The magazine of the Canadian Solar Industries Association Fall/Winter 2011

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ABOUT CanSIA

WHO WE ARE

The Canadian Solar Industries Association (CanSIA) is a national trade association that represents approximately 650 solar energy companies throughout Canada. Since 1992, CanSIA has worked collaboratively with the Government of Canada, municipalities, provinces and territories to develop a strong, efficient, ethical and professional Canadian solar energy industry with capacity to provide innovative solar energy solutions and to play a major role in the global transition to a sustainable, clean-energy future.

WHAT WE SEE

By 2025, solar energy is widely deployed throughout Canada, having already achieved market competitiveness that removes the need for government incentives, and is recognized as an established component of Canada's energy mix. The solar industry will be supporting more than 35,000 jobs in the economy and displacing 15 to 31 million tonnes of greenhouse gas emissions per year, providing a safer, cleaner environment for generations to come.

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> "PV will provide 32 per cent less power to the grid than natural gas, but it will create 4.8 times as many jobs. And if the industry stays on track, it will bring $12.9 billion of private investment into Ontario between 2008 and 2018."

CK

ONTARIO BEGAN 2011 WITH a little more than 200 MW of grid-tied solar photovoltaic generation, and CanSIA expects that number could nearly triple before year-end, which makes the province a competitor with California to be North America's leading PV market. This is enormously meaningful. But what does it mean to the rest of Canada?

A trans-Canada count of megawatts simply will not help measure Ontario's impact on the rest of the country. It is our ringer; our 600-MW gorilla. On the other hand, Canada's PV success certainly cannot be measured in Ontario alone.

A national PV status report issued in 2011 by CanmetENERGY, a federal government research organization, says a sustainable Canadian market for PV grew at an annual rate of 22 per cent for an 18-year period to a total installed capacity of 94 MW in 2009. Interestingly, 75 per cent of that total was off the grid. Then, on a cold February day in 2009, a Liberal government led by Premier Dalton McGuinty introduced the *Green Energy Act* in the Ontario Legislature, warming renewable energy advocates from coast-to-coast-to-coast, and permanently altering the Canadian PV landscape.

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"The Ontario feed-in-tariff program is paving the way for a steep uptake of grid-connected PV," says Canmet, explaining national off-grid PV dropped to 50 per cent of total capacity in 2010. Again, though, the numbers, skewed by Ontario, reveal too little about what's going on in the country.

"Provincial and territorial government policies are now all supporting net-metering of PV power and have encouraged a number of building-integrated PV applications," continues the Canmet document, while adding "market uptake has been low for net-metering applications due to the low price of electricity in most regions of Canada."

So Canada's PV market has shifted from off- to on-grid installations; it's accelerating, and Ontario is at the wheel. It's a big vehicle; there are 10 provinces and three territories in the back seat, and they're all watching the driver.

"There are lessons to be learned by all the stakeholders everywhere," says **Chair, CanSIA Board of Directors Jon Kieran**. "A market has been created. People are generating clean electricity, which Ontarians want, and Canadians want, and it has created jobs and economic investment. That's why everyone is watching."

New research by ClearSky Advisors, a Toronto-based renewable energy research and advisory firm, indicates that in 2011, the PV industry was responsible for $2 billion of private sector investment in Ontario and now offers 8,200 full-time jobs.

But once again numbers don't tell a story, and a snapshot of Ontario's PV sector portrays too small a picture to understand the economics of a very complicated energy market. ClearSky, therefore, calculated out to 2018 the cost of PV as well as industry sector benefits to the provincial economy, and compared this to the cost and benefits of the alternative. Because the profile of PV generation in Ontario, for the most part, corresponds to peak electricity demand, ClearSky used natural gas generation, the primary peaking alternative in Ontario, for this comparison.

On a 20-year feed-in-tariff (FIT) or microFIT contract, the Ontario Power Authority pays scaled prices ranging from 44.3¢/kWh to projects as large as 10 MW up to 80.2¢/kWh for installations 10 kW and smaller. These costs can be averaged and translated into a monthly marginal cost to ratepayers. To make a long story short, by 2018, ClearSky believes the added cost of PV versus natural gas will be $4.58 to a typical ratepayer's monthly bill.

"The cost of generation from solar PV, between 2011-2018, will be greater than the cost of its alternatives," says ClearSky. On the other hand, per dollar invested, solar PV creates many times more jobs than natural gas. For the same money, ClearSky says, PV will provide 32 per cent less power to the grid than natural gas, but it will create 4.8 times as many jobs. And if the industry stays on track, it will bring $12.9 billion of private investment into Ontario between 2008 and 2018.

"We're not just a voice for solar anymore. We represent an industry," says Kieran, "and it has created jobs – we have the figures for that. And it has attracted investment to a province that was really suffering post recession."

> "Ontario's energy plan is an economic plan that puts us at the forefront of clean energy, which is creating a new industry and thousands of new jobs." — Former Energy Minister Brad Duguid

The new Canadian subsidiary of Siliken, a company based in Spain that globally manufactures PV modules and components and develops turn-key projects, now employs 121 people in Ontario. The opening of Siliken Canada's Windsor manufacturing plant in spring 2011 was predicated on FIT contract rules, which state power producers must meet a 60 per cent domestic content requirement: you need Ontario-made modules to be FIT compliant.

The official opening of the plant was attended by the mayor of Windsor, CEO of the regional economic development corporation and no less than three provincial cabinet ministers – representing economic development, finance and energy.

"Ontario's energy plan is an economic plan that puts us at the forefront of clean energy, which is creating a new industry and thousands of new jobs," said **Energy Minister Brad Duguid** at the time of the opening.

Then **Minister of Economic Development and Trade Sandra Pupatello** said Siliken is "another great example of our government's Green Energy Act at work. We're attracting an entire sector and supply chain to Ontario, providing good jobs for people in Windsor and across the province."

Siliken Canada General Manager Paco Caudet told *SOLutions* his Windsor plant is well situated. "We chose it because it's right on the border to the U.S. It's a great location. It's a big manufacturing hub in North America. Everything is available – people, skill sets, materials, suppliers, vendors – everything."

Caudet's market intelligence predicts Ontario will experience PV market growth of 400 MW per year, and he says Siliken has aimed at a 10 per cent share. He opened the plant with the capacity to manufacture 25 MW per year but anticipates a full complement of close to 200 employees and annual capacity of 50 MW by early 2012. "It depends on how the market goes," he explains.

Caudet represents one of 18 PV module manufacturers now in Ontario, all fiercely competing within the borders of the province and, of course, beyond to North America.

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Silken Canada's North American strategy, says Caudet, is based on regionally supplying customers with PV modules from Windsor and a U.S. subsidiary in San Diego. Other Canadian provinces and U.S. states do not have domestic content requirements, simplifying centralized distribution from Ontario, but very competitively priced Chinese modules are challenging North American manufacturers. There is a price point, however, says Caudet, slightly above the Chinese imports, where domestic modules are the preferred choice. And "choice" is now a keyword, he says, for would-be Canadian PV power producers.

Ninety-five per cent of calls to Siliken Canada come from Ontario, but the remaining five per cent indicate a growing Canadian market. Caudet doesn't want to tip his hand but says people in the prairies and the Maritimes are pricing Ontario-made Siliken modules.

"I didn't think about the rest of Canada before. We came here for Ontario and the FIT program. Now we see there is movement in other provinces."

Saskatchewan buy-down boosts PV uptake

Saskatchewan's PV market is visibly on the move. In late summer, **Environment Minister Dustin Duncan** announced the allocation of $2.9 million to extend the government's Net Metering Rebate Program, administered by the Saskatchewan Research Council. The program was launched in late 2007 and provides a 35 per cent rebate to a maximum of $35,000 to people who wish to install small, grid-connected, green power generation. It was wrapped up in March 2011 but, says a government news release, has been revitalized and extended to March 2012 due to a "significant increase in uptake in the past year," and an "unexpected influx of applications received by SRC just prior to the March 31, 2011, deadline."

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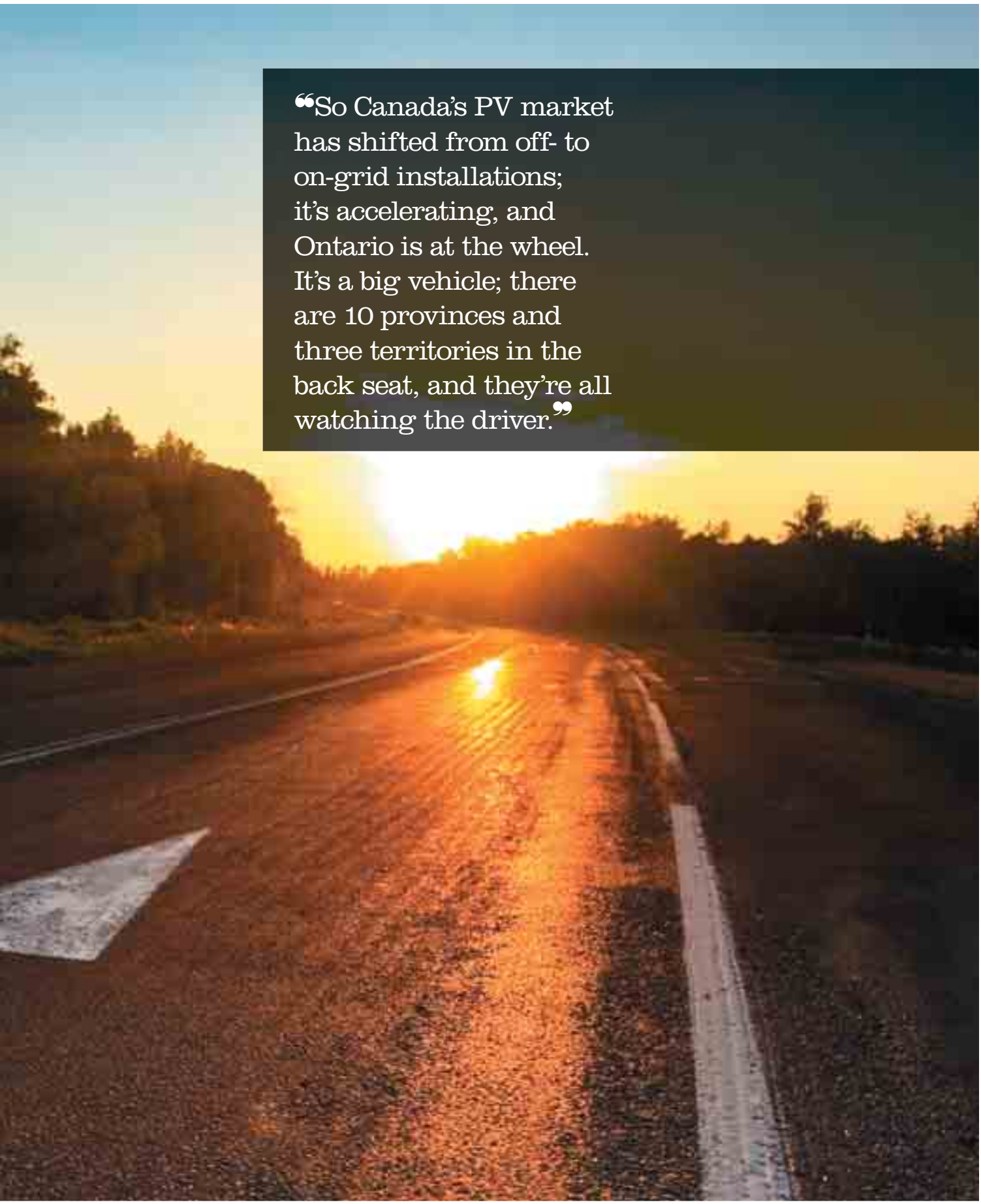

> “So Canada’s PV market has shifted from off- to on-grid installations; it’s accelerating, and Ontario is at the wheel. It’s a big vehicle; there are 10 provinces and three territories in the back seat, and they’re all watching the driver.”

> “Three years ago there were less than 10 MW, and now it’s one of the largest markets in North America, in three years, and it has legs.”

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The rebate incentive, or buy-down, is a significant addition to the ongoing Net Metering Program, also launched in 2007 and run by Saskatchewan’s Crown electric utility, SaskPower. The utility has 260 net metering customers receiving credit on their monthly bills for any power excess to consumption generated the month before. The excess energy is, of course, supplied to the distribution network, and the utility’s reconciliation is at the retail electricity rate: the standard residential rate is just under 11¢/kWh. The maximum system size is 100 kW, and if a producer consistently offers excess power to the grid, the credits cannot be accumulated beyond a year, at which time they are forfeited.

Right now, Saskatchewan has about 55 net metering PV generators, mostly homeowners, with a cumulative capacity of 300 kW, but a re-evaluation of the Saskatchewan PV market in 2012 will likely show significant growth. There are already another 400 kW in development, and there is a sharp increase in PV net-metering applications.

Ian Loughran, now **Manager, Energy and Sustainability Engineering for the City of Saskatoon** (responsible for demand-side management and renewable energy programs for SaskPower at the time of this interview), said 2009 PV applications were eight per cent of the total, while 2010 applications jumped to 40 per cent. Guessing at the 2011 rate, he thinks it might be close to 50 per cent.

“Saskatchewan is saying, OK, these are the benefits we’ve seen in Ontario. It’s clear job creation is one, and we’re seeing that with our rebate program. We’ve seen almost 30 companies start up, and they’re all distribution and installation companies. They’re not manufacturers like in Ontario, but there is a grassroots green energy industry taking off.”

Interestingly, Saskatchewan does have its own FIT-like program. It offers 20-year contracts with an annual rate escalation of two per cent. The 2011 one-size-fits-all rate, available to generators using environmentally preferred technologies, is 9.6¢/kWh. Few would call that a PV-friendly offer, but this year the Small Power Producers Program attracted PV applications from two producers each with a plan to install the maximum 100 kW.

“I don’t know how they’re making it work economically,” says Loughran. “They said they have panels out of China and can make it work. They’re dedicated businesses doing it for business reasons. They’re ground-mount systems, and they’re putting in trackers. They’re both installers and distributors of PV panels, and these will be demonstration projects to show what can be done.”

When it comes to what can be done, Loughran says “all eyes are on Ontario,” including customers, whom he compares to someone standing in his or her driveway looking at the neighbour’s house and seeing a BMW. “You say I want one,” he laughs, adding “I don’t think we’re getting a BMW.”

It may not be a Beemer, but Saskatchewan is kicking the tires on a new renewable energy incentive program. Its design, marshalled by the Ministry of Environment and scheduled for completion in the fall, has been ongoing through 2011. Buy-downs, long-term contracts and kWh tariffs are all being considered and could even be combined, says Loughran. Naturally, the solar industry would like to see a price higher than 9.6¢/kWh.

“I was in Regina speaking to government leaders, and they raised the subject of Ontario prices,” says Kieran. “The same thing is happening in British Columbia. Everywhere people are talking about the Ontario prices.”

