivity and increased operational costs. The Cellex zero emission fuel cell solution addresses this problem by running longer and refueling faster.

Company President and CEO Chris Reid commented, “It was support from organizations such as Western Economic Diversification Canada (WD), the Industrial Research Assistance Program and the National Research Council that gave us our start. We are grateful for their vision and support as Cellex continues to grow and develop.”

The successful trials are an excellent example of groundbreaking product deployment that is being made possible through partnerships between WD, industry and Fuel Cells Canada (FCC).

Cellex is an active member and sponsor of Fuel Cells Canada, a non-profit, national industry association whose mission is to accelerate Canada’s world-leading fuel cell and hydrogen industry. FCC is pleased to continue working with Western Economic Diversification Canada to forward the innovative work of its members through product demonstrations and project facilitation.

For more information about Cellex Power Products, call (604) 270-4300 or visit their website at: www.cellexpower.com. For more information about Fuel Cells Canada, call (604) 822-9178 or visit www.fuelcellscanada.ca. ♣



The 'Maytag' of the Environmental Clean-Up Industry

by Jean Collins

Simple. Simple. Simple. That's the premise Regina's **Ground Effects Environmental Services Inc. (GEE)** applies to every design of its ground, water and air remediation or purification systems.

Sean Frisky created his first remediation system while working at the Regina Federated Co-op refinery. Frustrated with his environmental engineering work at the plant because the existing technology wasn't working, he thought he could come up with something better. Frisky approached his supervisor with a plan to design and build a more efficient system to clean-up contaminants on site. Today GEE is the exclusive remediation service provider to Federated Co-op across Western Canada.

With the success of his first system, Frisky set out to design and manufacture others.

GEE custom designs and manufactures environmental systems to clean-up ground contamination at gas stations, refineries or oil patch sites. This equipment uses a variety of methods to remove the contaminants at the source rather than digging up the soil and transferring the problem elsewhere. Because the equipment has up to 300 per cent fewer moving parts than the competition, it results in fewer breakdowns and faster site cleanup.

"We try to be the *Maytag* of the industry," asserts Frisky.

Sales at GEE are increasing exponentially — from \$80,000 in 1998 to \$4 million in 2003. Along with the sales growth, there has been an increase in staff to 19, up from only six in 2002.



Justin Lee, a graduate of the Civil Engineering Technology program at Saskatchewan Institute of Applied Science and Technology, Palliser Campus in Moose Jaw.

Photo courtesy of Greg Huszar Photography.

One of those staff is Justin Lee who was hired through Western Economic Diversification Canada's (WD) **First Jobs Science and Technology Program**. The program provides up to 50 per cent of a recent post-secondary graduate's salary for up to one year.

"The learning curve (at GEE) is straight up," says Lee.

Frisky is quick to note the value of Lee's work at all stages of a project — from design and manufacturing, to installation. Being able to incorporate feedback from one design into the next improves performance and "impresses the client," says Frisky.

For more information about Ground Effects Environmental Services' products, call (306) 352-1400 or visit: www.groundeffects.org.

For additional information about the First Jobs program, contact WD at 1-888-338-WEST (9378) or visit our website at: www.wd.gc.ca. 🍁

Eco-Efficiency – No Problem for the Experts



Sulphur Experts test trailer at the base on an incinerator at a typical Alberta sour gas plant.

Photo courtesy of Sulphur Experts Inc.

Refineries and natural gas processing plants are familiar sights in Alberta. Unfortunately, they have a downside — sulphur dioxide emissions that cause acid rain and affect our environment.

Federal legislation requires sulphur content in gasoline be reduced by 90 per cent by 2005, and the Alberta government is pushing to eliminate sulphur flaring from sour gas wells.

According to John Sames, Calgary-based **Sulphur Experts Inc.** is a “sulphur plant trouble-shooting and pollution busting” company when it comes to gas plants and refineries.

To keep up with the demand for their services, the company approached Western Economic Diversification Canada (WD). With assistance from WD’s **First Jobs in Science and Technology Program**, the company hired two recent graduates from the University of Saskatchewan.

“Our focus was to hire younger blood and train them,” commented Sames, president of Sulphur Experts. “You take a gamble when you hire someone not proven in the field, but it has paid off for us. And, without the First Jobs program we would have hired only one engineer – instead we hired two.”

Chemical engineering graduate Eugene Bast and mechanical engineering grad Chris Jaggard were hired to assist with a collaborative Eco-Efficiency program with CETAC-West, a not-for-profit corporation committed to helping small and medium-sized enterprises engaged in the development and commercialization of new environmental technologies.

It makes perfect sense that these experts take the lead in developing a benchmarking and modeling initiative within the energy and greenhouse gas control sectors. Through the Eco-Efficiency program, Sulphur Experts and its sister company, Amine Experts, visit oil and gas plants to audit their use of energy. By optimizing energy efficiency, savings are created. Less fuel is used, producing fewer emissions. It’s a win-win for both the oil and gas sector and the environment.

Sames indicated that the company has already audited six Alberta plants in the last eight months, but they are not limited by the provincial border. The company has taken its business globally, and 65 per cent of its work is now outside Canada.

