Expect Delays

Reviewing Ontario's "Buy Local" Renewable Energy Program

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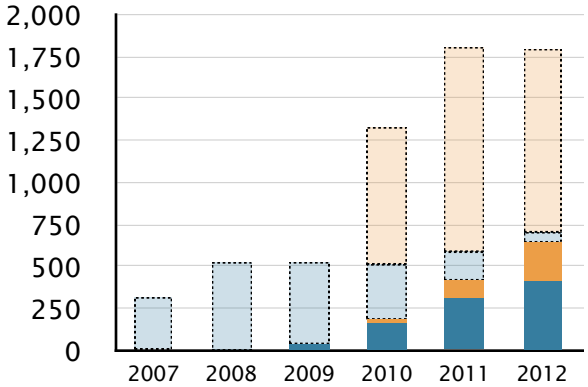
ILSR INSTITUTE FOR Local Self-Reliance

Executive Summary

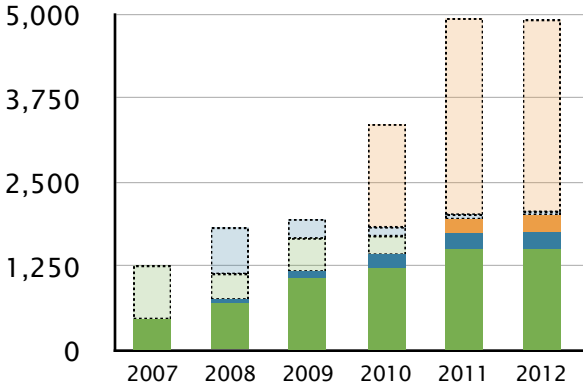
Launched in 2009, Ontario's "buy local" Feed-In Tariff (FIT) program promised to deliver hundreds of megawatts of new renewable energy and create 50,000 new jobs by the end of 2012. The program has had some notable achievements, and the province has worked hard to remedy some of the remaining roadblocks to success.

The bottom line is that the FIT program and its predecessors (despite facing significant threats) have jumpstarted renewable energy development in Ontario: the province would rank #4 and #11 for solar and wind deployment, respectively, if it were a U.S. state. It has created 31,000 jobs. It has also enabled widespread participation in renewable energy generation: 1 in 7 Ontario farmers is participating, earning a return on their investment. Finally, it has enabled the province to shut down all of its coal-fired power plants by the end of 2014.

Ontario Power Authority Solar Power in Commercial Operation (Megawatts)



Ontario Power Authority Wind Power in Commercial Operation (Megawatts)



Prior
FIT
RESOP (in development)
RESOP
Prior (in development)
FIT (in development)

Huge Interest

The biggest challenge for the FIT program is the overwhelming demand. Already, signed contracts for nearly 5,000 megawatts of new renewable energy capacity will allow the province to meet most of its 2030 renewable energy target, 12 years early. Actual deployment has kept pace with many U.S. states, but poor preparation has meant that less than 10% of energy under contract (thus far) is actually producing electricity.

Success with Small

The MicroFIT program (mostly 10 kilowatt and smaller solar) has been a huge success. More than half of the 230 megawatts of solar added to the grid under the FIT program has been from the MicroFIT program, serving almost 15,000 individuals and small businesses.

Unexpected Challenges

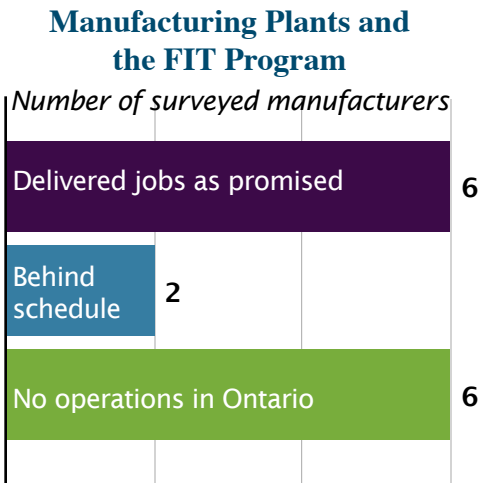
The Ontario Power Authority has faced several additional challenges that may explain its difficulty in keeping up with demand:

- The world economy collapsed in late 2008, with a slow recovery.
- The ruling Liberal Party nearly lost its majority in the fall of 2011, jeopardizing support for the FIT program.
- The largest provincial utility, Hydro One, limited renewable energy to no more than 7% of peak demand on its distribution feeders and missed deadlines for interconnection, slowing energy deployment.
- In May 2013, Canada lost an appeal to a World Trade Organization suit challenging the program's buy local provisions from Japan, the European Union, and the United States.

A Mixed Review on Jobs

The Energy Ministry says that 31,000 direct and indirect jobs have been created thus far by the Green Energy Act, far more than would be expected with less than 10 percent of the renewable energy deployed and despite the world economic slowdown.

Manufacturing has come to the province to serve the "buy local" provision. About half of surveyed manufacturers intending to locate in Ontario have established a presence locally.



Doubling Down on Local

Ontario energy officials haven't abandoned the buy local policy, but rather have reinforced it with new program rules that prioritize local ownership of FIT projects. The success of the MicroFIT program and community-based projects led to a points scoring system for new FIT projects that rewards greater local support and local ownership. A quarter of the program capacity opened in early 2013 was set aside for locally owned projects. The new rules will hopefully lead to more smaller-scale projects with support from the local community.

