

SOLUTIONS



THE MAGAZINE OF THE CANADIAN SOLAR INDUSTRIES ASSOCIATION

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CANADIAN SOLAR INDUSTRY

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OF ELECTRICITY IN ONTARIO

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OF THE INVESTMENT TAX CREDIT



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Small Members are the Lifeblood of CanSIA

BY JOHN GORMAN, CanSIA PRESIDENT AND CEO

Our diversity as an industry is our greatest strength. The scalability and versatility of our technology drive the diverse composition of the solar sector; it enables us to present solutions on the doorstep of a homeowner, in the boardroom of a corporation or in the control room of a systems operator. While other power sectors rely entirely on utility-scale opportunities to survive, solar technology powers everything from calculators to communities. Solar electricity is slated to become the dominant power source over the next two decades not because it's replacing existing centralized plants, but because it's being deployed to fill in the gaps. And there are many gaps to fill as climate pressures and consumer demand force the electricity sector through its profound transformation.

Meeting the needs of CanSIA's diverse membership is demanding. The CanSIA team sometimes envies other trade associations whose large corporate members are focused entirely on enabling mega-projects. Each new market opportunity in the solar sector requires multiple programs and policies tailored to the residential, commercial and utility-scale market segments. Combine this

with the reality that provincial markets outside Ontario have little experience with solar energy and you can see how the advocacy and policy challenges are compounded.

Nonetheless, the rewards of working on behalf of our members far outweigh the challenges inherent in our industry. CanSIA Members—regardless of their size or market-niche—innately recognize that comprehensive policy proposals rely on the virtues of all scales of solar power. Indeed, distributed generation and the ability of solar to empower homeowners is pivotal to the propagation of the larger-scale market segments. In this sense, distributed generation is the lifeblood of our industry. I'm continually impressed by the collaborative efforts of our membership and feel a sense of gratitude and pride watching our diverse market segments making decisions in the broader interests of our entire industry. Our diversity truly is our greatest strength and the tenant that drives key decisions taken by the CanSIA Board and staff enabling our industry to grow.

This philosophy is reflected in everything from the composition of the new CanSIA Board to the selection of priority policy and advocacy efforts. CanSIA's emphasis on net metering, for example, recognizes the indispensable role that our smaller members play in the overall health of our industry. Our flagship Ontario project over these last 24 months—the Distributed Generation Task Force—has produced compelling work on the net metering future. Our members recognize the tremendous success CanSIA has had in shaping the upcoming net metering framework in this province. Because of this work—as well as CanSIA's accompanying effort with the Ministry of Environment and Climate Change—I feel confident that we will have a funded and smooth transition to a sustainable net metering future.

CanSIA's focus on distributed generation in the Alberta market is also bearing fruit. The revamped Micro-Generation Regulation combined with the recent announcement of the \$36M capital incentive program (10,000 rooftops) are important catalysts for the growth of our residential and small-commercial sector. CanSIA and its members worked closely with the Government of Alberta to design these programs and we are determined to make it a success for all Albertans. It's safe to say that the trusted relationship our industry has developed with the Government of Alberta will serve us well as we begin to participate in

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the formal consultations around the community-scale program this spring. The competitive price discovery from Alberta Infrastructure's 135,000 MWh procurement will also cause policy-makers and the public to start paying more attention to solar energy.

The discussions underway with the federal government on the introduction of an Investment Tax Credit (ITC) for rooftop solar could be a game-changer for distributed generation in Canada. This measure would complement the renewable energy investments made by commercial lenders in utility-scale projects with investment from households, small and medium business and communities in smaller-scale renewable energy projects. An ITC also has the advantage of complementing the diverse provincial programs while leveling the playing field with the U.S. CanSIA forecasts that the introduction of an ITC would lead to approximately 5,300 MW of distributed solar electricity generation installed capacity in contrast to a business-as-usual outcome of 3,000 MW. This equates to an additional 230 MW of solar electricity generation assets per year on average from 2016 to 2025 (i.e. 2,300 MW in total over that 10-year period) in contrast to the business-as-usual scenario.

Diversity is the Canadian solar industry's greatest strength. Robust and sustainable solar markets exist when a strong utility-scale sector is complimented by a healthy distributed generation sector. It is for this reason CanSIA continuously works hard to grow all segments of our market while meeting the needs of our diverse membership. ■

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.

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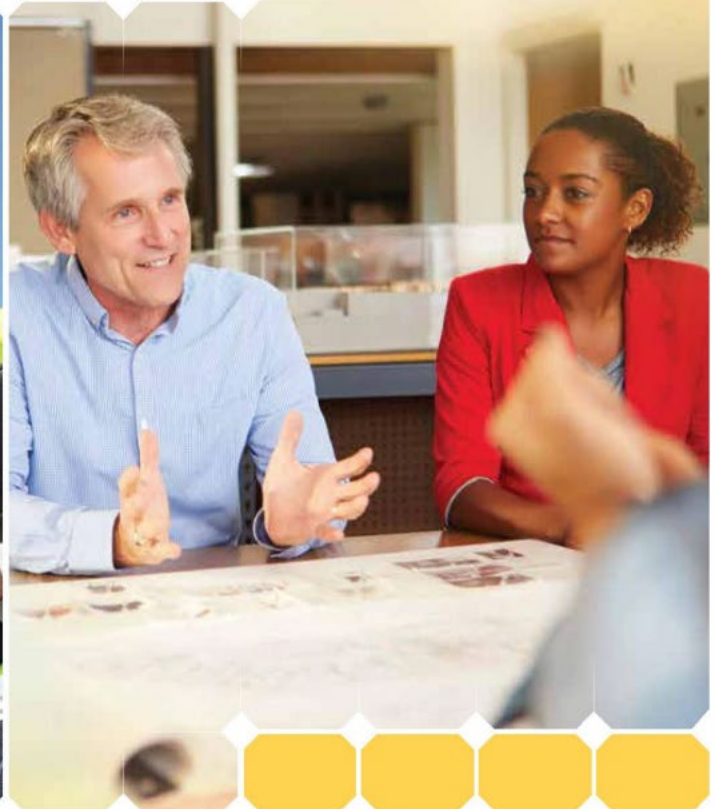
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Climate Change Plan Stimulates National Solar Breakthrough

The Paris Agreement on climate change produced a cascade of meetings and announcements leading to a Canadian strategy on greenhouse gas (GHG) emissions, and an appreciable expansion of national solar energy development.

