



## Small Wind Research Paper: Exploring potential for Danish exports to Brazil, Canada\*, Japan, and the United States

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## INTRODUCTION

Based on the agreed Framework Agreement, The Trade Council is pleased to submit a market overview of the small wind sectors of Brazil, Canada, Japan, and the United States, with additional emphasis placed on opening market opportunities for Danish small wind manufacturers in Canada. Small scale wind continues to be a largely untapped and underutilized market for these targeted countries, and with increased interest from the public and government, these locales offer potential expansionary opportunities for Danish wind technologies, but also come with their own challenges. Overall, opportunities will be highlighted throughout the report and will provide an overview of the current competitive landscape in these markets. In addition, a more in-depth Market Evaluation and Go-to-market plan has been conducted for the Canadian small wind market, and will conclude with a market visit in October 2015 and follow-up meetings.

This report follows the layout of the agreement between the Danish Trade Council Toronto and the consortium of small wind companies, led by Danish Technical University, Risø Campus. In this format, the report will begin with Market Overviews for the four identified countries to provide a brief overview on the current standing of each market in small wind.

We will provide a more in depth analysis of the market opportunities in Canada for small wind, with focus on provinces with FIT Programs in place. The project will culminate with a delegation visit to Toronto, Canada in October 2015.

From research conducted in the making of this report it is recommended that we approach both potential distributors in Canada to supply the turbines while also taking our presence at Canwea to engage directly with potential FIT program participants (individuals, farmers, universities, municipalities) to build awareness and trust in the Danish manufacturers' product lines and approach to wind energy generation.

## STEP 1: MARKET OVERVIEWS

### AN UPDATED LOOK AT BRAZIL, JAPAN, UNITED STATES

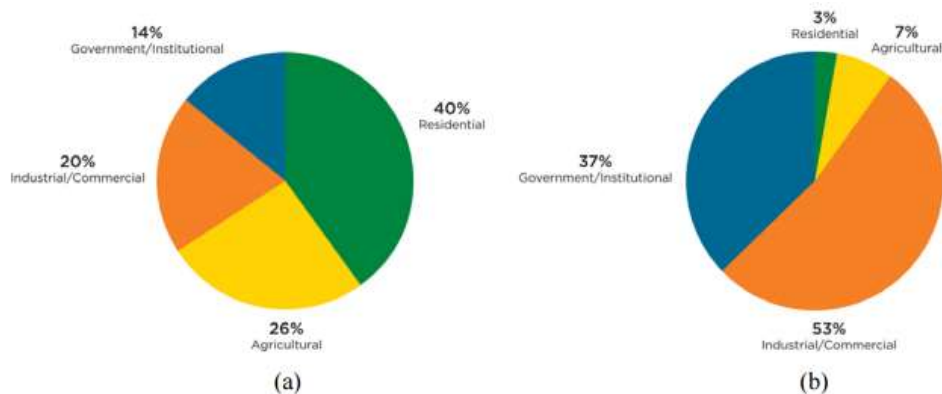
#### UNITED STATES

##### OVERVIEW

Being both one of the largest producers and markets for wind technology, small wind continues to have a significant presence in the U.S. and is supported at the federal and state level. While international and domestic standards define small wind turbines as having a rotor swept areas up to 200 square meters (approximately 50kW) for certification purposes, the IRS enables small wind to include turbines up through 100kW for the purpose of federal investment tax credit eligibility.

The distributed wind market is divided into four subsections:

- Residential (includes cabins, rural homesteads, suburban homes, etc.)
- Industrial/Commercial (large manufacturing facilities, food processing plants, small businesses, etc.)
- Government/Institutional (schools, universities, municipal facilities, etc.)
- Agricultural (includes all types of farms, ranches, and agricultural operations)



**Figure 1: 2013 Distributed Wind Market Applications (a) by Project and (b) by Capacity**

Following the expiration of the federal production tax credit and the phasing out of U.S. Treasury 1603 Program, there has been a significant YoY decline in small wind installations. It remains to be seen whether policy alternatives will be renewed at the federal level.

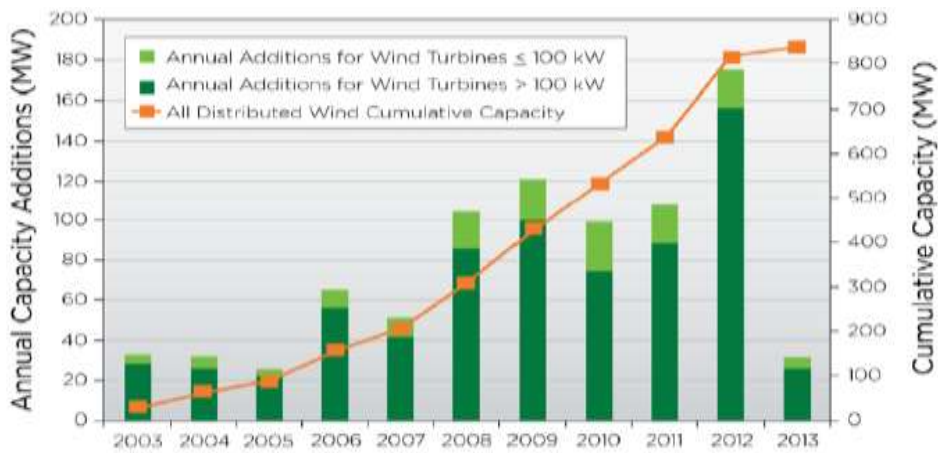


Figure 2: U.S. Distributed Wind Capacity

## GOVERNMENT REGULATIONS

There continues to be sizeable support for wind energy both at the state and federal level. However, policy lengths are consistently in flux, with incentive programs varying widely in terms of the amount of funding available, the total number of projects being supported, and the length of time they are available.