Questioning Ontario’s PV FIT rates seems to be a national pastime. And within Ontario, PV rates have become a lightening rod, occasionally attracting judgmental bolts of derision from the ill-informed. The fair question, however, is can the rates be lower?

“The first thing we noticed is the price of the FIT,” says Loughran. “That’s a huge price for energy, and it sets a precedent for other areas. That price is great for the solar industry, but is it sustainable?”

The well informed, like Loughran, understand there is a connection between FIT PV rates and Ontario job creation. The rates were carefully designed to incentivize PV deployment as well as build the foundation of a provincially based supply chain and service industry created by domestic content requirements. Kieran says the association’s cross-country consultations were very much focused on the clarification of FIT rates.

“Every meeting I have, I discuss these things in other provinces. They see the opportunity but they’re nervous about the price. They raise the Ontario program and wonder what’s going to happen with it.”

CanSIA Policy and Research Advisor Patrick Bateman says the Ontario market will show some maturation in 2012, and people will begin to realize the FIT program and Ontario energy policies have been successful. As the size of the market stabilizes, he adds, cost will decrease.

“That’s an important metric,” says Bateman. “That is one of the primary benefits that we can demonstrate to the rest of Canada.”

Past CanSIA Chairman David Eisenbud is also optimistic about the future performance of the Ontario PV market, as well as how it will be perceived. He is TSMC Solar North America’s director of business development, responsible for sales in the eastern U.S. and all of Canada. TSMC Solar, a division of the Taiwan Semiconductor Manufacturing Company, plans to serve a global market with thin-film PV modules manufactured in its own facilities, with production capacity reaching 1 GW in three to five years. From his Massachusetts office, Eisenbud is looking at the Ontario market, the rest of Canada, and thinking long term.

“Ontario is delving into solar in such a big way,” he says. “The ripple effect will have a positive impact, I think, on program development everywhere.”

Eisenbud believes Ontario is raising the visibility of solar and thereby creating consumer demand. It has, he says, changed

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people's perception and educated the country. Not only that, he adds, the province's "zero-to-60" market has the ability to sustain growth because of its substantial structure and the level of participants' commitment.

"Three years ago there were less than 10 MW, and now it's one of the largest markets in North America, in three years, and it has legs. So many industries, not just pure play solar, so many industries have a vested stake in its success that, by default, it has to continue and spread beyond Ontario. There are services, consultants, engineering and technical folks. It's even causing a rethink among utilities."

Eisenbud is curiously enthusiastic for a man who is now excluded from the Ontario market, since TSMC modules are not FIT-compliant, and he doesn't have Canadian orders pouring in from other provinces. He and his employer believe PV is an irresistible force. The very near term, tomorrow, he says, is not as important as the day after tomorrow, and the years to follow.

"I guess the biggest driver is the realization the solar market has to compete beyond incentives. In my view, there is technology that will come to improve the baseline solar offering and open markets with fewer and fewer incentives."

Eisenbud sees grid parity – when the cost of installing PV is clearly as economic as buying power from the utility – rapidly approaching. In the U.S. by 2016, he believes, and in Canada shortly thereafter.

Altogether, he says, putting Ontario into a global context, PV has never enjoyed greater public acceptance. There is a big "rethink" going on around clean energy because of political turmoil, climate change and weather-related events. And the icing on the cake, says Eisenbud, is PV's capital cost and pricing environment has never been more favourable.

"This has been an incredible summer internationally. We have seen solar module pricing fall more than 20 per cent within two quarters – that's unprecedented – with more players, with more capacity than has ever been measured in the history of the solar industry."

Meanwhile, back in Saskatchewan, folks keen on solar still think Ontario's Beemer looks pretty cool. But at the same time, they are looking up and down the street and realizing there are a lot of different cars parked in driveways, and maybe a BMW isn't the only way to get into town. Canadian renewable energy industries, too, have come to realize that every province and territory will ultimately have its own vehicle for development. In the end, no two will likely be the same.

Provincial diversity challenges renewable industries

Canadian Wind Energy Association (CanWEA) President Robert Hornung says it is important to recognize the constitutional division of responsibilities between the Federal Government and each of the provinces. The overwhelming responsibility for electricity policy development rests at the provincial level. And at that level, says Hornung, every province is unique.

"We have members from Europe telling us working across the various countries in the European Union is more straightforward than working across the different provinces in Canada. When we talk about Canada and how to build wind out, and how to integrate it into the electricity system, we really are talking about 10 electricity systems not one, 10 policy frameworks not one, and this is one of the challenges of doing business in Canada."

Wind is ahead of solar on the Canadian renewables development curve, but surely solar energy will follow its trajectory. In fact, Loughran says SaskPower is beginning to prepare for the operational reality of PV grid parity – 10 or 12 years away in his view. At the moment, though, CanWEA, which hired its first full-time employee just eight years ago, now has 22 people, including seven policy analysts, with staff in Montréal, Toronto, Ottawa, Calgary and Vancouver.

This analytical and communications faculty has developed wind energy targets and policy framework proposals tailored for individual provinces. Hornung agrees provincial governments are evaluating Ontario, and CanWEA is helping them better understand how Ontario's accomplishments can be realized elsewhere. One of the strengths of all renewable energy technologies, he explains, is there are multiple reasons to proceed with deployment: environmental sustainability, electricity system diversification and stability, economic and industrial development.

"All of these arguments hold, but it may well be that in different provinces, different arguments carry more weight," says Hornung. "But I think it is one of the strengths of every technology, because there is a multitude of arguments for supporting them. It means we can go into each jurisdiction and make a case that will resonate with its unique circumstances."

CanSIA has a national template for Canadian solar development, *Solar Vision 2025*, released December 2010 at the association's annual conference, but it does not yet have the manpower to focus the kind of resources at CanWEA's disposal on individual Canadian markets. Bateman, however, says not only the solar industry, but also the industry association, has made "leaps and bounds" because of the Ontario market experience. "The capacity we're developing in the near term in Ontario will be a long-term advantage when policies and awareness grow in other provinces," he explains.

Right now, says Kieran, an important goal for the CanSIA Board is to further communicate the benefits of solar energy and the positive aspects of the Ontario experience. "If CanSIA had been a bigger organization two years ago when the FIT program began, we would have started being more active in the public eye in Ontario and across the country. We're going to have to come together as an industry across Canada and ask how do we open these markets... it's not just about programs. It's also about demand."

A big difference between wind and solar is the public experience. Kieran reiterates that people, and lots of them, generate solar energy. "Let's talk about real people," he says. "Real people are worried about their environment. They're worried about climate change. They see changes in what they're doing. Some people are aware of how we have generated electricity in the past and it's not how we're going to do it in the future."

CanSIA polling, says Kieran, indicates it is going to be a big job educating Canadians about solar energy. They want it, but they don't really understand its capabilities. Most people envision generating their own power and don't think of PV as a larger-scale resource. Again, Ontario, with the world's largest

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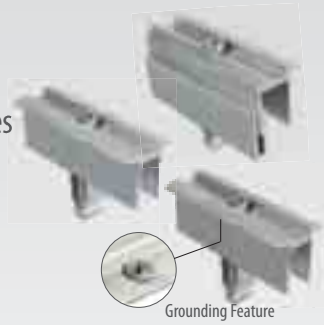

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> "Ontario is delving into solar in such a big way," he says. "The ripple effect will have a positive impact, I think, on program development everywhere."
>
> — Past CanSIA Chairman David Eisenbud

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PV power plant – Enbridge's 80 MW Sarnia Solar Project – should help.

While CanSIA's Board works on a public education strategy, the association and its provincial caucuses are working with provincial policy planners, government representatives and utility people. The Saskatchewan Solar Caucus, for example, joined Kieran to discuss solar program development with the Environment Ministry and the minister responsible for SaskPower.

"I know what CanSIA said was heard," says Loughran, who was also involved with the meeting. "Ultimately, that raises the level of awareness, and CanSIA being active with governments and executives – the entities involved with these programs – that needs to happen."

CanSIA also began using the services of Hill & Knowlton in 2011. **Senior Vice-President Elizabeth Roscoe** says the public affairs company is assisting the association, behind the scenes, with provincial government outreach, helping the industry confer with governments on programs and policies. "It's more than helping them communicate," says Roscoe. "It's helping them work with government."

Hill & Knowlton is mindful of provincial governments' agendas, political motivation and interests. Making sure the government in Saskatchewan knows, for example, there are numerous pending requests for the net metering program is going to resonate because as politicians they want those supporters, says Roscoe.

"CanSIA's effort to engage provincial governments in a customized discussion is occurring at exactly the right time," she says. "They have learned considerably from the FIT program in Ontario, from both positive and negative circumstances, and for that reason I believe they see the timely circumstances to extend that knowledge to governments across the country."

Timely, because right now the solar industry is in a "policy defining moment," says Roscoe. In 2011, she explains, provincial governments across the country are experiencing new leaders, a leadership review or an election, not to mention a relatively new majority government in Ottawa. This is a great opportunity, she explains, to influence policy.

"From the macro policy perspective, the 2008 to 2009 period really spoke about diversification in Canada's economy, not just reliance on oil and gas, not just reliance on hydro. No longer do policymakers, I think, want to make a single bet on energy policy. Therefore, diversification is incumbent upon them, to have diversification fit into their energy policy mix."

The first thing Roscoe says she learned about solar energy is the same thing Hornung, after eight years in the business, says is important to understand about renewable technologies – adaptability. So she's helping CanSIA adapt the solar message to individual provinces.

"Solar can be customized. It can be supported and have long-term stability in every jurisdiction. That's a huge advantage.

"Number two is the receptivity by consumers and businesses, and manufacturers, this is just an incredibly growth-oriented sector. It's a great opportunity."

In her role, Roscoe sees Ontario not necessarily as a model for solar deployment but as an opportunity to learn how to inform Canadian policy. Ontario interconnection issues are a good example. The problem has led to a backlog of small PV power producers waiting to get on the grid. The issue, she says, is huge.

"It's very complicated, and sometimes in public policy when something does not work, those models of what not to do jump off the page."

Roscoe hastens to add, while the Ontario market has a few obvious problems, the province has got a lot right.

Kieran agrees. Implementing a new program as massive as the FIT, he says, with all of the technologies, is a huge undertaking. He says he appreciates all the people who put FIT in place, but the tough job is implementation.

"When you have a program of this size and scope, people pay attention – they want to learn from your mistakes and understand, and then they look at their own resources and electricity market. There are a lot of important considerations."

As a new Ontario manufacturer, Caudet is undaunted by the province's struggles and motivated by its promising future. As a European, in terms of politics, pricing and competition, he says Canada is not that different than everywhere else.

"I sold my flat in Spain because I want to live here in Ontario. I like this place. My long-term plan is to stay here and to thrive. We can become a big company here and serve Ontario and other provinces in Canada and the Northeast U.S. That is a long-term plan that works for me, personally, and the company as well."

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SOLAR CANADA 2011

CanSIA's Annual Conference & Exposition

SOLAR CANADA 2011 IS THE LARGEST and most influential conference and trade show for the solar industry in Canada. The number of attendees at this annual solar marketplace increased from 400 in 2007 to a staggering 4,000 last year.

CanSIA, Canada's solar advocate, is working to support the solar industry's bid to have solar energy widely deployed throughout Canada as a recognized and established component of Canada's energy mix, enabled by a solar industry that competes on a global playing field. By 2015, the solar industry is expected to support more than 35,000 jobs in the economy and displace 15 to 31 million tonnes of greenhouse gas emissions per year, providing a safer, cleaner environment for generations to come.

In 2011, CanSIA expects some 5,000 exhibition visitors and conference delegates to attend a dynamic two-day event at the Metro Toronto Convention Centre.

Solar Canada 2011 is THE premier event for Canada's fast growing solar industry. There may still be time to register. Check out **www.solarcanadaconference.ca**.

A SNAP SHOT OF THE EVENT'S ITINERARY

The first day will feature solar pioneer as **keynote speaker Dr. John Macdonald, chairman, Day4Energy Inc.**, in a speech about **Solar Beyond Subsidies: Building a Sustainable Industry** and, on the second day **Karen Farbridge, Mayor of Guelph**, speaking about **Cities and Solar**.

1.

PLENARY 1 — Global Outlook, Local Impacts: PV Industry Leaders Panel

Five of the top global PV manufacturers offer their views on the current and future status of Canada's PV industry as well as key insights on global market trends in pricing, supply and demand, and technological innovation.

CHAIR

Doug Payne, Co-Founder and Executive Director, SolarTech

PANELLISTS

Kerry Adler, President and Chief Executive Officer, SkyPower Limited

Howard Gomes, Director of Sales, Canada, Suntech

Milfred Hammerbacher, President and CEO, Canadian Solar

Jason Gray, Country Manager Canada, SunEdison

Marc van Gerven, CEO, Q-Cells North America

2.

PLENARY 2 — A Post-Election Strategy: Next Steps for Solar in Ontario and Impacts for the Rest of Canada

Ontario's Feed-in-Tariff (FIT) program spurred the development of Canada's nascent solar PV industry, which is expected to post unprecedented growth in the next couple of years. The run-up to the province's October election caused a great deal of market uncertainty with the future of FIT coming into question. Regardless of election results, the regulatory landscape in Ontario will experience changes and this will affect industry developments across Canada.

In this session, leading experts assess the post-election solar strategy and what this means for the Canadian solar industry. A presentation of ideas on how industry and government can work together to create market stability, drive investment and ensure economic growth for Canada's solar industry.

CHAIR

Chris Benedetti, Principal, Sussex Strategy Group

PANELLISTS

Jared Donald, President, Canada, Conergy

Jan Dressel, Managing Director, Sovello Canada

Jason Chee-Aloy, Managing Director, Power Advisory

David Herle, Principal Partner, The Gandalf Group

Andrew Kinross, Director, Energy, Navigant Consulting

3.

PLENARY 3 — Opportunities for Canada's Solar Industry: Provincial Renewable Energy Schemes and Strategies

What is the status of provincial renewable energy strategies and where do the opportunities lie for the Canadian solar industry? This session will be chaired by **Linda Bertoldi, Senior Partner, Borden Ladner Gervais**, and feature experts and those responsible for energy strategy procurement on the provinces discuss what role solar might play in regional renewable energy initiatives.

4.

PLENARY 4 — Big Energy Betting on Renewables: How Does Solar Fit into a Diversified Energy Strategy?

Some of the biggest players in oil and gas are investing in renewable energy projects and technologies in an effort to diversify their portfolios and offset their carbon footprints. While wind and biofuels has received the majority of investment dollars from Canadian energy companies, solar is starting to attract more attention globally. How do these companies view the potential for solar and the opportunities for partnerships between big energy and the renewables sector?

CHAIR

Jon Kieran, Director of Solar Development, EDF EN Canada Inc.

PANELLISTS

Ed Sappin, Director, Project Development, Americas and Asia Pacific, BP Solar

John Maniawski, Senior Director, Power Generation Business Development, Enbridge

Andrew Kuske, Managing Director, Head of Equity Research, Canada Credit Suisse Securities (Canada)

Scott Mueller, Director of Business Development, North America, pvXchange

DID YOU KNOW?

