Getting FIT:

How Ontario Became a Green Energy Leader and Why it Needs to Stay the Course

environmental defence

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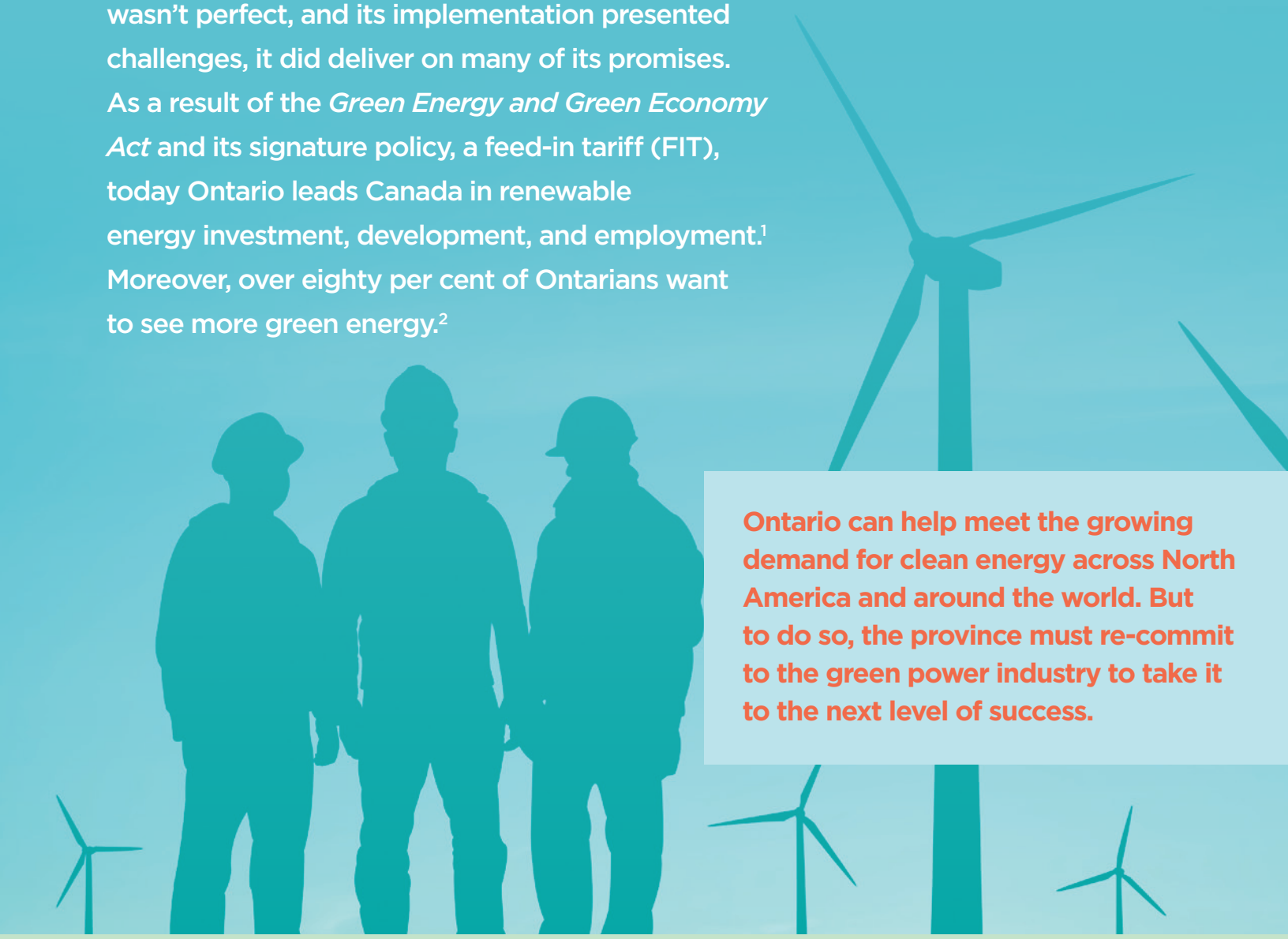
Table of Contents

A worker at Canadian Solar's facility in Guelph, Ontario.

CANADIAN SOLAR

Introduction

With the passage of the *Green Energy and Green Economy Act* in 2009, Ontario took a bold step into the future by launching an ambitious effort to develop a green power industry. The Act's goal was not only to expand renewable energy generation, but to seed a new industry in a province that faced a steady decline in manufacturing jobs. While the Act wasn't perfect, and its implementation presented challenges, it did deliver on many of its promises. As a result of the *Green Energy and Green Economy Act* and its signature policy, a feed-in tariff (FIT), today Ontario leads Canada in renewable energy investment, development, and employment.[1] Moreover, over eighty per cent of Ontarians want to see more green energy.[2]



Ontario can help meet the growing demand for clean energy across North America and around the world. But to do so, the province must re-commit to the green power industry to take it to the next level of success.

Despite all this, the future of Ontario's renewable energy industry is uncertain. The province is behind schedule on its plans to build renewable power and it will be a stretch for Ontario to meet its renewable energy targets as set out in the 2013 Long-Term Energy Plan. Worse still, that plan would have Ontario stop building wind and solar power by 2021.[3]

During the coming year, Ontario's Long-Term Energy Plan is up for review. That plan needs to change.

Ontario needs to support more clean energy and build on the early lead the province has established. The tens of thousands of jobs in Ontario's newest industry are at stake. Walking away from green energy would also see emissions from Ontario's electricity sector rise after a decade-long decline, something we cannot afford as the province takes action to fight climate change. It could also mean missing out on one of the largest global economic opportunities.[4]

Around the world, renewable energy use continues to soar and the industry is expected to continue to experience very strong growth in the years ahead.[5] Ontario could help meet the growing demand for clean energy across North America and around the world. But to do so, the province must re-commit to the green power industry it successfully grew.

Despite routine and often misguided attacks by some, renewable energy remains very popular in Ontario. **Three quarters of Ontario respondents to a recent poll voiced support for the province's move away from coal and towards renewable energy. Over 80 per cent of respondents said that they would like to see Ontario generate more power from renewable sources.[6]**

Over the past decade, billions of dollars have been invested in solar, wind, water and biogas projects across the province. New manufacturing plants making everything from solar panels and wind turbine blades to specialized racking and power equipment have sprung up, often using sites abandoned by other manufacturers hit hard by the 2008 recession. By some estimates, investments in green energy have created nearly 200,000 jobs in Ontario.[7]

As the province reviews its Long-Term Energy Plan and rolls out its climate action plan, now is the time for Ontario to show consistent and ongoing support for the renewable energy and clean technology industry by committing to build more green energy, like wind and solar power.

