

Investment in wind power in Ontario

A review of who really benefited from the government's pro-renewables economic strategy

In brief:

- *In 2009, the Ontario government launched the Green Energy and Green Economy initiative to use renewable energy projects to boost the Ontario economy, assuming it could provide incentives to help small companies grow and become competitive in the world-wide renewable energy sector.*
- *A review of the evolving ownership structure of wind power in Ontario shows that the major beneficiaries of the subsidies and above-market rates paid for electricity produced were large, multi-national corporations, with few fledgling Canadian-based ventures. Two-thirds of the subsidies went to foreign companies who flocked to Ontario.*
- *A key result of the program was the rapid escalation in electricity costs which in turn caused "energy poverty" for Ontario residents on fixed/low income, and chased manufacturing jobs out of the province to locations where lower cost electricity was available. Successive Ontario governments have had to subsidize electricity rates, adding to Ontario's long-term debt.*
- *Once early profits from creating new wind power projects were obtained, many foreign developers sold their projects to investment organizations. The Canada Pension Plan Investment Board and its investment partners now control one-third of Ontario's wind energy capacity. This has created a situation in which the Ontario government is borrowing money to protect seniors from being harmed by the investment strategy of the federal pension plan — a plan that was set up to support those same seniors.*
- *The history and evolution of ownership in the Ontario wind power industry should be considered by the federal government in order to avoid following a similar flawed strategy as part of its response to the economic crisis created by COVID-19.*

The great wind hope

In the fall of 2020, Canada's federal government announced its plans to focus on a "green" economy as part of its response to the impact of COVID-19 on the Canadian economy. Because this focus includes renewable energy and wind power development, it is appropriate to look back at Ontario's experience with a program that had similar objectives. The wind power program launched by the former Ontario Liberal government raises important questions about whether massive investments in renewable energy will actually provide the promised benefits to the Canadian economy.

The Green Energy and Green Economy program launched by Premier Dalton McGuinty in 2009 and continued by his successor Premier Kathleen Wynne, was built on themes that are very similar to the federal objectives: building Ontario's economy by investing in renewable power. The similarities are not surprising as some of the same staff, including the Prime Minister's advisor Gerald Butts, were involved in designing both programs.¹

On this basis, it is reasonable to review the results of Ontario's Green Energy Program before the federal government goes down the same path.

A popular view of the wind power industry in Ontario was that it is composed predominantly of Canadian companies. The reality only becomes clear when one looks behind the scenes at the actual participants in the Ontario program.

A range of subsidies for wind energy

Because wind power was considered an "infant" industry back in 2009, the government assumed it needed subsidies and incentives to survive. Investors in Ontario's wind power program enjoyed the benefits of many federal and provincial programs, all of which were intended to ease access to financing and improve investors' returns. The list of special incentives is long, but here are the four most important.

- **Granting wind and other renewable energy sources priority access**, or "first-to-the-grid" rights, requiring Ontario's Independent Electricity System Operator (IESO) to take their power whenever it was available, even when that meant paying other generators with contracts to curtail their production or dumping surplus energy at distressed prices on export markets.
- **Twenty-year contracts that initially guaranteed special feed-in-tariff (FIT) rates** far above the market rates received by conventional energy producers for the life of the contract; these rates started at \$135 per megawatt hour (MWh) and then declined to \$125 per MWh. In the final round, contracts offered by the Liberal government were based on responses to a request for proposals. The contracts awarded through this process averaged \$85 per MWh. The projects still were highly profitable due to the "first-to-the-grid" rights and the use of fewer, but more powerful turbines to meet the capacity commitments.

¹ <https://www.theglobeandmail.com/news/national/exodus-of-ontario-liberal-staffers-to-ottawa-set-to-begin/article27181936/>

- **Special tax benefits**, including the federal government’s accelerated capital cost allowances and the Canadian Renewable and Conservation Expenses allowance and the Ontario government’s cap on the property taxes that industrial wind turbines pay to local municipalities.
- **Other subsidies**, including the federal government’s ECOenergy for Renewable Power Program, \$1.4 billion over five years in Budget 2017, and continuing large research and development assistance.

As a result, in Ontario the wind power industry was given the “pot of gold”: a level of income and wealth that far exceeds the popular image of a struggling “green” industry. The reality was large companies looking to leverage this opportunity for substantial profit, squeezing out the small operators who might have needed subsidies to survive.

Who benefited?

It is important to note who exactly became the prime beneficiaries of government support aimed at boosting the Ontario economy.

- **Foreign investors were the largest beneficiaries** of this government investment with about two-thirds of Ontario wind power capacity being developed by foreign companies. Once the projects completed the profitable development phase and the rate of return was fixed for the remainder of the contract, the foreign investors showed a reduced interest in the Ontario market.
- In the years since the original push for wind power, the industry became a focus for asset managers, seeking premium returns for their investors. This included two Canadian organizations that purchased large positions in the Ontario wind industry. Canadian investors currently own just over 65%, but **foreign companies continue to own almost 36%** of Ontario’s wind power capacity.
- **Liberal Party supporters were major beneficiaries of the program** with 29% of the capacity developed by Canadian companies operated by people identified by Elections Ontario as donors to the Ontario Liberal Party.

Effectiveness as economic stimulus

Terms of the contracts put in place by Ontario governments between 2008 and 2016 drove up the cost of electricity in Ontario as the power utility was forced to buy intermittent power from these suppliers whether or not it was needed to meet electricity demand in Ontario. Surplus power was sold to neighbouring jurisdictions at a loss,² and other suppliers were paid to stop producing power to help manage the surplus.

