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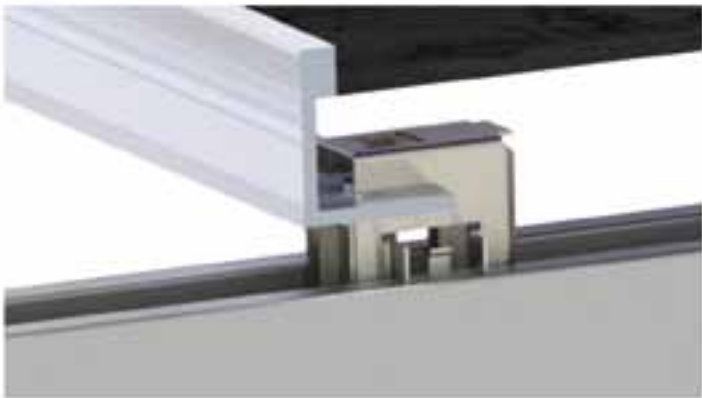
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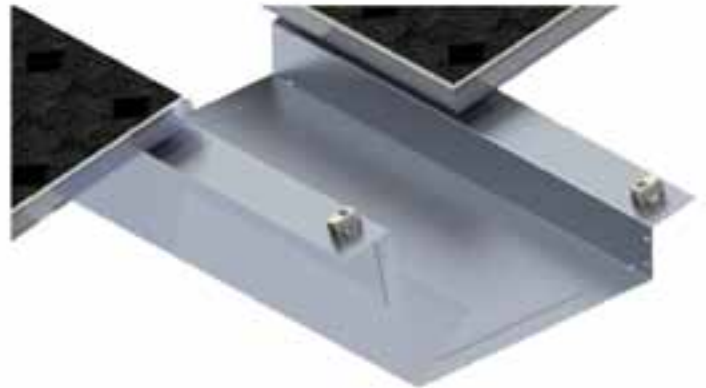
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»» ABOUT CanSIA



»» WHO WE ARE

The Canadian Solar Industries Association is a national trade association that represents the solar energy industry 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.

»» VISION

CanSIA actively represents the Canadian solar industry by promoting the unique economic, environmental and technology benefits of solar energy in Canada. Our goal is to be the source of trustworthy information about solar energy and its growing importance to Canadian energy consumers.

STATE OF THE INDUSTRY

President and CEO John Gorman



At CanSIA, we believe that the role of an association is not only to represent its members on issues of the day, but to position the industry for sustainable growth over the long term.

The province of Ontario is a case-in-point. Over the last few years, we have accomplished much in a short period of time. The daily struggle to establish and grow an industry capable of installing more than 2GW of solar PV has been both rewarding and consuming. With this

proven success under our belt, we are now turning our attention to the longer-term needs of an experienced and mature industry...across Canada and internationally.

In Ontario, we are working to formalize the solar industry's status as a full and permanent participant in the province's electricity sector. Our representations before government, its agencies, industry stakeholders and the public are being brought to a higher level. For that reason, CanSIA has added policy and communications strength to its team of committed staff.

Our industry requires longer-term stability, not only for the health of the industry but also for the economic, social, and environmental health of this country. Stability can only come when governments commit to renewable energy in real terms.

To that end, we as an association are shifting our thinking with a view to 2020 and beyond. What will the electricity sector look like? What will solar energy's true value be in that future? What contribution can it make — and how do we best communicate all of this to government decision-makers?

There are a number of opportunities unfolding this year that could have significant bearing on solar energy's growth and — with our members' support — CanSIA will take advantage of them.

To begin with, the policy discussion across Canada is shifting toward emissions reduction and grid modernization. Solar energy — both PV and thermal — are uniquely positioned to augment efforts in all segments of emissions-based reduction, be it in the buildings, transportation, or industrial sectors.

CanSIA is participating in these climate change consultations federally and in Ontario, Alberta, Saskatchewan and Québec to demonstrate the true value of solar across the emissions reductions spectrum. Unlike other generation technologies, solar energy is an empowering, highly-scalable enabler of a greener future.

The Canadian discussion around solar energy's role as a tool in combatting climate change is taking place in a larger, global context. The United Nations Climate Change Conference (COP21) is taking place in Paris in December. CanSIA's position as Designate on the International Energy Agency's Executive Committee (PVPS) ensures that we are helping prepare our federal, provincial and municipal governments with solutions that leverage the solar industry we have developed here at home.

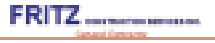
It's time to turn our focus to ensuring the solar energy industry has long-term stability and growth. We can play an important role in Canada's climate change future, and CanSIA and its members are ready to have that conversation. ●

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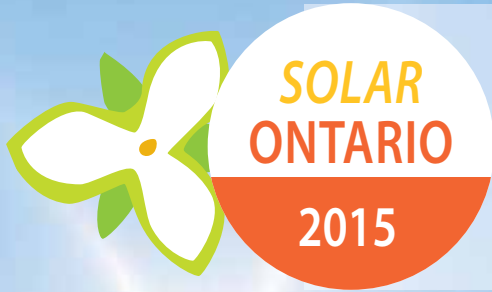
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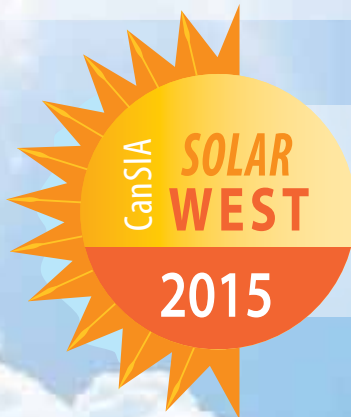
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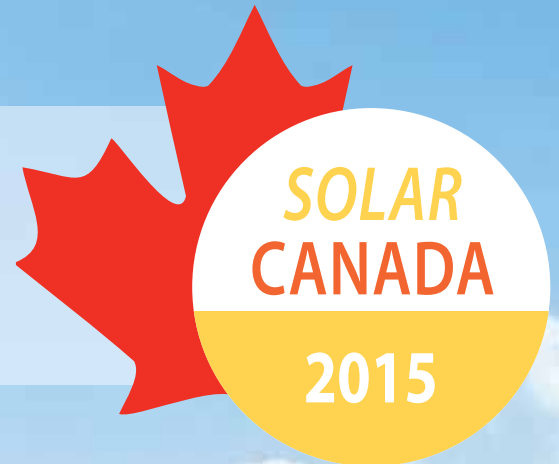
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CanSIA's ROADMAP 2020 KNOWS THE WAY