Ontario's experience with renewable energy also contains lessons for other provinces that are now looking to switch away from polluting coal-fired power toward renewables. Despite pundit criticism, the *Green Energy and Green Economy Act* delivered on many of its promises and led to new manufacturing jobs, billions of dollars in investments, and a decentralized energy system that tens of thousands of Ontarians are actively participating in. Moreover, Ontario's green energy program is popular with the public and supported by a strong majority of Ontarians.[8] Other jurisdictions can learn from Ontario's missteps, and on the whole, the Act has to be viewed as a success.

Over 80 per cent of respondents said that they would like to see Ontario generate more power from renewable sources.[9]

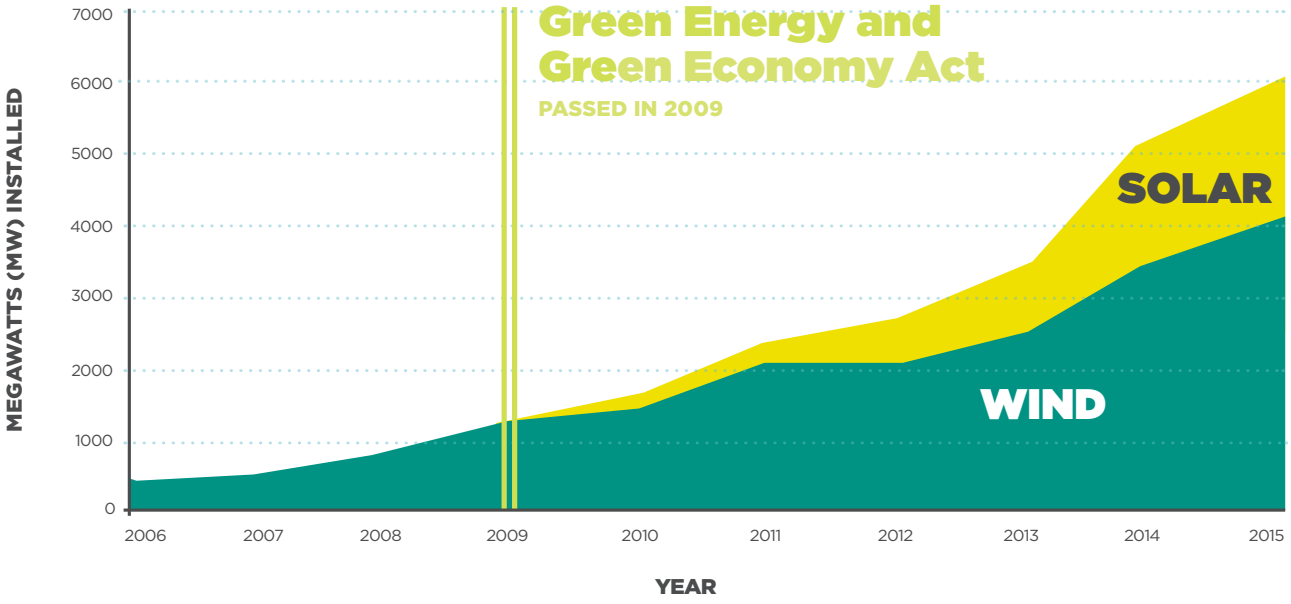
SUMMARY OF CLEAN ENERGY ACTIVITY IN ONTARIO BETWEEN 2008 AND 2014

$6 billion invested in wind energy[10]
$5.8 billion invested in solar power[11]
An estimated 91,000 direct and indirect jobs in the solar sector[12]
An estimated 89,000 direct and indirect jobs in the wind sector[13]
Enough solar and wind power to meet the needs of 760,000 homes[14]

ADDITIONAL BENEFITS:

Municipalities have received close to $2 billion in revenues in the form of land lease payments, municipal property taxes, and community vibrancy funds (over 20-year contract period)[15]
There are over 550 power projects with aboriginal participation in operation and under development and 320 projects with community participation in Ontario[16]
Ontario is one of the world's top 20 jurisdictions worldwide for solar power investment[17]

FIGURE 1: THE GROWTH OF WIND AND SOLAR POWER IN ONTARIO[16]



The Green Energy and Green Economy Act:
Increasing Green Jobs and Green Power

Thanks to the *Green Energy and Green Economy Act*, which led to large increases in wind and solar power in Ontario (Figure 1), the province is now a North American clean energy leader (Figure 2 and 3).

When Ontario decided that wind and solar power would play an important role in replacing coal, the province also sought to ensure that the new jobs and economic activity created by the renewable energy boom would be captured locally.

By 2009, Ontario had lost more than 200,000 manufacturing jobs due to the global recession caused by the 2008 financial crisis and because of a rapidly rising Canadian dollar, driven up by record high oil and gas prices.[18] The province saw investment in green energy as a way to reverse the trend of job losses.

Ontario planned not just to install wind and solar power generators, but to manufacture the components – everything from massive wind turbine blades to solar panels – in the province. To do so, the government had to entice businesses to locate in Ontario.

In 2009 the provincial government passed the *Green Energy and Green Economy Act*. The centrepiece of the Act was a Feed-in Tariff (FIT) program that offered attractive prices for solar, wind, biogas and small water power projects. The caveat was that project developers had to use a high percentage of components manufactured in Ontario in order to receive the favourable rates.

FIGURE 2: ONTARIO'S SOLAR GENERATION COMPARED TO OTHER NORTH AMERICAN JURISDICTIONS[19] (AS OF MARCH 2016)

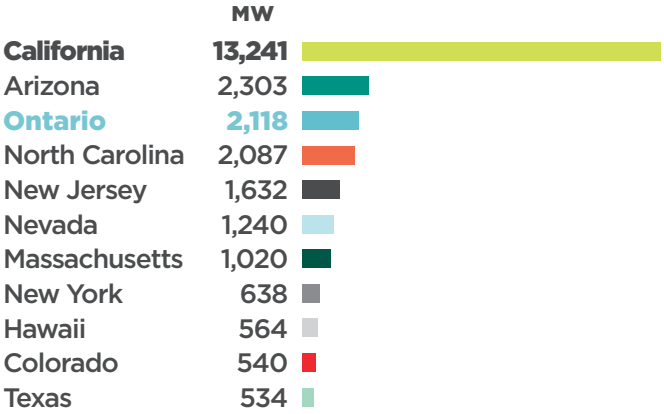
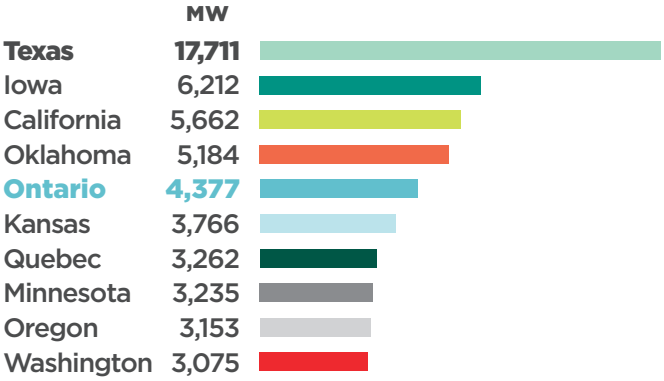


FIGURE 3: ONTARIO'S WIND GENERATION COMPARED TO OTHER NORTH AMERICAN JURISDICTIONS[20] (AS OF DECEMBER 2015)



Workers move a massive section of a wind turbine tower at the CS Wind manufacturing facility in Windsor, Ontario.