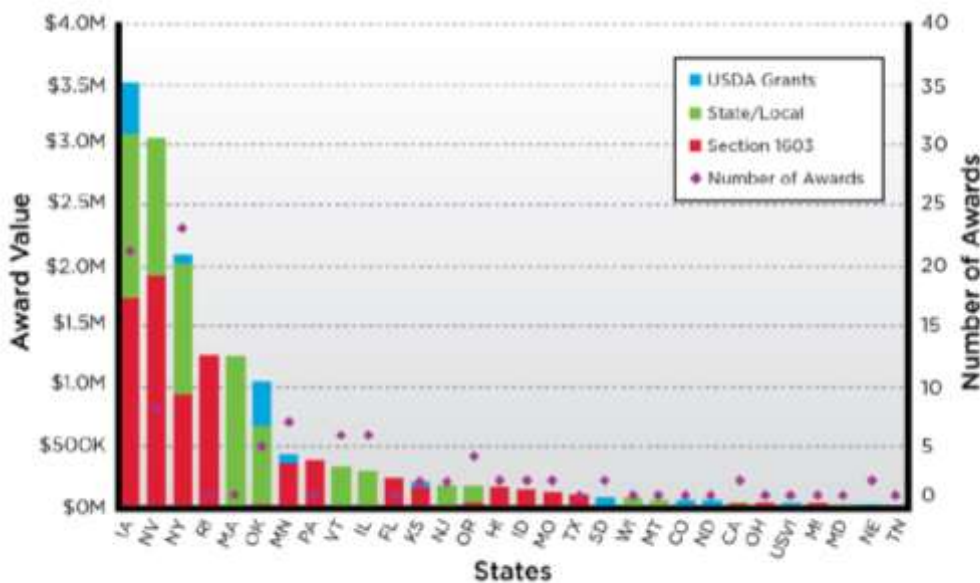


Figure 15: 2013 U.S. Distributed Wind Incentive Awards

## FEDERAL INCENTIVES

### Business Energy ITC

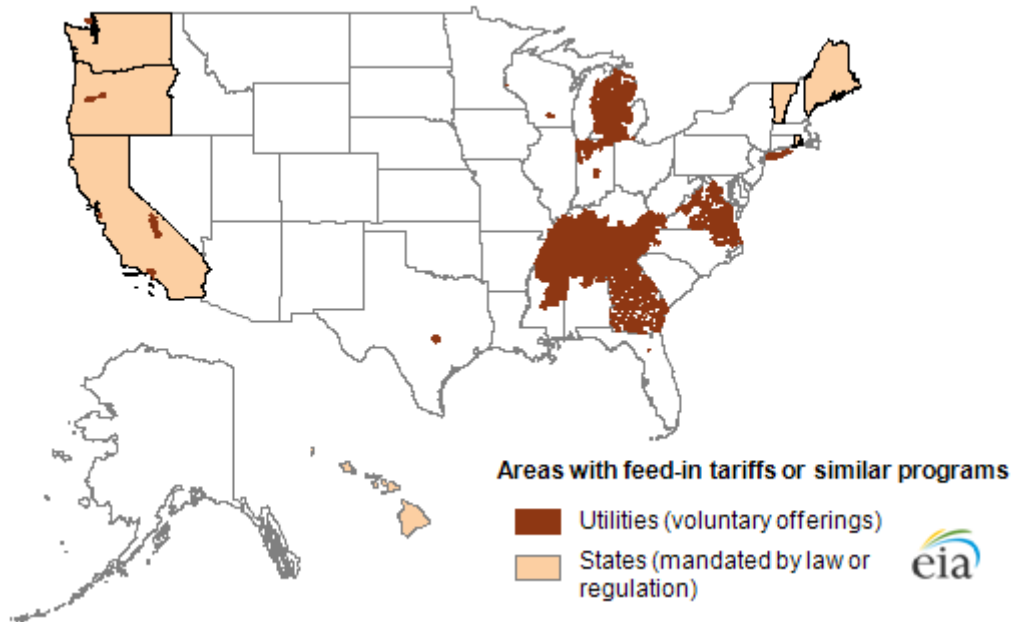
- Provides 30% credit against capital costs of a project after the project is placed in service
- Credit has expired for turbines larger than 100kW at the end of 2013. However, the comparable 30% Residential Energy Tax credit is still available for small win projects through till 2016

U.S. Department of Agriculture: Rural Energy for American Program (REAP)

- Provides financial assistance to agricultural producers looking purchase renewable energy systems
- Loans guarantees up to 75% of the project's cost, or up to \$25 million
- Grants issued for up to 25% of a project's cost, or up to \$500,000

## STATE INCENTIVES

### U.S. states and utilities with feed-in tariffs or similar programs



Currently the US has a mix of municipal/local and state level initiatives favorable to renewable energy. The majority of feed in tariff programs at the state level are almost exclusively for large wind projects, with the exception of Hawaii and Vermont. Hawaii provides 0.110 EUR/kWh for projects under 100kW; Vermont provides 0.20 EUR/kWh for projects under 15 kW.