By Drew McKibben

CanSIA's FIVE-YEAR PLANNING DOCUMENT, *Roadmap 2020, Powering Canada's Future with Solar Electricity*, offers clear targets and a well-reasoned strategy to build a national industry.

"Making the smart choice is what's driving the rapid pace of growth in solar electricity in our country and around the world," says **CanSIA President and CEO John Gorman**, adding the International Energy Agency forecasts PV generation could be the world's largest source of electricity by 2050, 27 per cent of global supply.

"Establishing solar electricity as an integral part of Canada's energy mix requires a deep understanding of the sector, a strong vision for the future and a clear action plan to achieve the vision," says Gorman.

A year in the making, with widespread membership and stakeholder input, and produced with the assistance of KPMG — a professional services consultancy with global experience in the renewables sector — *Roadmap 2020* was released in December at CanSIA's 2014 annual conference.

Roadmap 2020 has two main objectives. It aims to position solar electricity in the mainstream of our country's electricity mix, and the industry in a stable regulatory environment without direct subsidization. Its recommendations are designed to apportion a one per cent slice to solar electricity in the Canadian generation supply mix, 6.3 GW, all by 2020.

KPMG LLP Vice-President Georges Arbache, Canadian renewable energy leader in the firm's infrastructure investment team, worked on the plan.

"We looked at what other countries are achieving," he explains. "Countries of similar economic structure and development status are working towards even greater goals, but because we're not a country with a highly dense population, because every province has a unique resource available for electricity production, we feel that one per cent is an appropriate and sizable goal."

In his opinion, says Reijerse, *Roadmap 2020* is the basis from which the Canadian solar industry will make a fundamental shift from reacting to the demanding pace of Ontario developments to industry-driven change in the rest of the country.

The plan identifies opportunities associated with, and barriers to, CanSIA's goal. The first barrier, says the document, is Canada's policy and regulatory environment.

At the federal level, for example, Natural Resources Canada's CanmetENERGY claims to be "the Canadian leader in clean energy

research and technology development," and it has a group mandated to facilitate the development and deployment of PV technology. Not surprisingly, in 2007, NRCan launched a renewable power program with a four-year application window, offering a production incentive of 1¢/kWh for eligible participants during the first 10 years of plant operation. Solar applicants were eligible; some solar agreements were signed, many wind ones were signed.

In addition, Canada has special tax regulations to encourage electricity from renewable sources.

But evaluating the efficacy of the federal approach to solar electricity, or those of the provinces for that matter, doesn't warrant meticulous research, not if effectiveness is judged by global standards. Canada has one regulatory environment where the solar industry is building a manufacturing base, retailing and exporting products, creating employment and generating electricity.

Ontario has over 99 per cent of the country's solar generation, now about 2 GW.

"Ontario has developed a globally recognized solar market sector," notes *Roadmap 2020*. "While it has experienced challenges, it is today one of the top 20 solar electricity markets in the world, based on solar installations."

In a global sense, and particularly among G20 economies and First World nations, Canada's PV industry would be woefully small if not for Ontario's legislated renewable energy strategy.

"Canada is the only major industrial country without a national renewable energy strategy, while at the same time heavily supporting fossil fuel, or carbon-based, industries," according to *Roadmap 2020*.

A few years ago, federal and provincial assistance to our country's combined fossil-fuels industries was estimated by the International Monetary Fund. It arrived at an annual subsidy of \$34 billion, including direct support to producers, foregone taxes and the economic consequences of environmental concerns.

Stakeholders have debated this complex calculation, and therefore its accuracy, but that is a distraction from



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the issue articulated in the *Roadmap* document: It is fair to say government is a key player in energy markets; Canadian governments through an historical interest in carbon-based resources have tilted the playing field; the solar industry is struggling to compete against heavily-advantaged incumbent players.

Achieving a favourable federal solar electricity policy presents the national industry with one of its greatest opportunities, says CanSIA, explaining this would create a framework to initiate complimentary provincial and territorial policy. If provincial action is induced by a federal PV policy and renewable energy strategy, work already done in Ontario will play a key role. It is the foundation of the Canadian solar electricity market, to build upon or learn from.

RESCo Energy's President Fidel Reijerse chairs CanSIA's Ontario PV Caucus. He says Ontario's FIT program "commandeered 120 per cent of people's energy, effort and time." But as a result, the Ontario market has helped CanSIA build able capacity to assist government with industry expertise.

At the federal level, says *Roadmap 2020*, CanSIA will increase government-relations activity. And through that pursuit, focus on tax-based policy recommendations, including investment tax credits, flow-through shares, accelerated capital cost allowances and residential solar tax credits.

In his opinion, says Reijerse, *Roadmap 2020* is the basis from which the Canadian solar industry will make a fundamental shift from reacting to the demanding pace of Ontario developments to industry-driven change in the rest of the country.

"Everybody's hoping that some level of provincial policy support will be generated, given Ontario has already done the heavy lifting," says Reijerse.