The resulting costs were passed onto Ontario’s retail and business electricity users, creating energy poverty among seniors and people living on fixed incomes. In its 2016 annual report, the Association of Ontario Food Banks said: “Since 2006, hydro rates have increased at a rate of 3.5 times inflation for peak hours, and at a rate of 8 times inflation for off-peak hours. Households

² Canadian Council for Clean Reliable Energy, Commentary: Ontario’s High-Cost Millstone, page 3. <https://www.thinkingpower.ca/PDFs/Commentary/CCRE%20Commentary%20-%20Ontario%27s%20High-Cost%20Wind%20Millstone%20-%20Marc%20Brouillette%20-%20June%202017.pdf>

across Ontario are finding it hard to keep up with these expenses, as exemplified by the \$172.5 million in outstanding hydro bills, or the 60,000 homes that were disconnected last year for failing to pay. In rural Ontario, the effects of the rising cost of hydro can be felt even more acutely. According to a recent report, rural Ontarians can expect current hydro bills to increase by 11.5 per cent by 2017, on top of their current hydro costs, which are already higher than those in cities or larger urban areas.”³

When cost increases threatened the reelection of the Liberal government, the government created a new “Ontario Clean Energy Benefit” which was a subsidy for electricity costs. The stated purpose was to offset the high costs created by the investments needed to transition the electricity system to reduce the carbon emissions from electricity generation. The cost of the subsidy was funded from general government revenues which effectively added these costs to the provincial debt. This was intended to be a temporary solution for a transition period, but the PC government extended this solution by creating an “Ontario Electricity Rebate.”

The escalating costs of electricity were highlighted in two reports by the Auditor General’s office, and the government knew it had to take further action to control costs. In September 2016, after then energy minister Glenn Thibeault had spoken of the need to get electricity costs down, the government announced it was cancelling all plans for further procurement of renewable energy projects. The rationale was that Ontario’s power supply was adequate and also “90 per cent emissions-free.”⁴

Were carbon emissions actually reduced?

Critics of the government’s policies noted that the higher costs for electricity did not even result in environmental benefits. Professor of law and economics Michael Trebilcock wrote in a 2017 report that “These policies have had a dramatic impact on electricity costs in the province, but they have generated very limited environmental benefits and have had a negligible to negative effect on economic growth and employment.”⁵

Contrary to popular thinking and industry self-promotion, intermittent, weather-dependent wind (and solar) power did not replace Ontario’s coal-fired power generation. Elimination of coal-fired power generation was made possible by the refurbishment of the Bruce nuclear station. By the government’s own admission, Ontario’s power supply (chiefly nuclear and hydro) was largely emissions-free. Another myth is that wind power is a carbon emission-free source of electricity; the fact that wind power is an intermittent, unreliable source of power, its introduction to the Ontario energy supply created a need for back-up capacity that can be started on short notice when output from wind power facilities was not available. This is provided by natural gas generating facilities, many of which are owned by the same large companies that hold contracts to

³ Ontario Association of Food Banks, p. 15. <https://feedontario.ca/wp-content/uploads/2016/11/Hunger-Report-Digital.pdf>

⁴ Government of Ontario media release, September 27, 2016. <https://news.ontario.ca/en/release/41930/ontario-suspends-large-renewable-energy-procurement>

⁵ C.D. Howe Institute news release, August 2017. <https://www.cdhowe.org/media-release/sobering-lessons-ontario%E2%80%99s-green-energy-policies>

supply intermittent wind power to the grid. In the Ontario context, adding intermittent wind power to the grid actually increased the overall carbon emissions from the system.

Did Ontario's renewables program achieve objectives?

As can be seen from the company information provided below, with a significant proportion of ownership by foreign corporations and perhaps as much as two-thirds of the initial profits flowing outside of Canada, it is clear that the Ontario program failed to meet its objective of boosting the Ontario economy by creating new renewable energy companies that would supply the world. Rather, the result was higher cost electricity that in turn became a drag on job creation as manufacturing moved to other jurisdictions with lower energy costs.

Promises of an Ontario-based wind power industry which included manufacture of wind turbine components also failed to materialize, and job creation was minimal. Today, most components come from other countries; for example, the Nation Rise wind power project under construction in 2020, relies on turbine parts from Germany and Brazil for the foreign-owned developer to complete the project.⁶

In short, the results of the Ontario Green Energy program should provide a warning to the federal government. Fostering new wind power development to respond to the economic damage from COVID-19 would be a repeat of the poor energy policy decisions that harmed Ontario.

Ownership Structure of the Ontario Wind Projects

This section provides information on companies that are active in Ontario both as developers and current operators. The wind power industry is rapidly evolving with companies and projects continuing to change ownership. The information presented here is based on company reports and business news sources.

1. Non-Canadian developers/operators

Non-Canadian companies developed about two-thirds of Ontario's wind power projects. The entities involved are generally large players in the renewable energy market world-wide. They are certainly not "infant" companies that need government subsidies to operate. For the most part, they were not interested in creating long-term jobs in Ontario but were simply attracted by the high level of financial returns offered by the Ontario and federal governments to develop new wind projects. In some cases, development of these projects offered a market for turbine components that they manufactured. Some branch plants were created in Ontario, but these largely served the provincial market and once the flow of new Ontario projects ended, these manufacturing facilities were closed.⁷

After the power projects were operational, the focus of ownership shifted with interest from investment firms ("yieldcos") looking for higher long-term fixed income. This led to the

⁶ Port of Johnstown, 2019 Annual Review, pages 4-5. <http://www.portofjohnstown.com/files/Year-End-Review-2019-Final-Public-Jan-808324.pdf>

⁷ <https://nationalpost.com/news/canada/siemens-closes-wind-turbine-plant-in-tillsonburg-340-green-energy-jobs-gone>

consolidation of contracts awarded to domestic organizations as well as whole companies into larger investment packages with smaller domestic operations being purchased, and returns flowed offshore. While interest from non-Canadian developers in the Ontario wind market declined, two major Canadian asset management organizations took advantage of this situation by purchasing companies and projects to provide elevated returns for their investors.

Details on the non-Canadian owners/operators of Ontario wind projects are as follows.

Acciona: With headquarters in Madrid, Spain, Acciona develops and builds power projects for itself and third-party companies in 20 countries worldwide. As part of its “wind power value chain” the company also manufactures some turbine components. In Ontario, Acciona built the 76-MW Ripley wind power project in a partnership with Suncor Energy. In July 2017, Suncor sold its share in the Ripley project to Acciona.