#### California

- Self-Generation Incentive Program: Provides support to existing, new, and emerging distributed energy sources.

#### Massachusetts

- Clean Energy Center: Provides incentives and rebates for residential households shifting to renewable energy; more of a focus on PV solar

#### Wisconsin

- Focus on Energy: Similar to Clear Energy Center, focus on PV over wind

#### Montana

- North Western Energy: Also imbalanced in favour of solar

#### New Jersey

- Clean Energy Program: Includes both wind and solar, but has certain provisions that result in a bias towards increased solar funding

#### Net Metering:

- Monthly rollover of credits for excess generation is only allowed in portions of 30 states; only 10 states have statewide net metering policies: California, Delaware, Hawaii, Louisiana, Maine, Maryland, New Hampshire, Vermont, Washington, West Virginia)

## ASSOCIATIONS

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### National

- [American Wind Energy Association](#)
- [Distributed Wind Energy Association](#)
- [Northeast Sustainable Energy Association](#)

### Prominent State-Level Associations

- [Iowa Wind Energy Association](#)
- [Alliance for Clean Energy New York](#)
- [Renewable Energy Vermont](#)
- [Wind on the Wires \(Illinois\)](#)
- [New Jersey Wind Working Group](#)

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## BRAZIL

### OVERVIEW

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While the Brazilian market has a high degree of interest in sustainable energy, government initiatives continue to favor large infrastructure projects over decentralized systems and currently has not FIT programs available. However, there appears to be some support for the development of small wind systems among communities and industries favorable to partial or total own-energy, provided excess energy generation is able to feed back into the electrical system. The Brazilian energy regulator classifies small wind into two categories: minigeneration (producing up to 100 kW) and microgeneration (from 100kW to 1 MW)<sup>1</sup>.

### STRENGTHS & CHALLENGES

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Distributed energy has been formally characterized as the following: the energy must be produced near the customer and directly connected to the distribution grid and come from any energy source, excluding hydroelectric plants over 30mW, with energy efficiency below 75%.<sup>2</sup> Some positives in favor of small wind opportunities include:

- Fast deployment of the systems in difficult to access regions
- Lower losses, since energy consumption is near the consumer
- Limited environmental impact
- Enables governments to postpone additional investments into the expansion of distribution and transmission systems

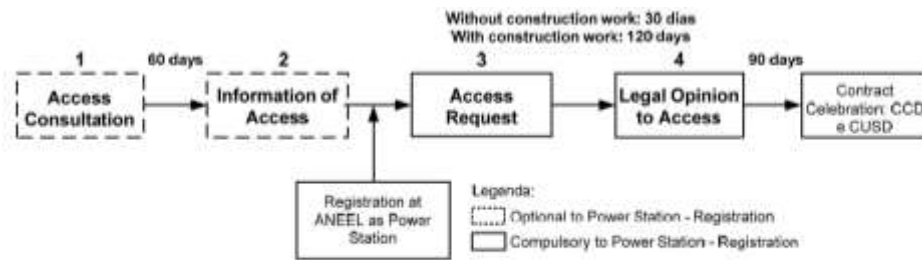
However, the expansion of small wind in the Brazilian market is not without some challenges:

- Current distribution lines are not prepared for bidirectional energy flows
- Increased complexity of operation lines
- High cost investments with high return time
- Long processing times for grid connections

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<sup>1</sup> <http://www.cresesb.cepel.br/publicacoes/download/artigo/DEWEK2012.pdf>

<sup>2</sup> [http://proceedings.ewea.org/annual2012/allfiles2/1492\\_EWEA2012presentation.pdf](http://proceedings.ewea.org/annual2012/allfiles2/1492_EWEA2012presentation.pdf)



Reference: PRODIST – Module 3.  
**Figure 2:** Flowchart of steps to be done to connect power station (Certification of Register) into the distribution grid.

## GOVERNMENT REGULATIONS

While there continues to be a lack of an explicit programs targeting small wind development, the Brazilian government has come out strongly in favor of clean energy sources and has gone about developing policies to promote such energy goals:

- The Alternative Energy Source Incentive Program, PROINFA, was created in 2002 and aimed to stimulate development in wind, biomass and small hydro projects by subsidizing the higher cost of alternative energy through a levy on consumers. This feed in tariff program ended in 2006; there appears to be little political support for renewing similar programs in the future, with the current Brazilian government prioritizing price stability combined with an abundance of cheaper hydro-electric sources, it appears unlikely FIT programs will be initiated in the near future.
- The Electricity Development for States and Municipalities, called PRODEEM, and the Luz para Todos (Electricity for All) federal initiative encourages the development of alternative energy systems in rural and isolated parts of Brazil
- The Brazilian electrical regulator ANEEL now allows independent and individual producers to use renewable energy generation to connect to the national grid and a net metering compensation system has been introduced to offer credits on energy bills
- The Brazilian Development Bank has several credit options for companies operating in the renewable energy sector