"Ontario was able to bring FIT rates down by 50 per cent in the last four years. Everybody else gets to start there. Nobody has to start at the top end of the curve anymore. Theoretically, you only have to be half as bold now.

They don't have to do the same political and financial lifting Ontario chose to do."

Of course, CanSIA also plans to work with provincial and territorial governments across the country to promote new opportunities.

In the context of provincial markets, for distributed solar generation, CanSIA lists feed-in tariffs (FIT); net metering; net billing, and a FIT variation called pay-all-buy-all, where a PV producer buys electricity supply at retail rates while selling production at the utility's

avoided cost. These support mechanisms, it continues, are most effective when combined with complementary policies such as investment and production tax credits, or renewable energy certificates.

For utility scale solar plants, *Roadmap 2020* suggests options widely proven in other markets: renewable portfolio standards, FITs, auctions and renewable energy certificates, also complemented by investment and production tax credits.

While in every province, Reijerse points out, "there are excellent solar



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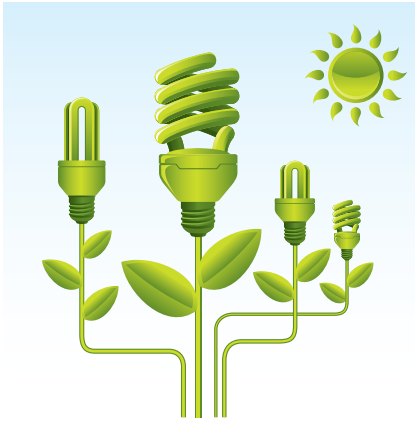
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Roadmap 2020 has two main objectives. It aims to position solar electricity in the mainstream of our country's electricity mix, and the industry in a stable regulatory environment without direct subsidization.

projects," every province does not have the same fertile ground for solar growth. The Alberta-Saskatchewan market, he says, with carbon-intensive electricity generation and the best solar resources in the country, is where the policy conversation needs to happen and has already begun.

"If Alberta as a province doesn't pick up on this, it's a missed opportunity for the Canadian market," he says.

A fundamental aspect of policy design in Alberta, but important in every province, and particularly if the

industry is to operate subsidy free within five years, is recognition of the true value of solar electricity, including externalities.

Solar electricity provides calculable benefits to provincial electricity systems, including supply security, price stability, peak shaving and power quality. And environmental concerns associated with incumbent energy supply – such as carbon emissions, air and water pollution, and health care costs – have an increasingly clear economic valuation. This cost can

be offset by, and credited to, solar electricity generation, argues *Roadmap 2020*.

This may become an area where the dynamics between the provinces and the federal government are important to understand. Energy policy is provincial jurisdiction, explains Arbache. At the same time, "Ottawa has the ability to take a more hands-on approach and help the provinces come up with whatever tools and mechanisms they need to support what the country is trying to achieve with its oil and gas industry.

"A lot of the big projects that have been built, and a lot of the issues around our carbon footprint and the oilsands' environmental impacts are of strategic importance to the country," Arbache says. "That's where the role of the federal government can be. It can work with our provinces so they collectively agree on certain levels of commitment to better manage our country's carbon footprint."

Beyond federal inaction and the provincial policy patchwork, CanSIA sees another barrier to market growth.



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“Establishing solar electricity as an integral part of Canada’s energy mix requires a deep understanding of the sector, a strong vision for the future and a clear action plan to achieve the vision.”

— John Gorman, CanSIA
President and CEO

As the price of solar electricity equipment rapidly falls, there will be a shift from the economic hurdle solar now faces to the challenge of electricity system access. Provincial regulations and utility company procedures, high connection fees and excessive paperwork from overlapping layers of approval often make access to the grid a complex, expensive and lengthy undertaking.

Ontario, where this problem has already been laid bare, once again comes into play. CanSIA is now working with the province’s Ministry of Energy to convene a solar task force, which will bring electricity distributors and utilities, power producers and energy regulators together in 2015. The task-force approach, which can be replicated in other provinces, is aimed at authoring best practices to eliminate redundant requirements and sluggish permitting processes. A key to the group’s success, says CanSIA, is ensuring fair outcomes for both consumers and electric utilities.

Another actionable problem related but not limited to grid connection is the soft cost of PV deployment, which is the sum of all expenses beyond the PV hardware and equipment. This includes connection, inspection, installation, maintenance, even financing. There is limited formal research into soft costs in Canada, says CanSIA, although it believes they may be among the highest in the world.

To explain soft costs and how they might be managed, *Roadmap 2020* offers a case study, a description of the U.S. Department of Energy’s SunShot Initiative: named for President Kennedy’s moon-shot target of reaching the moon within a decade. The federal enterprise is a public, private and academic collaboration to cut the total cost of solar power by 75 per cent by 2020, making unsubsidized solar generation competitive with Americans’ default electricity supply.

In 2012, U.S. soft costs were benchmarked at 52 per cent of the price of a large commercial system, and 64 per cent of a residential system, so



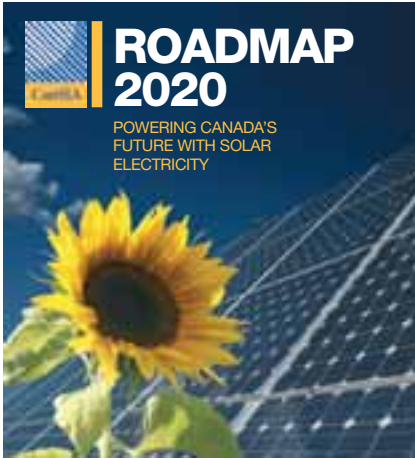
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If provincial action is induced by a federal PV policy and renewable energy strategy, work already done in Ontario will play a key role.

SunShot aimed funding at measures to encourage market transparency, support workforce training and improve the efficiency of system deployment. It also set per-kilowatt, soft-cost targets relative to installation size.