Brookfield Renewable Partners: Headquartered in Bermuda, Brookfield Renewable Partners is a subsidiary of Brookfield Asset Management. Brookfield claims to be a “multi-technology, globally diversified, owner and operator of renewable power assets” which includes more than 70 wind power projects around the world. In Ontario, the company operates Prince (189 MW), Comber (165 MW) and Gosfield (50.6 MW) projects. In January 2020, Brookfield purchased the remaining shares of US-based TerraForm Power, which operates the Raleigh Wind Farm (78 MW).

Capstone Infrastructure: In January 2016, Capstone Infrastructure was purchased by UK-based Irving Infrastructure, which is in turn an subsidiary of iCON Infrastructure – an independent, British investment firm that is focused on energy and regulated utilities including thermal and renewable power facilities. Capstone developed a series of smaller projects in Ontario and continues to hold and operate them under the new ownership. Headquarters for Canada are in Toronto. In Ontario, projects are: Erie Shores-Port Burwell-Malahide (99 MW), Skyway 8 (9.5 MW), Grey Highlands (18.5 MW), Grey Highlands ZEP (10 MW), Ganaraska (8.8 MW), Snowy Ridge (5 MW) and Settlers Landing (4 MW). Capstone also operates the Goulais project (12.8 MW) with the Batchewana First Nation as a partner with 49% ownership,

DIF Infrastructure V: In May 2019, Netherlands-based DIF V entered the Ontario renewable energy sector by acquiring 100% of the shares of BluEarth Renewables. BluEarth had been described as a “private independent” company headquartered in Calgary. Prior to the purchase, its major shareholder was in fact the Ontario Teachers’ Pension Plan. Through this purchase, DIF V now operates two wind power projects in Ontario: St. Columban (33 MW) and the 60-MW Bow Lake project which is a partnership with the Batchewana First Nation.

EDF Renewables: This company is associated with EDF or Electricité de France, the power utility in France. Headquarters for EDF Renewables is in San Diego, California; the company operates in Canada as EDF EN Canada (EDF Energie Nouvelles). The company was awarded one of the LRP I contracts for the 60-MW Romney Wind power project and moved rapidly through the approval process receiving its Renewable Energy Approval on April 16, 2018. The project began commercial operation in January 2020.

EDP Renewables: EDPR is a division of EDP or Energias du Portugal. The company's headquarters are in Oviedo, Spain. EDPR claims to be the world's fourth largest wind power developer. In 2017, the company states, it produced 27,600 GWh of power from wind. In Ontario, it operates the 30-MW South Branch project between Ottawa and Cornwall. EDP acquired this project from Prowind which was originally awarded the contract in 2013. In 2014, EDP sold 49% of the project to Northleaf Financial Partners.

As part of the LRP I (Large Renewable Procurement I) process, the company received a contract for the 100-MW Nation Rise project that is currently under construction in North Stormont, south of Ottawa. In 2018, Axium Infrastructure acquired a majority stake in the Nation Rise project. Once commercial operation is achieved, the sale of the project to Axium Infrastructure will be complete.

Engie: Engie is based in France, with North American headquarters in Houston and an Ontario office in Markham. Engie acquired International Power (a British firm) which had previously bought AIM Power Gen which was managed by Mike Crawley, an early industry player linked to multiple wind turbine projects. Crawley has strong ties to the Ontario and federal Liberal party and is now CEO at Northland Power. International Power was in turn acquired by GDF Suez. Rebranded as Engie, the company operated the wind power projects at Cultus-Clear Creek-Frogmore (30 MW), Harrow (40 MW), Erieau (99 MW), East St. Clair (99 MW), Plateau (27 MW), and Point Aux Roches (49 MW). Subsequently these projects were sold to Axium Infrastructure.

Invenergy: This US-based company has its headquarters in Chicago, and offices in Toronto, Denver and Mexico City plus a European office in Warsaw. It currently manages or has developed 82 wind power projects. Invenergy developed the 78-MW Raleigh Wind project, which it sold to TerraForm, a subsidiary of SunEdison. Subsequently TerraForm was purchased by Brookfield Renewable.

Invenergy had proposed a project in North Perth, but the contract with IESO was terminated when it became impossible for the company to meet the contracted amount of power generation, due in part to citizen action and community opposition. It also obtained an LRP I contract for the Strong Breezes project in Dutton Dunwich (57.5 MW), but the contract for the project was cancelled by the government.

Invenergy continues to operate the 584-MW St. Clair Energy Centre, a natural gas plant near Sarnia.

Longyuan Canada Renewables/China Longyuan Power Group: With 10,000 wind turbines worldwide in its portfolio producing 17,000 MW of power, the China Longyuan Group is the world's largest wind power developer. The company also produces power from coal, and has minor interests in thermal, biomass and solar. Wholly owned subsidiary Longyuan Canada Renewables is headquartered in Toronto with nine employees, and operates the 91.4-MW Dufferin Wind power project (Melancthon).

NextEra Energy: NextEra Energy Canada along with Florida Light and Power is a division of NextEra Energy Inc. The company's headquarters are in Juno Beach, Florida with a Canadian office on Bay Street in Toronto. NextEra developed nine Ontario wind power projects under

contract to the provincial government. In April 2018, Canada Pension Plan Investment Board purchased four of these NextEra wind projects: Conestogo (22.9 MW), Jericho (149 MW), Bluewater (60 MW), and Summerhaven (124.4 MW). These projects are now operated by a subsidiary of the Canada Pension Plan Investment Board (CPPIB), Cordelio Power.

NextEra continues to operate the remaining five projects: Adelaide (60 MW), Goshen (102 MW), Cedar Point II (100 MW), Bornish (73.5MW), and East Durham (22 MW).

Pattern Energy: The company's slogan is "Transitioning the world to Renewable Energy." Headquarters are in San Francisco. The company partnered with Samsung Renewables to develop a series of projects using the capacity allocated to Samsung under its agreement with the Ontario Liberal government. These included Armow, Belle River, Grand Renewable, K2, North Kent and South Kent. Details of the partnership arrangements for each project are provided in the description of Samsung's role, below.