Efforts to increase energy access in rural and inaccessible regions of Brazil make small wind quite compelling, with the President of the Brazilian Wind Energy Association recently noting the country's greatest wind potential is concentrated in impoverished areas of the country.<sup>3</sup>

## ASSOCIATIONS

- [Brazilian Wind Energy Association](#) (ABEEoílca)
- [Câmara de Comercialização de Energia Elétrica](#) (Brazilian Power Trade Chamber)

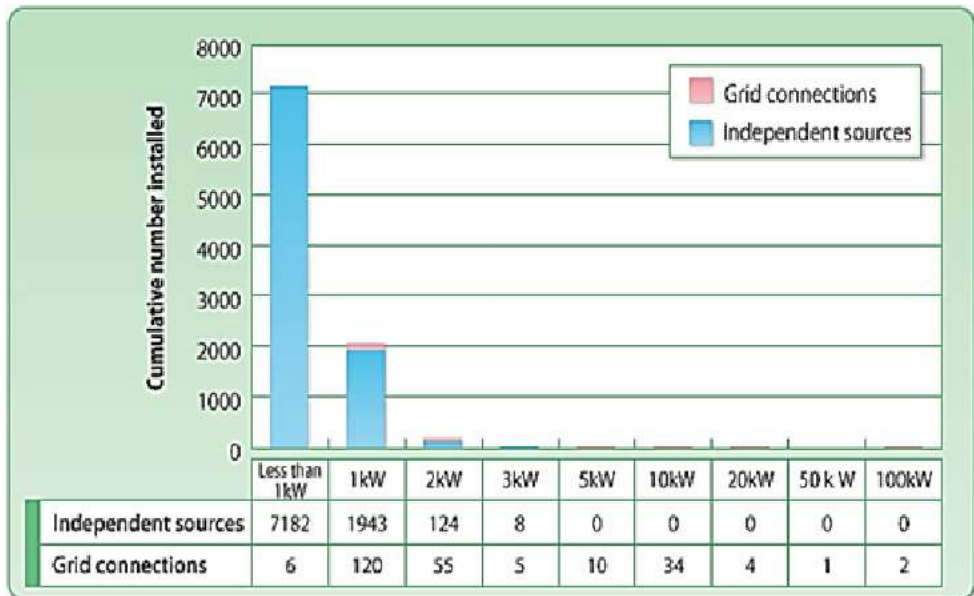
<sup>3</sup> <http://www.theguardian.com/global-development-professionals-network/2014/nov/21/brazil-wind-capacity-hydropower-energy-renewables>



OVERVIEW

The Japanese energy market continues to be in transition as it attempts to compensate for the closure of many of its nuclear power facilities and has attempted to bolster this shift through a FIT program. Following the events in 2011 at Fukushima, Japanese dependency on nuclear has gone from 50 operational reactors down to 2, representing a significant shortfall in electrical production capacity. With public sentiment still continuing to be in favour of keeping nuclear facilities closed for the foreseeable future, government support has shifted towards supplementing alternative electrical programs, including the development of small wind<sup>4</sup>.

While the current government attempts to re-open a portion of the nuclear reactors available, wind energy has the perfect opportunity to gain market share. Current support for small wind in Japan covered units with a maximum rated capacity of 100 kW, with an emphasis being placed on projects in the 10 kW range<sup>5</sup>. As the majority of turbine installations taking place are independent from the power grid, this suggests there may be an underlying demand for small wind in the market.

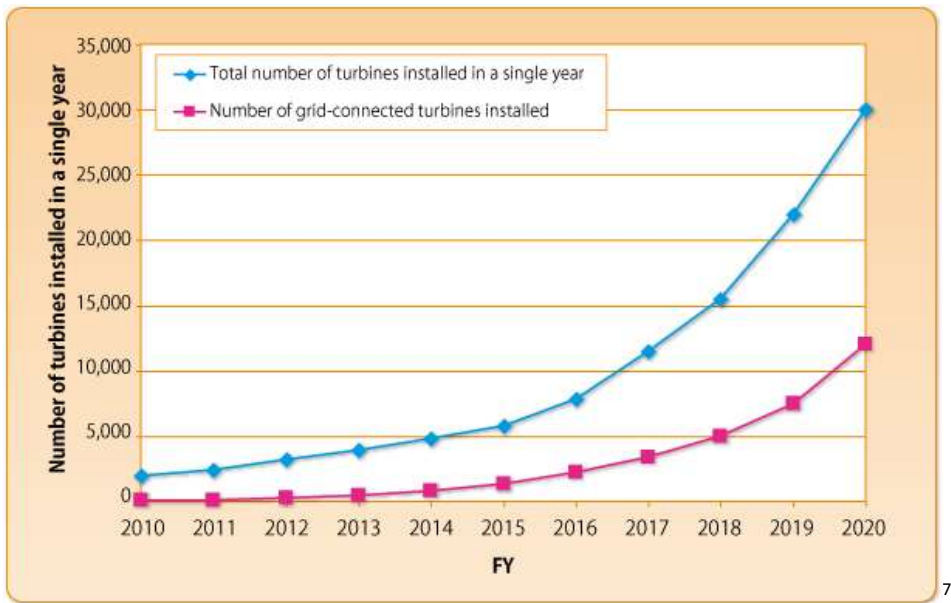


Both graphs above and below are sourced from the Ministry of Economy, Trade, and Industry and outline the aggregate performance and adoption of small wind turbines in Japan. With the market being dominated by turbines that produce less than 1 kW and the majority of such devices resulting in the development of increasing numbers of decentralized power sources, there is considerable potential to be found in Japan.