Four years into SunShot's 10-year timeline, soft costs have stabilized and the initiative is more than 60 per cent successful in accomplishing its primary goal.

"Canada, led by CanSIA and the solar industry, will launch a program similar to SunShot," says *Roadmap 2020*, calling on all levels of government to come together with industry and other stakeholders. Soft-cost reduction would be an important aspect of this collaboration, starting with baseline data, then establishing best-practice guidelines, reduction targets and a plan to achieve them.

Two more areas *Roadmap 2020* identifies as requiring immediate action are education and enhancing enabling relationships.

CanSIA plans to work on its relationships with key stakeholders identified as "enablers," defined as other technologies and circumstances to which PV technology can be perfectly applied. The list includes energy storage technology, electric vehicles, smart-grid technologies and green building design. While still in a state of market emergence, they are all on track to enable solar development.

"Solar electricity technology coupled with other emerging technology and application enablers have the potential to be game changers, and to completely revolutionize the energy system," says *Roadmap 2020*.

Finally, CanSIA will continue its commitment to public awareness and education. In fact, the Association has hired communications personnel to develop and manage a comprehensive national awareness program, and it intends to call on members, government leaders and advocacy groups to help. The program will have a wide range of messages with a consistent motto: solar energy is the smart choice to power Canada's future.

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ROADMAP 2020'S FIVE KEY AREAS REQUIRING IMMEDIATE ACTION:

- 
- Develop a supportive and stable policy and regulatory environment that recognizes the total value of solar electricity, including externalities.
 - Simplify and streamline permitting and processes for grid interconnection and metering of solar electricity systems.
 - Reduce soft costs to levels consistent with global best practices.
 - Educate the Canadian population on the true benefits and costs of solar electricity, and empower them to take action to support and adopt solar.
 - Develop new and enhance existing relationships with technologies, applications and stakeholders to create synergies that enable greater solar electricity use in Canada.

Primary Objectives:

- Solidify solar electricity as a mainstream energy source and an integral part of Canada's diversified electricity mix.
- Ensure the solar electricity industry will be sustainable, with no direct subsidies, and operating in a supportive and stable policy and regulatory environment that recognizes the true value of solar.

Reijerse and Arbache both point out PV will be a smart choice, sooner rather than later, because of its economics.

"We're going to be the economically preferred solution in a lot of cases by

2020," says Reijerse. "After that the market opens up very broadly, the opportunity opens up enormously, and the most important thing is to have a strong, diversified industry of capable people.

"We don't need to become a huge industry by 2020. We need to become an industry that is large enough to be able to scale and address the opportunity that starts to open up at that point." ●

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CanSIA USHERS IN A NEW ERA OF CHANGE

By Shawn Murphy

THE ADOPTION THIS SPRING of a new CanSIA business model and membership offering signals an era of change as profound as any the association has experienced since its formation. Once it is fully in place, it will be a more member-centric organization that also responds more strategically to, and helps drive, Canada's maturing solar energy sector.

In March, the CanSIA Board of Directors approved a partnership with Deutsche Messe AG, who will now manage the majority of the conference and trade show functions. The German-based international company has the talent and resources to bring together global leaders, investors and decision-makers in a number of sectors, including energy and technology. The result sets CanSIA on a course of change that will redefine the scope and value of what it brings to its members and to Canada's solar energy sector.

Making the transition

In exchange for handing off the trade show function (but retaining 25 per cent ownership and a direct role in determining

content), CanSIA receives a cash amount equal to the valuation of that part of its business, placed in an endowment fund for use in future member service activities.

"CanSIA used to rely heavily on the revenues of our trade show and conference business," says **CanSIA President and CEO John Gorman**. "They are a valuable offering to our membership. But that line of business is very consuming. It was taking a lot of time for a small team to plan and organize them, and taking focus away from other member needs."

Planning conferences and trade shows is not just an intensive investment of valuable resources, it comes with risks. Preparation requires significant up-front investment of member dollars without any guarantee the sector's policy or economic environment won't shift while an upcoming event is being organized – thereby diminishing its value. It also means an end to a relatively predictable revenue source.

"There are two sides to the transaction with Hannover," says **Bob Waddell, Chair of the CanSIA Board of Directors**. "On the one hand, it relieves us of the financial strain of

managing trade shows. On the other, we no longer have the same revenue stream. If anything, it is more challenging because we have to manage the value of what we have earned from the sale, but we also want to accomplish more."

Revitalized and sustainable

Divesting the trade show work is a dramatic departure from CanSIA's traditional business model, but it clears the way to enhance core member services and move in promising new directions.

"We will make the transition to a new, revitalized and sustainable member-focused organization," says Gorman, adding the CanSIA brand will likely evolve in due course to reflect its changing face. "We will broaden our membership base and increase involvement of members in the organization."

Stronger focus will be placed on policy-making and regulatory change, as well as research, increased government relations activities and greater attention to communication and marketing services.

"We can dedicate more time and resources to protect and grow the market in Ontario and in Canada," adds Gorman.

Now is the time

The change in the CanSIA business model is timely. In the years since the introduction of Ontario's Green Energy Act in 2009, solar energy in the province and in Canada has experienced significant consolidation and attrition. Today, it is a stronger sector with a more stable policy and regulatory climate, particularly with the Ontario government's renewed commitment in 2013 to its Long-Term Energy Plan (LTEP), which commits to the amount and timing of solar electricity procurement in the province.

In addition, growth has been rapid. In 2013, installations of solar electricity systems grew by nearly 60 per cent over the previous year for a value of nearly \$1.5 billion. The province of Ontario – where 99 per cent of solar electricity is generated – is recognized as one of the 20 solar electricity markets in the world based on solar installed capacity. In just the past six years, 2 GW of solar has been installed in the province.