Conclusion: Improvements Needed

While renewable energy development has been a modest success and job creation more so, the FIT program needs to improve. The Ontario Power Authority needs to streamline the development process for projects with existing contracts and push utilities to use evidence-based procedures for determining grid capacity. It should consider whether utility-scale, multi-megawatt projects make sense, given the difficulty in getting such projects to market. It should consider requiring local ownership for the remaining program capacity, knowing that it will minimize public opposition and maximize the economic returns. With these changes, the FIT program may still live up to much of its early promise.

Acknowledgments

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Introduction

In late 2009, Ontario launched North America's most ambitious renewable energy policy, a Feed-In Tariff program (FIT). Unlike many other renewable energy programs, Ontario also made explicit the expectation of local jobs and economic development. At the outset, at least 25% of the value of a wind power project and 40% of a solar power project in the program had to be generated within the province, and the percentages have risen to 50% and 60%, respectively.

The program hasn't achieved its full promise, but it provides valuable lessons in handling adversity and maximizing the economic returns of renewable energy.

The basic premise of a feed-in tariff program like Ontario's (sometimes called a CLEAN Contract in the United States) is that renewable energy producers are guaranteed a grid connection, a long-term contract, and a price sufficient to make a modest return on investment. In addition to this democratization of renewable energy development, Ontario's local value law also guarantees ratepayers an economic return on their renewable energy investment.

In early 2011, ILSR released a report exploring the potential economic benefits of Ontario's nascent program. At the time, estimates suggested the addition of 50,000 new jobs and 5,000 megawatts (MW) of new clean energy for the province.

The program has fallen short of expectations. Only 10% of contracts signed since its launch in late 2009 have resulted in projects producing electricity. Seen another way, however, some might describe this as a problem they would like to have. The province has nearly enough renewable energy under contract to meet its 2030 goal of 10.7 gigawatts of new capacity, twelve years early.

Whether a bother or a boon, it's clear that provincial authorities and utilities were not prepared to bring that capacity online.

The FIT program has also weathered unexpected threats. The global economic collapse in 2008 hurt many renewable energy companies. The ruling Liberal Party nearly lost the 2011 provincial election to the opposition party, which opposed the feed-in tariff. A narrow victory for the Liberals preserved the policy, but resulted in a long program review that halted new development. Additionally, a promised complaint to the World Trade Organization (WTO) materialized, brought by Japan, the European Union, and the United States. In May 2013, Canada lost its appeal to the ruling that the feed-in tariff program's domestic content requirements were discriminatory.

The poor preparation and unfortunate circumstances means Ontario residents will pay more for their renewable energy, since the cost of wind and solar has fallen significantly since the contracts were inked several years ago. Prospective producers with shovel ready projects wait for grid connections and will get paid last year's prices when they finally come online in the next year or two.

Despite the challenges, the energy ministry estimates that the Green Energy Act (which includes the FIT program) has already generated 31,000 jobs.[1] A remarkable 1 out of 7 farmers in the province is generating energy via the feed-in tariff or microFIT program.[2]

It may not have been the red carpet rollout hoped for when the Green Energy Act passed in 2009, but the FIT program may yet overcome its biggest roadblocks.

Ontario's Renewable Energy History

From the time of electrification until the late 1990s, electricity was a monopoly of the Hydro-Electric Power Commission of Ontario, reflecting a major reliance on hydroelectric power. The monopoly was renamed Ontario Hydro and recognized as a crown corporation in 1974, a situation that would last for nearly 25 years.[3]

A 1998 law changed the electricity system dramatically, and in 1999, the government-owned Ontario Hydro was broken up into five separate entities in anticipation of market deregulation (to separately administer the power plants, grid infrastructure, balance supply and demand, handle code compliance, and manage the system's finances).

Unfortunately, deregulation went poorly for the province. The original deal saddled the government with $20 billion in stranded debt, ratepayers were hit with enormous rate increases (30% or more) and insufficient investment in infrastructure left the province with a drop in electricity supply as demand was increasing.

In 2003, a newly elected Liberal Party provincial government took steps to remedy the situation, reintroducing price regulation and investing $17 billion to increase capacity and upgrade infrastructure. It also established the Ontario Power Authority (OPA) to implement province-wide conservation, long-term planning (including a commitment to close all coal-fired power plants), and to administer contracts with independent energy generators.

The new structure of the utility system has six major players:

NO COAL

In 2003, provincial officials committed to closing all of Ontario's coal-fired power plants, which provided 25% of the province's electricity.

That project is nearly complete, with the last coal power plant scheduled to go offline in 2014.

- Hydro One - which owns and operates nearly all transmission power lines and most rural distribution power lines.
- Toronto Hydro - the municipal utility serving greater Toronto and providing 18% of the provincial electric load.
- Ontario Power Generation - which owns and operates power plants accounting for about 60% of provincial electricity generation.
- Ontario Power Authority (OPA) - which contracts with independent power producers for the remaining 40% of electricity generation.
- Ontario Energy Board - the long-time regulator of the electricity and gas utilities, similar to a state public utility commission in the U.S.
- A dozen electricity retailers selling to residential and small business customers.

By the end of 2004, the province had a re-regulated electricity system, a baseload fleet of nuclear, coal, and hydro power, and a new power authority charged with developing new electricity resources including renewables, largely to replace its coal power plants.

In the next two years, the OPA contracted for approximately 1,500 megawatts (MW) of wind power (as well as 6,000 MW of gas and 3,000 MW from refurbished nuclear reactors), the first step toward a cleaner

energy system. About half of the 1,500 MW of large wind power contracted by the OPA were in operation by early 2009.