<sup>4</sup> <http://www.dw.de/japan-pushes-ahead-with-plans-to-reopen-nuclear-reactors/a-18305161>

<sup>5</sup> [http://www.mnre.gov.in/file-manager/UserFiles/wind\\_hybrid\\_system\\_para3.pdf](http://www.mnre.gov.in/file-manager/UserFiles/wind_hybrid_system_para3.pdf)

<sup>6</sup> [http://www.meti.go.jp/committee/chotatsu\\_kakaku/003\\_06\\_00.pdf](http://www.meti.go.jp/committee/chotatsu_kakaku/003_06_00.pdf)



## STRENGTHS & CHALLENGES

Japan has both its fair share of strengths and challenges regarding the development of small wind capacities.

Challenges are largely centred on combination of technical, environmental and social shortcomings:

- Any small wind turbines must have the capacity to withstand typhoon weather conditions
- High prevalence of lightning strikes also poses risks
- Geographical terrain corresponds with noticeably higher turbulence intensity
- Greater public familiarity with other sustainable energy sources such as solar and hydro make wind underrepresented in public discourse

## GOVERNMENT REGULATIONS

### Feed-in-Tariff:

Japan currently possesses a very generous FIT scheme that is guaranteed by the central government for the next 20 years. However, it is expected that small wind FITs will eventually follow the declining trajectory of solar FITs in the next 10 years<sup>8</sup>. It should be noted that the premium procurement price for wind in Japan is not fixed and is re-evaluated on a yearly basis, depending on technological innovations and declines in power generation costs. Current rates for projects less than 20kW are 0.418 EUR/kWh and 0.167 EUR/kWh for those above the 20kW threshold.

<sup>7</sup> [http://www.meti.go.jp/committee/chotatsu\\_kakaku/003\\_06\\_00.pdf](http://www.meti.go.jp/committee/chotatsu_kakaku/003_06_00.pdf)

<sup>8</sup> <http://cleantechnica.com/2014/10/27/small-wind-turbine-myths/>

**Table: Feed-in Tariff – Price and Period**

Source	PV		Wind		Geothermal		Hydropower	Biomass
	>10 kW	<10 kW	>20 kW	<20 kW	>15 MW	>15 MW		
Price [JPY] w/o Tax	42	42	22	55	26	40	24 – 34	13 – 39
Period	20	10	20	20	15	15	20	20

**Tax Credits:**

There is a Green Investment Tax incentive available for taxpayers who obtain approval for the FIT and acquire solar or wind power generation equipment and implement them in business within 1 year of acquisition<sup>9</sup>. Benefits include:

- 30% special depreciation in addition to ordinary depreciation
- 100% depreciation (i.e. total acquisition costs can be expensed upfront)
- Tax credit (7% of acquisition costs, available only to SMEs)

ASSOCIATIONS

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- [Japan Small Wind Turbines Association](#)
- [Japanese Wind Power Association](#)

<sup>9</sup><http://www.kpmg.com/global/en/issuesandinsights/articlespublications/taxes-and-incentives-for-renewable-energy/pages/japan.aspx>

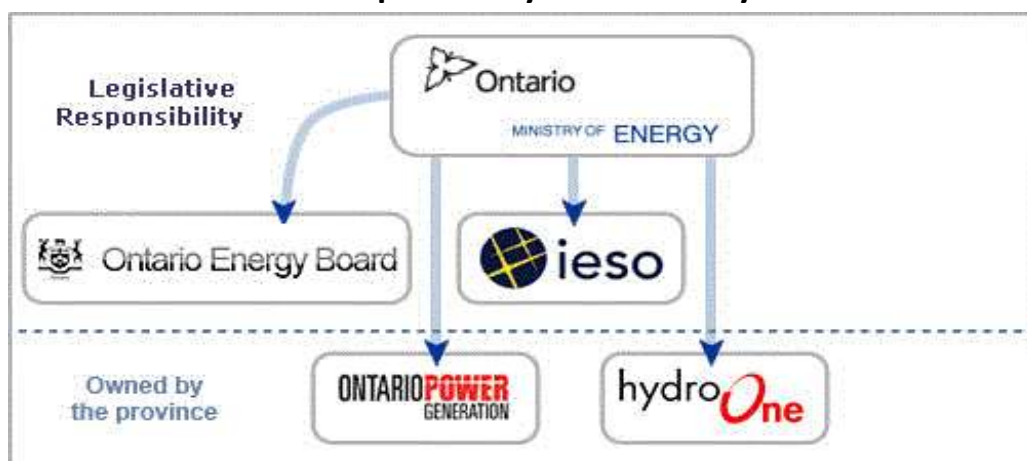
## A DEEPER LOOK AT CANADA

### OVERVIEW OF SMALL WIND IN CANADA:

Canada's energy supply comes from diverse and complementary sources of energy to provide reliable and affordable electricity. These sources are nuclear, hydro, natural gas, wind, solar and bioenergy. In 2012, clean wind energy grew by nearly 20 per cent in Canada, representing over \$2.5 billion in investment and creating 10,500 jobs. Canada's current installed capacity is just over 8,000 MW, generating the equivalent electricity consumed by over 2 million average Canadian homes. Every Canadian province is now benefiting from clean wind energy, predominantly provided by large scale wind projects.