The Pan-Canadian Framework on Clean Growth and Climate Change (Framework), released in December, is a national plan to reduce GHGs 30 per cent below 2005 levels by 2030. It is the first of its kind and a recipe with the ingredients to make change. The federal government, 10 provinces and three territories collaborated on the plan and almost all agreed to it, with Saskatchewan and Manitoba prominently holding out. Collaboration is critical because the provinces have the muscle to regulate emissions, and uneven rules could result in carbon leakage, where emissions move to the most lenient regulatory environment. The Framework document clearly indicates participants' interest in the global economic opportunity propelled by low-emissions technologies.



“Clean, non-emitting electricity systems will be the cornerstone of a modern, clean growth economy,” says the Framework.

Even though 80 per cent of Canadian electricity is already produced by non-emitting sources, the potential for renewable energy development is significant. Electricity generation is the country's fourth-largest source of GHG emissions,

and Alberta, Saskatchewan, Nova Scotia and New Brunswick face an accelerating pace of coal-fired electricity retirement or the cost of its emissions.

The price of carbon emissions is a pillar of the Framework, and a federal backstop will create a floor-price, starting at \$10 per tonne in 2018 and rising \$10 per year to \$50 in 2022. This is prickly because it increases the price of fossil-based energy for everyone: electricity, natural gas and petroleum-based fuels for transportation.

To comply with the Framework, the provinces have two choices. They can use an explicit price-based system, like British Columbia's \$10 carbon tax implemented in 2008. B.C. raised the rate \$5 a year to \$30 in 2012, and the system is revenue neutral, meaning revenue is returned to British Columbians through reductions in other taxes. Alberta launched a \$20 carbon levy in early 2017, which escalates to \$30 in 2018, and Albertans are getting rebates based on income.

At the same time Alberta launched a carbon levy, Ontario chose the alternative: cap-and-trade. This means busi-



nesses have annually declining carbon limits, and if they exceed those limits they must buy emission allowances through government-run auctions or from other emitters with performance-based credit. Quebec also has a cap-and-trade system, implemented in 2013.

BEYOND ONTARIO

Given all the new dynamics in Canada's electricity market, CanSIA's Director of Policy and Market Development, Patrick Bateman, says Alberta and Saskatchewan are primary areas of progress and, "There is early-stage activity in every other province and the territories.

"We're seeing a huge amount of policy and regulatory work at the moment."

This is important because Canada is approaching 3,000 MW of installed photovoltaic (PV) generation and more than 99 per cent is in Ontario.

Ontario PV generation grew by 333 MW in 2015, attracting \$1 billion dollars in investment and supporting a skilled force of 10,000 workers. Premier Kathleen Wynne released a new climate action plan in 2016, pointing to the government's commitment to a "low-carbon economy that will drive innovation, create more opportunities for business and industry, and generate high-value jobs."

Meanwhile, Saskatchewan premier Brad Wall not only rejected the Pan-Canadian Framework, he called the federal benchmark on the cost of carbon emissions "a betrayal." He maintains the United States could make a U-turn on the Paris Agreement, and the Saskatchewan economy will falter if Canada gets too far ahead of an American emissions reduction plan.

The province, however, is not idling on the road to reductions. It is committed to reaching 50 per cent renewable energy capacity by 2030. Solar power is also in the mix, says Mike Marsh, President and CEO of the Crown utility corporation, SaskPower. The utility has requested proposals from 34 qualified bidders to install a 10 MW solar project to be in service by late 2018. It is the first step in a plan to add 60 MW of solar to the grid.

"To meet this goal," says Marsh, "SaskPower will also be looking at community-based projects and a partnership with First Nations Power Authority for utility-scale projects."

The phased approach, he explains, will allow the utility to add solar while



balancing sustainability against cost-effective investments in generation. "The first 10 MW project," he says, "will allow us to better understand how the technology works within Saskatchewan's power grid, similar to what we did with wind."

Announcing solar objectives, the Minister responsible for SaskPower, Gordon Wyant, expressed his hope the province will break ground on both construction of a new solar project and the western development of solar energy.

"Not only is this the first time Saskatchewan has seen a competitive process for a solar project of this scale, it is also the first Canadian utility-scale solar project outside of Ontario."

Saskatchewan moved forward to the Request for Proposals (RFP) in February after 34 independent power producers qualified under the initial Request for Qualification (RFQ), issued late last year.

It is apparent that Saskatchewan will have the first utility-scale solar project outside Ontario only if its western neighbour does not get there first.

ALBERTA SHINES

Alberta enshrined aspects of its Climate Leadership Plan into law through 2016 legislation, defining a carbon levy and a new Crown corporation, Energy Efficiency Alberta, which has a mandate to design and deliver renewable energy and conservation programs. Another act requires the electricity system to supply 30 per cent of demand from renewable sources

by 2030, giving industry the stability and predictability needed to make long-term investments.

Through its Renewable Electricity Program (REP), the province will add 5,000 MW of new renewable capacity to its grid by 2030, starting with a 400 MW request for proposals in 2017. The initial competition will be based solely on price, announced Alberta's Minister of Environment and Parks and the Minister Responsible for the Climate Change Office, Shannon Phillips.

"Renewables developers, both in solar and in wind, have long been saying that the prices are falling precipitously," Phillips says. "We want to test that theory. The way to get the best price is to ask the market what its best offer is, and that's what we're doing here."

Winning developers will sign 20-year Renewable Electricity Support Agreements with the Alberta Electric System Operator (AESO) based on a contract for difference. A contracted generator will bid a fixed price per MWh. When the wholesale electricity price falls below that level, the producer receives a top-up payment from the province: an indexed Renewable Energy Credit (REC) funded by the carbon levy. If wholesale prices rise above bid prices, generators pay the difference back to the government.

"The AESO recommended the use of the indexed REC for the first procurement for a number of reasons," says Mike Law, the agency's Vice-President of Renewables Development and Sustainability. "It seemed the most likely to draw the

highest number of competitors to the program, and it allows risk to be allocated to those best able to manage it, providing greater price certainty for investors at a time when price certainty is at probably one of the all-time lows within the Alberta electricity market.”

Wind generation, with about 7,000 MW of projects in the AESO’s interconnection queue, may dominate the first round of bidding, but Phillips says subsequent rounds could include requirements around geographic diversity or indigenous equity participation.

“The Prairies have the best solar resources in Canada, and our government is committed to providing opportunities for the emerging solar industry to take advantage of this natural resource.”

CanSIA’s Bateman says the REP is “conducive to enabling renewables to participate in Alberta while overcoming some of the unique challenges that renewables have always faced there.