Renewable Energy Standard Offer Program

In November 2006, the Ontario Power Authority launched a new renewable energy program to develop distributed (10 MW and smaller) renewable energy projects by using a standardized, fixed price, long-term (typically 20-year) contract. The contract price was 11¢ (Canadian) for wind, hydro and biomass, and 42¢ per kilowatt-hour (kWh) for solar projects. The new initiative was called the Renewable Energy Standard Offer Program (RESOP).

RESOP succeeded in attracting new renewable energy, contracting for nearly 1,400 MW of wind (56%), solar (34%), bioenergy, and hydro power projects.

However, execution was more problematic. Projects had to apply to multiple levels of government to get a contract and grid connection. Certain areas of the grid were off limits to development and the connection queue was long with uncertain timetables for grid upgrades. Many solar projects remained undeveloped as their owners speculated that prices would fall while they squatted on their fixed-price contract that gave them 3 years to reach commercial operation.

After 18 months, only 34 MW out of 1,400 MW had reached commercial operation. By early 2009 (two and a half years into the program), there were still only 107 MW producing electricity (mostly wind), although nearly 1,000 MW were expected on the grid by the end of the year (a target the program has never achieved, in part as developers switched to the FIT program).[4]

SOLAR MEGAWATTS

When compared to international and U.S. renewable energy programs, Ontario's solar numbers are artificially low because the province reports its installed renewable energy capacity in alternating current (AC), the same form the electricity is delivered (in kilowatt-hours).

In most other jurisdictions, installed capacity is reported in direct current (DC), but that power must be converted (at a 20-25% loss) to AC before it is used by electricity customers.

The OPA attempted improvements to the program. Revised program rules released in May 2008 tried to reduce the ability of a single party to reserve too much of the queue and to push projects toward operation faster. The new rues included:[5]

- A 10 MW generator limit per transformer
- 50 MW in development at a time per generator
- Progress milestones for new contracts
- Better coordination regarding available system capacity

By now, six years after the launch of RESOP, the program is mostly complete. It has deployed 736 MW of new renewable energy, primarily solar and wind power, with about 120 MW of projects left in the development queue.

At the time, the challenges with RESOP and its revised rules were the context for the next era of renewable energy in Ontario.

The FIT Program

In early 2009, advocates of expanding and improving RESOP won passage of the Green Energy Act, which established the Feed-In Tariff program. The program replaced RESOP, providing contracts for large and small projects, increasing contract prices for wind, biogas and solar power, and setting different prices based on project size (see Appendix for comparison of RESOP and FIT contract prices). It included provisions intended to simplify connection of small (< 500 kW) projects to the grid. It also introduced the local content requirements, the hallmark of Ontario's program.

When the program officially launched in late 2009, it quickly attracted thousands of applicants. Within a year, the program was effectively closed, with contracts executed for 2,600 MW of projects out of over 16,000 MW in applications.

Despite (or because of) the surge of interest, the FIT did not immediately improve on RESOP's failings.

By the two year mark, the FIT Program had resulted in the installation of just 193 MW of solar (75% from the MicroFIT program for <10 kW systems) and 215 MW of wind power, out of nearly 5,000 MW in contracts.[6]

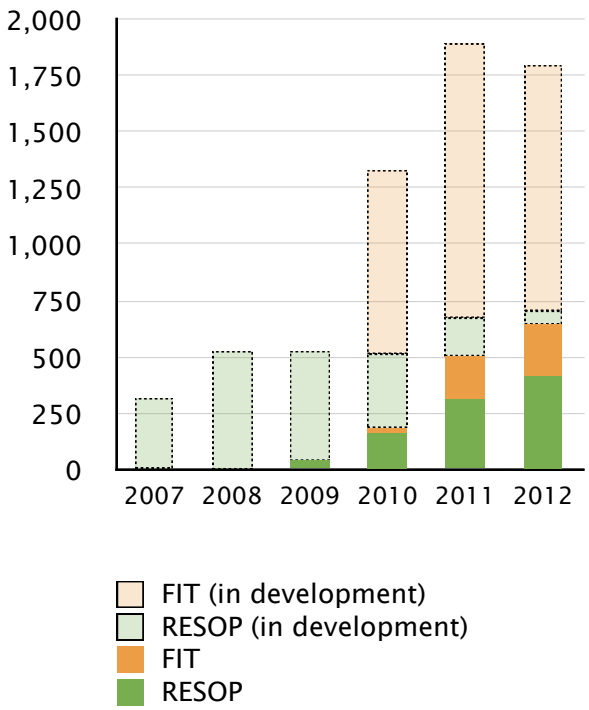
Problems included bureaucratic delays in processing applications, from environmental review to screening for grid connection and necessary grid upgrades. The transmission system was already constrained from early wind contracts and RESOP, leaving many new wind projects languishing in hopes of near-term grid upgrades. And distribution utilities, largely Hydro One in rural areas, set very low limits on capacity for small-scale generation feeding onto their low-voltage power lines.

In late 2010, the OPA lowered the contract price for ground-mounted solar in the MicroFIT program (< 10 kW) from 80.2¢ to 64.2¢ to reflect the relatively better economics compared to rooftop systems.