CLEAN ENERGY CANADA/CS WIND

Ontario now attracts more than half of the annual investment flowing into clean energy across Canada.[21]

The domestic content rules were eventually struck down by the World Trade Organization. But by that point, the FIT program had already successfully provided the spark for the development of a sophisticated renewable energy supply chain in Ontario: steel manufactured in Sault Ste. Marie is used to fabricate wind turbine towers in Windsor; solar panels manufactured in Guelph are mounted on steel frames built in Toronto, and 50 metre-long wind turbine blades made in a repurposed factory in Tillsonburg are installed on turbines throughout the province.

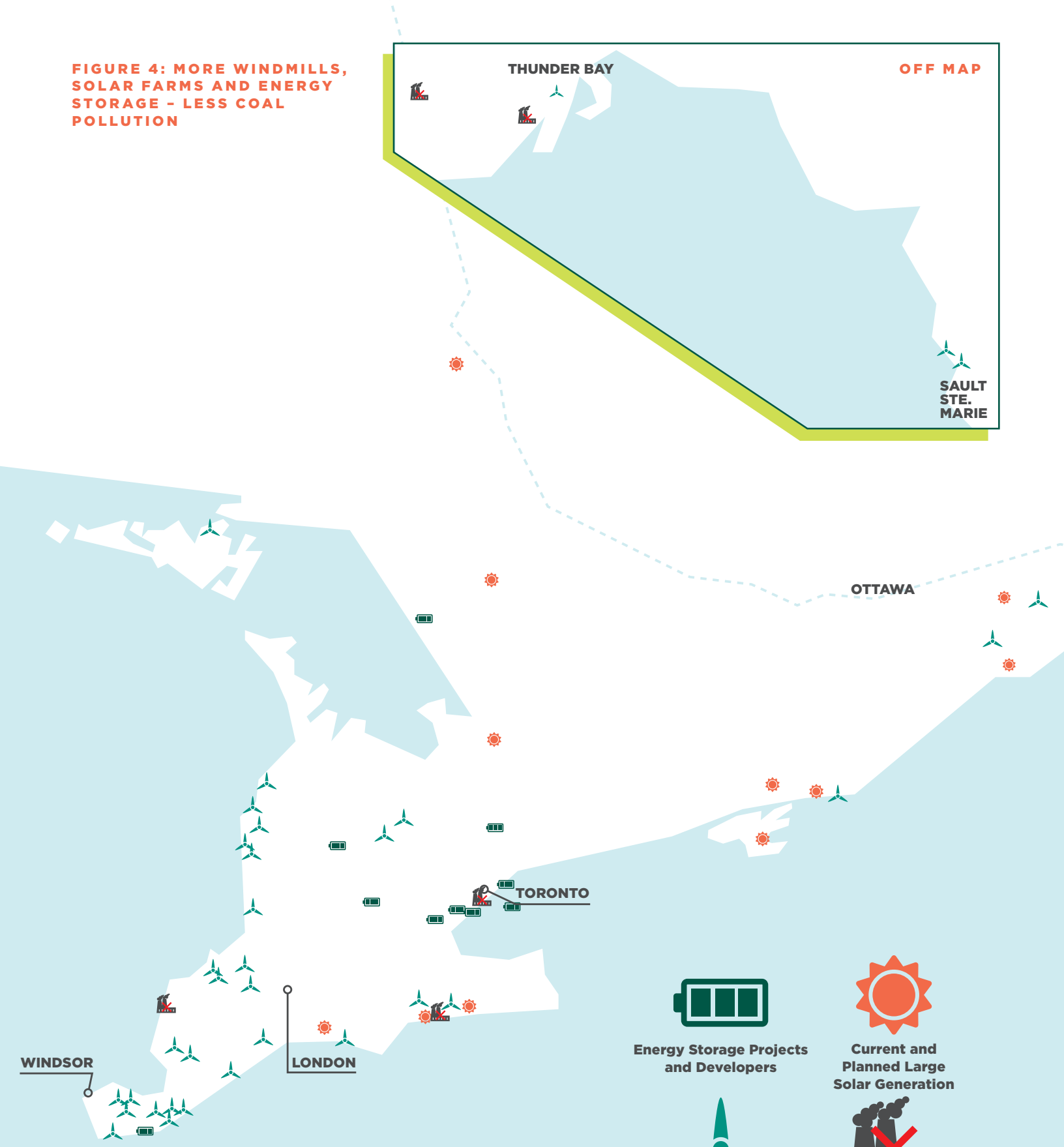
Ontario now attracts more than half of the annual investment flowing into clean energy across Canada.[21] The province's growing array of green energy companies are well positioned to supply the fast growing clean energy sector globally (see maps (Figure 4 and 5) of green energy workplaces and projects in Ontario).

DOMESTIC CONTENT REQUIREMENTS FOR WIND AND SOLAR

In order to get the favourable rates offered by the Feed-in-Tariff program, a percentage of parts and labour for Ontario wind and solar projects needed to come from Ontario, which created a strong incentive for manufacturers and developers to set up operations in the province.