“This is a long-term initiative, and it’s certain that solar is going to play a big role between now and 2030. Early decisions are not indicative of what will happen throughout the next decade.”

Alberta also has a near-term, solar-specific plan, which Bateman says is the “solar carve-out” the industry is looking for, a plan the Ministry of Infrastructure announced, “Could lead to the first solar farm in Western Canada.”

The ministry supplies government-owned buildings with 100 per cent renewable energy through three contracts with wind power producers providing 250,000 MWh a year. One contract is in place until December 2024, but a second just expired and the third is expiring December 2017, leaving the province with a combined shortfall of 135,000 MWh per year.

Alberta Infrastructure, therefore, issued a request for information in late 2016 seeking advice on the potential cost and best approach for procuring supply from new Alberta solar generation. If the two contracts go to the industry they will add as much as 100 MW of solar generation to a current installed capacity of just less than 16 MW.

“We expect the price discovery from the Alberta Infrastructure procurement will demonstrate to Albertans and government policy makers, to everybody, that solar can be cost effective in Alberta,” says Bateman. “It will position utility-scale solar very favorably for the future.”



In addition to utility-scale solar, Alberta also wants distributed rooftop PV, announcing a \$36-million rebate program in March.

“There’s a lot of buzz in Alberta around small-scale solar,” says Phillips. “This program will make solar power affordable for more Albertans, leading to new panels on 10,000 Alberta rooftops by 2020.”

In late 2016, Alberta amended its Micro-Generation Regulation, increasing the installation size limit to 5 MW, and allowing a system to serve an adjacent site. Details on the rebate will be announced in the spring, but at 75 cents per watt it is designed to cover up to 30 per cent of homeowners’ costs and 25 per cent for businesses and non-profit organizations. Furthermore, it is expected to create 900 jobs.

ONTARIO STILL THE PROVING GROUND

While western developments captured the industry’s attention, the Ontario market continued to evolve, and an increased demand for clean energy could come sooner than the government expects.

2016 applications to the Ontario FIT program for small renewable projects have a collective capacity of much more than double the 150 MW allocation; the smaller microFIT program has a 2017 allowance of 50 MW; and the government unexpectedly suspended its Large Renewable Procurement (LRP II), which specified 250 MW of new solar generation.

The suspension was a political decision justified by a planning report predicting the province might have adequate electricity supply for the next decade. Immediately following the suspension, the Ministry of Energy launched consultation

on a new Long Term Energy Plan (LTEP), to be published in spring 2017.

Bateman says nuclear refurbishment, potential delays and planned outages, plus cost uncertainty for nuclear and gas-fired generation, are important reasons to restore LRP II. And load growth related to electrification is why Ontario cannot slow its renewable energy procurements.

“The LTEP is the most important policy document relative to Ontario’s emission goals,” says Bateman. “If those two things don’t jive, the province is not going to hit its emission reduction targets. For that reason, more clean energy is needed.”

Ontario’s new GHG emission targets are 15 per cent below the baseline year of 1990 by 2020, 37 per cent by 2030, and 80 per cent by 2050. The province has already gone a long way to reduce emissions from its electricity system, retiring coal in 2014. But now, buildings using oil or natural gas for heating and cooling are responsible for almost a quarter of emissions, and a third come from carbon-fueled transportation.

The LTEP can provide important policy guidance to programs and regulation that will support the government’s goals. For example, the Ontario Ministry of Energy is making changes to the province’s net metering framework which could provide a mechanism for industry and customers to produce their own renewable electricity, reduce their energy costs, and contribute to decarbonizing the electricity system – which can then support decarbonizing other energy consuming parts of the economy. Net metering is thus an instrument which could play a role both in the electricity sector, but also within the government’s plan to reduce emissions.

Introducing the provincial reduction plan, Glen Murray, Minister of the Environment and Climate Change, declared Ontario “will lead North America in low-carbon and zero-emission transportation, and we will halt rising greenhouse gas pollution from buildings by retrofitting existing buildings and ensuring that future buildings have the lowest possible emissions.”

If this is so, Ontario, like Quebec and British Columbia, all now managing surplus and relatively clean electricity supplies, will be the proving ground for longer-term national GHG reductions described in the Framework. A joint 2016 policy recommendation on the federal approach to climate change from Canada’s solar and wind energy industries says numerous analyses demonstrate GHG reductions on that scale can only be achieved through an increased use of decarbonized electricity systems to replace fossil fuels across a wide variety of end uses, including transportation, buildings and industrial processes – thus, electrifying Ontario’s economy.

“Accordingly,” says the policy paper, “we believe a focus on zero carbon electricity production, increased electrification and fuel switching to renewable resources must be at the core of Canada’s climate change strategy.”

Bateman is hopeful the Ontario solar market will “maintain its scale,” while the rest of the country follows in its path. “We’re absolutely certain solar is going to be a mainstream and integral part of our electricity supply by 2030. That’s for sure.”

FEDERAL CLIMATE CHANGE ACTION SHOULD INCLUDE NEW TAX POLICY

CanSIA, CanWEA policy recommendations on the federal approach to climate change also strongly recommend the government consult with the renewable energy industry on new tax measures.

Tax policy is a key enabler for renewable energy projects globally. But Canada’s tax code currently offers a limited number of incentives to offset development expenses and capital costs for renewable energy projects, and they are weak in comparison to those historically received by other Canadian energy sectors and major trading partners, especially the United States.

The United States has recently extended their 30 per cent Investment Tax Credit (ITC) after being successfully implemented in 2005. Many attribute the success of the United States’ solar market to their renewable tax policies.

Canadian tax policies, say the recommendations, are designed to significantly limit the types of taxpayers who can benefit, and do not reflect the investor profile or asset owners of renewable energy projects, “which include individual households to small businesses to major corporations and everyone in between.”

The policy paper seeks industry consultation on the subject while recommending an ITC on capital costs for personal and corporate taxpayers who invest in renewable energy projects. It also suggests an ITC on development expenses.

CanSIA has identified the implementation of an ITC as a key priority, firmly believing that in order to reach Canada’s clean energy targets, Canada must encourage the deployment of renewable energy and that the best tool at the federal government’s disposal is enhanced tax treatment of renewable energy projects.