Pattern also entered into a 50/50 partnership with the Nigig Energy Corporation, which was owned by the Henvey Inlet First Nation to develop the 300-MW Henvey Inlet project.

In January 2019, Pattern sold its share of the K2 project to the Axiom Infrastructure. Pattern/Samsung partnership continued on the remaining projects until Pattern Energy Canada was purchased by the CPPIB in May 2019.

Prowind: Prowind is a subsidiary of Prowind GmbH of Germany. It is a very small player, having received the initial contract for the South Branch project (30 MW) which it sold to EDPR in 2013. The company also held the contract for the Nation Rise project which it sold to EDPR.

The company developed the 18-MW Gunn's Hill project near Woodstock, which it claims is a totally community endeavour. In fact, the lone community member in the investment leadership group went on to be president of Prowind Canada, and other "community" members were Toronto-based environmental organizations. Residents in the area launched an appeal of the project approval but were not successful. The Gunn's Hill project is now operated by RES Canada.

RES Canada: RES Canada is a subsidiary of the RES group with headquarters in the UK and a Canadian office in Montreal. RES' slogan is "Power for Good." The company boasts a portfolio of more than 7,000 wind turbines and asset management of 2 GW of wind power generating facilities. (RES Group was the subject of a BBC documentary called "Blown Apart" which featured an RES employee "Rachel" who infiltrated a village community with dreams of a green future for her community, only to be revealed eventually as a corporate operative trying to get people to sign wind turbine leases.) In Ontario, RES was involved in construction of South Kent (270 MW), North Kent (100 MW), Brooke-Alvinston (10 MW), Grand Valley 3 (40 MW), and Gunn's Hill (18 MW). RES continues to operate only the Grand Valley 3 and Gunn's Hill project. As a developer, RES was awarded an LRP I contract for the 32-MW Eastern Fields in The Nation, near Ottawa. This contract was cancelled by the PC government in 2018.

Samsung Renewable Energy: The company is a division of Samsung C&T Investment Trading Group. Samsung C&T is headquartered in Korea; there is an office in Canada located in

Mississauga. Samsung, also known as “the Korean consortium,” was given an extraordinary contract by the Ontario government in 2010 to supply \$9.7B CAD worth of electricity. The contract amount was slashed by a third in 2013; the government claimed Samsung had missed some deadlines, but comments from the then energy minister indicated the government knew it needed to act on high electricity costs. (An opposition party Member of Provincial Parliament commented that “sweetheart deals with private companies have not delivered good jobs, and they’ve created increased costs.”)⁸

Samsung used its contracted capacity to build a series of projects in partnership with Pattern Energy and other participants. Details of these arrangements are shown in the following table:

Project	Total	Samsung	Pattern	Other Participant(s)	Share
Armow	180 MW	50%	50%	None	
Belle River	100 MW	42.5%	42.5%	Bkejwanong First Nation	15%
Grand Renewable	149 MW	45%	45%	Six Nations of Grand River	10%
K2	270 MW	33.3%	33.3%	Capital Power	33.3%
North Kent	100 MW	35%	35%	Bkejwanong First Nation Entegrus Renewable	15% 15%
South Kent	270 MW	50%	50%	None	

Samsung (along with Capital Power) sold its share of the K2 project to Axiom Infrastructure in 2018. Samsung continued to operate the remaining projects in partnership with Pattern Energy until Pattern Canada was sold to the CPPIB in 2019. Since then, CPPIB now partners with Samsung on these projects.

Terraform Power: Headquartered in Bethesda MD, Terraform was a subsidiary of SunEdison Inc. SunEdison was a mega-renewable energy powerhouse that grew rapidly and then ran into financial difficulties. At its peak, SunEdison was the owner and operator of a 2,600-MW diversified portfolio of high-quality solar and wind assets, primarily in the US. One of these assets was the 78-MW Raleigh Wind project, which Terraform had purchased from Invenergy. As part of the US bankruptcy proceedings related to SunEdison, Brookfield Renewable Partners bought Terraform Power including the Raleigh Wind Project.

wpd Canada: This is a wholly owned subsidiary of wpd Europe/wpd AG, a private company headquartered in Bremen, Germany. The Canadian office is in Mississauga. The company is active in 18 countries and says it has installed 1,700 wind turbines. In Ontario, wpd operates the Springwood (8.2 MW), Whittington (6 MW), Napier (4 MW) and Sumac Ridge (10.25 MW) projects. It also had a contract for the 18-MW White Pines project in Prince Edward County which was cancelled by the Ontario government. The cancellation of this project raised objections from various investors in this project including the City of Munich, Germany.

⁸ Canadian Press, June 20, 2013. Ontario-Samsung deal dubbed a colossal failure. <https://globalnews.ca/news/658399/ontario-samsung-deal-slashed-by-3-7-billion/>

2. Canadian Operators/Developers

Canadian companies developed about one-third of Ontario's wind turbine projects. Canadian ownership of Ontario wind projects has increased in the past three years due to acquisitions by the Canadian Pension Plan Investment Board and Axium Infrastructure. This investment has partially offset the purchase of smaller Canadian firms by larger foreign companies.

The early participants in the industry were a mix of small start-ups, some of which had connections to the Ontario Liberal Party, plus large players in the fossil-fuel energy sector seeking to diversify their revenue streams. Some of the participants from the fossil-fuel industry also developed natural gas generating stations that were needed to provide back-up for the intermittent production of electricity from the wind turbines.

As the industry evolved, Canadian asset management organizations seeking the high yields offered by the generous wind turbine contracts put in place by the Liberal government purchased companies and/or operating projects. The fossil fuel companies decreased their participation in what became seen as non-core assets.

Indigenous participation in wind projects was also encouraged by the Liberal government with a number of First Nation communities signing on as partners in several projects. This strategy essentially saw revenues from electricity customers in Ontario being routed through wind power projects to support indigenous communities. One community pursued this aggressively, obtaining participation in four wind power projects.

Details on the evolving participation by Canadian firms in the Ontario wind industry follow.