The number of attendees at this annual solar marketplace increased from 400 visitors in 2007 to more than 4,000 last year.

PUSHING the ENVELOPE

SMALL-SCALE PROJECT EXAMINES FEASIBILITY OF LARGE-SCALE SOLAR COMMUNITY PLAN

By Drew McKibben

PHOTO COURTESY NRCAN

“The Drake Landing project has proven quite successful so far, so the next step is to move it up to the larger scale and evaluate whether or not we can bring the cost down to the point where a utility would be interested in offering something like this to land developers.”

THE FEDERAL GOVERNMENT AND its private sector partners are examining the feasibility of building a 1,000-home community served by a solar thermal district heating system.

The project is designed to build on the success of the Drake Landing Solar Community, a 52-house suburb in Okotoks, Alberta, that was the first neighbourhood of its kind in North America.

The homes in Drake Landing are heated by hot water from a district-heating loop connected to a central energy centre, which houses water tanks for short-term heat storage. The tanks are charged by 800 solar collectors, which cover 2,300 square metres and generate up to 1.5 MWth. Excess heat from the collectors is stored for use in winter months in an insulated, subterranean borehole field, 35 metres in diameter, consisting of 144 tubes each 37 metres deep. The system is designed to supply 90 per cent of the community’s space heating requirements.

“The Drake Landing project is considered small-scale for this technology, but it was built to help demonstrate the concept, the technical feasibility,” says **Doug McClenahan, manager of solar thermal R&D for Natural Resources Canada (NRCan)**. “It’s proven quite successful so far, so the next step is to move it up to the larger scale and evaluate whether or not we can bring the cost down to the point where a utility would be interested in offering something like this to land developers.”

The goal of the new project is to achieve up to a 40 per cent cost reduction over Drake Landing, says McClenahan. The cost of energy for space heating at that project is 17¢/kWh, too far from the cost of natural gas right now to make economic sense. Although the larger-scale project is not going to be able to compete against natural gas at today’s depressed prices either, says McClenahan, the partners want to be able to show they can “get somewhere in the neighbourhood” of 10¢/kWh. “It’s certainly more competitive than electricity prices but also shows significant progress towards natural gas,” he says.

According to preliminary estimates, says McClenahan, the 10¢/kWh goal represents a total capital-cost per house in the range of $20–25,000, compared to $50–70,000 per house at Drake Landing.

McClenahan sees a couple of paths to achieving the necessary cost reductions. “One is that when you go larger scale you get a higher efficiency on the long-term storage side, and the other is when you go larger scale, you usually benefit from lower purchasing costs for solar collectors.”

An option on the collector side is to utilize larger-area modules. “That’s what they’re doing in Europe now. With Drake Landing it was single modules installed side-by-side. If you get a larger module and hoist it in place with a crane in a larger development, maybe that would cut the cost down significantly,” explains McClenahan. “It’s one of the areas we’re looking at.”

The size of the system will be a significant step up from Drake Landing. It will consist of 30,000 square metres of solar collectors with a 20 MWth peak output, and a borehole field 85 metres in diameter. System size is not the only difference between the new project and Drake Landing, however. While Drake Landing is made up exclusively of single-family dwellings, the larger-scale project will also incorporate townhouses, apartments and commercial properties. “It’s nice to have the mix of the different heating loads,” says McClenahan.

The partners are also looking at significantly increasing energy efficiency in the buildings compared to Drake Landing, says McClenahan. “For Alberta at the time, a subdivision of R2000 homes was a nice step forward. But in this case we’re going another 50 per cent lower in heating load.”

A key part of the feasibility study is to determine exactly how far to go with efficiency measures, McClenahan adds. “As you

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increase the energy efficiency, your return on investment goes down. If you add more features, more insulation, you get lower and lower savings over time. So at some point there's a crossover where it doesn't make sense to invest any more in efficiency. It now makes sense to invest in renewable energy like solar," he says.

"We want to be right at that crossover for the demonstration. We don't want to have pushed energy efficiency so far that the final bits were not really cost-effective and we could have brought solar in earlier."

Moving ahead with a large-scale project, which McClenahan hopes would start construction in the next couple of years, would put Canada at the forefront of research and demonstration of solar heating with seasonal storage, just as Drake Landing did.

"We're looking at a few firsts around the world. Size-wise it would be the largest solar community in the world, and it would be the most efficient community in the world. It would also be the highest performing solar community in the world regardless of size. So we're pushing the envelope quite a bit on this one," he says.

"It would be a significant accomplishment to pull this off in Canada."

The location of the new solar community will also be in Alberta, says McClenahan, mainly because there is a team already "very familiar with the concept and what's involved in the operation of a facility like this," he explains. "Bringing in new players at this point is riskier."

ATCO Gas, Alberta's largest natural gas delivery company, operates the Drake Landing system and is part of the new project. NRCan is also working with the Qualico Group, one of the largest real estate development operations in Western Canada. The group includes Sterling Homes, the builder of Drake Landing.

Qualico is in the process of developing two new communities in Calgary and two outside the city, says McClenhan. "This concept could apply to any one of those four developments. They would be quite happy to integrate it into a development if it works out to be a feasible option."

The partners are hoping to tap into the Federal Government's new ecoENERGY Innovation Initiative, which was announced in the 2011 budget and launched in early August, to provide funding for the project. "The timing of it is perfect for an application there," says McClenahan. The program has a budget of $97 million over two years to support both R&D and demonstration projects to advance Canadian leadership in clean energy technologies.

NRCan and its partners expected to present the preliminary results of their feasibility study to developers and utilities from across Canada at the end of October at a seminar in Calgary, says McClenahan. NRCan tied it in with a meeting of the International Energy Agency's new task on large-scale solar energy systems, part of the organization's solar heating and cooling program. Canada hosted the second meeting of Task 45, which included an October 23 technical tour of Drake Landing, and two days of meetings at the Banff Springs Hotel. The Task's international experts also participated in the October 26 Calgary seminar, discussing large-scale projects in Europe.

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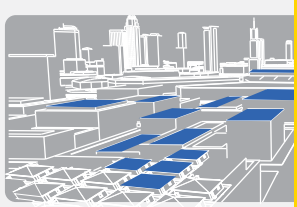

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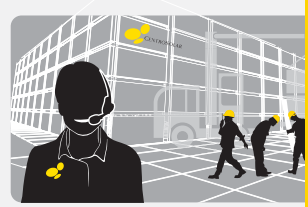

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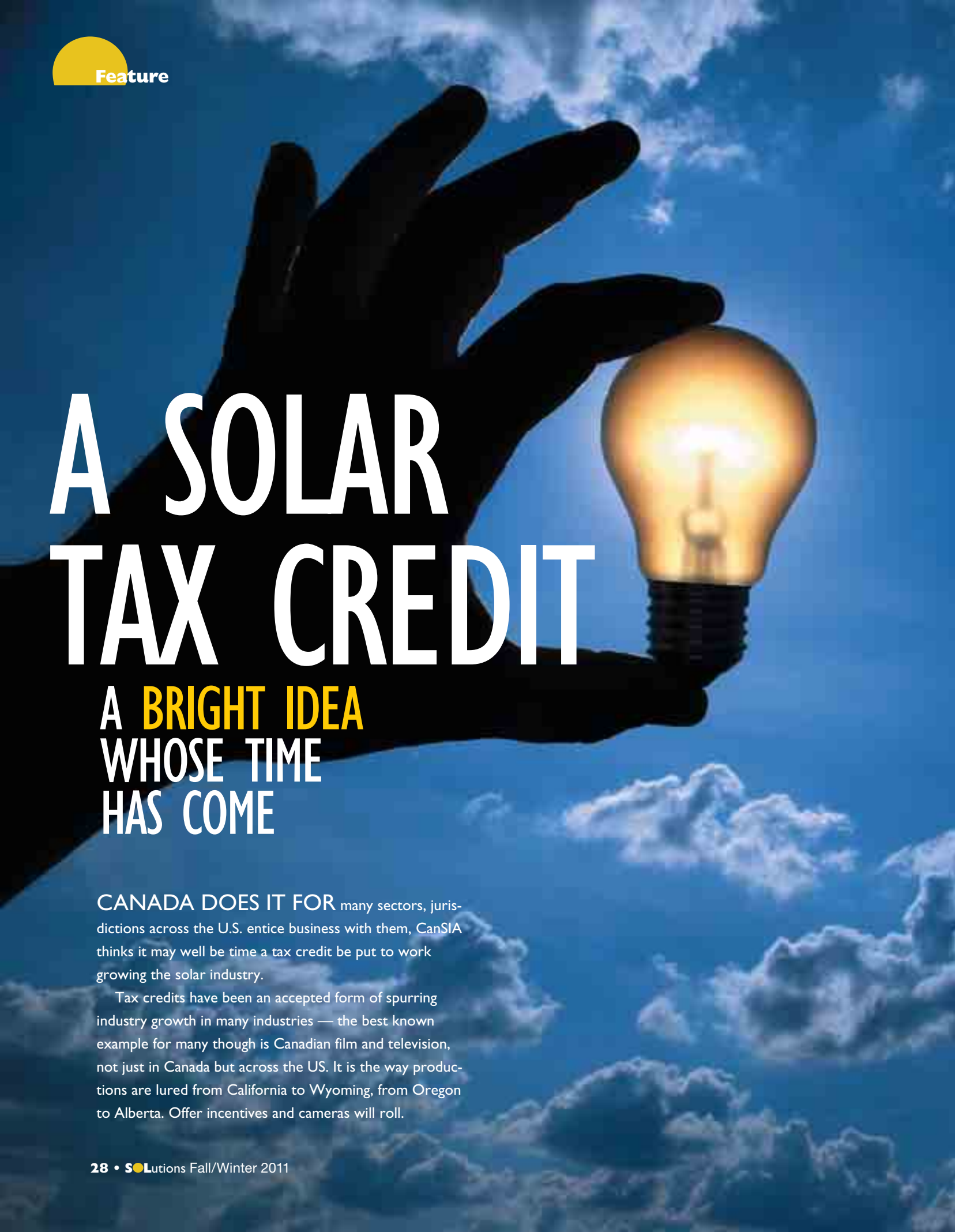

A SOLAR TAX CREDIT

A BRIGHT IDEA WHOSE TIME HAS COME

CANADA DOES IT FOR many sectors, jurisdictions across the U.S. entice business with them, CanSIA thinks it may well be time a tax credit be put to work growing the solar industry.

Tax credits have been an accepted form of spurring industry growth in many industries — the best known example for many though is Canadian film and television, not just in Canada but across the US. It is the way productions are lured from California to Wyoming, from Oregon to Alberta. Offer incentives and cameras will roll.

Build it and they will come — it could be a different *Field of Dreams* for the energy sector.

Most recently CanSIA points to the boost in spending evident in the home renovation, construction, retail and forestry industry sectors spurred on by the Renovation Tax Credit. It's major positive impact for Canada's families and economy was touted in a Jan. 25, 2011, news release — *Harper Government's Home Renovation Tax Credit a Success: Saved Average Family over $700; Pumped Billions into the Economy*.

All this evidence led to the recommendations CanSIA made to the House of Commons Standing Committee on Finance as it gathered information as part of a cross-country tour in advance of the 2012 federal budget.

The association came up with three recommendations that can apply to a plethora of market-ready and near-market solar energy technologies and applications that can produce high-value low-impact heating, cooling and/or electricity.

CANSIA RECOMMENDS THE FEDERAL GOVERNMENT...

- Establish a multi-year 30 per cent Investment Tax Credit for solar energy technologies;
- Introduce Green Bonds to support the adoption of solar energy technology in Canadian households, small businesses and communities; and
- Invest $200,000 annually for five years to develop and maintain Canadian solar energy technology standards and codes.

The tried true — Investment Tax Credit

As mentioned the success of the Investment Tax Credit (ITC) in stimulating economic activity is clear in the results from the recent Home Renovation Tax Credit (HRTC), which was claimed by more than three million Canadians and induced increased spending on home renovations to the tune of $4.3 billion for the economy within a one-year period.

This sort of program, which would reduce the effective tax rate for solar energy technology adoption, is an established and proven low-cost method in stimulating economic growth with renewable energy technologies.

The U.S. (Canada's largest direct competitor for investment in the solar energy value-chain) currently offers the U.S. solar energy ITC, reducing the overall tax liability for individuals or businesses that make investments in solar energy generation technology through a 30 per cent uncapped tax credit for residential solar systems. The ITC is in effect until Dec. 31, 2016.

The existence of this ITC through to 2016 provides market certainty for companies to develop long-term investments in the value chain that drives competition, technological innovation and ultimately lowers costs for consumers.

The U.S. 30 per cent solar ITC is a demonstrated success with taxpayers receiving significant benefits in return for their investment. Since the ITCs implementation in 2006, it has contributed to growth in annual solar installations of 800 per cent and a quadrupling of U.S. solar manufacturing capacity from 726 MW in 2007 to 2,887 MW in 2010.

Growth of 67 per cent in 2010 made the U.S. solar industry one of the fastest growing industry sectors in the U.S. economy (contrasted to the 2.8 per cent GDP growth overall in 2010), supporting a labour force of more than 100,000 American workers in all 50 states (including nearly 25,000 workers in solar manufacturing). An additional 24,000 jobs was forecasted for 2011.

The creation of a multi-year 30 per cent tax credit will benefit Canada through considerable market activity, economic growth and the resultant federal taxes stimulated. It is certain to be seen as a win-win by industry, consumers and the government.

A different kind of green

The second recommendation to the Federal Government by CanSIA is for the introduction of Green Bonds to support the adoption of solar energy technology in Canadian households, small businesses and communities.

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A 2008 poll conducted by Nanos Research showed 81.8 per cent of Canadians supported the introduction of a Green Bonds initiative, with 62.2 per cent saying they would purchase the new instruments themselves if an interest rate similar to Canada Savings Bonds was provided.

Green Bonds raise funds for renewable energy projects by giving members of the public the opportunity to make low-risk fixed-income investments in a fund that accelerates the deployment of environmentally preferable technology. Green Bond holders accept a (low) government-guaranteed rate of return in exchange for participating in the provision of a public good.

A number of governments have successfully raised significant revenues by issuing Green Bonds for the advancement of renewable energy technology within their jurisdiction. Examples include the European Union where the "Climate Awareness Bond" issued by the European Investment Bank in 2007, has raised over €1 billion and where "Europe 2020 Project Bonds" are expected to channel €1 billion from bond markets to investment in public infrastructure.

THE TIES THAT GROW AN INDUSTRY

Canada's film and television industry has grown in part through the Canadian Film or Video Production Tax Credit (CPTC), a refundable corporate tax credit. The CPTC program is jointly administered by the Department of Canadian Heritage, through the offices of the Canadian Audio-Visual Certification Office (CAVCO), and by the Canada Revenue Agency.