“The benefit of the ITC is it applies universally across the country,” says Bateman, “providing a base for every province and territory to build on. That’s one of the reasons it’s so successful in the United States. We’d like to see that success replicated in Canada.” ■

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Breaking Down the Cost of Electricity in Ontario

A report by Environmental Defence reveals that renewables are not to blame for Ontario's rising electricity prices

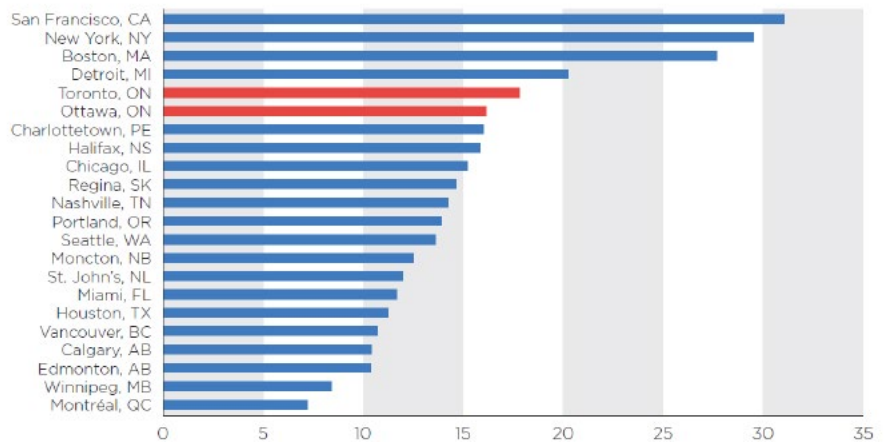
Renewable energy – wind, solar and bioenergy – has been handed a bad rap as of late, shouldering much of the blame for Ontario's rising electricity prices.

In an attempt to shed light on Ontario's electricity system and mend the misconception that solar and other renewables are driving up electricity costs, Environmental Defence commissioned Power Advisory LLC to study the different factors contributing to the cost of electricity in Ontario. The consulting firm's resulting analysis reveals that renewable energy only accounts for a small part of residential electricity bills, and that these prices – particularly solar – are expected to continue to fall while the price of nuclear power will rise.

"Electricity prices have become a major issue in Ontario; electricity is in the news on a daily basis and a fair number of commentators have suggested that renewable energy is the main driver of rising electricity prices," says Keith Brooks, Programs Director for Environmental Defence.

With prices for power increasing significantly over the last decade and renewables being the new addition to the mix, experts say solar and wind are the easy targets.

Comparison of Electricity Prices in Major North American Cities (cents per kWh)



Source: generated from Hydro Quebec: Comparison of Electricity Prices in Major North American Cities⁹

Figure 1

"I think it's partly because they're new, and partly because they're visible," Ben Weir, Director of Policy and Regulatory Affairs for the Canadian Solar Industries Association (CanSIA), explains. "People can see the wind turbines from the side of the road, and people can see solar panels showing up on people's homes, on top of businesses or in farmers' fields. Other

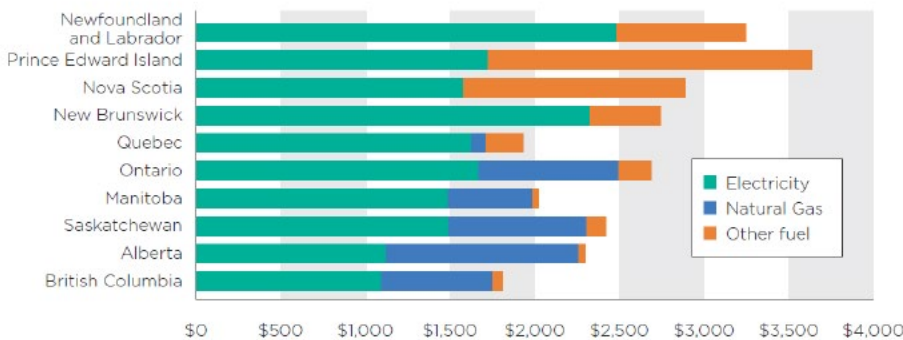
cost drivers, like a refurbished transformer station, a gas plant or a transmission line can be less in the public eye."

But despite the public's recent popular belief, Power Advisory's analysis proves otherwise. Non-hydro renewables account for approximately 12 per cent of the average residential electricity bill, with solar power responsible for only five per cent – approximately \$9 a month. The largest contributor to electricity bills is the delivery charge at 31 per cent, with nuclear power coming in second at 24 per cent (see figure 3).

"Renewable energy is a factor; it's just that it's a small factor," explains Brooks. "And the reason is that renewable energies are still a relatively small share of total electricity in Ontario and so they're also a small share of bills."

According to Travis Lusney, Director of Power Advisory, not only has Ontario invested in new generation types, such as natural gas, solar, wind, etc. over the last decade to prepare for the shutdown of coal-fired generation, but they've also financed improvements to current resources.

Annual Energy Costs by province (estimated 2016)



Source: Financial Accountability Office of Ontario and Hydro Quebec⁸

Figure 2

“In addition, large amounts of existing generation, transmission and distribution assets have reached the end of their useful life and must be replaced or upgraded to continue operating in a safe and reliable manner,” Lusney reveals. “While these investments were being made, Ontario experienced a significant decrease in electricity demand due to the financial crisis of 2008/2009. The decrease in electricity demand meant that the costs of investments being made across the electricity sector were being borne by less customers. The pie got bigger but now there were less slices to share the pain.”

The overstated costs of renewable energy have been compounded by a misunderstanding about the Global Adjustment charge – a separate fee on electricity bills that has drawn additional attention. While the firm’s findings point out that stories on this topic imply that the \$37 billion cost overrun can be attributed to renewables, the Global Adjustment includes costs for all forms of generation: solar, wind, hydro, nuclear, gas as well as conservation programs.

In spite of rising electricity prices, the average electricity bill in Ontario is on par with other Canadian provinces (see figure 2). The report reveals that while Ontario electricity rates are the highest in Canada, on average, Ontarians consume less electricity than residents in neighbouring jurisdictions, putting them behind the Maritimes, but ahead of the western provinces and Quebec for overall energy costs.

“Prices in Ontario are the highest of any other jurisdiction in Canada but they’re not the highest in North America,” adds Brooks.

Electricity prices in major North American cities, including San Francisco, New York, Boston and Detroit are all higher than Toronto and Ottawa (see figure 1). And still, the province is a leader in solar power with more installed solar generation than anywhere in North America, except for Arizona and California.

With investments in Ontario’s green energy, Environmental Defence’s report states that the successful coal phase-out and clean energy transition has saved Ontario \$4.4 billion per year. And the province is poised to continue to save with the price of renewables continuing to fall.