Alberta Teachers Retirement Fund (ATRF) – Based in Edmonton, ATRF is an independent corporation that manages and administers pension plans for over 80,000 teachers in Alberta. ATRF has over \$16 billion of net assets under management. ATRF manages a diversified global portfolio composed of investments in public financial markets, infrastructure, private equity, real estate and absolute return strategies. ATRF is a minority stakeholder in the consortium led by Axium Infrastructure that now owns the K2 Wind project (270 MW).

Algonquin Power & Utilities Corp. – Algonquin is described as a Canadian utility involved in the generation, transmission and distribution of power. The headquarters are in Oakville, Ontario. At present in Ontario, the company's wholly owned subsidiary Windlectric Inc. sold half of its lone wind project to Newfoundland-based construction company Pennecon to build a 75-MW wind power project on Amherst Island.

Axium Infrastructure – Axium is an independent portfolio management firm dedicated to generating long-term investment returns through investing in core energy, transportation and social infrastructure assets. The firm benefits from the capabilities of a group of specialists with decades of experience acquiring, developing, financing, operating and managing infrastructure assets. Since 2010, the firm has invested, or committed to invest, in a diversified portfolio of over 100 North American infrastructure assets. Included among the Ontario assets that have been acquired by Axium are K2 Wind (270 MW), Cultus-Clear Creek-Frogmore (30 MW), Harrow (40 MW), Erieau (99 MW), East St. Clair (99 MW), Plateau Wind (27 MW), and Point Aux

Roches (49 MW). Axium's purchase of Fiera Infrastructure included a 50% share in the Cedar Point project (100 MW).

Axium's political connections may be of interest: Pierre Anctil, Axium CEO, joined SNC-Lavalin in 1997 after holding positions with the Quebec Liberal Party and working for Quebec Premier Robert Bourassa. Testimony at the Quebec Charbonneau Commission linked him to political fundraising including arranging for political donations from SNC-Lavalin employees that were later reimbursed by the company.⁹ Two other senior executives at Axium, Stephane Mailhot and Jean Eric Laferrière, also held executive roles at SNC-Lavalin.

Bkejwanong First Nation – The Liberal government offered incentives to developers bidding on contracts for new capacity if the bid included participation from indigenous communities. The Bkejwanong First Nation was aggressive in pursuing these arrangements and now holds a 15% share of two projects: Belle River (100 MW) and North Kent (100 MW) and 25% of the Grand Bend project in partnership with Northland Power and the Aamjiwnaang (Chippewas of Sarnia) First Nation. Bkejwanong also was a 15% participant in the Otter Creek project which was cancelled by the PC government.

BluEarth Renewables: With headquarters in Calgary, Alberta, BluEarth is described as a “private independent” company whose major shareholder is in fact the Ontario Teachers’ Pension Plan. It operates two wind power projects in Ontario: Bow Lake Wind (60-MW), and St. Columban (33 MW). The Bow Lake project is a 50% partnership with the Batchewana First Nation. In May, 2019, DIF Infrastructure V, a Dutch Infrastructure investment firm, announced that it had acquired 100% ownership of BluEarth Renewables.

Boralex: Boralex was created in 1990 as a joint venture between the leaders of three companies; the name Boralex is derived from the names of these companies: LaduBOR, ALbany Oil (U.S.) and EXar (U.S.). Headquarters are in Kingsey Falls, QC. Boralex is active in Canada, France and the US.

Ontario projects operated by Boralex are the Niagara Region Wind Farm (230MW), Port Ryerse (10 MW) and the Thames River Project (40MW) which was developed in partnership with Gengrowth. Boralex was also involved in the Otter Creek project in partnership with RES Canada and the Walpole Island First Nation. The FIT contract for this project was cancelled by the Ontario government.

Capital Power: Capital Power has its roots as the utility which supplied power to City of Edmonton. Still based in Edmonton, Capital is involved in a variety of power generating enterprises, including wind and natural gas. Capital Power was an early investor in the Ontario wind industry, developing the 40-MW Kingsbridge 1 project in Huron County which began operation in 2001. The second phase of this project became the 270-MW K2 project which Capital Power developed as a partner with Samsung and Pattern Energy. The K2 project was sold to Axium Infrastructure, along with two partners, in December 2018. Capital Power continues to

⁹ Montreal Gazette, November 11, 2014.

operate the Kingsbridge 1 project in Huron County as well as the 104-MW Port Dover and Nanticoke wind facility.

Capital Power also operates three natural gas generating facilities in Ontario: Goreway, York Cogeneration and East Windsor for a total capacity of 1,159 MW.

Canada Pension Plan Investment Board/Cordelio Power – Canada Pension Plan Investment Board (CPPIB) has been given a mandate by the federal government to increase its investments in renewable energy resources. These investments are being managed through Cordelio Power which is positioned as an independent power producer that develops, owns and manages renewable power facilities across North America but is in reality 100% owned by the CPPIB.

In May 2018, CPPIB investments announced that it had acquired a 49% interest in Enbridge's renewable energy projects including the Underwood/Cruickshank (189.8 MW), Greenwich (98.9 MW) and Talbot (98.9 MW) projects. In July of the same year, CPPIB purchased 100% of NextEra's Bluewater (60 MW), Conestogo (22.9 MW), Jericho (149 MW) and Summerhaven (124.4 MW) wind projects in Ontario.

In May 2019, the CPPIB completed an agreement to purchase the Canadian assets of Pattern Energy which will give the CPPIB an interest in the Armow (180 MW), Belle River (100 MW), Grand Renewable (148.6 MW), Henvey Inlet (300 MW), North Kent (270 MW), South Kent (100 MW) wind projects.

The Canada Pension Plan Investment Board and its partners now own about one-third of Ontario's wind energy capacity. This participation of the CPPIB in Ontario's wind power projects creates an interesting conflict between the high yields it earns from the projects and the high cost of electricity needed to generate these returns. The resulting high cost of energy is creating energy poverty among seniors on fixed incomes, many of whom are recipients of pensions provided by the Canada Pension Plan.