In February 2011, the Ontario Power Authority (OPA) had to offer a 1-year extension for developers because of bureaucratic delays.[7]

The following charts show the progress of developing wind and solar under the standard offer programs.[8]

Ontario Power Authority Solar Power in Commercial Operation (Megawatts)

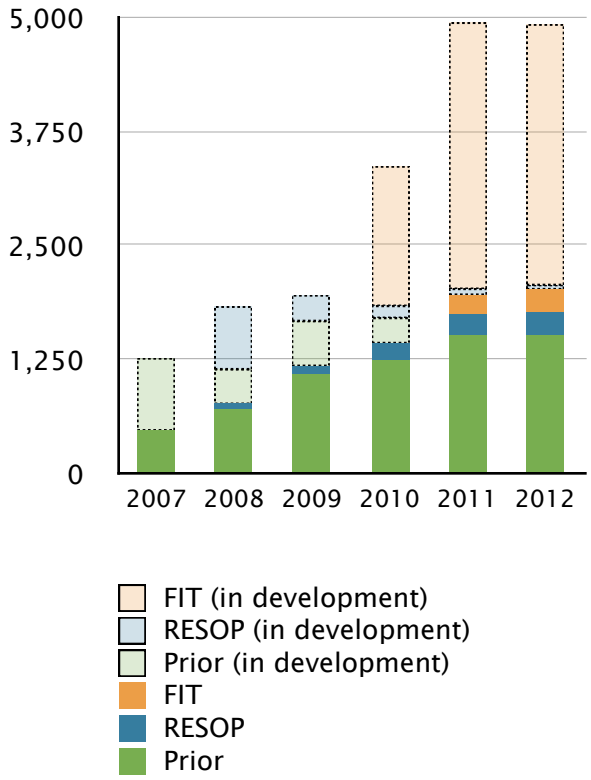


While the rollout of solar has lagged signed contracts, Ontario's installed capacity has risen rapidly enough to rank it 4th in North America (behind California, Arizona, and New Jersey).[9]

Wind power development largely precedes FIT and RESOP. By the end of 2011, only a

quarter of the approximately 2,000 MW in commercial operation was contracted under the two programs.[10] Due to transmission constraints, almost no new wind power has been brought online since 2011. However, the operating capacity would still rank Ontario 11th among U.S. states for installed wind power and the pace of development is comparable to (if not slightly faster than) the leading wind power states in the U.S.

Ontario Power Authority Wind Power in Commercial Operation (Megawatts)



A Lengthy Program Review

By October 2011, the FIT Program had approximately 92 MW of new wind and solar deployed out of 4,750 MW under contract. Over $10 billion in private investment had been leveraged, but largely for projects in the development pipeline.[11]

At this time the Power Authority began the first planned review of the program. During the review, which took nearly six months, the FIT program was suspended with no new applications accepted.

The revised rules (dubbed FIT 2.0) were released in March 2012. They included:[12]

- Reducing solar PV contract prices by 10-30% and wind prices by 15% (see Appendix).
- A points system encouraging more local ownership.
- Streamlining the regulatory approval process.
- Shortening the timeframe for solar projects to reach commercial operation from 3 years to 18 months.
- Improving siting rules to address concerns with wind and ground mounted solar.
- Improving the process for grid interconnection, increasing information about grid capacity and rewarding contracts only to projects in areas with minimal upgrade requirements.
- Shifting to annual program review, rather than biannual.
- Reviewing the provincial renewable energy target of 10.7 GW (largely met with energy projects under contract) to consider an increase.

Still Waiting

However, the release of the new rules did not mean the restart of the FIT Program, presumably because OPA was trying to handle the backlog of projects. Four months after the review report was released, a ministerial directive to the Ontario Power Authority instructed them to reopen the program as soon as possible.[13]

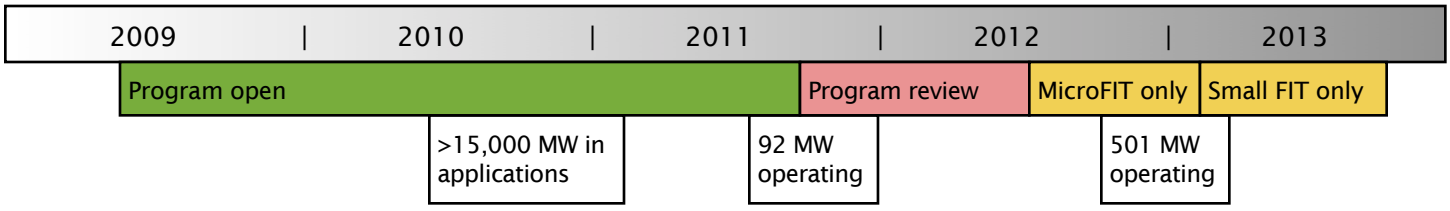
The MicroFIT (for projects <10 kW) opened shortly thereafter, in July 2012, with a capacity limit of 50 MW. The OPA has processed applications consistently, with about 7 MW of capacity still available by April 2013.[14]

The FIT Program did not reopen until January 2013, and then only for projects sized 10 kW to 500 kW. FIT 2.0 limited these projects to a cumulative new capacity of 200 MW, with 25 MW set aside for community based projects and an additional 25 MW set aside for aboriginal-owned projects.[15] The new round was open to new projects or those that had been stranded by FIT 1.0. Within weeks, there were many times more applications than capacity.[16]

The program pause hasn't made a significant dent in the backlog of projects. In the 18 months since the program closed for review, the capacity in commercial operation rose from 92 MW to just 501 MW. The lone bright spot is the MicroFIT program (largely smaller solar projects), which has 130 MW of solar in operation (more than half of all the solar in the FIT program) out of 430 MW under contract, with steady progress on new connections.