“The costs have come down precipitously for solar power, for wind power... and that’s because of advances in technology, and because of economies of scale,” describes Brooks. “We’re getting better at producing and installing these things and when there’s more volume, the costs come down.”

There are already cases in the world where solar power is the cheapest form of electricity. While Ontario may be years away from that milestone, the province’s efforts to support and sustain renewable energy makes Ontario future ready and will enable people to draw less and less from the grid.

“The investments Ontario has made have built a supply chain that will allow individuals and businesses to get to the point, in the not-too-distant future, where they’re going to be able to install projects to generate their own electricity for self-consumption, and be able to do so cost effectively,” Weir discloses.

To read Environmental Defence Canada’s full report on Ontario’s Electricity System, go to <http://environmentaldefence.ca/report/ontarios-electricity-system/>

Breakdown of Average Ontario Residential Electricity Bill in 2016

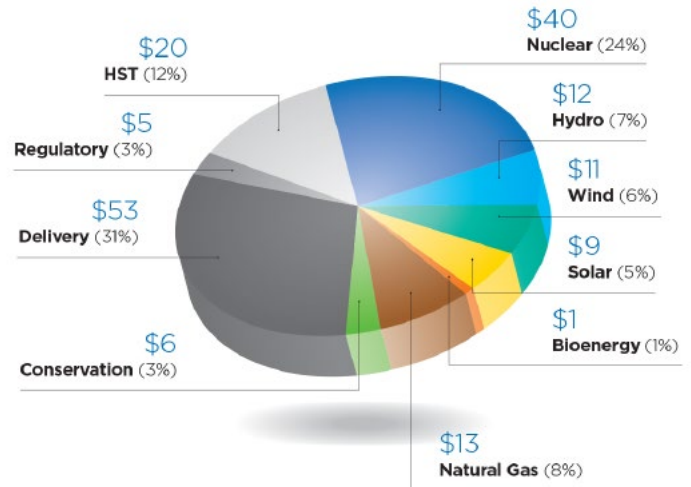


Figure 3

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The State of Community Solar in Three Key Canadian Markets

Community solar is a model of project development and ownership that is poised to experience significant growth in those markets that allow and encourage it. Looking south of the border to the United States, GTM Research predicts 2017 to see 410 MW of community solar developed. They also expect to see community solar representing a 500 MW annual market by 2019. Canada, on the other hand, has seen very little community solar development outside of Ontario – and Ontario’s version of community solar doesn’t line up neatly with ownership models that are experiencing growth in the U.S. Community solar, though, is a term that generally suffers from a lack of specificity and clarity. Therefore it is beneficial to pause for a brief explanation of what we actually mean by the term “community.”

Depending on the jurisdiction one is examining, the word community will be interpreted differently, at least when it comes to defining eligible entities. For example community solar could be defined as being restricted to only

co-operatives, hospitals, schools or a combination thereof. From a project structuring perspective, community solar programs or regulations could also dictate a certain type of ownership (ex. equity ownership of, or participation in, a project vs multi-party net metering). Canada is no different and provinces have either experimented with community models in the past, or, are currently going through the process of developing “made in (insert province)” approaches.

Across most types of community solar frameworks, though, there are a few key parameters which will take advantage of the positive attributes of this model, as well as a few that should be avoided. For the purposes of this article we won’t constrain ourselves to one definition of community solar over another. Instead, we will discuss the different models, how they are finding homes in different provincial jurisdictions, and what provincial policy





PROVINCES HAVE EITHER EXPERIMENTED WITH COMMUNITY MODELS IN THE PAST, OR, ARE CURRENTLY GOING THROUGH THE PROCESS OF DEVELOPING “MADE IN (INSERT PROVINCE)” APPROACHES.

makers and regulators could do differently to take advantage of this largely untapped resource.

Let's start with Alberta. For anyone with a finger even remotely on the pulse of the solar industry in Canada, you will know that Alberta has made large strides in recent years. Premier Notley's government set a target of achieving 30 per cent of electrical generation coming from renewable resources by 2030. In support of this target, several initiatives are underway including, the Alberta Infrastructure 135,000 MWh solar electricity procurement, the 5,000 MW Renewable Electricity Program (REP) and the Residential and Small Commercial Solar Program through the newly established Energy Efficiency Alberta (EEA).

Another area where there is significant interest and expectations in Alberta is community solar. The province's Municipal Solar Program and Indigenous Solar Programs have initiated some community solar projects in the province while a more fulsome policy and regulatory review is undertaken throughout 2017.

Saskatchewan is a slightly different story. Like Alberta, Premier Wall's government has made a strong push forward on greening their electricity supply, however, SaskPower (the crown corporation that manages the electrical grid) has actually carved out a portion of their activities to more directly take advantage of community solar. Along with a target to achieve 50 per cent of installed capacity from renewables, SaskPower, in conjunction with the First Nation's Power Authority (FNPA), has initiated two procurements to develop two 10 MW solar facilities (with another two 10 MW facilities to be developed later). In addition to these procurements, however, SaskPower will be procuring 20 MW of community solar projects. The exact form

that this community solar procurement will take has not yet been decided. SaskPower is, however, currently consulting with potential program participants to take in feedback on how the procurement could be structured. A program that adopts some of the parameters outlined below would allow SaskPower to see high levels of uptake and lower costs. More on those parameters later.

In Ontario, community solar has a longer pedigree under the Feed-in Tariff (FIT) Program. Since 2009, Ontario has provided price adders under the FIT Program to incent renewable energy projects that incorporated some form of community equity ownership. How the Independent Electricity System Operator (IESO) defined “community” has changed over time, however, the policy eventually settled on a community being a coop-

erative of local landowners from the same municipality as the project. This model worked reasonably well with 257 contracted community solar projects for 63.4 MW of capacity. Ontario, though, is transitioning out of the FIT Program and into a net metering based framework by the end of 2017. The final net metering framework is still under development but could be expanded to include what is termed Multi-Entity Virtual Net Metering (MEVNM) and Third Party Ownership (TPO). If enacted, these models could allow community solar along the same lines as has been pursued in the United States with multiple electricity customers subscribing to a project in order to receive credits against their bills based on the production of the system and their level of subscription.

So how should community solar frame-

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works be structured to best take advantage of their key attributes, namely size, lower cost, broad participation, and risk mitigation for owners?