It is only available only to qualified corporations, which throughout the year have a permanent address in Canada that primarily carries on the activities of a Canadian film or video production business. A "Canadian film or video production" is a production that meets the detailed requirements of the income tax regulations.

The CPTC program is known for its complex, tax-based incentive tied to many rules and regulations.

At times, producers form business relationships with foreign distributors or financiers to finance their productions. When productions reach a fairly high complement of foreign ties problems often arise. It is not unheard of for producers to experience delays in processing applications and in some circumstances, certification is outright refused or revoked.

In short, the tax credit program is not for the faint of heart.

Funds raised can be used to reduce specific barriers in the finance continuum that prevent the flow of private equity and debt finance, to mobilize institutional investor capital and to increase returns or reduce risks.

Green Bonds could offer a profound market transformation for households, small businesses and communities (including northern, remote and First Nation communities), where demand and sup-

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port for solar energy technology is highest but financial barriers are the most pronounced.

The benefit for the Federal Government would be increased availability of favourably priced credit for the adoption of solar energy technologies by households, small businesses and communities such as noted above, which with the leverage of a Green Bond fund could drive significant market and industry development.

The ratio of dollars generated as renewable infrastructure capital to dollars cost of Green Bonds would be higher than either tax credits or other direct subsidies can provide seeing as Green Bonds would be purchased by individuals, households and businesses.

A push for R&D

Ensuring that solar energy technologies developed and deployed in Canada perform on par and exceed global best practices is essential to protect consumers and encourage continued technological advancement and innovation. Hand in hand with that is the importance of ensuring the incumbent regulatory framework for new technologies (e.g. the Model National Energy Code for Buildings, the National Building Code and the National Plumbing Code) are current, and reflect and accept technological advancements and innovation imperative to an evolving and expanding technology-base.

To support the development and maintenance of Canadian solar energy technology standards and codes, CanSIA recommended an annual investment of $200,000 for a period of five years. This would go a long way to supporting the development of Canadian solar energy technology standards and codes in line with technological realities and international best practices to keep Canada in step with the rest of the world.

For the Federal Government, it would have the benefit of encouraging innovation and technological advancement through regulatory mechanisms providing extremely low-cost technological progress. National regulatory mechanisms that in-effect displace the consumption of fossil-fuels through conservation and renewable energy measures, are in addition an extremely cost-effective method to reduce Greenhouse Gas (GHG) emissions.

"It is inevitable that solar energy technology will become mainstream and widespread in Canada," said **Chair, CanSIA Board of Directors Jon Kieran**. "Simple low-cost framework incentives, complementary to the existing regulatory framework, can promote the development, commercialization and deployment of solar energy technologies and services in Canada mobilizing and leveraging private capital and unlocking regional energy potential."

"It is exactly these sort of incentives that compelled an accelerated deployment of solar energy technologies in Ontario and led to the private sector investment of $2 billion and the creation of 8,200 jobs in 2011 alone," he noted.

CanSIA suggests that with the Federal Government's leadership, the Ontario experience can be replicated in all Canadian communities, provinces and territories, municipalities, while maximizing the benefits of a solar energy future to Canadians through sustained economic growth, skilled jobs and value-added businesses.

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COMMUNITY POWER GROUPS

IMPACT INVESTING IN THE SOLARSHARE CO-OPERATIVE

PHOTO COURTESY TREC RENEWABLE ENERGY COOPERATIVE

WHEN EXAMINING THE wide-reaching benefits of Ontario's Feed-in-Tariff program, there are few more convincing success stories than those that highlight the mounting achievements of community power groups.

The SolarShare Co-operative, recently developed by TREC (TREC Renewable Energy Co-operative), is inviting Ontarians to "Solar Power their Portfolios." With the intention of reaching individuals who would otherwise not have access to solar generation (those living in apartments, shaded homes or having limited capital for project investment) SolarShare takes on the initial investment, risk and work in installing PV projects across Ontario. Now that SolarShare owns 18 projects representing over 600 kW of capacity, they have launched an offering of Community Solar Bonds to the public.

In order to purchase a bond, individuals first join the co-op, earning a vote in meetings, including the Annual

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General Meeting to elect board members. The aim is to include the interests of communities in developing new projects and growing the co-op. This involvement instills a sense of ownership and allows members to feel enthusiastic about uniting with other individuals who want to participate in the green energy economy and develop community owned power. As the co-op grows, so does a sense of community as members become involved in industry events, such as the CanSIA/OSEA Solar Drinks and the Moving Planet Green Field Day at Queen's Park. Members can also monitor the solar installations by viewing a live-feed metre on the SolarShare website (www.solarbonds.ca), measuring electricity and revenue generated. Each project site, spanned across a Google map of Ontario, is marked by a sun icon and leads to photos of the projects and real-time data. Co-op members from the solar technology industry particularly get a kick out of the interactive nature of the projects. Others like to watch the revenue generated and see tangible results of their investments.

The $1,000 bonds earn five per cent annual returns over a five-year term, generating revenue from 20-year FIT and microFIT contracts. Currently only one bond is available per member as regulatory approval is pending, most likely until late 2011. At that time, members will be able to file their Community Solar Bonds into self-directed RRSP/RESP/TFSA accounts, and purchase an unlimited number of bonds. In an emerging 'impact investing' market, the Community Solar Bond offers 'triple bottom line returns,' presenting economic, social and environmental benefits.

"The SolarShare bond release opens a door to everyone to participate in the solar economy in Ontario," stated **Mike Brigham, President of SolarShare and Chair of the TREC Renewable Energy Co-operative**. "SolarShare is designed for citizens who want to invest in solar power but don't have a suitable site or access to capital to install solar panels on their own property. All residents and businesses in Ontario can become SolarShare members and invest in the co-op."

Judith Lipp, Executive Director of TREC agrees. "TREC established the first renewable energy co-op in Ontario when over 400 citizens pooled their funds to build the iconic WindShare turbine at Exhibition Place in Toronto. SolarShare is the next evolution of community-owned power in Ontario. It exemplifies what the Green Energy Act and the feed-in-tariff program were designed to enable profitable businesses generating green energy and green returns to the community."

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TEACHING THE

WHEN STUDENTS AT OKANAGAN

College's new Centre of Excellence in Penticton plug their laptops in, they only have to look outside and up to see their energy source.

The solar energy system at Okanagan College's newest building is the largest system developed in Western Canada. SkyFire Energy was the project developer for the 260 kW solar energy system, which is using 1,106 Conergy P solar modules, on the rooftop of the college's newest building on its Penticton campus.

Generating about 292,500 kWh per year, the solar energy system will help the building — the Centre of Excellence in Sustainable Building Technologies and Renewable Energy Conservation — meet the goal of being energy neutral over the course of an annual operating cycle.

With school back in session and students on campus, the college has a three-fold benefit from the system. One, the solar energy system will help the college reach the goal of meeting the Living Building Challenge of net-zero energy and water consumption. In the Okanagan's sunny summer months, the solar energy system will, at times, exceed the building's needs and the energy will be fed into the grid. In the winter, the college will draw from the grid to

STANDARD

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meet campus energy needs. Decreased operating costs in terms of energy consumption are another benefit, but the college will also benefit from educational benefits for students.

The solar photovoltaic system serves multiple purposes. In addition to supplying the building with most, or possibly all, of its annual electricity requirements, the system is also being used as a hands-on teaching tool for the college's trades and technology classes.

Okanagan College's Director of Facilities Steve Robinson explains the reason for going solar: "Even as we were planning and building the Centre of Excellence, students and staff were excited by the energy-saving efforts and technologies being employed. Sustainability ranks high among our goals at the college, and the solar energy system on this building is a key component of our efforts.

The Okanagan College is a publicly funded post-secondary institution that offers degree, diploma, certificate and continuing studies courses to more than 20,000 people annually. With more than 1,000 employees, it is an organization that has made sustainability one of its key objectives. It is a leader in sustainability in Western Canada.

The Centre of Excellence in Sustainable Building Technologies and Renewable Energy Conservation has been built and will be operated to achieve the Living Building Challenge, which is among the world's most-demanding guidelines for sustainable construction. Its ambitious targets require net-zero energy and water consumption, as well as several other prerequisites.

The solar system incorporates over 1,100–235 watt solar modules as well as new leading edge inverter technology that utilizes maximum power point tracking (MPPT) at a string level.

"We are very excited to have been involved in this ground breaking installation that now sets the standards for solar power systems in Western Canada" says **David Kelly, an owner of SkyFire Energy**.

The facility itself contains many classes and shops but also goes one step further by integrating the systems and technologies that are being taught. It supports a program mix that has a focus on sustainable building technologies and processes, as well as research and development of alternative and renewable sources of energy.

Prompting the investment decision was the knowledge that the college was demonstrating leadership in incorporating sustainability into the building and curriculum. In fact the Okanagan College Students Union decided to contribute to the college's fundraising efforts around the building in appreciation of the innovation.

Cory Nelmes, a first-year student and OCSU Financial Co-ordinator, noted "when you sit down and realize that the power for the projectors and computers is coming from the sun, and that at times the building will produce more energy than it will use, you appreciate how we can use technology and innovation to address problems."

Apprentice and entry-level electricians being trained by the college will also be able to learn how the system functions, monitor energy production, and see how the system integrates into the rest of the building's infrastructure and with the municipal power grid.

The decision to deploy solar energy at the campus was an easy one for Okanagan College. The climate and rooftop were ideally suited for solar energy.

"A showcase project such as this one provides an excellent reference point for the industry and raises the bar for photovoltaic installations in Canada," said Kelly. "We at SkyFire Energy are excited to have been involved in another school-based educational system as it will allow the current generation of students to learn the benefits of solar first hand. This installation and Okanagan College training will help to grow the solar industry in British Columbia and Western Canada."

"Installations of this size and profile built in Western Canada really showcase the diversity of the Canadian photovoltaic market," said **Jared Donald, President of Conergy Canada**. "The solar potential in Western Canada is exceptional. It will take industry leaders, like SkyFire and the Okanagan College, to ensure that this market grows to meet that potential. We applaud Okanagan College for its environmental leadership and innovative education programs."

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CUTTING THROUGH THE HAZE

COMBINED EFFORTS CLEAR TAX CONFUSION SURROUNDING ONTARIO MICROFIT PROJECTS

IN SEPTEMBER THE CANADA REVENUE AGENCY cleared up tax confusion that was costing CanSIA members and their clients in Ontario untold thousands of dollars regarding the HST refund on microFIT solar PV systems.

Concerns arose in May 2011 following a directive issued to all CRA agents to hold all refunds for microFIT projects that did not meet the definition of being on commercial property or on property used at least 90 per cent for commercial purposes. The issue in question was whether a solar power system was considered to be partially or totally a home renovation.

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> “In short, the test should be that if the Homeowner Micro Producer is an HST registrant and is selling power to the power authority and charging HST, the Homeowner Micro Producer should be entitled to recover all of its HST regardless of the fact that the equipment may be attached to the person’s house.”

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CanSIA obtained an independent legal opinion from Torys LLP on behalf of it members supporting the HST input tax credit claims that clarified how solar panels should be assessed stating:

“It is more likely than not that the solar panels are not fixtures at all on the basis that the intention of the solar panels is not to improve the land or building of the Homeowner Micro Producer. Moreover, and more importantly, we are of the view that within the definition of improvement, even if it were a fixture, the cost of the solar panels is not added to the cost of the Homeowner Micro Producer’s house or contiguous land within the definition of improvement and therefore subsection 208(4) of the ETA does not apply and the ITCs should be allowed.”

Using the legal opinion CanSIA made a submission to the CRA on behalf of microFIT system owners to **Gail Shea, Minister of National Revenue**, noting that “in addition to the reasons set out in the Legal Opinion, the policy of the *Excise Tax Act* (Canada) that relates to HST would be violated and an incidence of double taxation would arise if the CRA were to deny the claims for ITCs.

Under the Ontario microFIT Program, solar photovoltaic panels are installed on homes and small businesses. A critical part of the microFIT Program is that the Homeowner Micro Producers sell the power that is produced to the appropriate power authority and the power output is metered and “sold” into the grid. The Homeowner Micro Producers, as sellers of the electricity, if they are registered for HST, are required to collect and remit HST on the power that is produced. The power that is placed into the grid is then sold by the appropriate power authority to users of the power on which the relevant power authority also charges HST. Producers of electricity, such as owners of wind turbines, gas fired electrical turbines and hydroelectric equipment are all entitled to obtain ITCs for the HST they incur to produce power because they are fully selling their power to the power authority. However, microFIT producers are being denied ITCs when they operate in the same manner.”

CanSIA concluded pointing out that “CRA’s HST Rulings Division should review the microFIT program and include

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a clear statement as to the tax treatment of photovoltaic equipment in the circumstances described."

"We think this would assist CRA auditors in reaching appropriate audit positions, and it would give the correct policy result to ensure there is no double taxation for Homeowner Micro Producers who produce power for sale in Ontario."

"In short, the test should be that if the Homeowner Micro Producer is an HST registrant and is selling power to the power authority and charging HST (and purchasing all of its power through the power authority on which it is paying HST), the Homeowner Micro Producer should be entitled to recover all of its HST regardless of the fact that the equipment may be attached to the person's house."

Later in September members began receiving letters from CRA informing them that their HST ITC claims may be approved and the CRA posted an information sheet — *The GST/HST Implications of the Acquisition of Solar Panels Under the micro Feed-In-Tariff Program in Ontario* clarifying the situation.

An excerpt offers some insight into the new arrangement.

"**Recovering the GST/HST paid or payable on the acquisition of a solar panel system** — A GST/HST registrant (other than a financial institution) is eligible to claim full input tax credits (ITCs) for the GST/HST paid or payable by them on the purchase of capital personal property if the property is for use primarily in commercial activities of the registrant.

Given the terms of the microFIT Program whereby all sales of electricity are taxable supplies made in the course of a commercial activity, a solar panel system that is connected to the electrical grid and used exclusively to sell electricity to the Ontario Power Authority or its designate is considered to be capital personal property. If you are a GST/HST registrant, you are eligible to claim full ITCs for costs related to the purchase and installation of a solar panel system, provided that the documentary requirements for claiming ITCs are satisfied and the claim is made within the time limit. The documentary requirements for claiming ITCs are set out in Guide RC4409, Keeping Records. The rules on the time limit for claiming ITCs are set out in GST/HST Memorandum 8.1, General Eligibility Rules. These publications are available on the Canada Revenue Agency's website at www.cra.gc.ca.

If you are a public service body that is not a GST/HST registrant, you may be eligible to claim a public service bodies' rebate to recover a percentage of the GST/HST paid or payable on inputs related to your taxable supply of electricity and for which you cannot claim ITCs."

"We are very happy to see that the CRA is starting to allow HST claims on eligible microFIT projects," said **Chair, CanSIA Board of Directors Jon Kieran**. "The purchase and installation of microFIT solar systems will now be interpreted as a 'Capital Personal Property' which is eligible for an ITC, instead of as a 'Capital Real Property' which isn't. Our members are happy that through our combined efforts, the issues were heard and understood."