The new business model in action

The new business model is already influencing the direction of CanSIA's internal operations. The staff mix is changing to meet new commitments to research, government relations and communication efforts.

Members can expect a new and much improved CanSIA offering with interesting opportunities to participate in projects. No increase in membership fees for the coming year is planned.

"Our members will experience a new look and feel to our membership program," says Gorman, adding they will get their first glimpse of what it looks like at the Solar Ontario Conference in Niagara from May 25-27.

"We are responding directly to a call from members to become more involved in conducting fundamental research to inform policy decisions and market forces. We will also communicate better what we are doing with members."

CanSIA's fresh direction also reflects and anticipates shifts in industry trends and growing consumer demand for energy alternatives. On this front, work was underway even before the transition to the new business model. But it will unfold more fully now that more resources can be applied to it.

The publication last December of the *CanSIA Roadmap 2020* lays out a clear path to "solidify solar electricity as a mainstream energy source and an integral part of Canada's diversified electricity mix." To get there, CanSIA has identified five areas that need immediate action — including making it easier for industry to build the solar sector, and educating Canadians on the value of solar power.

Roadmap 2020 aligns with related initiatives to foster and lead dialogues with government, industry and other stakeholders — specifically, the anticipated launch of the Solar PV Task Force in Ontario in the first half of this year. A driving force in the initiative, CanSIA is working with the Ontario Ministry of Energy to assemble key energy and solar industry stakeholders to work cooperatively, conduct research, share information, and propose recommendations to policy makers and regulators to create consistent and simplified solar electricity connection and metering frameworks. It is expected that the Task Force will expand to other Canadian provinces and territories.

"The real evolution of CanSIA, and our opportunity, is to put more energy into our leadership role to move the Task Force forward," says Waddell. "We are playing a central role in defining what our solar future looks like. This is the first time these players have come together at the same table. We are working through the challenges we will all face in the future."

Waddell says the focus of CanSIA's work is evolving. Where once the bulk of efforts was placed on political activities and lobbying to manage uncertainty in the sector, today the landscape is more mature, with the focus more on refining what the solar program will look like down the road.

"Our work now is on regulatory policy and working within the Ontario Ministry of Energy and the IESO to really determine how to make the process work better," says Waddell.

Challenges remain, but there's "bigger promise"

Gorman says CanSIA is well positioned to face the future, calling the new business model a "jumping off point

for bigger promise. What's pressing now is all of the in-depth policy and research work to entrench ourselves in new markets and keep growing."

Worldwide, critical mass for solar is being achieved as technology improves and costs come down. Momentum is building, including in Canada.

"In the U.S., solar installations are growing swiftly," says Waddell. "China is installing almost as much as all other countries combined. Canada's energy market is unique because we live in a resource-rich country, with fossil fuels, a high nuclear component, hydroelectric power, and energy from wind available to consumers. Most power — between 60 to 65 per cent, comes from hydroelectric sources.

But there's growing recognition that solar will be a part of the future energy mix, and recognition globally that it's here to stay."

There are challenges beyond Ontario's abundance of power. They include the elimination of domestic content requirements in the sector following a decision by the World Trade Organization (WTO) that the old rules contravened both the General Agreement on Tariffs and Trade and the WTO Agreement on Trade-Related Investment Measures. This translates into a more complex marketplace with a broader mix of players, but both Gorman and Waddell say Canadian manufacturers — especially in the Ontario industry — have shown themselves to be determined and innovative.

"In Ontario and across Canada, there's a collection of world-leading, sophisticated companies that are executing projects that are both efficient and effective," adds Gorman.

Every advantage

CanSIA's new business model marks a turning point in the association's history and a critical investment in the future. But Gorman says both the association and its Board of Directors have been fully engaged every step of the way and on every decision.

"It will be an evolution to put the model fully into place. But it will bring every advantage to our members," says Gorman. ●

CanSIA, a national trade association, works on behalf of its solar industry members to facilitate and promote the responsible and sustainable growth of solar energy across Canada. CanSIA provides networking and leadership opportunities for members, researches and develops policy options for different levels of government, and delivers a broad range of communications on solar energy.

CanSIA supports Canada's solar industry through the following three core services:

- Policy **Influence and Advocacy**;
- Industry **Knowledge Sharing**; and,
- Profile **Building and Networking**.

We are constantly improving our ability to help our members shape their industry and make the most of business opportunities by:

- **Driving** policy and regulatory change;
- **Supplying** members with market intelligence;
- **Organizing** proactive government relations activities;
- **Bringing** visibility and brand awareness to our members; and,
- **Creating** opportunities for members to demonstrate leadership through industry-shaping Strategic Projects.

Becoming a CanSIA member is for your company or organization if it seeks to:

- **Be recognized and demonstrate leadership** in the solar energy industry;
- **Stay informed** on policy, market and regulatory developments; and,
- **Support and contribute** to the advancement of solar in Canada.

Learn more about CanSIA **MEMBERSHIP** at

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You can't work in the solar industry effectively if you're not a member.

Marc Clark, General Manager, SLK Solar Corp.,
solar equipment manufacturer and CanSIA Corporate Member, March 2015

2015/2016 MEMBERSHIP

The next CanSIA **membership period** will run from **July 1, 2015 to June 30, 2016**.

Online registration for 2015/2016 membership **will begin May 1, 2015**.

Renew or register before May 31 to receive 10% off your annual membership fee.

CORPORATE MEMBER

Three levels of Corporate Membership (C1, C2, and C3) are now available for small to large corporations, either working as part of the industry or in a service-oriented company supporting the industry. Membership level is selected by members themselves, based on company size and membership objectives, or a combination of the two.