First, community solar frameworks should allow for community net metering. Many mature markets are moving towards net metering as the basis for solar development and community net metering allows customers who may not otherwise be able to pursue solar (due to a lack of available capital or a site that is unsuitable for solar) to do so. Community net metering frameworks should also accommodate a reasonable distance allowance between generator and customer and provide settlement based on the rate class of the subscribed customer.

COMMUNITY NET METERING ALLOWS CUSTOMERS WHO MAY NOT OTHERWISE BE ABLE TO PURSUE SOLAR (DUE TO A LACK OF AVAILABLE CAPITAL OR A SITE THAT IS UNSUITABLE FOR SOLAR) TO DO SO.

Secondly, community solar frameworks should be as permissive as possible with regards to eligibility to own the project. Traditional community groups, like universities, hospitals and cooperatives should

absolutely be allowed to participate, but so should third party owners (i.e. solar development companies). These companies make projects available to larger amounts of electricity customers and allow customers to take advantage of the private sector’s development experience, access to capital, and higher tolerance for risk. This principle should hold true whether the model is PPA or net metering based.

Thirdly, community solar frameworks allow for projects of a reasonable size in order to encourage economies of scale and lower cost power production. Arbitrary size limitations of 1 MW, for example, constrain business models and miss project “sweet spots” that tend to sit between five – 10 MW and increased economies-of-scale as the upper limits of the distribution system are reached.

Alberta, Saskatchewan and Ontario are all searching for ways to encourage solar development at low cost and with broad public support. Community solar, properly structured, offers a way to accomplish both goals. ■

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Solar Growth Booms with Extension of the Investment Tax Credit

In late 2015, the U.S. solar industry won what might be the biggest victory in its history, a five-year extension of the solar federal investment tax credit (ITC), originally enacted in 2005.

Today, we are benefitting from thousands of new jobs, clean energy for millions of Americans and economic activity the likes of which could not have been imagined just a few short years ago. Last week, GTM Research and the Solar Energy Industries Association (SEIA) released the annual Solar Market Insight report showing new solar generating capacity nearly doubled since 2015. In fact, last year, solar provided more new power capacity to the U.S. than any other resource, surpassing natural gas.

Yes, the solar industry was on a growth path before the extension, but the extension was an immensely important win for the industry and the American consumer. Most importantly, the policy is working.

The measure, which would have expired last year, extends the 30 per cent tax credit for residential, commercial and utility-scale solar projects through the end of 2019, and then ramps down through 2021. It also allows those who commence construction on their project by the end of 2021 to claim the credit if it is online by the end of 2023. Commercial projects will continue to get a 10 per cent ITC thereafter.

Its passage did not come without major strategic planning by SEIA and the effort of thousands of stakeholders. Members of Congress on both sides of the aisle were persuaded by arguments that a thriving solar industry adds jobs and economic vitality in communities around the nation.

The ITC extension will lead to 100 gigawatts of solar electric generating capacity by 2021, enough to power more than 20 million U.S. homes and provide 4.4 per cent of America's electricity generation. It will also trigger more than \$100 billion in new, private-sector investment in the U.S. economy by 2020, much of which will come from small businesses, which make up 85 per cent of America's 9,000 solar companies. Prior to ITC passage, the industry employed about 200,000 Americans. The extension will spark another 200,000 new jobs in five years.

SEIA employed a five-part campaign to extend the ITC, which it has since duplicated in several states. The plan focused on advocacy, communications, research, grassroots activism and of course, political action. SEIA compelled its stakeholder network to send 35,000 emails to members of Congress, placed more than 100 op-eds in key states and districts, sponsored political fundraisers, galvanized coalitions and organized lobby days.

The driving message was jobs and economic growth. Many members of Congress didn't realize the extent of solar activity in their own districts or states. We conveyed the fact that solar is not a liberal environmental issue—not a partisan issue at all. Rather it is a technology that drives an economic winning hand, boosting jobs and economic growth across all 50 states regardless of political persuasion.

In 2012, California was the only state that had installed more than a gigawatt of solar capacity. Today, nine states have eclipsed the 1-gigawatt threshold, including Texas, Georgia, Utah, Arizona and North Carolina. These are traditionally Republican, fossil fuel-heavy states that have now embraced solar.

The lasting result of this historic win is that the solar industry gained a seat at the table with the rest of America's electricity producers. Our electric grid will look much different in the decades ahead than it does today, in no small part due to the investments driven by the ITC. Solar has become an energy mainstay, and the industry's companies have embraced the challenge. And on the carbon front, our solar industry is reducing carbon emissions by 52.3 million metric tons annually, the equivalent of taking 11 million vehicles off the road.

SEIA and its allies worked tirelessly to ensure the more than 9,000 U.S. solar companies had a strong federal policy mechanism to support the deployment of solar. Above all other policies, the extension of the solar investment tax credit provided businesses with the necessary certainty to drive smart growth and create good-paying jobs across the country. ■

Policy & Market Development Updates

A selection of recent solar advancements from across Canada

FEDERAL BUDGET 2017 EARMARKS \$3 BILLION FOR DECARBONIZED AND SMARTER ENERGY SYSTEMS

On March 22nd, the Federal Government of Prime Minister Trudeau released their second budget since taking office and their first since ratifying the Paris Agreement and since the election in the United States of President Trump. The Budget continues to place significant focus on the future importance of clean technology and allocate significant investment to climate action and clean growth but is presented through a lens of intense uncertainty around the future of trade, tax competitiveness and environmental regulation in North America. A Fall Economic Update will present an opportunity for course adjustments.

In addition to signaling that further details on the allocation of the \$2 billion Low Carbon Economy Fund announced

in Budget 2016 will be announced in the near future, the following is a list of specific allocations to programs that will support the transition to a cleaner, smarter and more distributed energy systems:

- \$100 million to support smart grid, storage and clean electricity technology demonstration projects.
- \$220 million to reduce reliance of remote communities on diesel fuel and support renewable power.
- \$182 million to retrofit existing buildings and build new net-zero energy consumption buildings across.
- \$200 million to support the deployment of near-commercial renewable energy technologies.

The ongoing review of federal tax expenditures to make the system less complex and more efficient and the uncertainty

from the United States are two key factors that forced this Budget to hold-back on any major tax policy reforms.

DISTRIBUTED SOLAR KICK-STARTED AS LONG-TERM ROLE UNDER REVIEW

Energy Efficiency Alberta will launch the \$36 million Residential and Small Commercial Solar Program in the summer that will provide incentives for the installation of small-scale solar electricity generation. This program is intended to give rise to 10,000 solar rooftops by 2021.