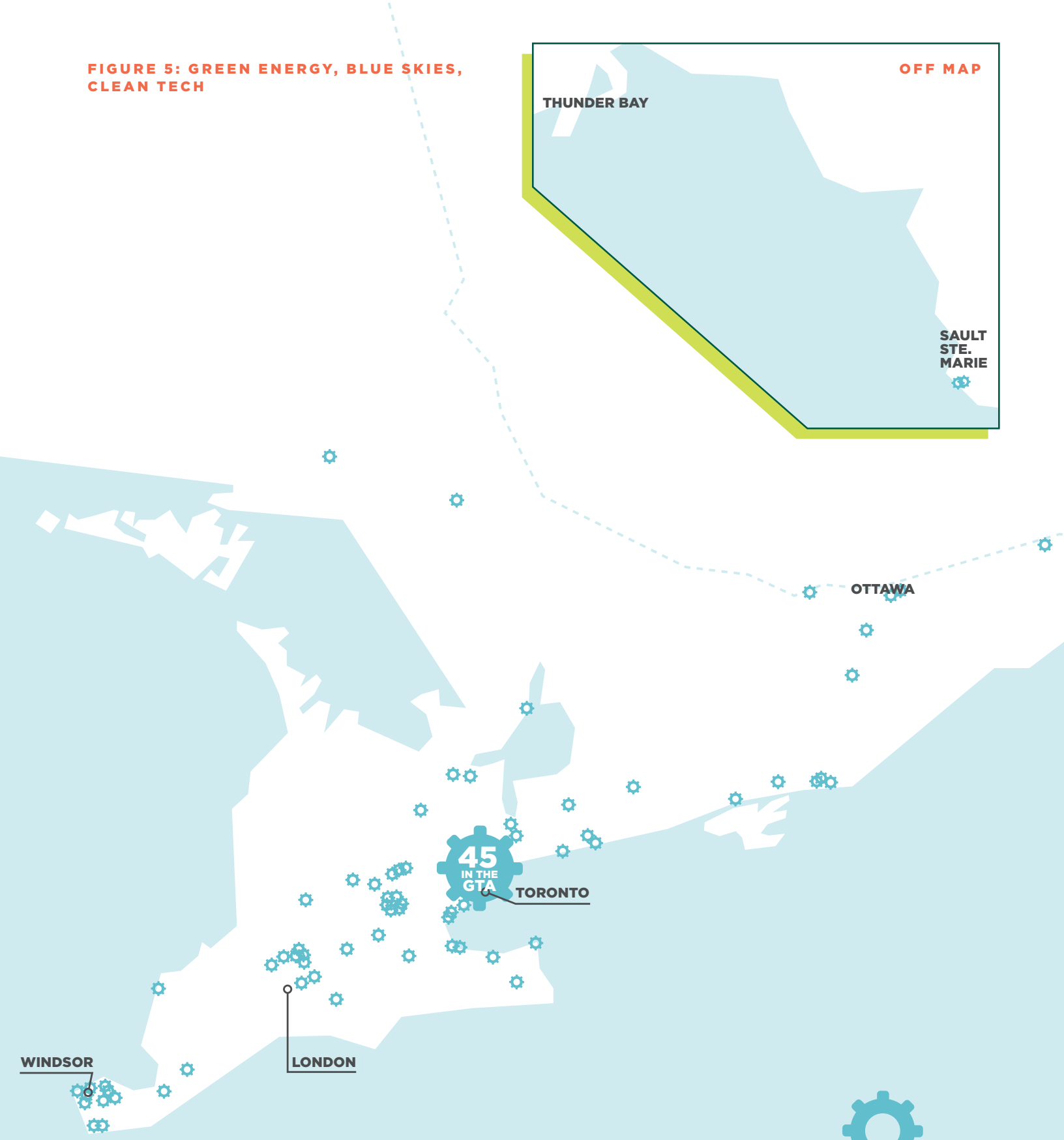
	Domestic Content Requirement (as of January 1, 2012)
Wind	50 per cent local content
Solar	60 per cent local content

FIGURE 4: MORE WINDMILLS, SOLAR FARMS AND ENERGY STORAGE – LESS COAL POLLUTION



Includes installed solar and wind capacity over 20 MW and solar and wind projects approved under LRP I. Does not include generation from FIT and microFIT. Icons do not indicate exact geographic location.

FIGURE 5: GREEN ENERGY, BLUE SKIES, CLEAN TECH



Includes companies that manufacture materials and components used in wind and solar projects. List of companies is not exhaustive and may not include all small companies creating jobs in Ontario. Icons do not indicate exact geographic location.

Wind and Solar Manufacturers, Installers and Developers in Ontario

"The world is on the cusp of an energy revolution, and Ontario has front row seats. But we aren't the only ones to see this opportunity. If we want our companies to grab a piece of the growing global pie, we need to keep making bold bets and go big to win our unfair share!"

—Ron Dizy, Managing Director, Advanced Energy Centre, MaRS Discovery District, Toronto[22]

While the fossil fuel industry has seen deep cuts in the past two years, clean energy is booming globally and the fall in oil prices hasn't dampened clean energy's prospects. For three years running, renewable energy investments have outpaced investments in fossil fuel power generation. In 2015, a record $367 billion U.S. was invested in renewable power worldwide.[23] Clean energy now receives twice as much global funding as fossil fuels.[24] According to Bloomberg New Energy Finance (BNEF), $8 trillion will be invested in renewable energy worldwide over the next 25 years.[25]

Many industry observers predict that solar will become the world's biggest supplier of electricity in the next 30 years.[26] Wind is already supplying more than half of all power in places like Denmark and Scotland, and up to 100 per cent in some periods.[27]

As climate action picks up speed and the costs of renewables continue to fall, the prospects for the future of the clean energy industry are very strong. The question is, will Ontario compete in the global clean energy jobs race? The answer depends on how much the province's Long-Term Energy Plan supports continued renewable energy investment.

Ontario's Green Power Efforts Hugely Popular

Although not always evident based on a read of newspaper editorials, Ontario's move to embrace green energy has been hugely popular.

Every request for clean power issued by the province has received much more interest than could be accommodated. The microFIT program which supports small scale renewable energy projects, most of which are solar arrays on rooftops, attracted 27,000 applications in its first few months after launching in 2009. The level of interest overwhelmed the Ontario Power Authority, which had to approve the contract offers, as well as Hydro One and other utilities, which had to connect the systems.[28]

Today, over 23,000 microFIT projects, mostly rooftop solar projects, have been built in Ontario, and thousands more applications are currently under review.[29]

The province's latest effort – the Large Renewable Procurement process – has seen similar levels of participation. The province was seeking project proposals for 300 MW of wind power and 140 MW of solar capacity, **but the program attracted proposals for almost ten times as much power**. Once again deadlines were pushed back to accommodate an overwhelming level of interest.[30]

Today, the vast majority of Ontarians support green energy and want to see the province do more. According to an April 2016 opinion poll conducted by Ekos Research Associates for Environmental Defence, 81 per cent of Ontarians support further development of renewable energy and 74 per cent see Ontario's support for renewable energy as being the right strategy for the province to pursue.[31]

And 56 per cent see renewable energy as having a positive impact on the provincial economy, with only 19 per cent believing green energy will harm economic growth. Close to two-thirds of Ontarians agree we can have both a strong economy and a healthy environment.[32]

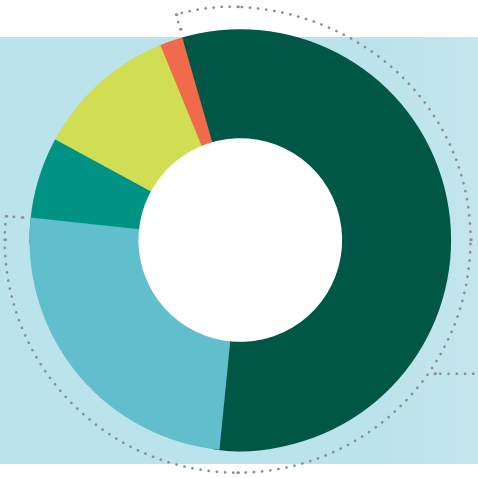
74 per cent see Ontario's support for renewable energy as being the right strategy for the province to pursue.[31]

Survey Results

Survey of 1,250 randomly selected Ontario residents ages 18 and over, conducted between March 24 and April 3, 2016 and considered to be accurate to within +/-2.77 per cent, 19 times out of 20. Survey conducted by Ekos Research Associates.