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Proven in practice: Highest energy yield for photovoltaic systems through MLD tracking

Twelve years ago, Artur Deger founded his company DEGERenergie (www.degerenergie.com). Today, DEGERenergie is the global market leader for solar tracking systems. This does not come as a surprise, as it has been verified that the users of MLD tracking technology based on the patented control module DEGERconecter achieve the highest energy yield worldwide.

On average, solar tracking systems with MLD technology (MLD = Maximum Light Detection) developed by DEGERenergie generate 45 percent more yield than rigidly installed modules. This is substantiated by the years experience of the company, which have been reinforced among other things by evaluations of the Spanish solar park operator Picanda Solar: Solar modules that Picanda Solar installed rigidly on the roof of an industrial building generate a yield of 1,501 kWh/kWp while at the same location, the identical modules tracked with DEGERtrakers of the type 5000NT achieve 2,203 kWh/kWp.

The decisive factor in this high yield, not achieved by any other system worldwide, is the MLD tracking technology from DEGERenergie.

There are two basic types of tracking systems for solar power plants:

• **Astronomically guided systems.** These work on the basis of astronomical data. This means that sunrise and sunset times throughout the year are stored in the software, as well as the angle of the sun rays. The tracking systems controlled in this way align the solar modules accordingly. They do not take account of weather conditions or other parameters relevant to the energy yield, however, such as reflection effects through snow, water, light colored rocks or clouds. Thus, according to details of the Baden-Württemberg Center for Solar Energy and Hydrogen Research, dual axis tracking systems working on the basis of astronomical data generate some 28 percent more yield than rigidly installed solar modules.

• **"Intelligent" tracking with MLD technology.** Systems equipped with this are always oriented to actual conditions and align the connected solar modules to the brightest, that is the most energetic, point in the sky. The core of these intelligent controls is the patented control module DEGERconecter, developed by DEGERenergie. It continually measures the intensity and angle of the incoming light beams. This means that reflected light or diffuse light that penetrates clouds is also taken into account in the alignment of the solar modules – thus the term maximum light detection.

The effect: The connected solar module takes in the highest possible amount of energy and transforms it into effective energy. This means that the extra yield with tracking systems working according to the MLD principle is considerably higher than astronomically guided systems. They extract up to 45 percent more solar energy than rigid systems, as substantiated by yield comparisons over several years, and thus have the highest yields worldwide in the photovoltaic sector.

Another advantage: DEGERenergie MLD systems work without a central control, since every system aligns itself independently. Each individual system achieves the highest possible yield at its respective location in the solar park. Also, if the control should fail, only one system is involved – the other systems in the solar park continue to work normally.

DEGERenergie was founded in 1999 and is now the global market leader for solar tracking systems, with more than 45,000 systems installed in over 45 countries. The patented control module DEGERconecter won the Inventor Award of the German state of Baden-Württemberg in 2001, and has since been deployed more than 60,000 times worldwide.

The MLD principle

The MLD, or maximum light detection principle, relies on tracking the solar module to the most energetic point in a way that is as precise, quick and energy-saving as possible. This is owed to the patented control module DEGERconecter, an acrylic pyramid (tetrahedron), which ensures the precise alignment of the connected solar modules.

Reference:

* Gabler, H., Klotz, F. H., Mohring, H. - D., "Ertragspotenzial nachgeführter Photovoltaik in Europa: Anspruch und Wirklichkeit", in the conference transcript of the 20th Symposium Photovoltaische Solarenergie in Bad Staffelstein, Germany, which took place from 09th to 11th March, 2005; Ostbayerisches Technologie-Transfer-Institute. V. (East Bavarian Technology Transfer Institute), Regensburg, Germany, 2005 pp. 61-65.

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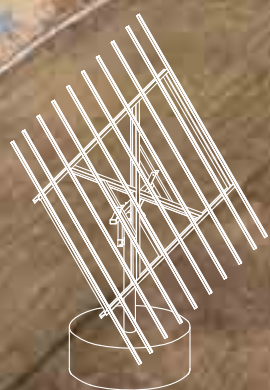

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EXPLORING PERFORMANCE-BASED SOLAR THERMAL INCENTIVES

A PERFORMANCE-BASED INCENTIVE program for solar thermal water and air technologies in Ontario would help the province maintain its leadership in the sector and provide a cost-effective option for meeting its aggressive long-term energy conservation goals, says CanSIA.

Association representatives met with officials from Ontario's Ministry of Energy in August to discuss the feasibility of implementing a feed-in-tariff structure for solar thermal technologies that would compensate producers for the displacement of natural gas and electricity on a $/kWh basis.

"This meeting was really a very first step in terms of educating the Ontario government about this kind of incentive," says **Wesley Johnston, CanSIA's director of policy and research**.

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"We see this as an opportunity to gain a lot more information and understanding that can be relayed to other provinces, municipalities and utilities across Canada."

— CanSIA Director of Policy and Research Wesley Johnston

> "The real benefit of a performance-based incentive program is you get paid for what you produce. That encourages companies to innovate. If you can come up with better techniques and better technology, and try to apply it in a more economical fashion, you increase the payback you receive."
>
> —CanSIA Director of Policy and Research Wesley Johnston

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To date, provincial and federal support programs for solar thermal heating and cooling have centred on rebates applied to the capital cost of the installations. An incentive that shifts the focus to the energy produced has some advantages, says Johnston.

"The real benefit of a performance-based incentive program is you get paid for what you produce. That encourages companies to innovate. If you can come up with better techniques and better technology, and try to apply it in a more economical fashion, you increase the payback you receive," he says. "I think it's a very intriguing approach because it does promote innovation."

A feed-in-tariff type of program would also provide the industry with a stable investment environment that will drive long-term growth and achieve the scale needed to bring costs down. "I think we need an approach like this. We've got to get into a program that's sustainable so the industry can grow," says **Mike Noble, then vice-president of corporate development for Enerworks Inc.**, an Ontario-based manufacturer of solar thermal water heating appliances.

"Rebate programs are budget driven. Once the budget's done, the program's done."

Ontario's solar thermal sector illustrates the impact shorter-term policy instruments can have. In 2009 and 2010, driven by the Federal Government's ecoENERGY for Renewable Heat program and the matching Ontario Solar Thermal Heating Incentive, the province led the country with more than 50 per cent of Canadian collector sales by revenue. Since the programs expired at the end of March, however, the industry has largely stalled. The situation has been exacerbated by the fact that Ontario's ground-breaking feed-in-tariff program, which offers 20-year power purchase agreements at prices that provide a reasonable return on investment for photovoltaic projects, has shifted the attention of many in the solar industry to the PV side of the business.

"At Enerworks, dealers numbered in the hundreds in Ontario and now you can count them on one hand," says Noble. "The market, as we see it right now, is not in Canada. It's in the United States. And we have to look internationally as well."

If this trend continues, warns CanSIA, Ontario risks losing the investment and industry capacity that made it a national solar thermal leader. A new long-term strategy to accelerate deployment of solar thermal technologies, on the other hand, would capitalize on that momentum and bring significant benefits to the province.

Solar thermal energy, CanSIA points out, could play a key role in meeting Ontario's conservation and demand management goals. The province's long-term plan calls for a peak demand reduction of 4,550 MW by 2015 and energy savings of 13 TWh over the same period, targets that ratchet up to 7,100 MW and 28 TWh by the end of 2030.

The added benefit of renewable heat, CanSIA points out, is that its cost is lower than many sources of renewable power. We could easily do a program based on a tariff that is anywhere from 12-15¢/kWh," says Noble. "This thing is ready to go."

Accelerated deployment of solar thermal technology also fits into Ontario's green industrial development strategy,

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says Johnston. "I think it's important to note that Ontario, and Canada in general, is really a leader in solar thermal air technology. We have some of the key companies in the world here. And on the solar thermal water side, there are companies in Ontario and Canada that are involved in manufacturing."

A vibrant domestic market for their products would draw new investment and create new jobs, says Johnston. "It could be very, very exciting."

The next step for CanSIA is to produce a comprehensive research paper that will take a more detailed look at Ontario's potential and the elements of program design, says Johnston. A key question will be how the program would be administered, given there is not a single regulator responsible for energy conservation in the province. An approved standard for thermal metering would also be required for such a program to be deployed widely, although Noble does not believe it should be viewed as a potential barrier. There are projects in operation that meter thermal output. "Get a program in place and people will fill in the gaps. The technology is there," he says.

A potential model for Ontario is the UK's newly launched Renewable Heat Incentive, which is the world's first long-term performance-based support program for solar thermal. The program, pays 8.5p/kWh over 20 years to commercial solar thermal projects less than 200 kWth in size, aims to drive a seven-fold increase in renewable heat in the UK energy mix over the coming decade and shift it from a fringe option into the mainstream. The program targets a range of generating resources, but eligible technologies on the solar side include liquid-filled flat plate or evacuated tube solar collectors and hybrid photovoltaic-thermal systems.

"I think the UK program is a good place to start from," says Noble. "Ontario looked at the German market for PV and borrowed ideas from it, so I think it makes sense. Why reinvent the wheel?"

The UK program is initially targeted at the commercial sector, largely because of the current lack of cost-effective metering solutions for small-scale systems. It is providing rebates for residential installations as a bridge program while a performance-based incentive for that segment of the market is finalized.

CanSIA will take an in-depth look at the UK program as part of its research, says Johnston. Ontario's review of its feed-in-tariff program, scheduled to start in 2011, will provide the association with an opportunity to present its findings and make recommendations for including solar thermal in the mix.

The fact that it was the province's energy ministry that initiated the discussion about performance-based incentives for solar thermal is encouraging, he says. "They're looking at having a feed-in-tariff program that is comprehensive and world-leading. Looking at new technologies is a big part of that."

CanSIA also expects its work in this area to have broader applications than just the Ontario market, says Johnston. "We see this as an opportunity to gain a lot more information and understanding that can be relayed to other provinces, municipalities and utilities across Canada."

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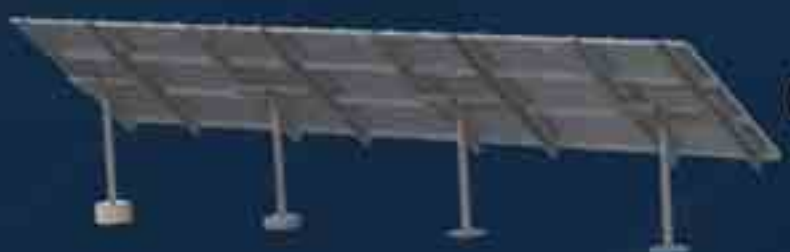

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OVERWHELMING INTEREST

HALIFAX RESIDENTS LINE UP TO EMBRACE SOLAR THERMAL WATER HEATING

By Nick Gustav

“Many of the attendees were quickly sold on solar thermal. Halifax had to end the online signup period for the program after only a month because the level of interest was so overwhelming.”

APPARENTLY, HALIFAX RESIDENTS KNOW a good deal when they see one. That’s why more than 1,600 residents signed up in January to participate in the Halifax Regional Municipality’s Solar City Program, which will provide financing and installation of residential solar thermal water heating systems.

Last October through December, municipal officials held five meetings scattered across Nova Scotia’s largest municipality to stir up interest in the program. The meetings drew a total of more than 1,000 attendees, far exceeding expectations, said **Julian Boyle, energy manager for Halifax Regional Municipality**.

Many of the attendees were quickly sold on solar thermal. Halifax had to end the online signup period for the program after only a month because the level of interest was so overwhelming. Though the province’s new ComFIT program leaves solar energy out of the equation, Halifax residents are excited about the prospect of eventually having free hot water in their homes.

The pilot program, which Boyle said likely will be launched this spring, calls for about 1,000 homes to get solar thermal systems in the first year, and if the program is successful, another 1,000 homes could be added each year.

Residents who enroll in the program would pay a flat fee of between $500 and $700 over a maximum of 10 years. The fee would show up as a surcharge on homeowners’ property tax bills. While paying off the system, residents would essentially break even, as the cost of oil or propane for water heating is replaced by the cost of the new system.

But once paid off, the system would provide free hot water for another two decades or more and save residents hundreds of dollars each year.

“There were 200 (solar thermal) installations in the Nova Scotia marketplace last year, so we’re already a pretty thriving solar thermal market here, and I think the industry seems ready, willing and able to evolve to the next level,” Boyle said.

Boyle said homeowners will be screened before enrolling in the program to ensure that it makes sense for them. For example, homes with more people living in them — and therefore requiring more hot water — are good candidates for the program, as are those with few trees shading the roof from the sun.

He said Halifax has tried to address all the barriers preventing people from adopting solar thermal, including the initial expense and apprehension about choosing the right system and hiring the right contractor.

“It’s truly turnkey, so we’re going to provide not only the financing but also the contract-administration side of things and the quality-control side of things, which are just as important,” Boyle said. “We’ve really made it simple for homeowners, and we’ve had overwhelming interest. There’s a big appetite out there for renewable energy.”

Heather MacAulay, CanSIA Board member and president of Halifax-based My Generation – Green Energy Solutions, said it makes good financial sense for residents to enroll in the program, especially since energy prices are likely to continue their upward trend.

“Typically with any solar energy system, you’re paying now for savings later, or as one colleague of mine

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says, you're saving it forward because you're buying a system that's going to generate energy for 25 to 30 years," she said.

Halifax's program would install only solar thermal systems that meet the CSA F-379 technical standards for packaged systems, meaning that the system and all of its components as one entity have been tested and verified to a certain performance standard. Non-packaged systems wouldn't be eligible for inclusion in Halifax's program even if they meet the CSA F-378 technical standards for solar collectors.

"That certainly limits some of the options," MacAulay said. "There is some discussion within the industry of whether it should be limited just to packaged systems. Certainly, quality components used in a properly engineered design can deliver a very efficient system for the consumer, but there is value in having a fully integrated system that has been tested and certified to a performance standard. Within the industry, folks who are only selling panels don't want to be limited."

Halifax's embrace of solar thermal stands in contrast to Nova Scotia's ComFIT program, a community feed-in-tariff program that pays residents for energy they produce through renewable sources such as wind, tidal, biomass and run-of-the-river hydroelectricity. The program is part of Nova Scotia's effort to make green energy account for 25 per cent of the province's electricity by 2015.

Both Boyle and MacAulay said the omission of solar energy from ComFIT was a mistake, though the program could be expanded to include solar in the future. In fact, in September, CanSIA and other solar industry stakeholders were in the process of drafting a letter to **Nova Scotia's minister of energy and natural resources, Charlie Parker**, to encourage the addition of solar to the program.

"We advocated that they include solar in the ComFIT program, and it would have been nice to see, but I don't see any reason why it wouldn't evolve to that," Boyle said.

MacAulay said many of Halifax's residents, businesses and universities could participate in the ComFIT program if it included solar because the rooftop systems are ideal for urban environments where space is at a premium. However, the urban layout offers relatively few opportunities for the forms of renewable energy currently covered by ComFIT.