Enbridge: The company is best known as a producer and distributor of fossil fuels in Canada. Headquartered in Calgary, Alberta the company says it transports, generates and distributes energy, in that order. In an attempt at diversification, Enbridge moved into the renewable energy market. It operates 16 wind power projects in North America, including the Greenwich (98.9 MW), Talbot (98.9 MW) and Underwood/Cruickshank (189.8 MW) power facilities in Ontario. In May 2018, Enbridge monetized its investment in these projects by selling 49% of them to the Canadian Pension Plan Investment Board.

Entegrus Renewable Energy – This subsidiary of Entegrus Inc. is owned by the Municipality of Chatham-Kent, the City of St Thomas and CORIX Energy. CORIX is a US company that provides services to support municipalities in development and operation of infrastructure like electricity and natural gas distribution systems. Entegrus Renewable was created to hold investments in renewable energy projects; it now owns 15% of North Kent Wind in a partnership with Pattern and Samsung (each owns 35% of the North Kent project) and the Bkejwanong First Nation which owns 15% of the project. This participation by the Municipality of Chatham-Kent created a complex conflict of interest when the Chatham-Kent Public Health Unit was asked to

become involved in the investigation of resident complaints that the North Kent project was involved in contamination of their rural wells.

Gengrowth – A Canadian energy development company based in Toronto began in the real estate development industry. President Paul Merkur is also president of real estate developer First Option. Elections Ontario reports that President Paul Merkur is a contributor to the Ontario Liberal Party.

Gengrowth's focus has been on the development, construction and operation of small renewable energy projects. They built and continue to operate five 10-MW projects in Essex County: Gracey, Naylor, North Malden, Richardson and South Side. In partnership with Boralex, they developed and operate the Thames River project which is an amalgamation of four additional 10-MW projects.

Horizon Legacy: Horizon is a Toronto-based company that developed and operates the 10-MW Ernestown Wind project near Kingston and the Bala Falls Hydro Project in the Town of Muskoka Lakes. The company also has developed a small wind project in Nova Scotia and another in Minnesota. The roots of the company were in investing in real estate projects in the Toronto area but it added investments in renewable energy projects to its portfolio. Elections Ontario reports that the President of Horizon Legacy, Anthony Zwig, is a donor to the Liberal Party.

Kruger Energy: Kruger is a family-owned company headquartered in Montreal that is involved in paper, paperboard recycling, and energy. Kruger Energy was founded in 2004 to develop power projects in Canada, and currently operates the 101.2-megawatt facility at Port Alma, and the 99.4-MW Kruger Chatham Wind Farm in Ontario. The company also put forward a proposal in 2015 for another Chatham-Kent facility.

Northleaf Capital Partners – Northleaf is a Canadian private capital investment firm with US\$14 billion in private equity, private credit and infrastructure commitments under management on behalf of public, corporate and multi-employer pension plans, endowments, foundations, financial institutions, family offices and high net worth individuals. Founded as TD Capital, a subsidiary of TD Bank Financial Group, Northleaf transitioned to a management-owned firm in 2009. The firm creates pooled investment partnerships for its clients. In 2014, it purchased a 49% share in the South Branch (30 MW) project from EDP Renewables.

Northland Power: Northland Power has headquarters in Toronto. The company operates two wind power projects at present: McLean's Mountain on Manitoulin Island (60 MW) which is a 50/50 partnership with the Mnidoo Mnising First Nations. The second project was the Grand Bend facility in Zurich (100 MW) where Northland owns 50% of the project with Aamjiwnaang (Chippewas of Sarnia) First Nation and the Bkejwanong (Walpole Island) First Nation, each owning a 25% stake through the Giiwedini Noodin First Nation Energy Corporation.

Northland Power also operates two natural gas generation plants (Thorold and Iroquois Falls) with a combined capacity of 385 MW. It also owns the 110-MW Kingston natural gas generation plant which was shut down by the current PC government.

Northland is involved in two offshore wind projects in Europe and owns 100% of the Nordsee wind power project. Northland is also involved in solar projects in Ontario.

Since 2019, the CEO of Northland is Mike Crawley, former CEO of AIM PowerGen and also chair of a McGuinty government panel that looked at a mix of energy resources for Ontario early in that government's mandate; he was later president of the Ontario Liberal Party, and subsequently, the Liberal Party of Canada.

Saturn Power – Saturn Power develops, operates and owns solar, energy storage and wind power projects. Its head office is located in Baden Ontario with offices in Turkey and Seattle. Saturn operates the 10-MW Gesner wind project. Elections Ontario reports that the President and Founder, Doug Wagner, is a contributor to the Ontario Liberal Party.

Suncor: The company describes itself as an “integrated energy company.” With headquarters in Calgary, Alberta, Suncor currently operates four wind power projects in Canada, one of which is the Adelaide (40 MW) power project in Ontario. But the company used to own more: in 2015, however, Suncor announced it was divesting almost all its wind projects, particularly in Ontario, as “non-core assets” and so sold off its shares in the Ripley (76 MW), Cedar Point (100 MW) and Kent Breeze (20 MW) projects.

TransAlta: Based in Calgary, TransAlta owns and operates the wind power project on Wolfe Island (famous for being one of the wind power projects with the highest number of bird kills in North America) and phases 1 and 2 of the Melancthon project in Shelburne (199 MW). The company claims production of 2,300 megawatts of power, of which 54% is from wind, in 18 facilities around the world. Wolfe Island and Melancthon received payments not only from their power purchase agreements with Ontario but also federal ECOenergy payments. TransAlta also operates the 499-MW Sarnia natural gas generation facility.

Unifor – Prior to the launch of the FIT program, the then Canadian Autoworkers Union received a contract to supply electricity from a 500-kW turbine located in the parking lot at their recreation centre facility on the edge of Port Elgin. As this project was created before the Ontario Regulation 359/09 was issued, the normal setbacks from residential properties and building lots did not apply and the turbine was located very close to residential properties. As a result, this single small turbine accounted for the fourth largest number of complaints of any Ontario turbine project.¹⁰ Acoustic testing and a compliance order have not resolved the concerns of the residents.

Veresen Inc.: Veresen was an Alberta-based pipeline and energy company. It also owned and operated the Grand Valley 1 (20MW) project as well as the St Columban project (33MW). In early 2017, the company was acquired by Pembina Pipelines for \$6.4B CAD. Following the purchase, Pembina Pipelines sold the St Columban project to BluEarth Renewables.