As this program creates near-term market activity, the Alberta Utilities Commission (AUC), the entity that regulates the province's electric utilities sector, have been directed by the Government of Alberta to conduct a formal study on how the electricity sector must evolve to adapt to cleaner and smarter forms of local electricity generation such as solar energy, energy storage and demand response.

SASKATCHEWAN DRIVES FORWARD WITH UTILITY SCALE SOLAR PROCUREMENT AND CONSULTATION ON DISTRIBUTED GENERATION

February was a big month for solar energy in the province of Saskatchewan. On February 15th the second stage of the competitive utility scale solar procurement was initiated with the release of the Request for Proposals (RFP) for a 10 MW facility. This RFP follows the successful conclusion of SaskPower's Request for Qualification (RFQ) which was utilized to establish a list of qualified participants. Only those 34 participants who received notice from SaskPower that they have met the requirements of the RFQ will be eligible to participate in the RFP. Proposals to the RFP are due in September 2017 and SaskPower expects to announce the successful proponent in December 2017.

SaskPower has also begun consultations on the community power and smaller scale solar fronts. Through their "Solar Conversations" SaskPower has been travelling around the province to select cities (Regina, Estevan, Swift Current and Saskatoon) in order to consult with interested parties on the principles for new solar programs and on the role SaskPower should play in order to best support solar in the province. SaskPower's initial foray into solar included plans for the development of 60 MW of capacity by 2021. 20 MW to be developed through competitive utility scale procurement, 20 MW to be developed through similar mechanisms in conjunction with the First Nations Power Authority (FNPA), and 20 MW is intended to be developed through an as of yet unknown mechanism that will have a focus on community power. The ongoing consultations with SaskPower will form the input into the mechanism/approach to develop these 20 MW of community power.

ONTARIO'S PHASE 1 NET METERING REGULATORY CHANGES ADOPTED AND CONSULTATION PROGRESSES ON THIRD PARTY OWNERSHIP AND VIRTUAL NET METERING

On February 10th the government of Ontario posted an updated net metering regulation (O.Reg. 541/05) which included the following revisions:

- Removing the 500 kW project capacity size limit.
- Enabling the use of energy storage in conjunction with renewable energy generation.

- Extending the credit rollover period from 11 months to 12 months.
- Allowing current net metered customers who have a net metering agreement to enter into a new agreement based on the new regulation.
- Maintaining credit settlement for exported generation calculated on the same basis that the customer is charged for electricity consumption. For the time being this continues to be tiered rates in Ontario, however, the potential to move to Time of Use (TOU) rates remains a possibility in the future.

These revisions (termed Phase 1 revisions) have an in force date of July 1, 2017. The Ministry of Energy is also continuing to consult with stakeholders on additional revisions to the net metering framework. These additional revisions (termed Phase 2 revisions) include Third Party Ownership (TPO) and virtual net metering. Consultation on the Phase 2 revisions will continue over Q1 and Q2 2017 through the Ministry's Net Metering/Self-Consumption Advisory Working Group, of which CanSIA is a member. As the FIT and

microFIT programs are phased out over the rest of 2017, making these additional changes to the net metering framework in Ontario to allow new business models will be critically important for the evolution of the distributed solar industry.

ONTARIO ESTABLISHES THE CLIMATE CHANGE SOLUTIONS DEPLOYMENT CORPORATION

On February 17th the Ontario Ministry of the Environment and Climate Change (MOECC) posted the final regulation to establish the Ontario Climate Change Solutions Deployment Corporation (OCCSDC). The OCCSDC, still known colloquially as the "green bank" will be the entity that will deliver a series of programs and incentives using proceeds from the Cap and Trade program in order to implement the goals of the government's Climate Change Action Plan (CCAP). These programs will include such focuses as fuel switching, energy storage and energy efficiency retrofits. The final regulation to establish the OCCSDC included an expansion of its mandate specifically to include stimulating activities such as "Using renewable energy for generating



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electricity, for heating or for cooling.” This change aligns well with recommendations made by CanSIA during the regulatory consultation process and provides an opportunity to develop programs that will support solar net metering and heating technologies.

This change is a welcome addition for the solar industry in Ontario which has been advocating for solar PV and solar heating programs to be included within the CCAP and the program suite to be delivered by the OCCSDC since early 2016. While the regulation creating the OCCSDC specifies an expanded mandate which now includes deploying technologies like solar PV and solar heating, this does not guarantee that a program will be created to fund these technologies. The OCCSDC now has to be staffed, have a board appointed, and develop programs for delivery to Ontarians. CanSIA is continuing to advocate for the creation of these programs based on the offset Greenhouse Gas (GHG) emissions, cost, and economic impacts of solar technologies.

ONTARIO ANNOUNCES FAIR HYDRO PLAN

The Fair Hydro Plan is being implemented to provide, in total, a 25% reduction on the average residential electricity customer's bill. These impacts, however, are largely focused on volumetric portions of the bill (commodity/electricity charge, HST, regulatory charge) and are thus going to impact the economics of solar net metering as this is the portion of the bill that can be reduced by a net metering system. The Fair Hydro Plan incorporates a number of measures including: refinancing the Global Adjustment (GA), expanding the Rural or Remote Electricity Rate Protection (RRRP), enhancing the Ontario Electricity Support Program (OESP), and creating a First Nations On-Reserve Delivery Credit and a new Affordability Fund. More information on the impact of the Fair Hydro Plan is available on CanSIA's website.



Certainly the GA refinancing plan will have the largest impact, however, the cumulative impact of all changes are additive and will add to the overall impact. The impacts will be especially pronounced for residential customers. The commercial/industrial sector will not be as heavily impacted due to the relatively low costs per unit of electricity that come from the GA for these customers relative to residential customers.

PRINCE EDWARD ISLAND'S 10 YEAR ENERGY STRATEGY CONSIDERS FUTURE ROLE OF SOLAR IN THE PROVINCE

Prince Edward Island's new energy strategy will create jobs, stimulate the economy, and put money into the pockets of Islanders. The 10-year plan aims to develop a stronger, more sustainable, and resilient province. It focuses on energy efficiency, conservation, and generating more renewable energy. Based on input gathered from Islanders and Island businesses during public and partner consultations, the strategy was developed by the Prince Edward Island Energy Corporation with support from the Atlantic Canada Opportunities Agency.

Solar is given significant consideration in the strategy.