"They have specified that they will review the program down the road and have a Phase II, but really, it is a missed opportunity not to have solar in the program right from the get-go," MacAulay said. "We're not sure exactly why solar was excluded. We're trying to gain a better understanding of that and perhaps present some current information that may better inform the decision-making process.

"The dynamics of solar have changed considerably in the last year, or even the last six months, so it is conceivable that the pricing structure and economics that they based those decisions on are very different from the current reality, and it's very important that they look at the current reality in terms of formulating a program. You certainly could make a business case for solar within that feed-in-tariff program."

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PROOF IS IN THE PILOT

EDMONTON CONTINUES TO SHINE WITH SOLAR-BASED SOLUTIONS

By Susan Miller

DO EDMONTON HOMEOWNERS AND businesses have a strong appetite for solar energy solutions? Some might say the proof is in the pilot. After launching the City of Edmonton Solar Electric pilot program in September 2010, the city recognized a voracious public demand for solar energy solutions.

Within a few weeks of the program's introduction, the $200,000 program was sold out, according to **Barbara Daly, project manager in Edmonton's Office of Environment, Sustainable Development Department**. The pilot funds allowed homeowners up to $9,000 and commercial businesses up to $18,000 to cover the costs of photovoltaic (PV) systems.

Daly credits the generous incentive as a key factor in spurring public interest. "We learned that when an attractive price incentive is offered, the public is very supportive of solar power," she said. The program not only allowed Edmonton to expand its base of PV systems, but also helped the city better understand barriers that could

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"Within a few weeks of the program's introduction, the $200,000 program was sold out, according to Barbara Daly, project manager in Edmonton's Office of Environment, Sustainable Development Department."

> “The program not only allowed Edmonton to expand its base of PV systems, but also helped the city better understand barriers that could hinder growth of solar energy, such as the number of regulatory steps in the process, the turnaround time and various costs arising during the permitting process.”

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hinder growth of solar energy, such as the number of regulatory steps in the process, the turnaround time and various costs arising during the permitting process.

Edmonton shared results from the pilot with a Renewable Energy Task Force (RETF) charged with creating an over-arching “The Way We Green” report. The report will spell out a 30-year approach to sustainability and resiliency for the City of Edmonton including an element of renewable energy. As *SOLutions* goes to press, Edmonton is awaiting the RETF report which will spell out recommendations that may encourage long-term funding.

While the RETF recommendations were not available at press time, **Rob Harlan, executive director of the Solar Energy Society of Alberta** offered several practical steps that municipalities can consider to encourage broad adoption of solar energy. He reviewed some of the more popular options noted below:

Property-Assessed Clean Energy (PACE)

PACE bonds allow owners to finance renewable energy projects with no government subsidies. The low-interest loans for the purchase of a solar energy system are repaid via a property tax assessment for up to 20 years. Such Local Improvement Charges (LICs) have been used by municipalities for many years to finance other types of property improvements.

PACE financing removes the up-front costs which are a primary barrier to implementing renewable energy systems. In addition, PACE programs generate income and tax revenues for municipalities while unleashing a broad source of private capital and creating jobs.

Advanced Renewable Tariffs (ARTS)

Also referred to as Clean Contracts, Advanced Renewable Tariffs (ARTs) provide a production-based incentive that can be used for solar hot water and grid-connected renewable electricity. The incentives, rates and timeframe reflect the actual cost of generating energy plus a reasonable profit for the producer. Market forces align to determine rates,

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locations and providers of renewable energy while ART's performance-based nature insures a built-in motivation for providers to deliver attractively priced energy solutions. Widely used in many European countries, renewable tariffs are the world's most successful policy mechanism for rapidly stimulating renewable energy development according to Harlan. Their inclusive nature allows everyone from small micro-energy homeowners to large energy cooperatives to participate.

Harlan references Germany where ARTs are well established. In 2010 alone, Germany installed 7,400 MW of new PV generation capacity. In contrast, within the U.S., which primarily utilizes grants and not ARTs for incentives, there are only 3,000 MW of PV generation capacity after 30 years of developing solar. Additional benefits of ARTs include the unleashing of a broad source of capital and 20-year government-backed contracts that provide a solid basis for access to bank financing.

Community Solar Gardens (CSGs)

Harlan references a third renewable energy solution that merits consideration—Community Solar Gardens (CSG). CSG programs acknowledge that many municipal buildings do not have rooftops suitable for the installation of a solar energy system. Odd-shaped roof angles, shading to the south, and population concentrations in high-rise apartments may prohibit some interested parties from accessing traditional PV systems. Additionally, many city residents are renters with no incentive to purchase a solar energy system. At the same time, buildings such as schools, churches and large industrial/community buildings provide optimal sites for the location of rooftop solar energy solutions. These buildings can offer excellent sites for remotely owned PV installations. Recent technological advances now allow PV systems as small as one 150 watt module to interact with the electrical grid while being monitored on the Internet. CSGs open up the possibility that anyone can become a solar energy system owner.

From a social consciousness perspective, organizations can use CSGs to create creative energy programs that benefit groups through the receipt of profits from donated or partially donated systems.

As Edmonton reviews opportunities to strengthen its investment in renewable energy sources, Harlan and Daly believe the future looks bright. The public has expressed an interest, solutions exist and the recommendations will soon be on the table.

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GREEN ENERGY GETS THE GREEN LIGHT

SASKATCHEWAN RENEWS ITS NET METERING REBATE PROGRAM AFTER URGING FROM CANSIA AND ITS MEMBERS

By Nick Gustav

NO ONE LIKES TO PAY more for a product than his neighbor, so when Saskatchewan's Net Metering Rebate Program ended March 31, erasing a financial incentive to install renewable energy systems, many residents sat on their wallets and waited to see if it would eventually be renewed. After all, why buy something now if it might be on sale in the near future?

The solar energy industry, which had steadily built up momentum in Saskatchewan in recent years, suddenly faced a sharp drop in demand for solar photovoltaic panels, and industry stakeholders weren't certain whether the program, first instituted in 2007, would be rescued.

Thanks in part to CanSIA and its members in Saskatchewan, the solar industry got a much-needed shot in the arm Aug. 29, when the province announced that it would renew the Net Metering Rebate Program through March 30, 2012.

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> “I think CanSIA was very important in [effectively advocating for the program’s renewal]. CanSIA’s voice is separate from the entrepreneurs in the businesses in the province and carries a lot of weight.”
>
> — David Anderson, vice president and renewable energy engineer with Saskatoon, Saskatchewan-based Solar Outpost

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“We had been growing the industry really well over the last four or five years, but when the program wasn’t renewed, sales stopped completely,” said **David Anderson, Vice President and Renewable Energy Engineer with Saskatoon, Saskatchewan-based Solar Outpost and Chair of the CanSIA Saskatchewan Solar Caucus**. “The extension of the program is a very positive thing and will allow us to build on the success we’ve had in the past.”

Under the program, the Saskatchewan Research Council, working on behalf of Go Green Saskatchewan and Saskatchewan Power, provides a rebate of up to 35 per cent, with a maximum rebate of $35,000, to offset the cost of installing a renewable energy system. The program was aimed at helping Saskatchewan reduce its greenhouse gas emissions by 20 per cent from 2006 levels by 2020. The types of generating equipment covered by the program are wind, low-impact hydroelectricity, biomass, heat reclaim, flare gas and solar photovoltaic. Projects with generating capacities of 100 kilowatts or less that comply with the local utility’s net-metering policies and enter into net-metering contracts with their local electric utilities are eligible for the rebate.

Patrick Bateman, CanSIA’s Policy and Research Adviser, said the five-month gap between the end of the original program and its renewal threw cold water on a red-hot industry.

“The incentive program was canceled before there was any type of bridging program in place, so there was a chasm where consumers who were interested in adopting solar would be inclined to go into wait-and-see mode to see if there were further incentives along the line. The removal of the financial incentive meant that there was a financial barrier to the consumer, so market activity ground to a halt.

“This extension is important because it gives the government of Saskatchewan an opportunity to maintain the industry and not lose any momentum while they look at other options for policy development to further accelerate the deployment of solar technology, and the province continues to benefit from the economic activity and green jobs that the program creates.”

In April, **Chair, CanSIA Board of Directors Jon Kieran** sent letters to **Brad Wall, Premier of Saskatchewan**, and **Dustin Duncan, the province’s Minister of Environment**, urging them to renew the program.

Duncan responded to the letter in May, stating that a detailed review of the performance of renewable energy systems and incentives provided under the Net Metering Rebate Program would be completed by July and that the ministry was examining opportunities to provide bridge funding for renewable projects until a long-term solution was identified. He said input from CanSIA provided at the Renewable Energy Incentive Workshop in Regina in April provided useful technical information for that review.

In June, CanSIA established its Saskatchewan Solar Caucus to advocate for the renewal of the program, and in July, CanSIA submitted a presentation to Wall detailing the industry’s benefits to the province and the importance of the program. CanSIA’s members in Saskatchewan were encouraged to forward the presentation to their local representatives to keep this issue on the front burner.

On Aug. 16, Kieran visited Regina to meet with members before attending meetings with **Liz Quarshie, Saskatchewan’s deputy minister of environment**; **Rob Norris, the minister responsible for innovation and Saskatchewan Power**; and **Robert Watson, President and CEO of Saskatchewan Power**.

Kieran also met with the editorial board of the *Regina Leader-Post*, which published an editorial two days later that stressed the importance of solar energy in meeting the province’s energy needs.

Two weeks later, the program was renewed, ending a period of unnerving uncertainty for industry stakeholders. After the announcement, Bateman was quick to credit CanSIA’s Saskatchewan members for helping to turn the tide.

“CanSIA played an important role, but members on the ground did a lot as well,” he said. “Our provincial caucuses are very well-respected stakeholders for provincial governments because we represent the interests of an industry as opposed to individual companies. We look for

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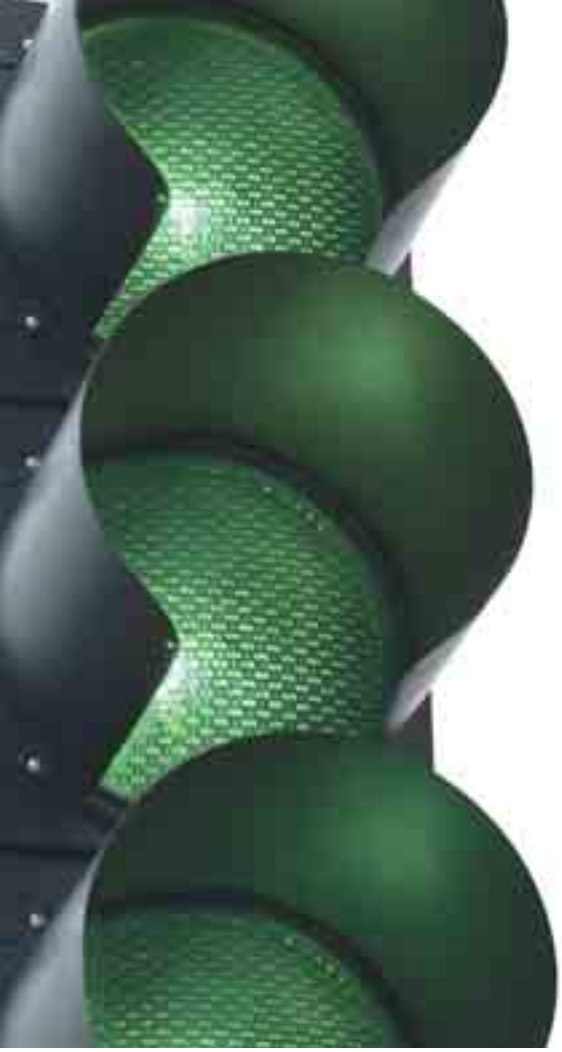

> “Though the program’s renewal was a major victory for CanSIA and its members, Bateman said the work must continue to ensure that financial incentives are in place following the expiration of the program March 30, 2012.”

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sustainable, long-term partnership options rather than short-term gains that don’t maximize the benefits to both the industry and the province.

“We’ve gained momentum now, and we’re hoping to work together with our members to make sure the momentum continues in Saskatchewan.”

Anderson said CanSIA should get high marks from members for effectively advocating for the program’s renewal.

“I think CanSIA was very important in that,” he said. “CanSIA’s voice is separate from the entrepreneurs in the businesses in the province and carries a lot of weight. This industry has grown into a multimillion-dollar industry with lots of companies, lots of employees and a lot of contractors that we use. It’s a great thing for our province, and the incentive programs that are in place here drive it all.”

Though the program’s renewal was a major victory for CanSIA and its members, Bateman said the work must continue to ensure that financial incentives are in place following the expiration of the program March 30, 2012.

“After the provincial elections in Saskatchewan in November, we’re going to be working closely with policymakers to try to form a longer-term vision for solar in the province that would provide a certain future after the completion of this program,” he said.

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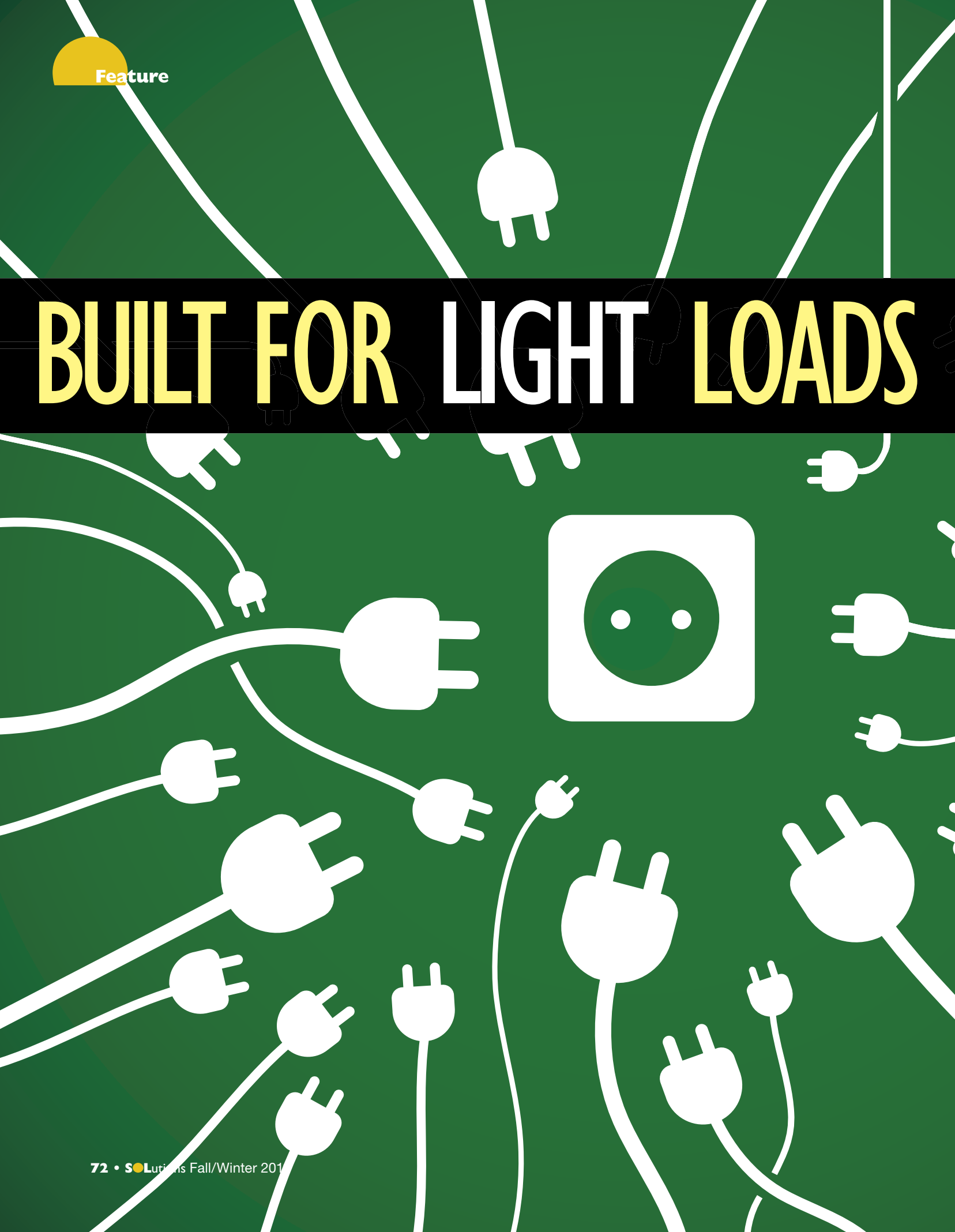

RURAL ONTARIO HYDRO WIRES CONSTRAIN SMALL-SCALE PV

By Drew McKibben

INTERCONNECTION DELAYS FOR SMALL solar PV projects are a big issue in Ontario, particularly if you are among those waiting in the queue, but CanSIA and almost every provincial agency related to the electricity industry are working on the problem.