For more information about Sulphur Experts and Amine Experts, call (403) 215-8400 or visit their website at: www.sulphurexperts.com.

For information about the First Jobs program, visit WD’s website at: www.wd.gc.ca. ♣

Tapping the Earth for Energy Savings

by Lee Gregg

In late 2001, **Wheat Belt Community Futures Development Corporation (CFDC)** thought to create Manitoba's first geothermal housing subdivision. An environmentally-friendly technology, geothermal energy uses ground source heat pumps to tap into the earth's energy to heat and cool buildings.

Discussions between Manitoba Hydro's geothermal and heat pump specialists and Wheat Belt CFDC convinced them to partner on this project. The Village of Wawanesa and the Wawanesa/Oakland Community Development Corporation were eager to participate, as they believed it would create social, environmental and economic development opportunities for their community.

With a commitment to the environment and sustainable communities, Western Economic Diversification Canada (WD) was very enthusiastic about joining the project team. The Department also provided \$196,000 to assist with the underground piping installation costs.

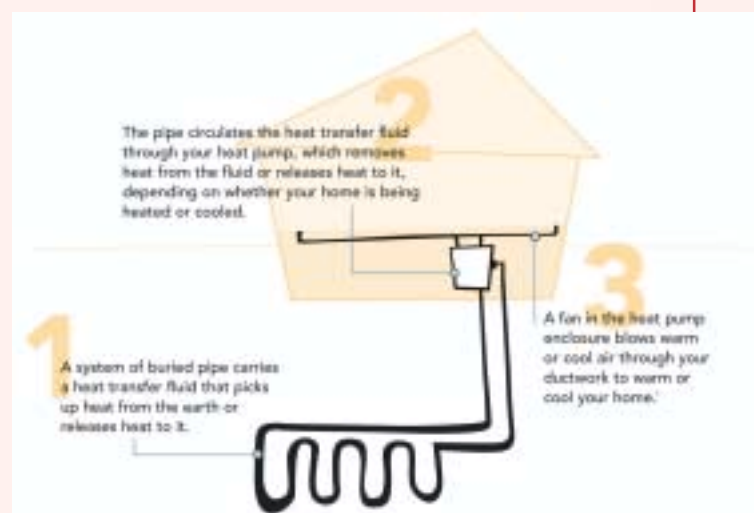
How does geothermal energy work? Below the frost line the earth's temperature remains fairly constant. In summer, the soil temperature is cooler than the outside air. In winter, it's warmer. Similar to an air conditioner, a ground source heat pump takes heat from inside a building and pumps it outside. But a heat pump can be reversed to take heat from a heat source outside and pump it inside. Geothermal technology uses the earth's constant temperature to heat and cool buildings 300 per cent more efficiently than traditional methods.

"The project goal was to create an environmentally-friendly subdivision that would create an impact for the entire surrounding region," noted Russ Danielson, Wheat Belt economic development officer. "This

project has been a greater success than we ever thought possible and all the partners are extremely pleased with the results."

As project manager, Wheat Belt CFDC put together the dynamic team responsible for developing a geothermal housing subdivision and raising awareness of this sustainable energy source. For information on this and other upcoming geothermal projects, visit the Wheat Belt CFDC website at: www.wheatbelt.mb.ca, or call 1-888-347-4342.

Community Futures Development Corporations are members of the Western Canada Business Service Network and are financially supported by WD. For a complete listing of CFDC offices, call 1-888-338-WEST (9378) or visit www.wd.gc.ca. ♣



Geothermal heat pump systems generally have these three components. For additional information, visit Manitoba Hydro's website at: www.hydro.mb.ca.

Photo courtesy of Manitoba Hydro.

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It Pays to Think Beyond the Box

Combine the talents of a western Canadian women's business network, an innovative online business training facility and a groundbreaking Internet conference, and you have the makings of success.

On behalf of the **Women's Enterprise Initiative**, Sharon Hughes-Geekie, executive director of the Women's Enterprise Society of B.C., accepted a prestigious award for Internet innovation at the **Canadian E-Business Leadership Awards**. The awards — simulcast live in Toronto and Vancouver in October 2003 — paid tribute to Canadian organizations that demonstrate leadership and success in promoting electronic commerce, e-learning and business over the Internet.

Business Beyond the Box was a three-day networking and e-learning conference held in May 2003 for women entrepreneurs in Canada. From the comfort of their homes or workplaces, the conference brought together businesspeople from cities and communities across the country via the Web. Participants took part in strategic

planning workshops, industry-specific breakout sessions, a virtual trade show and peer-to-peer forums facilitated by business analysts.



The network of Women's Enterprise Initiative offices from across the West collaborated with the Royal Roads business school in Victoria to deliver the virtual, interactive conference. During the conference, the Business Beyond the Box initiatives were given a permanent home with the launch of the **Western Canada Training Centre** at www.bbtb.ca — an online e-learning facility that meets the needs of busy entrepreneurs. It is flexible and can accommodate individual learning styles.

Western Economic Diversification Canada (WD) extends its congratulations to the Women's Enterprise Initiative, a non-profit program funded by WD that promotes entrepreneurship in Western Canada by assisting women in starting and growing businesses. ♣



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