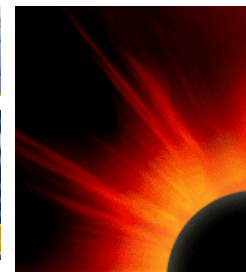


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Made in Ontario

November, 2009: A major manufacturing expansion is necessary to sustain Canada's most populated province as North America's fastest growing solar market



© Premier of Ontario

Green jobs or bust: Premier Dalton McGuinty (center) introduced generous feed-in tariffs on Oct. 1. But the Liberal Party's »domestic content« rules – designed to attract PV manufacturing – are too strict, complain some in the solar industry.

Ever since Sept. 24, the phones at Sentinel Power Systems »have gone insane,« says Adam Webb, president of the small Canadian supplier of photovoltaic systems and components based in southern Ontario.

That was the day Premier Dalton McGuinty, flanked by his energy and environment ministers at an event in Toronto, divulged the final details of the province's new feed-in tariff (FIT) program, which already has sparked »phenomenal« demand, according to Webb.

Launched on Oct. 1 as one of the core elements of the province's groundbreaking Green Energy Act, the

FIT program – administered by the Ontario Power Authority (OPA) – offers 20-year premium payments for PV power starting at 80.2¢ CAD (73.1¢ USD) per kWh for all systems 10 kW and under. Prices gradually decline to 44.3¢ CAD (40.4¢ USD) per kWh for PV output from large-scale ground-mounted power plants. For small-scale solar generators, the prices are nearly double the 42¢ CAD (39¢ USD) per kWh over 20 years previously offered by the OPA through its Renewable Energy Standard Offer Program (RESOP), which the FIT program now replaces. The prices for PV fed into the grid also compare favorably to payments for output from wind, biogas, landfill gas and small hydro generators – which range from 10.3¢ to 19.5¢ CAD (9.4¢ to 17.8¢ USD) per kWh.

While RESOP projects already look likely to make Ontario the No. 2 solar electric market in North America in 2009 based on installed generating capacity, the program has stimulated demand almost exclusively for large-scale power plants – and left the vast opportunity on residential and commercial rooftops virtually untouched. Of the 58 MW (DC) of RESOP-supported systems expected to be on-line by the end of this year, about 56 MW will come from three large solar farms scheduled for completion between October and December. In total, OPA executed 305 contracts through the RESOP program for PV systems with a cumulative generating capacity of 525.4 MW – the majority of which represents ground-mounted plants about 10 MW in size that developers may still complete in the next three years.

But Webb, who has survived on Ontario's fledging small-scale solar market for 15 years, believes boutique solar businesses

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focused on small- to mid-sized systems in Canada's second largest and most populated province are poised for a major breakthrough. »With the new feed-in tariffs, we are going to see the annual sales of local solar companies grow from the thousands into the tens of millions,« he says.

Green jobs strategy

But there is a catch. Premier McGuinty's Liberal Party government has stamped this particular feed-in tariff program with a distinctive »made in Ontario« logo that will require a major manufacturing investment in the province – easily in the billions of dollars – in order to create a sustainable, long-term solar market. As part of the government's goal to create 50,000 new green jobs in the next three years, the OPA established »domestic content« rules that immediately require all solar PV systems receiving renewable energy payments under the FIT program to meet certain qualifying percentages.

The made in Ontario mandate – which does not apply to existing RESOP contracts – demands that for the remainder of 2009 and 2010 at least 50 percent of all hardware and labor content originate in Ontario for PV systems greater than 10 kW. For projects 10 kW and under, the local content threshold starts at 40 percent. But beginning in 2011, the qualifying percentage of Ontario-sourced system content jumps to 60 percent for residential, commercial and large-scale solar systems. Although different combinations of sourcing balance of system parts and PV components can qualify a project for Ontario's renewable energy payments, the rules essentially require foreign manufacturers to locate at least some stage of mid- to upstream PV manufacturing in the province, or rely on local suppliers – of which there are very few.

That's fine with Webb, whose company is the exclusive supplier of modules made by SolGate Inc., which currently is the only solar panel maker in Ontario. With the domestic content requirement set at 40 percent for projects 10 kW and under through 2010, Webb estimates that foreign module producers can supply only these so-called »MicroFIT« projects. But for systems larger than 10 kW, which require 50 percent domestic content through 2010, SolGate's monocrystalline modules – with cells made in the Ukraine – are the only modules that can be deployed, claims Webb.