"There are some technical things we need to gain a mutual understanding on in terms of solar PV and inverter technology, and we're getting closer to that objective," says **Wesley Johnston, CanSIA Director of Policy and Research**. "But chances are we're also going to need infrastructure upgrades."

David Wills, Chair of the CanSIA Technical Working Group, which works on technical issues on behalf of CanSIA members, says the hold-up essentially resides on the rural electricity distribution system owned and operated by Hydro One Networks. The company, a subsidiary of Crown-owned Hydro One Inc., has the largest distribution system in Ontario, with 123,000 kilometres of wire serving 1.3 million customers.

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> “Drawing to the close of a somewhat tumultuous 2011, in which the complicated PV interconnection issue became obvious to everyone, Caudet is optimistic about next year. He believes the interconnection backlog, once resolved, will… take some pressure off the competitive Ontario module market.”

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“There are many, many people that want to put in small systems. They expected and may have been led to believe there would be no problem getting connected,” says Wills. “Then the number of applications started to build, and build. It took a while, but eventually the realization hit home, they’re not all going to get connected.”

It may be, says Wills, there are just too many applications and small PV systems aimed at Hydro One and its rural wires, which, he adds, “really were not designed for distributed generation.”

The vast majority of these applications can be tracked back to Ontario’s MicroFIT program. MicroFIT, through the Ontario Power Authority (OPA), acquires supply from renewable energy systems no larger than 10 kW, and 99 per cent of applications for the program are PV. By fall 2011, the OPA had received 38,000 submissions from hopeful small power producers, a potential sum of 350 MW. It is true, however, not all generators that swim upstream reach spawning ground. So, as of September 2011, drawing from a towering stack of applications, the OPA was able to sign off on about 7,400 contracts, now in commercial operation and producing a sum of 64 MW. It had also issued nearly 23,500 conditional offers.

If life was simple, all these offers would result in contracts once the applicant returned to the OPA with a connection agreement issued by a local distribution company (LDC). But life is complicated.

In December 2010, changes to the microFIT process were made to ensure there would be no more Ontarians holding conditional offers, imaging their PV modules generating power, but destined to discover they could not acquire a connection agreement.

The **OPA’s Mary Bernard** says, “When it became apparent the ability to connect these projects to the grid was outpaced by the interest to do so, we made this rule change.”

This means it is hard to say how many potential microFIT generators can’t get connected: they no longer appear on the OPA’s tally of conditional offers. Of the 23,500 in the microFIT process, though, Bernard says the OPA estimates five per cent, about 1,200 conditional offers acquired before the rule change, are constrained. But that number, too, is hard to nail down.

“What we’re finding – because people didn’t have to put any money on the table to apply prior to December 8, 2010 – is a lot of people got conditional offers and sat on them,” says Bernard. “They did not necessarily apply to their LDC. That leaves us hanging. We do not know whether they will be constrained or not.”

At this point, it is important to understand Ontario’s interconnection problem has not seriously interfered with the development of larger projects. Putting in a 10 MW ground-mount project is different, says Wills. Developers at that level, he explains, pay for engineered solutions to interconnection problems, whereas “it’s difficult to engineer 25,000 microFIT projects.”

Through the FIT program, which deals with projects up to 10 MW in size, also by September 2011, the OPA had contracted more than 1,200 MW of PV through 1,660 agreements. These projects are not constrained by connectivity and are now under development. By comparison, the sum of constrained microFIT PV thus far identified by the OPA, because of the maximum 10 kW project size, can be no more than about 12 MW.

But with the scope of microFIT constraints hard to assess, and given the large number of people effected, the OPA is doing everything it can to alleviate the problem. Bernard explains it is in communications with those it knows have constrained conditional offers and is suggesting “relocation options.” One is to simply relocate the constrained project to a location where it can be connected. Another is to combine projects at a single location where they can be connected together as long as the combined capacity doesn’t exceed size restrictions. A third relocation option is still being designed, says Bernard, and will be announced in the fall.

“The constrained projects have been the focus of many, many discussions,” says Bernard, adding one solution is not going to fit everyone. The OPA, she says, is working with the Ministry of Energy and Hydro One to connect all the conditional offers denied grid access by an LDC. “Primarily they are Hydro One customers,” she says, “because they’re rural customers, and Hydro One is the distribution company for most of rural Ontario.”

In a new video posted to its website, Hydro One explains to customers, in areas where microFIT is extremely popular, “many generators want to connect to the same thin line, but the line isn’t able to support the transfer of so much electricity.” Rural distribution lines, it says, were built for light loads.

The video also explains distributed microFIT generation could be a hazard to its employees and customers. If the line is damaged by a fallen tree, for example, the distribution system automatically cuts power to the fault. Distribution-embedded generators, says Hydro One, could compromise the utility’s ability to de-energize downed lines. It identifies this technical problem as “islanding.”

A document analyzing distributed generation from federal research organization CanmetENERGY, however, say PV technology developed for grid-interactive systems is specifically designed

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with this hazard in mind. There is "practically no chance," it says, of an undesired supported island stemming from an interconnected residential or small commercial system, "Grid-tied inverters monitor the utility line and cease to deliver power to the grid as quickly as necessary in the event that abnormalities occur on the utility system," says CanmetENERGY.

Wills says CanSIA's technical working group is very involved with Hydro One Networks, and a lot of the issues with Hydro One boil down to inverters. Through his group, "inverter manufacturers have been front and centre in terms of dealing with this.

"Hydro One has a very big influence on generation, and connections, and policy, and technical issues. We really need to talk to Hydro One and get things straight with them before anything is going to happen in Ontario."

Ongoing talks with Hydro One, says Wills, is educating his group on the utility's concerns. And CanSIA is informing Hydro One on inverter technology. It's a cooperative, even cordial, relationship.

"Hydro One has been great," he says. "But if you have a project you want to connect, if you have a business you need to run, it may look like you're getting nothing but stonewalling from Hydro One on the ground. There is a disconnect between our relationship with Hydro One and what CanSIA members might be experiencing."

CanSIA member **Paco Caudet is general manager of Siliken Canada**, a PV module manufacturer. While he is concerned about the province's political instability, he says his biggest concern is the interconnection issue. He believes an early-market slowdown will increase the intensity of an already competitive arena for newly established manufacturers. Caudet is also concerned about his customers.

"My customers have invested money and have been waiting and waiting and waiting, and they have a contractual relationship with the OPA," says Caudet. "It's a big stumbling block."

Drawing to the close of a somewhat tumultuous 2011, in which the complicated PV interconnection issue became obvious to everyone, Caudet is optimistic about next year. He believes the interconnection backlog, once resolved, will spur orders and take some pressure off the competitive Ontario module market. "I think the grid is going to open up. The connection problem will be resolved. There must be some kind of negotiations going on with the distribution companies."

Indeed, to the benefit of its members, all of Ontario's distribution companies and the provincial economy, Johnston says CanSIA is working on numerous fronts to move the Hydro One interconnection issue along to a satisfactory conclusion. That happy day, however, is still not marked on anyone's calendar.

"Hydro One is one of the main files I work on right now," says Johnston, "and 12 months ago there was no file."

Johnston concurs with Wills that the growth of a collaborative relationship between CanSIA and Hydro One through roundtable discussions, also attended by the provincial Ministry of Energy and Ontario Energy Board (OEB), has been

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essential. "That's moving the ball down the field," he says, "and the end goal is to connect more PV."

Studying the issue to find solutions

Another important aspect of CanSIA's work on this is the *Ontario Solar PV Connection Study*, a new third-party report exploring the impact of interconnecting inverter-based PV generators up to 500 kW in size. Not available at the time of *SOLutions*' printing, but complete in fall 2011, the study looks at technical challenges for both utilities and developers, and it explores possible solutions. The work is backed by considerable contributions of time and funding from numerous solar industry participants, Hydro One and CanSIA.

Appearing before the Ontario Energy Board

In addition to this new independent report and ongoing roundtable discussions, CanSIA has attended OEB hearings focused on issues specific to interconnection. The board formally evaluated Hydro One's difficulty complying with provincial codes that require the expedient connection of FIT and MicroFIT projects. CanSIA provided testimony.

Johnston testified that undue prolongation of coded interconnection timeframes would have an immediate and negative impact on the industry. In the longer term, Johnston told the board, investment might be diverted out of the Ontario economy, jobs could be lost, and the solar market could suffer diminished consumer confidence.

"It's important for us to participate in hearings to defend the industry and make sure our voice is heard," Johnston told *SOLutions*. "We need to show Hydro One, the Ministry and the OEB that CanSIA and the solar industry are serious players in the electricity market right now. We want to ensure things are done in a timely manner."

The bottom line, though, he says, is this is not just a Hydro One issue. If Ontario wants the Green Energy Act and FIT programs to create jobs and investment, the province "may need to look at financial and policy solutions. There are things to consider, which will take efforts from other stakeholders to really move solar forward in Ontario. We're going to have to look at the grid system holistically."

System operator launches renewable integration strategy

While the unforeseen and very real problem of interconnecting small PV generation projects on Hydro One's rural distribution system is still being defined and resolved, the Ontario Independent Electricity System Operator is taking steps to smooth out the integration of renewable energy on the grid.

The IESO balances the supply and demand for electricity, and then it directs the flow of power across transmission lines. Until recently, says **Darren Finkbeiner, IESO manager of market development**, the system operator could detect very little PV on the transmission system.

Ontario has 35,000 MW of installed generation, and CanSIA anticipates the province will be approaching 600 MW

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> “By fall 2011, the OPA had received 38,000 submissions from hopeful small power producers, a potential sum of 350 MW… as of September 2011, the OPA was able to sign off on about 7,400 contracts, now in commercial operation and producing a sum of 64 MW.”

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of grid-connected PV by the end of 2011. Finkbeiner says there is still no transmission-connected PV on the system. It is all still connected at the distribution level.

“There is an 80 MW solar farm in Sarnia,” he explains. “It’s fine. We know about it. We have visibility of it. The distribution host accepted it, and it’s fine from a transmission perspective.”

The IESO has visibility of the Sarnia solar farm because, historically, a transmission impact assessment is done for all distribution-connected projects 10 MW and greater. But this is changing. As of November 2011, the IESO requires systems of 5 MW and greater to pass this assessment, and they must now provide “additional real-time visibility,” says Finkbeiner. For solar, he says, this means passing on meteorological data, real-time output and availability status.

“The Green Energy Act and subsequent FIT contracts are attracting very high volumes of solar, into thousands of megawatts,” he says. “And if you look at thousands of megawatts on the system, which one day can give you virtually no output and the next day give you 100 per cent, it’s really changing the game for us.”

The changes are part of a comprehensive renewable integration strategy the IESO has laid out, which will be implemented through the end of 2011 and into 2012. Finkbeiner says the system operator is preparing for 10,700 MW of renewable generation installed by 2018 – the province’s target – with solar as a significant contributor.

“We have individual sessions and group sessions with CanSIA and CanSIA members to try and make sure we truly understand their issues and concerns, so we can factor those into our thinking,” says Finkbeiner. “We want to be fair and technically appropriate with the rules we have. We do not profess to be the experts in solar operation. That’s what CanSIA is for.”

At the moment, the IESO is meeting with solar generators to work on rules that will govern transmission-connected PV projects. The OPA has advised the IESO this is a fast-approaching reality, and the new rules will make large transmission-connected projects dispatchable. This change won’t occur until sometime in 2012, says Finkbeiner, when the IESO will also introduce a system for forecasting power output from both distribution- and transmission-connected PV.

“The visibility we’re looking for, and now have rules for, allow us to collect information and see what those farms are doing. Then we’ll be able to create a forecast about what their capability is going to be the next day, as well as the next five minutes.”

The IESO is also working on a joint study with the OPA specifically evaluating the issues large volumes of PV might bring to the grid. At the moment, however, it is difficult for the IESO or the OPA to really identify exactly how much will be added in the next half-dozen years.

“When we look at the predictions, we put some conservatism on them, and then we look at them optimistically, but they’re all numbers that require us to change how we do our business with respect to solar,” says Finkbeiner. “We are talking about substantial amounts of solar.”

MEMBERSHIP BLOOM

CANSIA'S CORPORATE 1 RANKS GROW

"CanSIA offers an informed and credible voice that gets heard by governments and strengthens public awareness about the advantages of solar. Our growing ranks are a testament of our service commitment to members and ability to engage policy makers," said **Jon Kieran, CanSIA Chair**. "Although new solar organizations are springing up, particularly in Ontario, CanSIA is the only national, multi-technology solar association that invests member resources in high-quality advocacy and public engagement. The stakeholder work of CanSIA is slow and careful — but members of Canada's solar industry want more than conferences and panels; they want to see their views represented directly to government and regulators."

"On the international front, CanSIA is a respected 'first point of call' among global solar firms interested in participating in Canada's expanding solar market. "

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THE CANADIAN SOLAR INDUSTRIES ASSOCIATION CONTINUES TO EXPAND ITS CORPORATE 1 MEMBER RANKS.