Larger projects (500 kW and up) still await word on FIT 2.0, and how much capacity the OPA has left under the province's 2018 goal of 10.7 GW of renewable energy (since 2003). It's unclear how much – if any – new contracts the OPA would sign without a revised provincial goal.

Ontario FIT Timeline



Doubling Down on Local

Despite the growing pains of the program, the FIT 2.0 rules suggested that the province had not backed down from its commitment to keeping the program's energy dollars local.

A new priority points system for new contracts, shown below, is in addition to the local content requirements. The most priority points are awarded to projects that have a minimum of 15% cooperative ownership, with a minimum number of members who are property owners within the municipality of the project. Projects with aboriginal participation and participation by or location at public institutions also receive priority points.

Local support, as expressed by a municipal council or First Nations band council, also results in a high level of priority.

The commitment to local ownership is further demonstrated in the January 2013 re-launch of the FIT program for mid-sized solar projects (10 to 500 kW). A quarter of program capacity (50 of 200 MW) was expressly reserved for community and aboriginal-owned installations, in addition the priority points used to evaluate the remaining projects.

The revised rules reflect an interest in supporting locally owned solar like the projects done by AGRIS Solar Co-operative Ltd. It is Ontario's largest farmer-owned solar co-op with over 1,000 farmers and rural property owners investing $20 million to finance well over 100 solar projects.[17]

In other words, FIT 1.0 focused on rules to ensure significant investment in manufacturing the materials of renewable energy projects locally. FIT 2.0 is all about local ownership.

FIT Program – Priority Points System

PROJECT TYPE		PRIORITY POINTS
Community Participation Project	A co-op having a minimum 15% direct economic interest in the project, and • Small FIT: minimum 35 members of the co-op are property owners in the host municipality (upper tier) • Large FIT: minimum 50 members of the co-op are property owners in the host municipality (upper tier)	3
Aboriginal Participation Project	First Nations, Métis Nation of Ontario or other approved Aboriginal community having a minimum 15% economic interest in the project	3
Education or Health Participation Project	Publicly funded schools, public colleges, public universities, hospitals and publicly owned long-term care homes having a minimum 15% economic interest in the project	2
NON-PROJECT TYPE		**PRIORITY POINTS**
Municipal Council Support Resolution	Resolution from council or other governing body of each local municipality (lower tier) in which the project is located, demonstrating support for the project	2
Aboriginal Support Resolution	Resolution from a First Nation band council, or Métis community demonstrating support for the project – the project must be a Small FIT project located on First Nation or Métis Lands	2
Project Readiness	• Projects on Aboriginal land, federal Crown land or private land: title to the site or a legally enforceable lease or option to lease for the site • Rooftop solar PV: ownership of the host building/site, or legally enforceable lease or option to lease for the host building/site	1
Pre-Existing Application	• Time stamp is on or prior to July 4, 2011	1
	• Time stamp is on or after July 5, 2011	0.5
Education or Health Host	Publicly funded schools, public colleges, public universities, hospitals and publicly owned long-term care homes who host a project	2
System Benefit	Water and bioenergy projects	1

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ONTARIO POWER AUTHORITY

Limitations

As mentioned previously, the rollout of the FIT program hasn't been as smooth as anyone desired. Tyler Hamilton of the Toronto Star captured the problems in a succinct statement in October 2012:

> *"Large developers crowded out small, community-based projects. Transmission and distribution infrastructure couldn't keep up. Hydro One dragged its feet. Communities were marginalized. Pockets of anti-wind activists made a lot of noise. The government started second-guessing. Politicians who once championed the program got weaker in the knees."*[18]

A major problem for the FIT program has been the unexpected delay from the biggest distribution utility – Hydro One – in connecting contracted FIT projects. When the FIT program launched, the Ontario Power Authority issued conditional approval for projects before they had grid connection offers from their utility (the rules were revised in December 2010, but not until many projects were stranded).[19] Hydro One, which serves 60% of the province's electricity customers, was unprepared.

Over 70% of proposed solar projects have been in their territory (when they expected most small-scale solar would be on urban rooftops).[20] This is in part because the first edition contracts paid the same price for rooftop and ground mounted solar, despite ground mounted solar costing significantly less. The company reacted by limiting distributed generation to 7% of peak capacity on its low-voltage power lines, less than half the comparable limit in most U.S. states, and a fraction of what leading U.S. utilities allow.[21] While ostensibly for grid safety, the limit is much lower than most other North American utilities have set, as shown in the adjacent graphic.

By mid-2011, Hydro One had not met mandatory deadlines for assessing renewable energy projects for grid connection and was given a six-month exemption from connection deadlines by the Ontario Energy Board.[22][23]

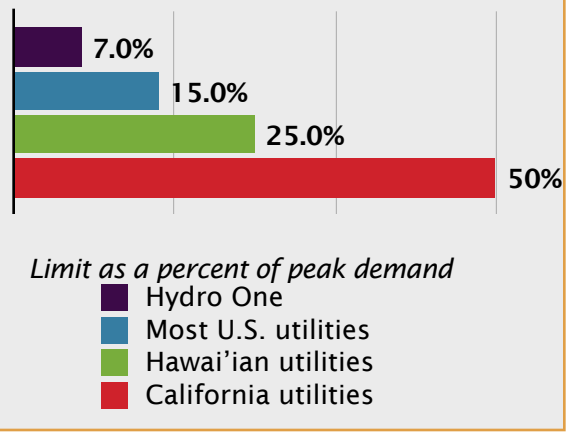
> *"If I had thought that the utilities would simply not obey the rules and the government would do nothing about it, I would have never started here," said Michael Carten, chief executive of Calgary-based Sustainable Energy Technologies, which makes solar inverters.*[24]

The poor coordination of Hydro One and the Ontario Power Authority is rather ironic, since they are both wholly-owned crown corporations controlled by the provincial government.