NB POWER INVITES LOCAL ENTITIES TO PARTICIPATE IN 40 MW RENEWABLE ENERGY PROGRAM

Local entities (municipalities, co-operatives and not-for profit organizations) have been invited to submit proposals to NB Power under the Community Renewable Energy - Local Entities Opportunity, which is the second phase of the government's Locally-Owned Renewable Energy Small Scale (LORESS) Program. The program allows for the production of 40 megawatts of electricity from renewable resources like hydro, biomass, wind and solar energy. A maximum of 20 megawatts can be owned by one or more local entity, or 40 megawatts can be owned by two or more local entities if they are located on the same site.

NOVA SCOTIA'S NEW SOLAR COMMUNITY BUILDINGS PROGRAM EDGES CLOSER TO LAUNCH

Nova Scotia has hit its 2015 target to produce 25 per cent of electricity from renewable sources and is on track to meet or exceed 40 per cent in five years' time. Now, the province is in the final stages of planning to launch a new community solar program next year. The program will provide non-profit groups, municipalities and First Nations an opportunity to install arrays of solar panels on local buildings such as fire stations, town halls, churches, recreation centres, farmers' markets and arenas. The program will involve a competitive bidding process and long-term power purchase agreements for successful projects. The draft regulations were recently posted and CanSIA submitted a series of recommendations in response to ensure that the implementation of the program delivers the expected outcomes and maximizes the benefit of the program to Nova Scotia. ■

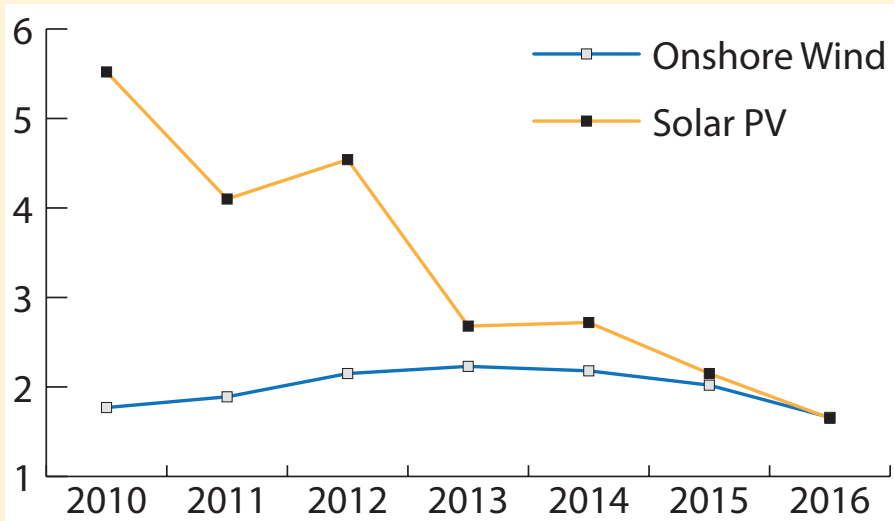
PRINCE EDWARD ISLAND'S NEW ENERGY STRATEGY WILL CREATE JOBS, STIMULATE THE ECONOMY, AND PUT MONEY INTO THE POCKETS OF ISLANDERS. THE 10-YEAR PLAN AIMS TO DEVELOP A STRONGER, MORE SUSTAINABLE, AND RESILIENT PROVINCE.

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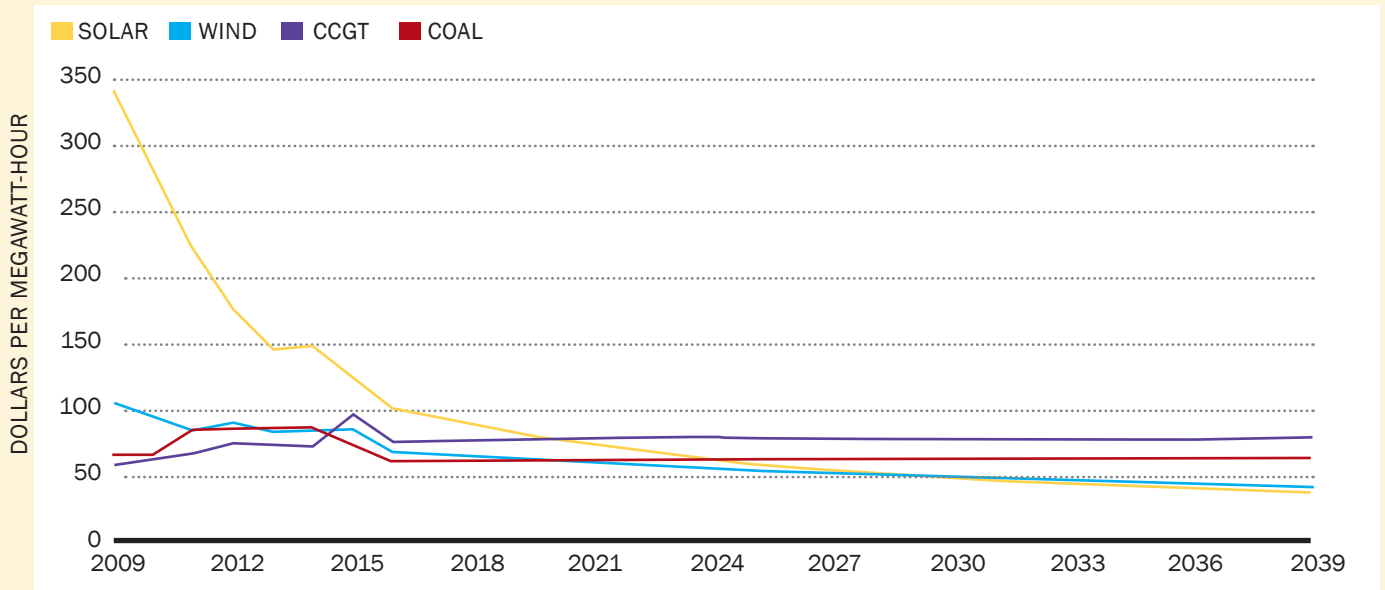
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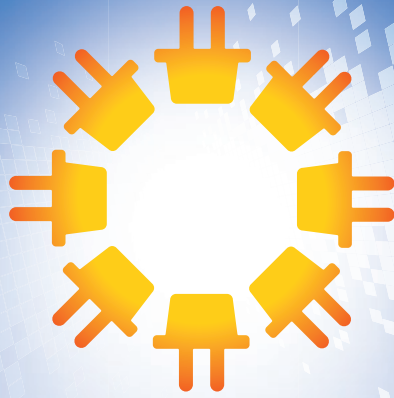
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