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NEW CORPORATE 1 MEMBERS'

Fritz Construction Services Inc.
Dedicated to furthering Ontario's initiative to become the world leader in alternative energy generation, the Fritz Group has been serving clients in a variety of industries across Ontario for over 35 years. With the ability to deliver unparalleled quality on-time and on-budget has allowed Fritz to remain established in its core business and expand operations by servicing new industries. Since 2006, recognizing the opportunities that the alternative energy sector would present, resources have been focussed into building renewable energy services.
www.thefritzgroup.ca

Hanwha SolarOne
Hanwha SolarOne Co., Ltd. (NASDAQ: HSOL) is a vertically integrated manufacturer of silicon ingots, wafers, PV cells and modules. Hanwha SolarOne offers high-quality, reliable products and services at competitive prices. Partnering with third party distributors, OEM manufacturers and system integrators, Hanwha SolarOne serves the utility, commercial/government and residential markets. The company maintains a strong worldwide presence with employees located throughout Europe, North America and Asia and embraces environmental responsibility and sustainability with an active role in the voluntary photovoltaic recycling program. The Company benefits from its strategic partnership with its largest shareholder Hanwha Group who is active in solar project development and financing and plans to produce polysilicon in the future.
www.hanwha-solarone.com

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Lockheed Martin Canada
Lockheed Martin delivers turn-key utility scale projects around the world. Lockheed Martin leverages advanced engineering design optimization, research and development, rigourous supplier qualification processes and construction management to ensure project delivery and through-life performance. Headquartered in Kanata Ontario, Lockheed Martin Canada brings 60 years of Canadian operating success and an excellent record in creating industrial benefits.
www.lockheedmartin.com

Northwind Solutions
Northwind Solutions is a progressive, customer focused service organization, dedicated to serving the North American renewable energy industry. Northwind was formed in 2004, initially providing construction services in industrial wind. Its service offerings and have earned a reputation as a leader in the renewable energy industry, providing a complete suite of the highest quality essential services to project developers, asset owners and OEMs.
www.northwindsolutions.com

Q-Cells North America
Q-Cells North America, part of Q-Cells SE, designs, builds and manages financially sustainable solar photovoltaic (PV) solutions. The company brings a decade of global leadership in solar PV to North America, combining best-of-world technology, processes and partnerships to deliver utility-grade solar PV solutions customized for local energy markets. Q-Cells North America offers the full spectrum of PV solutions — from the core technology of cells and modules to power plant development, design, construction, operations and maintenance. With proven capabilities across the solar value chain, Q-Cells North America minimizes uncertainty and risk, and helps customers achieve a higher return on their investment in solar energy.
www.qcells.com

SAE Power Inc.
SAE Power (SAE) offers complete turnkey electronic design/manufacturing services to provide major OEM customers, including those in the renewable energy marketplace, seeking local Ontario content, offering a high level of vertical integration to reduce overall system cost and improved time to market. SAE also offers world-class design and manufacturer of standard, modified standard and complete custom switch mode Power Supplies, Magnetics and EMI/RFI Filters with manufacturing facilities in N. America and Asia.
www.saepower.com

MEMBERS MOVING *UP TO* CORPORATE 1 RANKS

FRONIUS CANADA LTD.

Established in 2007, Fronius Canada offers sales, service, technical support and training as well as IG Plus grid-connected PV Inverter assembly and testing at its Canadian Head Office. A division of Fronius International, an Austrian company headquartered in Pettenbach with 3,250 employees worldwide, 350 employees dedicated to research and development, and 737 active patents, Fronius is a leader in the fields of battery charging systems, welding technology and solar electronics.
www.fronius.ca

In order to qualify as a Corporate 1 member, companies must have more than 25 employees or revenue of over $3 million per year.

WHAT CanSIA DOES FOR YOUR ORGANIZATION

The Canadian Solar Industries Association (CanSIA) is a national trade association that represents more than 650 solar energy companies throughout Canada. Since 1992, CanSIA has worked to develop a strong, efficient, ethical and professional Canadian solar energy industry with capacity to provide innovative solar energy solutions and to play a major role in the global transition to a sustainable, clean-energy future. The services that CanSIA provides to the Canadian solar industry include:

Government Relations and Lobbying

CanSIA engages its member-base, government and industry stakeholders collaboratively to develop and expand solar markets and industry capacity. CanSIA regularly represents the industry to the Federal Government and its standing committees and maintains close contact with all key bodies and agencies. CanSIA is intimately involved in the on-going development of Ontario's Feed-In Tariff program and with provincial governments and municipalities across Canada. CanSIA also works in a network with the Canadian Hydropower, Wind Energy and Geothermal trade associations to collaboratively pursue and improve renewable energy policy in Canada.

Public Awareness, Advocacy and Consumer Support

CanSIA's publications, external communications and advocacy campaigns educate the public, press and politicians about the truths, benefits and possibilities for solar energy.

Press and Media Relations and Marketing

CanSIA is a valuable contact for the media. CanSIA also assists members to release their news items through its database of media connections. Through CanSIA, each and every member also has the means to communicate directly to potential customers and other stakeholders via: the *SOLutions* magazine, Solar Beat newsletter (bi-monthly publication), *Canadian Solar Industry Directory*, Solar brochures and fact sheets and CanSIA's website.

Standards, Codes and Regulations Development

CanSIA represents the industry for the development of solar standards, codes and regulations.

Education and Training

CanSIA has worked with the Association of Canadian Community Colleges (ACCC) to develop solar college curriculums that are now freely available to all community colleges across Canada. CanSIA is currently analyzing and exploring options with solar industry members, various stakeholders to improve solar installer certification programs in Canada.

Events

CanSIA's events are highly popular and successful in showcasing members and giving exposure to the industry: Solar Canada: Annual Conference and Exposition, Solar Ontario and Solar West regional conferences, Summer Solstice industry celebration and other networking events.

Additional Benefits to CanSIA Members:

- Hundreds of public and industry inquiries received each month are referred to the member base.
- Business and employee benefit insurance program options. TD Canada Trust consumer financing.
- Discounts on merchandise and event attendance.

For further information on CanSIA membership and how to apply, visit www.cansia.ca or contact Sharon Chester, Member Services Administrator at 613-736-9077, ext. 222 or sharonchester@cansia.ca.

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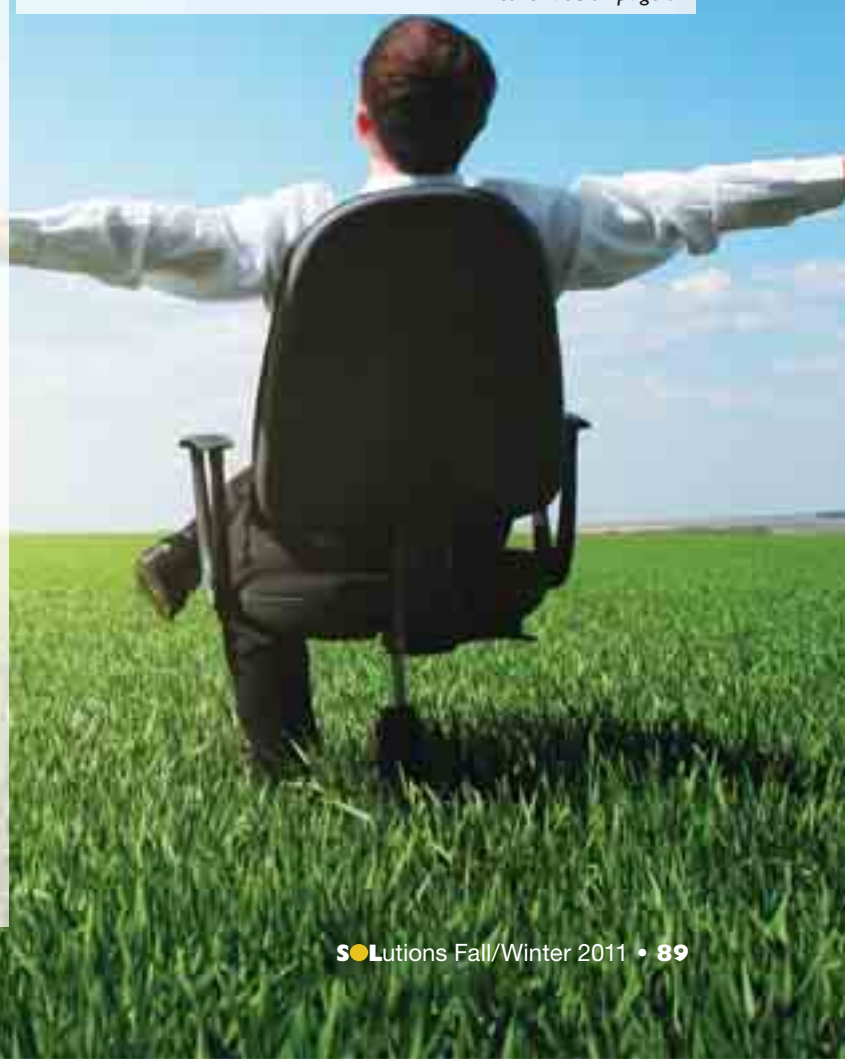

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Benefits of CanSIA Membership

	Advocate	Supporter IV	Supporter III	Supporter II	Supporter I	Corporate IV	Corporate III	Corporate II	Corporate I
Annual Fee	**$50/$100**	**$250**	**$400**	**$1,000**	**$2,000**	**$440**	**$920**	**$1,800**	**$6,250**
SOLutions (print magazine)	•	•	•	•	•	•	•	•	•
Solar Beat eNewsletter	•	•	•	•	•	•	•	•	•
Members web access	•	•	•	•	•	•	•	•	•
Merchandise and training discounts	•	•	•	•	•	•	•	•	•
Discount registration to conference	•	•	•	•	•	•	•	•	•
Membership Directory listing		•	•	•	•	•	•	•	•
Members Forum	•	•	•	•	•	•	•	•	•
Business and Employee Benefit Insurance Program Options		•	•	•	•	•	•	•	•
*** TD Canada Trust Consumer Financing to CanSIA members		•	•	•	•	•	•	•	•
Participation in CanSIA Caucuses and Working Groups						•	•	•	•
Code of Ethics						•	•	•	•
Able to vote on association issues						•	•	•	•
15% discount on *SOLutions* advertising						•	•	•	·
15% discount on exhibition space at the Solar Conference						•	•		
Link to your website on CanSIA's home page					•			•	•
Logo on CanSIA website and various publications					•			•	•
Participation in solar leadership events								•	•
25% discount on exhibition space at the Solar Conference									•
Complimentary business card ad in *SOLutions*									•
20% discount on exhibition space at the Solar Conference								•	

****Members must meet certain criteria. Does not include companies in Quebec.*

Voting

- **Corporate I:** 25+ employees or revenue > $3 million – $6,250
- **Corporate II:** 6–24 employees or revenue > $1 million – $1,800
- **Corporate III:** 3–5 employees – $920
- **Corporate IV:** 1–2 employees – $440

Non-Voting

- **Supporter I:** Large government departments, utilities and energy regulators – $2,000
- **Supporter II:** Small government departments and small local energy distribution companies – $1,000
- **Supporter III:** Large non-profit organizations and educational institutions – $400
- **Supporter IV:** Small non-profit organizations and community groups – $250
- **Advocate/Individual:** Anyone not involved in commercial gain from the industry – $100

The fees above are for the full year (July to June). Depending on when you join, the website will show the pro-rated amounts (in blue).

2011-2012 SOLAR CALENDAR

DECEMBER 5–6, 2011
Solar Canada
Canadian Solar Industries Association
December 5: Annual General Meeting

DECEMBER 7, 2011
Intersolar China

DECEMBER 14, 2011
InterSolar
Canadian German Chamber of Industry and Commerce Inc.

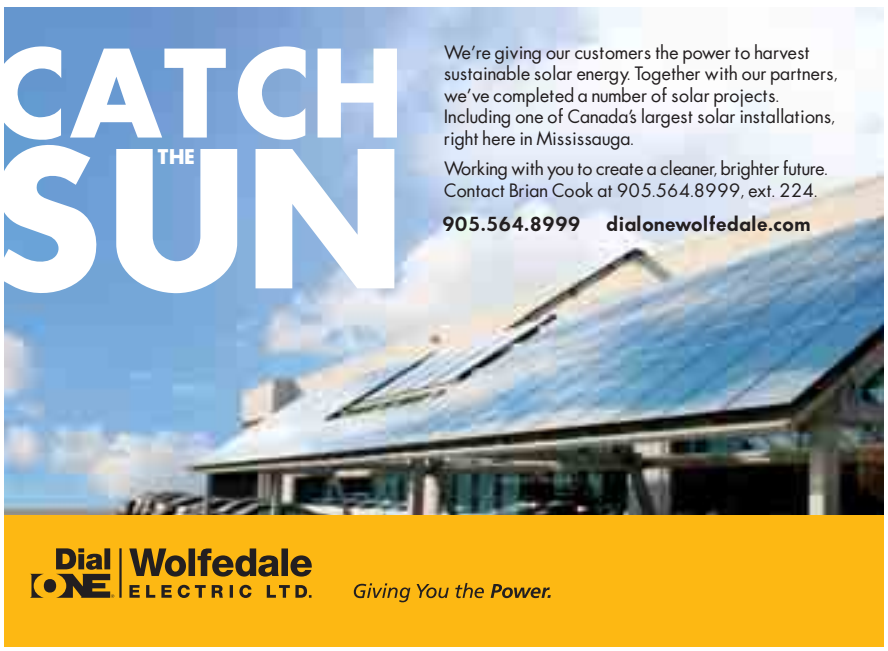
JANUARY 30, 2012
Renewable Energy Investment & Grid Development Strategy

MARCH 5, 2012
6th Annual Growing the Margins
Rural Green Energy
4th Annual Canadian Farm and Food Biogas Conference

JULY 9, 2012
International Conference on Solar Heating and Cooling for Buildings and Industry

For more information on these and other upcoming events, visit the CanSIA website at www.cansia.ca.

Advertiser. com



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We see opportunity in diverse energy sources.

Enbridge's investments in renewable and alternative energy—including wind, solar, geothermal, waste heat recovery and hybrid fuel cells—have the capacity to produce over 850 megawatts of electricity and meet the needs of about 295,000 homes. These investments represent the fastest-growing segment of our company. They're not only good for business, they're helping us achieve a neutral environmental footprint.

Enbridge delivers more than the energy you count on. We deliver on our promise to help make communities better places to live. It's part of the reason we were named one of the Global 100 Most Sustainable Corporations in the World.

Visit www.enbridge.com/NeutralFootprint to learn more.

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Where energy meets people™

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Powerful. Efficient. Made in Ontario.

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Capable of generating a whopping 300 watts of pure energy per panel, we manufacture high efficiency 60 and 72 cell photovoltaic modules in the 235 Wp to 300 Wp range, and provide you with 15% Ontario Domestic Content (13% for MicroFIT). Utilizing proven European technology and proudly made in Ontario, our modules can significantly decrease your installation costs.

That's how we're building better photovoltaic modules for your residential, commercial and utility scale installations.