If true, given SolGate's current annual production capacity of only 3.5 MW, the market will continue to consist largely of multi-megawatt solar farms still in the pipeline under existing RESOP contracts – which remain valid for three years and are not bound by the local content rules. For now, Webb believes his company and SolGate will be the primary beneficiaries of the made-in-Ontario mandate. In the first five days after rules were announced, Webb fielded requests for 5 MW of SolGate modules – more than the company can supply in the next year at its current run rate. SolGate is considering adding a second and third shift soon, potentially tripling manufacturing capacity.

»The policy has certainly thrust us to the front of the line. It was quite unexpected,« says Webb, adding, »Are we happy? Of course we are. At the same time, I absolutely would like to have more of my solar industry colleagues involved. I honestly believe we are dealing with a billion dollar market. For us to do 5 MW is great for us. But there is a lot more business out there to be had, and will be had in time.«

Meeting the mandate

In fact, SolGate and Sentinel may not have a lock on Ontario's emerging rooftop market for long – or at all, if Ian MacLellan of Waterloo, Ontario-headquartered Arise Technologies Corp. has

anything to say about it. »As we take a look at Ontario's content rules, we feel confident we can meet them in the short term and the long term,« says MacLellan, the founder of Arise and head of the company's systems division, which has supplied about 100 small- to medium-scale PV systems under RESOP contracts. Arise is planning a major expansion under the new feed-in tariff program. »We have a good understanding of the Ontario market. It may take some time, but this is going to be an excellent opportunity.«

Currently, Arise manufactures multicrystalline cells at an 80 MW factory in eastern Germany. In September, the company for the first time made cells at the factory using polysilicon feedstock produced at its own pilot refinery in Ontario. However, MacLellan stopped short of saying that this is the company's strategy for meeting Ontario's domestic content requirement. »We are looking at a range of possibilities,« he says.

Just days after the content rules were released, Canadian Solar Inc. (CSI), an Ontario-incorporated company with PV cell and panel manufacturing in China, announced a partnership with Ontario-based inverter maker Satcon Technology Corp. to deliver commercial rooftop and large-scale ground-mounted systems in Ontario. The companies will deploy Satcon inverters made in the province at the company's 400 MW capacity manufacturing facility, rather than the inverters Satcon produces in China at a 200 MW capacity facility.

If all balance of system components – including inverter, racking, wiring and labor – are sourced in Ontario, that just reaches the minimum 50-percent qualifying percentage for systems over 10 kW. In 2011, when the percentage jumps to 60 percent, the companies will need a new strategy. Potentially, this could mean that Canadian Solar will use PV cells made from upgraded metallurgical silicon manufactured by Ontario-based supplier Timminco Ltd., which is one of Canadian Solar's silicon providers – albeit currently in very small quantities. Using the cells would put the Canadian Solar/Satcon system at 61 percent domestic content.

Rumors are also swirling about the province that Korean electronics giant Samsung is considering launching its renewable energy business in Ontario in the form of a multi-billion manufacturing plant for wind turbines and solar panels, as was revealed in an article in the Toronto Star newspaper on Sept. 26. Ontario Minister of Energy and Infrastructure George Smitherman subsequently confirmed that the government of Ontario is in fact in negotiations with Samsung C and T Corp. regarding such an investment, while regretting that the talks »prematurely entered the public domain.«

Japan's Sanyo Electric Co. is also considering a PV manufacturing investment in the province, KC Chang, the sales and marketing director at Woodbridge, Ontario-based Sanyo Canada Inc., told PHOTON International. »We do have plans in mind and are looking at different avenues.«

Bar set too high?

While international companies are assessing Ontario as a place to invest, many market participants fear the government has jeopardized the program's success by setting the bar too high at the start. »The level of domestic content required caught everyone off-guard,« says Chang. »It will be a difficult task to set something up in only one year before 60-percent Ontario content takes effect. We were hoping for a slower ramp,« he says, noting that the domestic content rules are much lower for other renewables. Wind projects, for example, require only 25 percent Ontario-sourced content in two years.

Sanyo's view is a very widespread among foreign market

participants. »We think the OPA and the Ministry of Energy and Infrastructure may have missed the mark on striking the right balance between encouraging local manufacturing without impacting the development of solar projects,« agrees Jason Gray, who heads Ontario-based SunEdison Canada. The company is the subsidiary of SunEdison LLC, the US-headquartered solar power plant developer that supplied and constructed Canada's first solar farm – the 9.1 MW (DC) First Light Solar Park in southern Ontario.