It's not just the utilities who have delayed, however. Due to generous development windows in the first generation contracts, some projects have three years to get from contract to operations. With solar costs falling rapidly, every month of delay means higher long-term returns.[25]

Measly Limits on Renewable Energy

Hydro One's 7% limit on distributed renewable energy generation is much lower than seen in other jurisdictions:



Development of wind projects have faced other obstacles – anti-wind activists. Concerned about alleged health effects of living near wind turbines, lawsuits have threatened several wind projects. So far, all have been defeated at the Ontario Environmental Review Tribunal.[26]

The program was also hampered by uncertainty about the 2011 elections, when the Liberal Party narrowly retained control of government, and only then without an actual majority. The opposition party had pledged to largely dismantle the FIT program.

The delays have led to a great deal of cynicism from Ontarians who had hoped to join the renewable energy movement.

"They don't do what they say they're going to do and if they do, it takes so long, you can't remember what they said in the first place," said Ontario farmer Russell Elliott.[27]

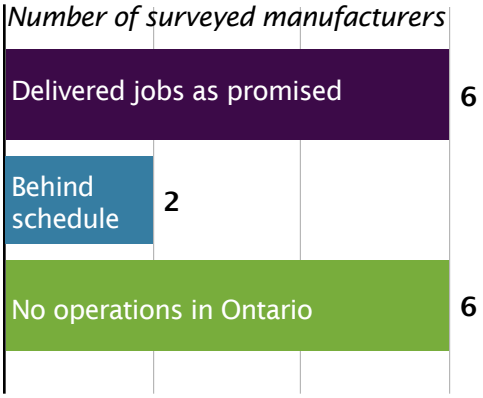
The FIT program is also hitting the upper bound of Ontario's 10.7 GW commitment to renewable energy. There's sufficient capacity in OPA's pipeline to reach 10.5 GW already, with 4.4 GW in commercial operation.[28] OPA forecasts that the majority of the queued projects will come online in 2013 and 2014, with the 10.5 GW target met in 2015.[29] Wind, biomass, and solar is competing to fulfill the remaining few hundred megawatts.[30] Without an increase the in the provincial renewable energy targets, the FIT program will be merely tinkering at the margins to get already contracted projects online.

Economic Development

Job development has progressed but has lagged behind expectations. At the two year program review, the ministry claimed 20,000 direct and indirect jobs (of the 50,000 promised by the end of 2012), with 2,000 manufacturing jobs.[31] By early 2013, that number had risen to 31,000.[32] Still, Ministry officials said that, "More than 30 businesses have announced plans to set up or expand plants in Ontario to manufacture parts for the solar and wind industries."[33]

In ILSR's January 2011 report, we identified news stories touting the planned opening of 27 manufacturing plants across the renewable energy supply chain. In early 2013, we attempted to contact these companies to see how their plans had panned out, and the results are mixed. Of 14 responses, only 6 had produced close to the promised number of jobs. Two more had opened, but with many fewer jobs than promised. The remaining 6 had no manufacturing presence in the province.

Manufacturing Plants and the FIT Program



The following excerpts from news stories paint a bleak picture of the promise of new manufacturing:

> *"The possibility of expanding in 2011 would require a miracle, and I don't expect it to happen," said Paolo Maccario, Silfab's chief operating officer.*[34]
>
> *"Heliene Canada, a solar panel maker in Sault Ste. Marie, sent 66 employees home for two weeks in May after customers suddenly cancelled two months worth of orders due to connection delays or after applications were rejected...Plans to hire 26 additional workers are on the back burner."*[35]
>
> *"United Solar...and a plant built by Spain's Siliken SA have all shuttered their Windsor operations within the past eight months...the promise of 480 jobs has evaporated"*[36]

To be fair, despite a world economic collapse in 2008, the pace of job development is running ahead of actual project installations, based on the Energy Ministry's estimates. To date, over 60% of the promised jobs have materialized, compared to 10% of the contracted renewable energy projects. If the program pace picks up in version 2.0, the jobs numbers may quickly catch the projections.

Benefits of Domestic Content

The domestic content requirements are likely to contribute to additional job creation. For example, the National Renewable Energy Laboratory JEDI economic modeler shows that a 60% domestic content requirement for 1,200 MW of solar (the current pipeline in Ontario) in Minnesota would create an additional 4,000 jobs and add $1.4 billion in economic impact over a similar program with no domestic content.[37]

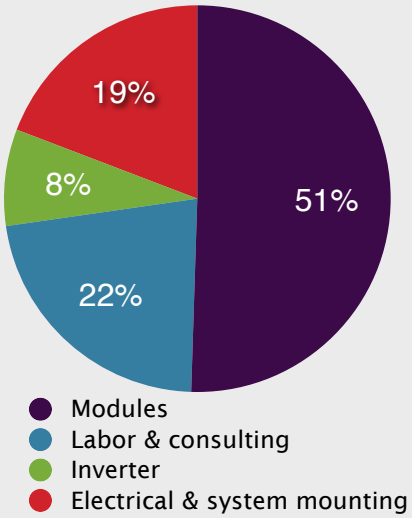
Anecdotally, domestic manufacturing can mean a lot. The following excerpt from a *PV Magazine* story about Ontario's "buy local" requirement illustrates:

> *"Since the launch of the iPhone in 2007, Corning Glass has manufactured the scratchproof face of the phone out of a factory in Kentucky. Not only has Corning created jobs and profits by becoming a domestic supplier to California-based Apple, but, after the iPhone became a success, Corning received a flood of orders from other companies hoping to imitate Apple's designs. Its glass sales have grown to more than US$700 million annually, and it has employed about 1,000 Americans to support the emerging market.*
>
> *Nothing in the renewable energy industry has challenged the scale of the iPhone to date. However, Corning Glass represents proof positive that,* ***yes, it matters where the components are manufactured****."*[38] *[emphasis added]*

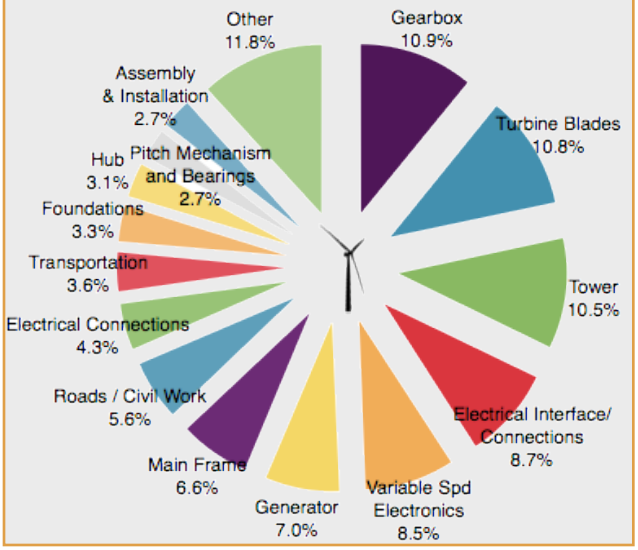
MEETING THE DOMESTIC CONTENT REQUIREMENTS

Wind projects must generate 50% of their value from within the province and solar projects have a 60% threshold. These two charts illustrate how the OPA measures local content.

Ontario Solar PV Project Value



Ontario Wind Project Value



World Trade Issue

Ontario also has to defend its FIT program from its trading partners.

Shortly after the program launched with its domestic content requirement, Japan and the European Union brought a complaint before the World Trade Organization. The complaint consisted of three parts:[39]

1. The FIT Program is a violation of the General Agreement on Tariffs and Trade (GATT) by giving less favorable treatment to imported equipment and protection to Ontario production.
2. The domestic content requirements are a trade-related investment measure in violation of GATT Article 3.
3. The FIT program provides a subsidy that is "contingent [on] the use of domestic over imported goods"

In short, "Japan and the EU claim Ontario is breaching international conventions by requiring new solar and wind facilities to be built with 60% and 25% [now 50%] of locally manufactured components, respectively."[40]

In reply, Canada argued that the FIT was a form of "government procurement," exempt from GATT.[41]

In May 2013, Canada lost its appeal to an earlier World Trade Organization panel decision that the FIT Program was in violation of GATT "because it forces companies selling premium-priced clean energy into the province's electrical grid to source a proportion of their equipment and services in Ontario."[42]

Even with the lost appeal, a resolution could take years.[43] The following excerpt from our 2011 report on the FIT Program is still relevant:

The wheels of the international trade resolution machinery grind slowly. Even if Canada loses its case on behalf of Ontario's feed-in tariff domestic content provisions, the entire process could take years to decide. During that time, Ontario can continue to operate the program and enforce its domestic content provisions.

If Canada does finally lose, Ontario still does not have to change its ways. The WTO process would merely allow Japan to apply compensatory tariffs on Canadian goods in retribution for the Ontario feed-in tariff provisions. Alternatively, Ontario could modify its program (though not entirely strip out policies favoring local content) and start another round of international negotiations and World Trade Organization actions.

Previous world trade disputes are illustrative, such as the "Great Banana Trade War" between the U.S. and Europe, which had been active for 17 years through 2009.[44]

In other words, the world trade issues may be more style than substance.

Lessons Learned

Ontario's experience with the FIT program provides a number of essential lessons for designing effective renewable energy programs.

What's Good

On the positive side, a simple and accessible renewable energy program can generate an enormous amount of interest and the promise of significant renewable energy generation. Ten of thousands of individual Ontarians (1 out of 7 farmers) have contracts to produce electricity and plans to invest their own money in a renewable energy future.

Second, having local content requirements (while subject to legal challenge) has created a firm connection between the willingness of Ontarians to pay extra for renewable energy and the resulting 31,000 jobs.

Third, even with a number of stumbling blocks, Ontario's ambitious energy plan has made it the first jurisdiction in North America to forgo coal power, thanks in large part to its renewable energy development.

What Needs Work

The most pressing problem for Ontario was and is the vast gap between signed contracts and projects producing electricity. The RESOP and FIT programs both produced a much higher level of interest than the provincial power authority or utilities were able to accommodate. Germany's world-leading program had many years to grow slowly before it reach gigawatt-per-year installation levels.