SUPPORTER

Two levels of Supporter Membership (S1 and S2) are available for government, public sector and not-for-profit organizations. Supporters are stakeholders in the industry who want to see it succeed, and want to be part of the success story.

INFLUENCER—NEW OPPORTUNITY!

Members at the C1, C2, and S1 levels will also have the ability to become Influencers by supporting and participating in Strategic Projects. A complete description of the 2015/2016 Strategic Projects, how to participate and the benefits for Influencers is available on the CanSIA website.

To discuss what membership and Strategic Project involvement
can do for your company or organization, contact:

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SOLAR FITS CLIMATE POLICY

By Drew McKibben

THE CHANGING POLITICAL DYNAMIC

around climate change has opened a unique window of opportunity for Canada's solar industry to position itself as a key player in any strategy to reduce greenhouse gas emissions from the electricity sector.

Canadians will go to the polls in a federal election on or before October 19, and whichever government is elected will head to Paris for the United Nations' climate change conference in early December. At the same time, several provincial governments are honing their own climate change policies in the lead-up to the global event.

"This is turning out to be a bigger deal than I expected it would be. Alberta

is literally planning to have its climate change framework and the programs that fall underneath fully defined by the time it goes to Paris," says **CanSIA President and CEO John Gorman**. Ontario and Québec are doing the same. The federal government has no choice but to take it very seriously as well.

"This is where I think the opportunity comes for solar."

With the Paris conference coming so closely on the heels of the election, says Gorman, federal bureaucrats are going to have to prepare for a range of possible scenarios around how aggressive Canada will be with its climate commitments and solutions. Getting information into their hands about solar and the role it can play in reducing emissions will be critical, he adds.

"The bulk of our efforts should be on working with the departments and those that are responsible for coming up with the actual solutions to meeting our climate change obligations."

CanSIA is working aggressively to develop an engagement plan and a set of policy recommendations, says Gorman. "Given we don't know who is going to be in power, I think we're going to be presenting an array of options so they can pick and choose," he says. "Central to our message will be the fact that even though electricity is a provincial responsibility, the federal government has a whole bunch of tools it could use to provide national direction."

CanSIA, he says, recently released a study showing that every 1 GW of

solar deployed in Alberta would displace one megatonne of CO₂ annually while meeting 1.5 per cent of the province's electricity needs. It is also in the process of developing a position paper on carbon pricing in Ontario.

"These will feed into the federal discussions," Gorman says. "And there are some other obvious messages we're going to be delivering to government. The global trends with solar, in terms of price and adoption, are astounding and we need to communicate that."

Forty per cent of new electricity generation additions in the United States last year were solar, he notes, and the International Energy Agency expects solar will be the dominant generating technology worldwide by 2050. Globally, solar has been contracted at prices as low as US\$0.08/kWh and expectations are that Ontario's new competitive request for renewable energy proposals could see prices hit \$0.14-.18/kWh.

The lead up to the federal vote gives CanSIA a chance to not only bring federal officials up to speed, says Gorman, but

inform their future political bosses as well. "It's important that we use this election period to get the facts about solar into the hands of MPs," he explains. "I think the chances are probably quite slim that we would introduce solar or renewable energy as a central plank to the platforms of any of the parties, but we want to make sure they're prepared to be open to it if they have to make decisions about which way to go on the climate file."

As the major political parties stake out ground for themselves in the energy and climate debate, there appears to be fertile ground for CanSIA's efforts. The NDP, says **Deputy Leader and Environment Critic Megan Leslie**, would create a cap-and-trade system that reinvests the revenue generated to projects that would reduce emissions further. It will also redirect \$1 billion of federal fossil fuel subsidies to renewables.

Canada needs to diversify its energy economy, she says, with the federal government playing a leadership role in the transition to green. "I see solar as a really important part of where we need to go," Leslie says.

The Liberal Party unveiled its climate strategy in February, an approach that would see the federal government set national emission reduction targets and allow provinces to develop their own policies to meet the obligations. "What our party is pushing for is a collaborative plan to move Canada to a low-carbon, clean energy economy," says **Liberal Energy Critic Geoff Regan**. "We support putting a price on carbon and ending subsidies to wealthy oil companies. We're also advocating for greater investment in renewable energy."

A **spokesman for Natural Resources Minister Greg Rickford** pointed to the Conservative government's record, including investing \$11.6 million in 80 MW of solar PV under the now-expired ecoEnergy for Renewable Power program and initiating the Drake Landing Solar Community project in Alberta. "Our government has made significant investments to promote clean energy projects," the spokesman said. "We remain committed to supporting their development." ●



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*By Gaëtan Masson,
Director at Becquerel
Institute, Operating
Agent of IEA-PVPS Task 1*

IN 2014, PV MARKETS REACHED

close to 40 GW of incremental installations for the first time. This incredible achievement represents the installation of 5 PV panels every second in the world. And if PV produces only 1 per cent of the global electricity demand, the speed at which this was realized shows the incredible growth potential PV has shown in the last few years. But this development of PV as a mainstream electricity source has been primarily driven by financial incentives: in most countries, the market was kick-started by feed-in tariffs, tax breaks or similar smart incentives that multiplied the PV market by a factor of 25 in a decade.

This remarkable growth was achieved in various market segments, from small-scale residential PV to utility-scale PV systems now targeting the GW size for the first time. In 2013, the growth of utility-scale PV was so important that this segment represented more than half of all PV installations and this share is probably going to stabilize in the coming years around 50 per cent. Meanwhile, focusing on utility-scale would only hide the extraordinary potential of distributed PV and especially PV on buildings.

In fact, while utility-scale PV are to a certain extent playing on par with conventional generators, distributed PV associated to local consumption of electricity has us entering a brave new world of opportunities, challenges and technical surprises. Distributed PV system owners are in general called “prosumers,” an emerging concept combining the words *producer* and *consumer*. After the decentralization process seen in various sectors of the economy in the last two decades, PV now steps into the decentralization of the energy production, or in other words, PV

empowers electricity consumers by offering them the possibility to become active in a market where they used to simply be passive consumers.