QUESTION 1

To what degree would you say you support or oppose Ontario generating more power from renewable sources, like solar and wind?



RESULTS

56% strongly support
25% somewhat support
6% somewhat oppose
2% don't know
11% strongly oppose

81% support 17% oppose

RESULTS

74% right strategy
18% wrong strategy
9% don't know

QUESTION 2

Ontario was the first province in Canada to pursue a renewable energy strategy, phasing out coal plants and creating investment and jobs in the renewable energy and clean technology sectors. Do you think this was the right strategy for Ontario or the wrong strategy?

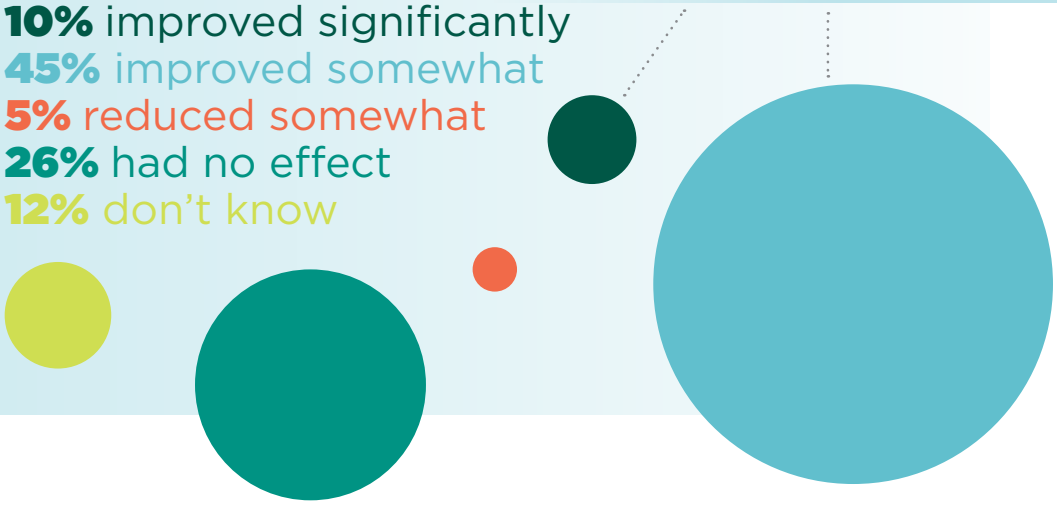
QUESTION 3

Do you think that Ontario's investment in renewable energy and clean technology has improved, reduced or had no effect on the province's ability to reduce the green-house gas emissions that cause climate change?

RESULTS

10% improved significantly
45% improved somewhat
5% reduced somewhat
26% had no effect
12% don't know

55% improved



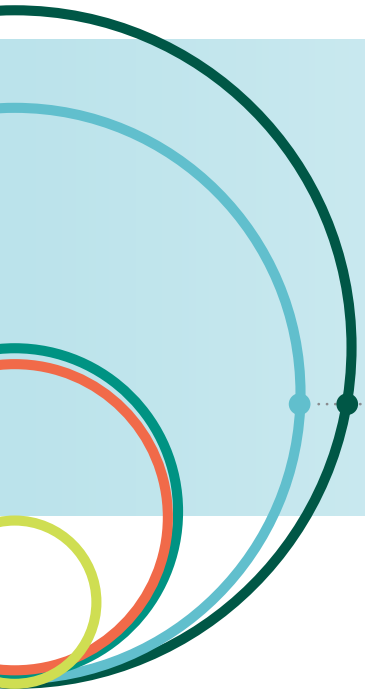
Survey Results

QUESTION 4

Renewable energy is now one of the fastest growing industries in the world, with investment in renewables setting a new record in 2015. Do you think Ontario's investment in renewable energy will have a positive effect, negative effect or no real effect on the provincial economy?

RESULTS

56% positive effect
16% no effect
19% negative effect
9% don't know



RESULTS

33% strongly agree
28% somewhat agree
16% somewhat disagree
15% strongly disagree
8% don't know

61% agree 31% disagree

QUESTION 5

Would you say that you agree or disagree with the following statement? As the negative impacts of climate change become more severe and more frequent, it is clear that we don't need to choose between a healthy environment and a healthy economy?

"Ontario has developed a globally recognized solar sector. While it has experienced challenges, it is today one of the top 20 solar electricity markets in the world, based on solar installed capacity. Our members fulfill the market demand in Ontario and are increasingly active in global markets and the United States. Being in this position is a direct result of the government's foresight and supportive policy through the Green Energy Act."

—John Gorman, President & CEO - Canadian Solar Industries Association

The Real Price Picture

The Holtby solar rooftop project is the first community-financed green energy project in the City of Brampton, developed in partnership with Endura Energy and Solar Share.

SOLAR SHARE

The *Green Energy and Green Economy Act* has been blamed for driving up electricity prices in Ontario. While it's true that the FIT program offered relatively high prices, especially in the early rounds, the impact of renewables on Ontario electricity prices has been widely exaggerated.

According to calculations done by Power Advisory LLC, new renewable energy additions accounted for just nine per cent of the average residential power bill in 2014.[33]

An independent analysis commissioned by Environmental Defence shows that green energy is only responsible for a small portion of electricity rate increases. According to calculations done by Power Advisory LLC, new renewable energy additions accounted for just nine per cent of the average residential power bill in 2014. Power Advisory calculates that this will rise to 16 per cent in 2024, and then fall to 12 per cent in 2032. The firm points out that other generation sources (nuclear in particular) and costs for upgrading and expanding the province's power transmission system represent a far larger proportion of the average monthly power bill.[33]

Ontario's electricity prices began rising in the 1970s, when the province turned to nuclear energy to meet its growing electricity needs, having fully exploited its supply of low-cost water power.[34] The foray into nuclear proved to be very expensive. Every nuclear project in Ontario's history has gone massively over budget, on average by 250 per cent.[35]

In 1993, the provincial government chose to cap electricity prices in the wake of a price surge caused by huge cost overruns on the construction of the Darlington Nuclear Station. Once the cap was removed, in 2004, prices began to rise as long-delayed electricity infrastructure improvements were finally included in power bills.[36]

EXAMPLE OF AN AVERAGE RESIDENTIAL MONTHLY ELECTRICITY BILL IN 2014 (BASED ON 800 KWH/MONTH)*[37]