The power authority and utilities should have developed a plan for identifying existing capacity on the electric grid and promising points for low-cost expansion. The progress of the microFIT program (representing a third of the total program capacity in operation) suggests that grid capacity for large projects has been a major problem.

That being said, Hydro One's remarkably low limits (7% of peak) on distributed generation interconnection suggest that the province needs to require utilities to use evidence-based practices for interconnecting projects. Development of RESOP and FIT projects may have proceeded much quicker with supportive utilities.

The delays in implementation have also exacerbated the problems with development timelines and price adjustments. The rapidly falling cost of renewable energy gave developers with a fixed-price contract a strong incentive to squat on their reservation while their potential profit margin rose. Ontario should have had a process in place to adjust prices more quickly or even used a price reduction schedule as is done in Germany with their FIT or in California with their solar incentives.

Finally, the OPA should have increased its commitment to local ownership much earlier. Opposition to wind power projects and municipal siting concerns played a role in the Liberal Party's electoral troubles in 2011 and could have been forestalled with a more significant commitment to local oversight and ownership.

Thus far, about 11% of OPA's operational renewable energy projects have some form of community or aboriginal participation.[45] The set-aside in the 2.0 program is admirable, but given the benefits, begs the question of why it's not the entire capacity allocation.

Specific Lessons for the U.S.

The FIT program provides a few unique lessons for American policy makers. First, a focus on small-scale projects can mean big-scale achievements. Almost all Ontario solar projects 10 MW and smaller (a third are 10 kW and smaller) and yet the province would be the #4 solar state.

The economic development achievements (31,000 jobs despite lagging project development) suggests that Ontario's focus on the local economy may pay dividends. While concerns with the Commerce Clause may limit a U.S. state's ability to restrict out-of-state content, there's precedence for states providing incentives for distributed generation (which is more likely to involve in-state spending) or for providing bonus incentives for in-state content.

Finally, community-based projects are a way to solidify political support for renewable energy. It's no coincidence that the FIT 2.0 rules, on the heels of the Liberal Party's near defeat at the polls in 2011, placed a much stronger emphasis on local ownership and control of renewable energy project development. The only strike against Ontario is that they didn't make this explicit commitment to local ownership earlier.

Conclusion

There's no question that Ontario's energy program has stumbled. In over three years, the program has deployed less than 10 percent of its contracted capacity, disappointing many manufacturers and potential participants. The promised jobs and economic development have also lagged behind projections, waiting on queued projects to come to fruition.

Unsuspected barriers have also slowed the program, from a major economic collapse to local utilities stalling on interconnection to World Trade Organization suits targeting the program's local focus.

Despite the troubles, Ontario's renewable energy deployment is still competitive with leading U.S. states. It would rank 4th in solar power and 11th in wind power if it were a U.S. state. It is still on schedule to be the first jurisdiction in North America to wean off coal powered electricity.

Job growth has kept ahead of the pace of renewable energy deployment and economic models suggest that the "buy local" requirement will result in greater job growth and economic impact.

The trade dispute may take years to resolve even after Canada has lost its appeal and the other nations exhaust their options before the WTO.

Projects under contract will soon hit deadlines for entering commercial operation or have to cede their capacity to other developers.

Through the hardships, the OPA has recognized the economic and political advantage of local ownership, prioritizing community and aboriginal investment in renewable energy with capacity set-asides and queue priority. It's no longer just a "buy local" FIT program, but also an "own local" one.

It's an open question whether the FIT program will live up to its original promise, but Ontario seems to believe that a focus on the local economic benefits outweighs the near-term deployment of renewable energy. Only time will tell.

Appendix

RESOP Contract Prices

Technology	Size	Price
Solar PV	< 10 MW	42¢
Wind	< 10 MW	11¢
Hydro	< 10 MW	11¢
Biomass	< 10 MW	11¢

FIT 1.0 Contract Prices

Technology	Size	Price	Inflation Adj.
Biomass			
	< 10 MW	13.8¢	20%
	> 10 MW	13¢	20%
Biogas			
On-farm	< 100 kW	19.5¢	20%
On-farm	100 to 250 kW	18.5¢	20%
Biogas	< 500 kW	16¢	20%
Biogas	500 kW to 10 MW	14.7¢	20%
Biogas	> 10 MW	10.4¢	
Waterpower			
	< 10 MW	13.1¢	20%
	> 10 MW	12.2¢	20%
Landfill gas			
	< 10 MW	11.1¢	20%
	> 10 MW	10.3¢	20%
Solar PV			
Any type	< 10 kW	80.2¢	
Rooftop	10 to 250 kW	71.3¢	
Rooftop	250 to 500 kW	63.5¢	
Rooftop	> 500 kW	53.9¢	
Ground Mounted	> 10 kW	44.3¢	
Wind			
Onshore	any	13.5¢	20%
Offshore	any	19¢	20%

FIT 2.0 Contract Prices (if different)

Technology	Size	Price	Inflation Adj.
Solar PV			
Rooftop	< 10 kW	54.9¢	
Rooftop	10 to 100 kW	54.8¢	
Rooftop	100 to 500 kW	53.9¢	
Rooftop	> 500 kW	48.7¢	
Ground Mounted	< 10 kW	44.5¢	
Ground Mounted	10 to 500 kW	38.8¢	
Ground Mounted	500 kW to 5 MW	35¢	
Ground Mounted	> 5 MW	34.7¢	
Wind			
Onshore	any	11.5¢	20%
Offshore	any	n/a	20%

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