»When you get into these projects, every penny counts. Some of these projects will be more expensive, or may not go forward,« says Gray. »We certainly understand the intent of provincial content, but starting at a lower percentage would have been better.«

The government has shown a willingness to discuss limited changes to the program during the two-month launch phase through the end of November, according to Elizabeth McDonald, executive director of the Canadian Solar Industries Association (CanSIA). This has some PV players optimistic the McGuinty government will loosen what they see as an overly protectionist policy. But the industry group – whose membership skyrocketed over the summer – itself is conflicted on this point, McDonald admits. »We have members on both sides of this issue. Overall everyone realizes that the province needs to see some local manufacturing benefits from this program. The question is simply whether this happens too quickly,« she says.

CanSIA is also concerned that government restrictions on developing solar plants on agricultural land »will take income away from Ontario farmers.« According to McDonald, the FIT program's rules limit development on so-called Class 1, 2 and 3 lands to »only 500 MW.« However, since this was unknown until late September, says McDonald, developers and farmers were already working on plans for 2,000 MW these lands. »This is a really positive rooftop program. However, there is pent up demand for ground-mounted systems on farms« that will be difficult to meet given the restrictions, she adds.

Nevertheless, despite the made in Ontario mandate and land limitations, McDonald describes the new feed-in tariff program – and Ontario's Green Energy Act as a whole – as a major turning point for solar and other renewables in Canada. »To a large extent, the world has assumed Canada is greener than it really is,« says McDonald. »But all of a sudden, everything has come together in this incredible program – a commitment to move away from coal, embracing renewable energy, creating green jobs and investing in new transmission.« In addition launching the feed-in tariff program, Minister of Energy and Infrastructure George Smitherman on Sept. 21 announced that the province would make the necessary long-term investment to access currently stranded renewable resources, committing \$2.3 billion for 20 separate transmission and distribution projects in the next three years.

Success of the generation and wires initiatives will determine whether Ontario can phase out coal-based electricity completely by 2014, in accordance with provincial policy. Currently coal makes up 18.9 percent – or 6.4 GW – of Ontario's total installed electric generating capacity of 34 GW, according to the Ontario Independent Electricity System Operator. Conservation and renewable energy are expected to fill the gap, and renewable energy developers think that's feasible. A survey conducted by OPA earlier this year of 150 renewable energy developers identified 15.1 GW of »near-term« projects being considered in the province, including 13.4 GW of wind and 1.2 GW of solar PV, not including RESOP contracts. CanSIA estimated that PV alone could make up 10 percent of Ontario's electric supply by 2025 – or approximately 16 GW. But achieving a renewables revolution in Ontario, especially for solar, may require loosening the farmland and domestic content rules, says McDonald.

»Most progressive policy in North America«

Interestingly, while Ontario's Green Energy Act goes to great lengths to emphasize domestic green jobs, its feed-in tariff model of guaranteed interconnection, differentiated premium pricing and fixed contract terms is overtly international – based largely on Germany's successful Renewable Energy Law (EEG), the policy that transformed the country into a world leader in renewable energy development and manufacturing.

One of the most influential players who helped to establish the policy in the province is American wind energy expert Paul Gipe, a tireless advocate of renewable energy feed-in tariffs who over the past year split his time between Ontario and his home in California. The day the program was announced, Gipe received the Canadian Wind Energy Association's Individual Leadership Award. An award from CanSIA may also be warranted. As an adviser to the Toronto-based Ontario Sustainable Energy Association, Gipe is largely responsible for making the case that PV generators require the higher rates now offered in order to ensure a broad range of investors – not just large corporations but also farmers, homeowners, communities and small businesses – a reasonable financial return.

»This is the most progressive renewable energy policy in North America in three decades, since the 1978 National Energy Act,« Gipe told PHOTON International. That law eventually led to standard offer contracts in California in the early 1980s, which resulted in about 1,200 MW of wind by the late 1980s, 354 MW of solar thermal power plants by the early 1990s and several hundred megawatts of geothermal power. These contracts, which still account for the majority of renewable power generated in California, were an early version of today's European – and now Canadian – feed-in tariffs.

»Ontario's Green Energy Act is on the scale of the German EEG, and we want to see EEG kinds of results,« says Gipe. »We want to see the rapid growth of solar, wind, biomass and hydro, and all the environmental and job benefits that go along with it. This is the window of opportunity for North America to prove its mettle. It's put up or shut up time.«

Garrett Hering

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