ONTARIO RESIDENTIAL MONTHLY BILL STATEMENT

Account Number
123 456 789 101 2345 0

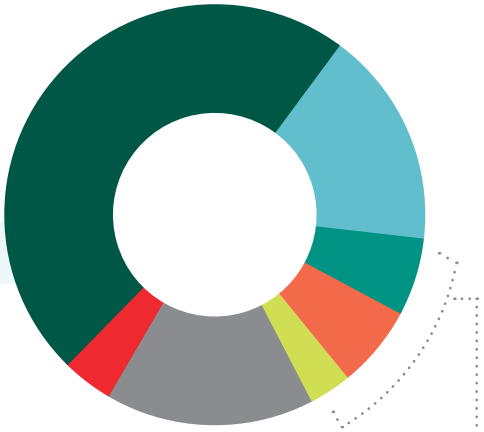
Meter Number
1234567

YOUR ELECTRICITY CHARGES

Electricity	$78.00
Delivery	$46.00
Regulatory Charge	$5.00
Debt Retirement Charge	$6.00
H.S.T.	$17.00
Ontario Clean Energy Benefit	$(15.00)

10 per cent off applicable electricity charges and taxes

TOTAL $137



37% Nuclear
13% Hydro
5% Wind
5% Solar
2% Bioenergy
13% Fossil fuel
3% Conservation

** 800 KWh/month is the average household electricity use that the Ontario Power Authority uses in its calculations.*

As of 2013, Hydro One and local distribution companies invested $19 billion into transmission system upgrades and the province invested $21 billion in new generation capacity, much of it for natural-gas fired generating stations. Natural gas generation increased by 38 per cent between 2003 and 2012.[38]

It's worth noting that the increases attributed to renewable energy development projected by Power Advisory may be on the high side. Thanks to rapidly falling costs for wind and solar, the costs for newly acquired renewable sources are coming in significantly lower than what the province budgeted in its 2013 Long-Term Energy Plan.[39] The recent contracts awarded to wind and solar power developers came in at prices lower than anticipated, and the costs for wind power are now competitive with other sources of generation, including natural gas and nuclear.[40]

Thousands of Ontarians put solar panels on their roofs thanks to the province's microFIT program.

Firing Up Exports

Workers move giant wind turbine blades manufactured at Siemens Canada's facility in Tillsonburg, Ontario. The blades are used in wind projects in Ontario and for export to Quebec, Sweden, and most recently Wales.

SIEMENS CANADA

While the *Green Energy and Green Economy Act* began by creating domestic demand for wind and solar power, and included a requirement that components be manufactured locally in order to receive the favourable prices, the intent was to create an industry that could also serve a global market.

Clean tech, which includes renewable energy along with other green technologies such as water purification and pollution controls, is an export-oriented sector. Eighty-seven per cent of Canadian clean technology companies were exporters in 2014, and 91 per cent anticipated exporting goods and services by 2016.[41] These exports are global: 57 per cent of Canadian clean tech company revenues in 2014 came from sales outside Canada.[42]

"It goes without saying that the Ontario Green Energy Act helped to kick-start clean tech manufacturing in the province."
—Canadian Solar CEO Shawn Qu[43]

While many green energy manufacturers came to Ontario to meet the domestic demand for green power, they are now also servicing export markets.

One example is Canadian Solar. Founded in 2001, Canadian Solar is one of the three largest solar companies in the world, operating in 20 countries and employing 8,500 people worldwide. Its solar panels can be found on the face of the Sunnybrook Health Sciences Centre in Toronto and alongside the runway at the Thunder Bay airport in Northern Ontario as well as on projects in the United States, Denmark, Spain and Germany.

Ontario's *Green Energy and Green Economy Act* was a key factor behind the company's decision to invest in a solar manufacturing plant in Guelph, Ont. that employs 300 people and a plant in London, Ont. that employs approximately 200 people.[44]

Recently, Canadian Solar signed agreements to supply new solar parks in India, which has also attracted other Canadian companies, including AMP Solar and Skypower Global. These Canadian companies are capitalizing on India's ambitious goal of developing 100 gigawatts (GW) of solar

power by 2022 and have signed contracts worth an estimated $1 billion.[45]

Another notable company is CS Wind, which is recognized as a world-leading manufacturer of wind turbine towers. Since 2011, the company's Windsor plant has produced 1,000 turbine towers for use on projects in Ontario and the United States.[46]

Meanwhile, the Siemens Canada wind turbine blade plant in Tillsonburg, Ont. manufactured its 1,000th wind turbine blade in February 2015.[47] Siemen's 49 and 55-metre blades – more than half the length of a football field – have been used on many Ontario projects and are also exported abroad, including a recent deal to export blades to Wales.[48]

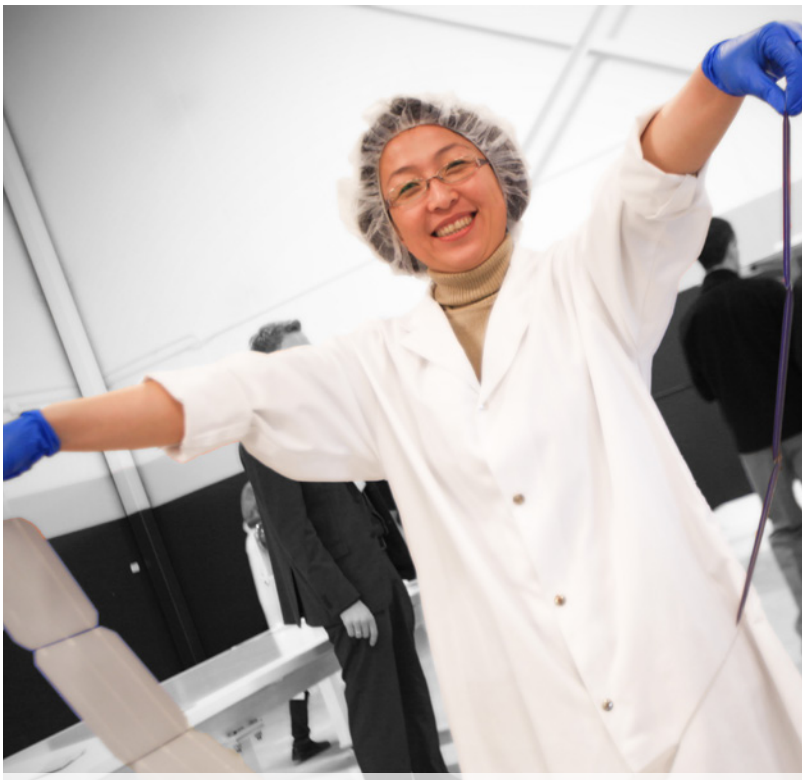
Ontario's *Green Energy and Green Economy Act* created "a strong incentive" for global giant Siemens to develop a wind turbine blade factory in Tillsonburg, Ontario. "Moving forward we see this as an integral part of the supply chain in the Americas and worldwide," notes Greg Thrasher, manager for sales and strategy at Siemens Canada's wind division.[49]

The export opportunities for green energy and other clean technologies will continue to grow. The U.S. Energy Information Administration (EIA) projects that solar power will be the leading source of new generation added to the nation's electricity grid in 2016. Solar and wind combined will add more than twice the generation capacity supplied by new gas-fired power plants this year, the agency says.[50] It's worth noting that the EIA has historically underestimated the growth rates of wind and solar power, which suggests an even larger opportunity for exporting solar to our southern neighbour.[51]

Ontario's green energy and clean tech industries are well poised to provide parts and technology to U.S. renewable power projects.