Energy in Canada has a diffused structure, with provinces largely being in charge of both the regulations and policies. With powers divided between federal and provincial governments, provinces have jurisdiction over the generation and production of electricity; federal jurisdiction primarily deals with the regulation of inter-provincial and international trade of energy. In the context of Ontario, the vast majority of energy services are provided by two centralized crown corporations: Ontario Power Generation (electricity generation) and Hydro One (Transmission and distribution). While there is no formal document highlighting Ontario's energy policy, Ontario's system would be best described as a hybrid between centralized and market-based solutions, borrowing components of both a centrally planned system and competitive market approach. Regulations and implementation continue to be delivered top-down, going from the legislature to the power authorities down to the crown corporations supplying the power to consumers. Similar structures can be found across the country, with crown corporations playing a prominent role in every province (i.e. NS Power in Nova Scotia, BC Hydro in British Columbia, Hydro Quebec in Quebec, etc). A full list of the electricity generation, transmission and distribution organizations in the leading provinces are included in Appendix III.

### Direction of Responsibility for Electricity in Ontario



## Ontario's Electricity System



With significant support at a provincial level found in Ontario, Canada's small wind sector continues to be disproportionately concentrated in Southern Ontario. As additional provinces proceed to develop their own FIT programs, there remains to be significant market potential in the long term across Canada for both small and large wind. Given the competitiveness of Danish wind technologies, the consortium of small wind manufacturers are well positioned to take advantage of the lack of dominant market players. Despite its geographical size and potential, Canada's small wind energy industry continues to underutilize the country's capacity. Ongoing efforts in research and product innovation are ongoing at the academic, government, energy board, and private sector levels.

Small wind for the Canadian context has been prioritized for three broad uses:

- For on-grid, small wind can help supplement grid electricity and reduce dependency on the local electrical utility.
- For off-grid, small wind can help provide electricity to remote locations for both seasonal and year-round use.
- For isolated grids (not connected to the national electrical grid), small wind can help reduce the use of diesel generators, thereby saving fuel costs and reducing pollution.

While there is market potential in Canada, manufacturers have identified three challenges to overcome for growth down the line:

- Previous market surveys highlighted government support as being central to continued growth in the small wind market. A combination of subsidies, rebates, feed-in tariffs initiatives have had varying degrees of success at both the provincial and federal level; costs continue to outstrip profitability and without FIT program support small wind remains too costly with current technologies on the market.

- Shifts in energy costs have a changed incentive structures for the industry. This is particularly relevant in the Canadian market, where low electricity costs have inhibited growth in small wind and will continue to be a factor in consumer decision-making. At [current electricity pricing](#), there are limited market-based economic incentives to shift from conventional electricity. However, it should be noted electricity pricing in Canada is poised to grow in the near future, as limited investments have been made into Canada's aging electrical infrastructure in the past 60 years. (Q1 2015 Electricity cost 8.63 ¢/kWh – [Ontario Energy Report](#)).
- Growing public concern for environmental-related issues will make eco-conscious consumers inclined to seek sustainable alternatives. Recent public pressure has seen Ontario close its last coal-based electrical plant in April 2014, suggesting green energy is becoming more of a priority<sup>10</sup>. Public attitude is towards cost savings and unless small wind can provide this, growth of the market will remain small. Communities want reassurances small foreign manufacturers won't go bankrupt leaving turbines un-serviced as has been seen to date.

Based on feedback from interviews conducted for this report, if an economic case be can made for small wind profitability at 25 ¢/kWh, then it's believed there is great market potential.

There are currently limited publically available figures surrounding the small wind industry, with the most recent market survey having taken place in 2010. However, most projections point towards growth in rural and off-the-grid locations. The most recent world small wind report places Canada 4<sup>th</sup> behind China, the US, and the UK in terms of cumulative installed units with 10,000 units nationally. With 30% of that market being located in Ontario, there is great potential to expand to other provinces.

While the definition of small wind varies across Canada, it is generally accepted by Canwea that production under 300kW is small wind, however based on the FIT programs available, small scale wind is either under 10kW, under 50kW, or under 500kW).

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## FEDERAL INITIATIVES

At the federal level, there is a limited amount of overt support for the small wind industry. While the Canadian federal government has established the goal of reaching 90% non-greenhouse gas emitting electricity by 2020, there has yet to be a concrete policy proposal outlining how the government intends to reach this goal. Previous wind-friendly policies have expired and have a low likelihood of being renewed.