¹⁰ Wind Concerns Ontario, 2020. Response to Wind Turbine Noise Complaints, Third Report:2017, page 25.

Vineland Power – Vineland is a partnership between Loeffen Farms and Rankin Construction that owns and operates the 9-MW HAF Wind Project in West Lincoln.

3. Current Beneficiaries of the Government Wind Energy Subsidies

The various changes in project and corporate ownership have created a situation where the subsidies being paid by Ontario electricity users are benefitting a relatively narrow group of organizations.

The largest participant in the Ontario wind industry is the Canadian Pension Plan Investment Board. As shown in the following table, through direct ownership and partnerships, it is involved in about one-third of the revenue streams.

Status	CPPIB Share	Partner Share	Minority Shares	Total Share All Partners
Full Direct Ownership	6.8%			6.8%
Samsung Partnerships	6.9%	6.9%	1.1%	14.9%
Nigig Partnership	2.8%	2.8%		5.6%
Enbridge Partnerships	2.6%	2.8%		5.4%
Total	19.1%	12.5%	1.1%	32.7%

Axium Infrastructure and its partners currently control 11.5% of Ontario’s operating projects. If the Nation Rise project becomes operational, then Axium’s share of projects will increase to 13.1%.

Four other firms control more than 5% of the capacity. These companies include Brookfield Renewable, NextEra, TransAlta, and Boralex. Collectively these firms control 27.4% of project capacity.

The final 28.5% of Ontario’s wind power capacity is controlled by twenty-five different companies.

The dominant ownership position of large organizations in Ontario wind industry suggests that the large government subsidies were not required to ensure the development of these projects. Rather, the industry is dominated by organizations who are seeking the strong financial returns that these support payments create.

4. Wind power development suppliers

In addition to the developers of wind power projects, various international companies supply the construction and operation of the facilities. These include:

Enercon Canada - Germany

Senvion Canada - Germany

GE Renewable Power - US

Vestas Wind Systems - Denmark

Siemens Canada – Germany

Summary

The preceding review of the changing ownership of Ontario's wind programs dispels many of the standard myths that surround the wind power industry.

- Ontario's electricity sector was, and continues to be, largely from carbon emission-free sources like nuclear and hydro power generation. This means that wind turbines are not a meaningful climate change investment. In fact, the intermittent and fluctuating nature of power generated by wind turbines requires back-up generation capacity fueled by natural gas — a source of carbon emissions.
- Wind power also proved to be an ineffective tool to stimulate the Ontario economy. Foreign companies were the major beneficiaries of the incentive programs offered by the federal and provincial governments. Any impact on the local Ontario economy was limited to lower level, short-term construction jobs, as documented by the Auditor General.¹¹
- The contracts put in place for renewable energy resulted in rapid increases in electricity rates in Ontario. These high costs contributed to the movement of employment to other jurisdictions with lower electricity costs and forced many Ontario residents on low and/or fixed incomes into energy poverty. To counteract these negative impacts on the economy, Ontario governments were forced to create subsidy programs for electricity rates. The cost of these subsidies ended up being funded by increased debt.
- The ownership information does not indicate that Ontario's program created a thriving home-grown renewable energy sector. Any development expertise was absorbed by existing large international companies and any new manufacturing jobs were short-lived.
- Pension plans and private assessment management firms now hold a major position in the Ontario wind industry. As a result, long-term high returns on investment via to the expensive contracts awarded to wind power developers are now funding pensions and

¹¹ Auditor General report 2011, page 91.

<https://www.auditor.on.ca/en/content/annualreports/arreports/en11/303en11.pdf>

high-end private investors, while the same time causing economic hardship for businesses and ordinary electricity customers.

Based on the findings of this report, it is difficult to conclude that Ontario's investment in wind power met the lofty objectives of the Green Energy and Green Economy program. These results should provide a warning to a federal government that appears to be planning to replicate the Ontario strategy in a Canada-wide program.

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Wind Concerns Ontario is a coalition of community groups, families and individuals concerned about the negative impact of industrial-scale or grid-scale wind power development on Ontario's economy, environment and human health.

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APPENDIX

Wind power projects in Ontario by number of turbines, capacity, and developer

Project Name	Location	No. of Turbines	Capacity (MW)	Developer	2020 Owner
Adelaide Wind Energy	Middlesex Cty	37	60.0	NextEra	NextEra
Amherst Island	Lennox Addington	26	74.3	Algonquin Power	Algonquin Power
Armow	Bruce Cty	92	180.0	Samsung/Pattern	CPPIB/Samsung
Arthur Wind	Dufferin Cty	5	10.0	windreich	windreich
Belle River	Essex Cty	41	100.0	Samsung-Pattern	Samsung/CPPIB
Bluewater	Huron Cty	41	60.0	NextEra	Cordelio
Bornish	Middlesex Cty	45	72.9	NextEra	NextEra
Bow Lake Wind Farm	Algoma District	36	58.3	BluEarth/ Aboriginal	DIF Infrastructure V/Aboriginal
Brooke-Alvinston	Lambton Cty	4	10.0	RES Americas	Capstone
Cedar Point	Lambton Cty	46	100.0	NextEra/Suncor	NextEra/Axium
Clear Creek	Norfolk Cty	6	9.9	AIM Power Gen	Engie
Comber	Essex Cty	72	165.0	Brookfield Renewable Power	Brookfield Renewable Power
Conestogo	Wellington Cty	10	22.9	NextEra	Cordelio
Cruickshank Wind	Bruce Cty	5	8.3	Enbridge	Enbridge/CPPIB
Cultus	Norfolk Cty	6	9.9	AIM Power Gen	Axium Infrastructure
Dufferin Wind	Dufferin Cty	49	99.1	Longyuan	Longyuan
East Durham	Grey Cty	14	23.0	NextEra	NextEra
East Lake St Clair	Chatham-Kent	50	99.0	AIM Power Gen/Engie	Axium Infrastructure
Erie Shores	Elgin Cty	66	99.0	AIM Power Gen	Capstone
Erieau-Blenheim	Chatham-Kent	55	99.0	AIM Power Gen/Engie	Axium Infrastructure
Ernestown Wind Farm	Lennox-Addington	5	10.0	Horizon Legacy	Horizon Legacy
Ferndale	Bruce Cty	3	5.1	Capstone	Capstone
Frogmore	Norfolk Cty	6	9.9	AIM Power Gen	Axium Infrastructure
Ganaraska ZEP	Durham RM	9	17.6	Capstone	Capstone
Gesner	Chatham-Kent	5	10.0	Saturn Power	Saturn Power
Gosfield	Essex Cty	22	50.6	Brookfield Renewable Power	Brookfield Renewable Power