Prosumers' development has been accompanied in several countries by specific policies aiming at framing their development. These schemes have been called net-metering, net-billing or self-consumption policies, but they all aim at framing the production and consumption of decentralized PV electricity. In most cases, they intend to limit the development of prosumers, rather than guiding it. In that respect, regulatory bodies

and utilities are taking the risk of alienating the consumers even more and pushing them to adopt PV faster, empowering themselves against traditional utilities.

Most self-consumption policies have been implemented in emergency and forget to address the big picture: the ongoing evolution of the electricity and energy systems will tsunami the existing electricity systems through a complete change in the behaviour of customers. Widespread onsite power production will shift electricity system revenues away from utilities and grid operators. Incumbents will face lowered

profitability due to reduced sales, reduced profitability due to wholesale market price decrease and reduced earnings opportunities due to lower capital investments. This has already been seen in several countries, especially in Europe.


Not only incumbents, but also local, state and national governments may experience a decrease of tax revenues as a result of the growth of prosumers.

In addition to the financial challenges, increased prosumer growth can cause a number of technical challenges in distribution systems. However, several European countries have shown that most of these issues can be overcome by already existing technologies and solutions that simply require the adequate regulatory framework and clear visibility on long-term grid investments.

While the above mentioned challenges are in no way dismissible, it is crucial to recognize that prosumers can also lead to opportunities that can transform the current electricity system and benefits. In more general terms, prosumers may be necessary to trigger structural change required in the electricity industry to achieve sustainability: the shift to electricity in the heating and cooling sector as well as in the transport sector with EVs will require anyway to start adapting the current electricity system. Empowering electricity consumers should, in that respect, be considered a simple piece in a giant puzzle. Therefore, prior to trying to find solutions that may primarily help incumbents to retain their current business models, policy makers should take a holistic approach considering the full picture.

Policy makers should then identify and articulate the benefits and costs created by prosumers, weighing risks and opportunities. Encouraging the growth of prosumers could become a national policy objective. So far, few examples of "prosumer friendly" policies exist globally and most of them failed to address the holistic challenges associated with the evolution of the energy system. The country that will succeed in presenting such a consolidated approach will offer to its companies a world-class asset to manage the electricity-driven world of tomorrow.


Search "John Gorman at TEDxElginSt" at www.youtube.com to learn more about the prosumer revolution. ●



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A NATIONAL SCORE CARD

By Patrick Bateman

Patrick Bateman, CanSIA's Director of Market Intelligence and Research, has worked with CanSIA since 2010. He is responsible for CanSIA's market, policy and regulatory strategy, research and analysis.



THE AMOUNT OF SOLAR PV annually connected by Canadian utilities has grown by a factor of one thousand in the past decade, from 500 MW in the year 2005 to approximately 500 MW in 2014. Canada joined the “1 GW” club in 2013, which at the end of 2014 included only 19 other nations¹, and by the end of 2016 Canada will have surpassed 2 GW of cumulative utility-connected solar PV in operation.²

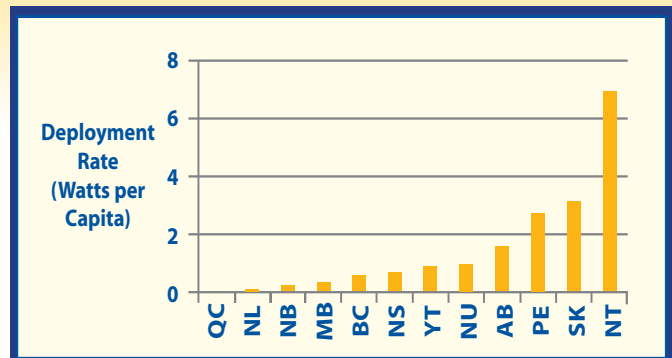
These national statistics are important but they don't tell the full story. The province of Ontario, Canada's leading solar market — which also ranks third in North America with less installed capacity than only two U.S. states³ — is home to more than 99 per cent of Canada's utility-connected solar generation capacity.

So when Ontario is removed from the picture, how do the remaining Canadian provinces and territories rate?

Only three of Canada's provinces and territories had more than 1 MW of installed capacity at the end of 2014: Alberta with 6.5 MW, Saskatchewan with 3.5 MW and British Columbia with just under 3 MW. Of the remainder, Nova Scotia is the only province or territory with more than 0.5 MW (~0.6 MW).

Where do Canadian provinces and territories stand, when normalized for population?

Ontario had more than 120 watts per capita at the end of 2014 (about one solar module for every two Ontarians). When the remaining provinces and territories are re-ordered by population size, we see some interesting results: Northwest Territories and Prince Edward Island, two of Canada's least populated jurisdictions, in first and third place and Saskatchewan, with one of Canada's best solar resources, at number two.



Cumulative Utility-Connected Solar PV in Canada by Province and Territory (2014)

Rank	Province and Territories	Cumulative Installed Capacity at year-end 2014 (MW)
1	Alberta	6.4
2	Saskatchewan	3.5
3	British Columbia	2.8
4	Nova Scotia	0.6
5	Manitoba	0.4
6	Prince Edward Island	0.4
7	Quebec	0.4
8	Northwest Territories	0.3
9	New Brunswick	0.2
10	Newfoundland and Labrador	0.04
11	Nunavut	0.04
12	Yukon	0.03

What does this market intelligence tell us?

These results tell us that, in a short period of time, the Canadian market has in aggregate experienced massive growth but, until now, this growth has been focused in one region. The learning curve and growth experienced in Ontario has contributed to scale, thereby driving down equipment costs across Canada and rapidly accelerating our national expertise in areas including solar engineering, finance, insurance and asset management.