U.S. state renewable power standards are expected to lead to a doubling of renewable power generation over the next 15 years.[52] This demand is about four times what Ontario will have built by 2020. The U.S. federal Clean Power Plan has been challenged by the Supreme Court, but many U.S. states are moving ahead with solar and wind power regardless.[53]

Ontario can also help meet the growing demand for renewable energy components from other provinces. Saskatchewan, for example, recently pledged to have wind, solar and other renewable energy sources supply half of its electricity needs by 2030.[54] Alberta also promised to phase out coal by 2030 and replace much of its dirty energy with clean renewable power. Alberta wants to meet 30 per cent of its electricity needs with renewable energy sources by 2030.[55]



A worker at Silfab Solar shows off the high-quality solar photovoltaic modules manufactured at the company's facility in Mississauga, Ontario. SILFAB SOLAR

The Storage Revolution

It is true that the wind doesn't always blow and the sun doesn't always shine, so using these renewable energy sources presents some new challenges – but these challenges can be met. Our ability to store intermittent power is developing by leaps and bounds. A recent report from the World Energy Council projected that the cost to store power from the sun and wind will fall by 70 per cent in the next 15 years while also making it easier to manage our overall electricity supply. It is projected that the global energy storage market could be worth as much as $230 billion by 2020.[56]

A number of Ontario companies are on the leading edge of developing new storage solutions that are in high demand around the world as the use of wind and solar energy soars. Many of these companies are in Ontario because of the province's investments in renewables.

It is projected that the global energy storage market could be worth as much as $230 billion by 2020.[56]

Toronto-based NRStor Inc. and Mississauga-based Temporal Power developed the province's first flywheel facility in Minto, Ontario that uses a mechanical battery for short-term storage and grid balancing.

NRSTOR INC./ TEMPORAL POWER

COMPANIES DEVELOPING STORAGE SOLUTIONS IN ONTARIO

ELECTROVAYA:

This Mississauga-based battery-maker holds more than 150 patents for its non-toxic battery manufacturing process. The company's Lithium Ion Super Polymer 2.0 battery packs a punch, using nanotechnology to pump up its energy density (power per kilogram of battery weight). Its batteries are well suited for use in electric vehicles and for utility-scale storage.

NRSTOR:

This leading-edge company is developing a number of storage solutions, including flywheel storage used for short-term storage and grid balancing. It used Canadian-designed technology from Mississauga-based Temporal Power to develop the province's first flywheel facility in Minto, Ontario, which came into service in 2014. The flywheel is essentially a mechanical battery that uses excess power to wind itself up and then unwinds to produce power. Flywheels are particularly well suited to addressing the need for a quick system jolt in response to demand surges or other grid fluctuations.

NRStor is also partnering with Canadian smart-grid company Opus One to bring the Tesla Powerwall energy storage system to Canada. The Powerwall has attracted a tidal wave of advanced orders, with reservations for roughly 55,000 units coming in the first week after the product was launched.[57]

HYDROSTOR:

The simple premise behind Hydrostor's underwater balloon energy storage system is that water is heavy. In the Hydrostor system, power is used to pump air into huge balloons anchored to the floor of a lake or ocean. When power is needed, the air is released and pushed out by the weight of the water at high pressure and used to turn turbines. The company has launched a project in conjunction with Toronto Hydro off the Toronto Islands, where six balloons are anchored in 60 metres of water about three kilometres offshore. Hydrostor has sold a similar system to the island nation of Aruba. The company uses off-the-shelf components such as marine salvage balloons and combines it with the knowledge its founder gained in the oil services industry using horizontal drilling for installations.

Energy storage resources can optimize power system operations through enhanced flexibility and increased reliability. Ontario's Independent Electricity System Operator (IESO) recently released a report that found that energy storage facilities can provide a wide range of services needed to reliably operate the power system in Ontario, including regulation, voltage control, operating reserve, and flexibility.[58]

Opportunities also exist to partner with neighbouring jurisdictions to maximize the transmission system. For example, Quebec's large water reservoir system could store renewable power produced in Ontario for use during peak periods. The province could also explore more electricity trade with Manitoba and with U.S. states to help with load balancing.

Hydrostor Inc., based in Mississauga, partnered with Toronto Hydro to launch the world's first underwater compressed air electricity storage system.

HYDRO-STOR INC.

The Democratization of Energy:
Community-Owned Renewable Projects

Today, there are more than 30 renewable energy co-operatives in Ontario.[59] These co-ops raise funds from local community members to invest in renewable energy projects – mostly large solar arrays – and pay competitive (and stable) investment returns to their members.

Ontario is home to North America's largest renewable energy co-op, SolarShare (see text box), but the province still greatly lags behind Germany and Denmark,[60] which together have 2,400 green energy co-ops.[61] Research shows a strong link between high levels of community ownership and levels of support for renewable energy projects.[62] By keeping investment dollars in the local community, co-ops also help to better leverage the investments Ontarians are making in green energy.[63] Municipalities, school boards and other institutions have also benefitted from Ontario's green energy policies by seizing the opportunity to lower their emissions while earning new revenue that can be put into everything from fixing roofs to rebuilding arenas.

In Ontario everyone, from international energy companies to average citizens, have participated in Ontario's green energy boom.

More than 23,000 contracts for small green energy systems, mostly rooftop or farmyard solar systems, have been issued under Ontario's microFIT program.[64]

The Toronto District School Board is putting solar panels on 323 schools. Loblaw Companies installed 65 systems on supermarket roofs across Ontario. Numerous municipalities, companies, First Nations, faith communities, school boards and co-operatives developed projects that are generating emissions-free energy and new revenues across Ontario.

The AMBER Renewable Energy Co-operative is composed of farmers and rural landowners in Aylmer, Ontario that formed to enable the rural and agricultural community to participate in Ontario's FIT program.

Spotlight on Renewable Success Stories

Below we shine the spotlight on three different types of successes in renewable energy in Ontario. These successes would not have happened without the *Green Energy and Green Economy Act*, which spurred renewable energy in the province.

SOLARSHARE: HELPING ONTARIANS INVEST IN SOLAR

The SolarShare Co-operative is one of North America's largest renewable energy co-operatives. It allows people to get involved in the green energy revolution by owning a piece of its 34 solar energy projects, which are located on industrial rooftops in the GTA, farm fields in Central Ontario and on the rooftop of a mushroom farming business in Moose Creek, Ont. Local investors have bought $15 million worth of solar bonds to finance SolarShare projects and are earning a stable return of 5-6 per cent annually. Meanwhile, the many businesses that host SolarShare projects earn roof lease payments. SolarShare, like other community-owned co-ops across Ontario, allows people interested in solar, but who do not have the right conditions on their own home, to help spark climate action in the province. And with the returns from its projects going back into the pockets of local community members, SolarShare strongly amplifies the local economic benefits of its solar projects.