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## PROVINCIAL INITIATIVES

While there is a high degree of variance among the provincial jurisdictions, Ontario and Nova Scotia to date are the only provinces with established FIT programs for small scale projects.

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## ONTARIO: FIT, MICROFIT & NET METERING PROGRAMS

<sup>10</sup> [http://www.nawindpower.com/e107\\_plugins/content/content.php?content.12849](http://www.nawindpower.com/e107_plugins/content/content.php?content.12849)

Ontario is a province of focus for many key stakeholders in the small wind industry. Ontario's Long Term Energy Plan was released December 2013, which focusses on cost effectiveness, reliability, clean energy, community engagement and emphasis on conservation and demand management before building new generation. A quarterly energy report on the province's energy sector can be found [here](#). Around 30% of the nation's wind output comes from Ontario, and within the province a majority of wind activity in 2015 is in south-western Ontario corridor - see map of [Ontario's Power Grid](#).

#### **Fit and microFIT Programs:**

Under the [Independent Electricity System Operation](#) (IESO), the FIT Program (for projects generating capacity greater than 10 kW and generally up to 500 kW) and microFIT Program (10kW or less) offer eligible generator contracts for receiving guaranteed price per kilowatt (kW) for 20 years. The programs share very similar setup, requirements and pricing. The microFIT Program is a "stream" or component of the FIT Program, designed specifically to encourage the development of micro-scale renewable energy projects. The main difference in the programs other than nameplate capacity is the microFIT Program has streamlined contracting and application processes.

#### *Eligibility and Requirements*

- Eligibility criteria is not overly stringent or seen as a barrier to the Danish manufacturers, a full list of eligibility requirements is [here](#)
- Projects must be located in Ontario
- Energy generators are the applicants of the FIT scheme, and must have full documentation and technologies in place at time of application. Criteria on eligible participants in the programs [here](#).
- Land ownership by the participant is required with exceptions for public sector leasing agreements. Individuals or farmers may only have one microFIT project
- No domestic content requirements on wind projects (abolished)
- Procurement target for 2015: 150MW allocated to 2015, (50 MW FIT 2014 rollover, 41MW MicroFIT 2014 rollover)
- A cap is calculated each year, it is a 'hard cap'; once met, applicants must wait for the next year
- Priority points are provided to applications that have municipal council support, aboriginal support resolution or host, municipal site lease or public sector entity host.

#### *Pricing*

- Annual Price reviews for FIT and microFIT are currently underway for release September 2015 – to be implemented in 2016. More found [here](#)
- Eligible generators that bring the generation facility into service by the required milestone date will received a fixed price for the electricity produced over a 20-year contract period with the Ontario Power Authority (OPA now merged with IESO)
- Prices for on-shore wind initiatives for 2015 are priced at 12.8 cents/kWh with an escalation percentage (based on the Consumer Price Index) of 20%<sup>11</sup>
- FIT projects may also benefit from price adders, an incremental increase in the price paid per kWh of generation as seen below:

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<sup>11</sup> <http://fit.powerauthority.on.ca/fit-program/fit-program-pricing/fit-price-schedule>

### FIT PRICE ADDERS

	Aboriginal Participation Project		Community Participation Project		Municipal or Public Sector Entity Participation Project	
	> 50%	≥ 15% ≤ 50%	> 50%	≥ 15% ≤ 50%	> 50%	≥ 15% ≤ 50%
Participation Level (Equity)	> 50%	≥ 15% ≤ 50%	> 50%	≥ 15% ≤ 50%	> 50%	≥ 15% ≤ 50%
Price Adder (¢/kWh)	1.5	0.75	1.0	0.5	1.0	0.5

Note: The above table applies to all FIT Project sizes and all Renewable Fuels except Solar (PV) (Rooftop).

### FIT/microFIT PRICE SCHEDULE (Effective September 30, 2014 for FIT and January 1, 2015 for microFIT)

Renewable Fuel	Project Size Tranche*	Price (¢/kWh)	Escalation Percentage**
Solar (PV) (Rooftop)	≤ 10 kW	38.4	0%
	> 10 kW ≤ 100 kW	34.3	0%
	> 100 kW ≤ 500 kW	31.6	0%
Solar (PV) (Non-Rooftop)	≤ 10 kW	28.9	0%
	> 10 kW ≤ 500 kW	27.5	0%
On-Shore Wind	≤ 500 kW	12.8	20%
Waterpower	≤ 500 kW	24.6	20%
Renewable Biomass	≤ 500 kW	17.5	50%
On-Farm Biogas	≤ 100 kW	26.3	50%
	> 100 kW ≤ 250 kW	20.4	50%
Biogas	≤ 500 kW	16.8	50%
Landfill Gas	≤ 500 kW	17.1	50%

\* The FIT Program is available to Projects generally ≤ 500 kW.

#### IESO Review for microFIT

- The IESO received input on potential changes to the microFIT program through more than 45 written submissions from a broad range of stakeholders and communities between December 1, 2014 and January 23, 2015. While there are no changes to the microFIT Program at this time, these submissions have been reviewed and shared with the Ministry of Energy. It is under consideration that microFIT transition into a net metering program at some point in the future, not yet confirmed. No changes expected in 2015/2016. Full Overview [here](#) and updated rules [here](#).