The Canadian solar industry is now poised to replicate the successes experienced in Ontario throughout Canada. The implementation of the CanSIA Action Plan in our industry's *Roadmap 2020* will get us there. ●

¹ International Energy Agency (2015) "Trends 2015 in Photovoltaic Applications"
² International Energy Agency and CanSIA (2015) "National Survey Report of PV Power Applications in Canada"
³ Solar Energy Industries Association (2015) "2014 Top 10 Solar States"



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ELSE

LAUNCHES INDUSTRY'S FIRST MENTORSHIP PROGRAM IN CANADA

By Lia Van Baalen

THIS SPRING, EMERGING LEADERS FOR SOLAR ENERGY

(ELSE) will launch Canada's first mentorship program for the solar energy industry.

Targeting students, recent graduates and young professionals less than 35 years of age, the program will match mentees with two experienced industry professionals for one-hour, in-person sessions. The ELSE program was modelled after a successful commercial real estate mentorship program which encourages pairs to develop diverse, casual mentoring relationships with minimal time commitments for mentors.

"My co-chair Lia and I were looking for ways to better serve ELSE members and to truly add value to their professional development efforts," said **outgoing ELSE Co-chair Jonathan Frank**. "And on a broader scale, I felt that a mentorship program was a critical step in the maturation of the Canadian solar industry."

John Gorman, President and CEO of CanSIA, notes that the industry's reaction to the mentorship program has been overwhelmingly positive. "ELSE continues to design and implement programs and initiatives that are of tremendous value to the industry. Every member of CanSIA's Board of

Directors signed up on the spot," said Gorman. "It's another example of the vibrancy of the solar industry as represented by our emerging leaders."

Mentorship programs provide a valuable connection between current industry practitioners and emerging leaders, said **Victoria Alleyne, Project Manager for CSA Group and volunteer with Career Skills Incubator's mentorship program**. Alleyne noted that at solar conferences and events she has seen colleagues of different generations often interacting separately and not mingling with other groups. "Having a mentorship program can bridge the divide," she said.

Maged Sami Abdelmalek, Project Coordinator at CarbonFree Technology, believes that sharing lessons-learned would benefit everyone in Canada's still-developing solar industry. "It's likely to move the whole industry forward," Abdelmalek said. "In its simplest form, being able to share knowledge from one entity to the other — whether that's company to company or individual to individual — it spares someone from making the same mistakes, or trying to find a solution when one already exists."

Personally, Abdelmalek attributes his current solar career path to his undergraduate mentor, the Vice-President of technology at CarbonFree Technology. "I originally thought I'd be a solar designer or something along those lines," he said. But when his mentor began describing his role and interests, which included analyzing project development risks, forecasting, and financing, Abdelmalek's interest was piqued. "It clicked that this might be something I would find a lot more engaging than just pure engineering design."

Now a young professional in a mentee position, Abdelmalek's goals for his mentoring relationship have changed. "As a student, what I was looking for was

more focused: help and guidance honing in on what I would like to be doing and what opportunities existed," he said. This time, he would like to gain exposure to different areas of the industry and work with a mentor who can help him set goals and create a plan to achieve them. "I would like to get advice from someone who has been through the career path that I have planned for myself. They know what the shortest route to a certain outcome is."

For Alleyne, a mentor would help shed light on behind-the-scenes industry activity, as solar is only one of the types of renewable energy technologies that she works with. "Everyone knows about the standard aspects of the PV industry," she said. "It's really nice to develop a relationship where you can discuss informal things that are very valuable to hear, and learn what lies between the lines of public information."

Volunteering to be a mentor is more than just a way to give back for **Ron Mantay, Vice-President of Engineering and Construction at PowerStream**. "The satisfaction



of helping the mentee is, for me at least, a big part of it...and the fun, fresh viewpoints from a young person as well," he said.

Mantay looks at three benefits that anyone, regardless of their stage of life, can take advantage of by participating in a mentorship program: diversity, experience and networks. Mentorship, he said, is a two-way exchange from diverse viewpoints that can lead to better and faster idea generation, innovation and actions. The mentees can also benefit from their mentor's complementary experience and the increased opportunities that their broader network can provide.

And mentorship meetings can be more than just career discussions. "A mentor and a mentee, when they interact, need to feel that the status quo really should be challenged," Mantay said. "We often feel that we can't change things, but I think that we need to believe that they can, and in many cases should, be changed."

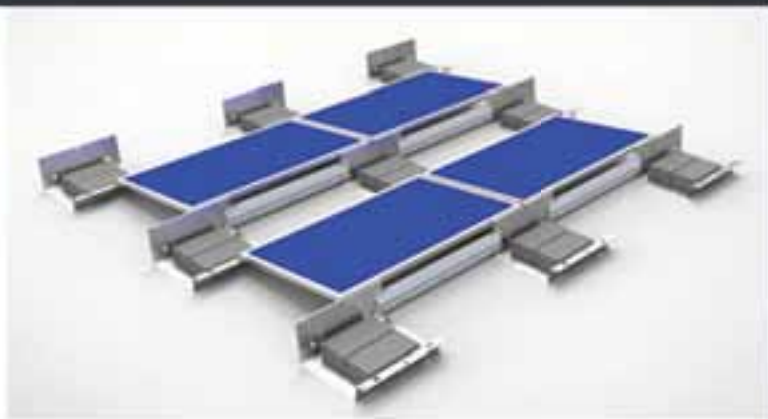
To date, more than 70 individuals have pre-registered to become mentors and mentees. To learn more about the program or to sign up, visit <http://www.elsecanada.ca/mentorship-program>. ●

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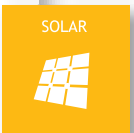
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