"Solar Bonds are a great product with a decent return. I invested in line with my values and my belief in a profitable low-carbon economy."

—Christopher Charlesworth, Entrepreneur

FIRST NATIONS GAIN NEW POWER

The Aamjiwnaang First Nation from the Sarnia area and the Bkejwanong First Nations from Walpole Island are partnering with Northland Power to develop a 100 MW wind power project along Lake Huron near Grand Bend. The investment by these First Nations in the $383 million project is possible thanks to Ontario's Aboriginal Loan Guarantee Program put in place through the Green Energy Act.

According to the Ontario government, more than 35 First Nation and Métis communities are partnering in more than 240 renewable power projects across Ontario.[65]

"Under the *Green Energy and Green Economy Act* the opportunities for First Nations have been absolutely great . . . The foundation has been laid and there is growing excitement for moving forward."

—Ed Gilbert, Project Manager, Giiwedin Noodin First Nation Energy Corporation

POWER FOR SCHOOLS GOES A LONG WAY

The Toronto District School Board is taking advantage of Ontario's feed-in tariff program to demonstrate the future of energy to its students and to pay for badly needed roof repairs. The board started out with 12 pilot systems that over their contract life will generate $3.6 million in revenue, which will flow into the board's Environmental Legacy Fund. With solar power proving its worth, the board decided to use the opportunity to tackle its huge backlog of roof repairs. It partnered with an experienced solar provider to install systems on another 311 schools.[66] These systems will generate enough power to meet 15 per cent of the board's total electricity needs.

The project is being built and financed by a private company, School Top Solar Inc., which in return for using the school roofs will take care of 70 per cent of the board's outstanding roof repairs. The TDSB's director of Sustainability, Richard Christie, says once all 311 systems are in place, the board would be interested in further expanding its solar footprint through a continued FIT program. This is an example of how Ontario's green energy efforts are paying off for municipalities, schools and other public institutions that have used the FIT program and clean green power to meet some of their electricity and revenue needs.

Canadian Solar partnered with NCC Development to install a 152 kW rooftop solar array at Deer Lake First Nation Elementary School. This was the first project in an ongoing commitment to bring renewable energy to off-grid First Nations and other remote communities in northern Ontario.

CANADIAN SOLAR

Conclusion

Ontario got off to a good and fast start in the worldwide race to develop renewable energy sources. Ontario has also made important gains, including developing a critical mass of suppliers, driving technological innovation, and creating jobs. Many other jurisdictions are now joining the race and they will quickly catch up and pass us if Ontario slows its pace or stops running altogether.

Unfortunately, Ontario's current Long-Term Energy Plan leaves no room for further investment in wind and solar energy after 2021. Changing that plan and continuing to develop increasingly low cost wind and solar energy post 2021 would not only keep the valuable supply chain the province has developed intact, it would also sustain the thousands of jobs in Ontario's renewable energy industry.

In Ontario, continuing to develop renewable energy would not only have economic benefits, it would also help lower provincial GHG emissions. Currently, the province intends to double the use of natural gas-fired generating plants while it embarks on rebuilding up to 10 nuclear reactors. This is the wrong direction at a time when Ontario must focus on reducing carbon emissions on all fronts in order to keep on track to meet its emissions reduction targets.

Unfortunately, Ontario's current Long-Term Energy Plan leaves no room for further investment in wind and solar energy after 2021.

Further development of renewable energy could offset some of the need for natural gas generation and allow the province to forgo some costly nuclear reactor rebuilds. With the cost of wind power in the latest Large Renewable Procurement process coming within half-a-cent of Ontario Power Generation's "best case scenario" for the cost of power from rebuilt reactors at the Darlington Nuclear Station,[67] turning to renewable energy instead of rebuilding 10 reactors could save the province billions of dollars, especially if the rebuilds are anything like our past experiences with nuclear projects which ran far over budget.[68]

With the costs of climate change becoming increasingly apparent, the global commitment to reducing power sector emissions will accelerate. Ontario is well positioned to benefit from this huge global transition to cleaner energy, but only if it stands behind the policies that helped to make it a clean energy leader.

Ontario's experiences with renewable energy contain lessons for other jurisdictions as well. Despite some stumbles and some opposition to green power in certain communities and constituencies, Ontario's green energy policies remain popular and are supported by the majority of Ontarians.

The *Green Energy and Green Economy Act* has delivered on many of its promises. Ontario is a leading renewable energy producing jurisdiction in North America, home to green energy manufacturing facilities and a renewable energy industry that employs tens of thousands of people.[69] The Act also created opportunities for farmers, First Nations, schools, businesses and home-owners to participate in the green energy revolution. And it helped Ontario emerge as Canada's clean tech leader. Investing in green power can bring similar benefits to other jurisdictions.

The key now for Ontario is to commit to the future of this industry, in keeping with global trends where demand for clean, renewable energy is expected to continue to soar for decades to come. It is crucial that Ontario continue to invest in and support green energy to build a clean, healthy and prosperous future for all Ontarians.

In order to retain Ontario's clean energy jobs, build on the lead this province has established and to ensure emissions from Ontario's electricity sector continue to decline, we encourage the province to consider the following recommendations.

RECOMMENDATIONS FOR ONTARIO:

1. Commit to procuring more renewable energy in the Long-Term Energy Plan which is to be reviewed during 2016. Sustain domestic demand for renewable energy components and give renewable energy manufacturers and installers the certainty they need to keep their operations active in Ontario.

2. Develop an export strategy to ensure that Ontario's clean energy manufacturers capture a larger share of the demand for wind and solar power outside of Ontario. Pay particular attention to nearby U.S. states that are heavily reliant on coal and to other Canadian provinces, like Alberta and Saskatchewan, that have recently committed to building more renewable energy.

3. Commit to phasing out gas-fired electricity generation in a timely manner. Renewables and energy storage can take the place of gas, and our Long-Term Energy Plan can lead to fewer emissions and more support for Ontario-based clean technology. The contracts for a number of gas-fired generators will come up in the years ahead. Ontario needs to commit to taking these facilities off-line, instead of renewing or renegotiating the pricey and polluting contracts.

4. Disclose the fine print in the recent agreements to refurbish the Bruce and Darlington nuclear generation plants. Both of these agreements contain escape clauses that allow the province to terminate the contract if the project comes in over cost or behind schedule. Ontarians need to know how those escape clauses can be triggered, and they need to know if the province is getting a good deal for the projects that go ahead. Renewable energy can compete with nuclear, but Ontarians need to have the information in front of them to ensure good decision making and cost effectiveness.

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