Goshen	Huron Cty	72	102.0	NextEra	NextEra
Goulais	Algoma District	11	25.0	Capstone	Capstone
Gracey	Essex Cty	5	10.0	Gengrowth	Gengrowth
Grand Bend Wind Farm	Huron Cty	48	100.0	Northland Power	Northland Power
Grand Renewable	Haldimand Cty	67	148.6	Samsung/Pattern	Samsung/CPPIB/Si x Nations
Grand Valley 1	Dufferin Cty	9	19.8	Veresen	Pembina Veresen
Grand Valley Wind	Dufferin Cty	17	40.0	RES Americas	RES Americas
Greenwich	Thunder Bay	43	98.9	RES Americas	Enbridge/CPPIB
Grey Highland Clean Energy	Grey Cty	9	18.5	Capstone	Capstone
Gunn's Hill	Oxford Cty	10	18.0	Prowind Canada	RES Americas
HAF Wind	Niagara RM	5	9.0	Vineland Pwr	Vineland Power
Harrow	Essex Cty	24	40.0	AIM Power Gen/Engie	Axiom Infrastructure
Henley Inlet	Parry Sound	100	300.0	Pattern/Nigig Power	CPPIB/Nigig Power
Huron Wind Bruce	Bruce Cty	5	9.0	Trans Canada	Trans Canada
Jericho	Lambton Cty	97	150.0	NextEra	Cordelio
K2	Huron Cty	140	270.0	Samsung/Pattern	Axiom Infrastructure
Kent Breeze	Chatham-Kent	8	20.0	TransAlta	TransAlta
Kingsbridge	Huron Cty	22	39.6	Capital Power	Capital Power
Kruger CK	Chatham-Kent	44	100.0	Kruger	Kruger
McLean's Mountain	Manitoulin	24	60.0	Northland Power	Northland Power
Melancthon 1& II	Dufferin Cty	88	132.0	TransAlta	TransAlta
Mother Earth	Manitoulin	2	4.0	M'Chigeeng First Nation	M'Chigeeng First Nation
Napier Wind	Middlesex Cty	2	4.1	wpd	wpd
Naylor	Essex Cty	5	10.0	Gengrowth	Gengrowth
Niagara Region WF	Niagara RM	77	230.0	Boralex	Boralex
North Kent	Chatham-Kent	48	100.0	Samsung/Pattern/ RES Americas	Samsung/CPPIB/+
North Malden	Essex Cty	5	10.0	Gengrowth	Gengrowth
Oxley	Essex Cty	3	6.2	Bullfrog Power	Bullfrog Power

Plateau Wind Dundalk	Dufferin Cty	18	27.0	AIM Power Gen/Engie	Axium Infrastructure
Pointe aux Roche	Essex Cty	27	48.6	AIM Power Gen/Engie	Axium Infrastructure
Port Alma	Chatham-Kent	44	101.2	Kruger	Kruger
Port Dover Nanticoke	Haldimand Cty	58	104.4	Capital Power GP	Capital Power GP
Port Ryerse	Norfolk Cty	4	10.0	Boralex	Boralex
Prince 1 + II	Sault Ste Marie	126	181.5	Brookfield Renewable Power	Brookfield Renewable Power
Proof Line	Middlesex Cty	4	6.6	Capstone	Capstone
Quixote1	Bruce Cty	1	2.4	Leader Resources	Leader Resources
Raleigh CK	Chatham-Kent	52	78.0	Invenergy	Axium Infrastructure
Ravenswood	Lambton Cty	6	9.9	Capstone	Capstone
Richardson	Essex Cty	5	10.0	Gengrowth	Gengrowth
Ripley Wind Farm	Bruce Cty	38	76.0	Suncor Acciona	Acciona Energy
Romney	Chatham-Kent	17	60.0	EDF Renewables	EDF Renewables
Settlers Landing	Peterborough	5	10.0	Capstone	Capstone
Skyway 8	Southgate	5	9.5	Capstone	Capstone
Snowy Ridge	Peterborough	5	10.0	Capstone	Capstone
South Branch	Stormont, Dund. Glengarry	10	30.0	EDP Renewables	EDP Renewables
South Kent	Chatham-Kent	124	270.0	Samsung/Pattern/ RES Americas	Samsung/CPPIB
South Side	Essex Cty	5	10.0	Gengrowth	Gengrowth
Springwood Wind	Wellington Cty	4	8.2	wpd	wpd
St Columban	Huron Cty	15	33.0	Veresen	DIF Infrastructure V
Sumac Ridge	Peterborough	5	10.3	wpd	wpd
Summer- haven	Haldimand Cty	58	128.8	NextEra	Cordelio
Suncor Adelaide	Middlesex Cty	18	40.0	Suncor Energy	Suncor Energy
Talbot	Chatham-Kent	43	98.9	RES Americas/ Enbridge	RES Americas
Thames River	Chatham-Kent	20	40.0	Boralex/ Gengrowth	Boralex/ Gengrowth
Underwood	Bruce Cty	110	181.5	Underwood	Enbridge/CPPIB
Wainfleet Wind Farm	Niagara RM	5	9.0	Loeffen Farms	Loeffen Farms

Whittington Wind	Dufferin Cty	3	6.2	wpd	wpd
Wolfe Island	Lennox-Addington	86	198.0	TransAlta	TransAlta
	Total	2,578	5,347		