#### Net Metering for small producers

- Managed by [Hydro One](#)
- Electric generation must primarily be for personal use
- Must be generated from a solely renewable resource
- Maximum generation capacity cannot exceed more than 500 kW
- Excess generation credits can be carried forward for up to 11 months, including the 11<sup>th</sup> month, to offset future electricity costs
- Information on connecting micro generation (up to 10 kW) to Hydro One's system is available [here](#).



## Comparison of Programs Available in Ontario:

	<b>Feed-in Tariff (FIT)</b>	<b>Micro Feed-in Tariff (microFIT)</b>	<b>Net Metering</b>
<b>Designed for...</b>	Small, medium or large renewable energy generation projects.	A person (generally a homeowner, farmer or small business owner), developing a very small or "micro" renewable energy generation project on their property.	Any customer of a distributor who produces electricity from a renewable resource primarily for his/her own use.
<b>How It Works...</b>	Under the FIT program, you will be paid a guaranteed price for all the electricity your project produces for 20 years (40 years in the case of a hydroelectric project).	Under the microFIT program, you will be paid a guaranteed price for all the electricity your project produces for 20 years (40 years in the case of a hydro electric project).	A "trade" of electricity you supply versus electricity you consume. Excess electricity is provided to the local distributor. Credits for that excess are applied toward your energy bill.
<b>Project size...</b>	More than 10 kilowatts.	10 kilowatts or less.	500 kilowatts or less.
<b>Licensing and licence fees</b>	No licence is required for facilities that have a capacity of 500 kW or less. For facilities that have a capacity of more than 500 kW but no more than 10 MW, there is a licence application fee of \$100. For facilities that have a capacity of more than 10 MW, the licence application fee is \$800. There is also an annual registration fee of \$800.	No licence is required.	No licence is required.
<b>Metering requirements and account treatment</b>	Metering requirements will depend on how you choose to connect (in series, in parallel, or directly to the distribution system). A separate generator account is required, regardless of connection configuration.	Metering requirements will depend on how you choose to connect (in series, in parallel, or directly to the distribution system). A separate generator account is required, regardless of connection configuration.	Meters may be either one-way or two-way at the choice of the distributor. No separate generator account required.

Source: Ontario Energy Board

Wind now provides close to 10% of the electricity used in Nova Scotia. To ensure a more diverse energy mix, Nova Scotia Power and the municipal electric utilities must have 25% renewables in their mix by 2015 and 40% by 2020. The province is well on the path to meeting those requirements, and wind will play a major role as projects already approved will reach the technical limit of 500 megawatts around 2015. As of September 2013, there was 321 MW of installed capacity from wind generation in the province.

### **ComFIT Program – Currently Frozen**

Under NS Power, Nova Scotia's "ComFIT" is the world's first feed-in tariff for locally based renewable energy projects. The ComFIT program is currently frozen and under review due to a series of failed community projects for various reasons, mainly due to small turbine manufacturers going bankrupt, leaving the project unproductive and un-serviced.

The principle was that small-scale renewable energy projects can contribute electricity to the power grid and receive a fixed rate for each kWh of power they add. The rate they receive varies with which renewable means the power was generated from. However, once a rate is assigned the community shall receive this price for a twenty year period. The government hopes that more small-based community renewable projects will continue to develop to reach the program goal of 100 MW of energy being produced through COMFIT. Interested parties are encouraged to formally register their interest in ComFIT to the Nova Scotia Department of Energy.

#### *Eligibility and Requirements*

- Available for both small and large wind initiatives; projects 50 kW and under are eligible, but are capped at 5MW in total.
- Projects must be community owned to be eligible and connected to the distributed grid
- Program is currently under review in 2015, with an announcement expected in Fall 2015 concerning potential changes to the program.
- Before any wind energy project in Nova Scotia can be built it must meet, at a minimum, the requirements of the municipal and provincial governments.
- Municipalities have more experience with regulating large scale wind turbines. Policies and by-laws relating to small wind turbines are in more of a developmental stage since the technology is not widespread in Canada; therefore practical experience with impacts and mitigation strategies is developing as well.
- There are a variety of approaches to regulating wind turbines according to scale in Nova Scotia: some municipalities have one set of by-laws that are applicable to both large and small turbines, others have different sets of by-laws for large and small, and others still have by-laws for only large or only small. Ideally, by-laws for both sets of scales are best in order to adequately address safety and siting issues, and to encourage the development of wind energy in different contexts. There are also vast differences in how municipalities (and the wind energy industry itself) define small and large scale wind turbines. Examples of these differing definitions are: Based on nameplate rated capacity (small scale is described as below either 100kW, 200kW or 300kW); Based on the total turbine tower height (for example, below 60m is small scale); Based on the rotor diameter and total swept area (rotor diameter of no more than 15.0m and a total swept area of no more than 180m<sup>2</sup> for small turbines); Based on the intended end use of the power produced (small scale is primarily for on-site

consumption and large scale is generally intended to feed electricity into the provincial grid); and A combination of the above.

#### Pricing

- 50 kW or less: 49.9 cents/kWh
- 50kW and above: 13.1 cents/kWh

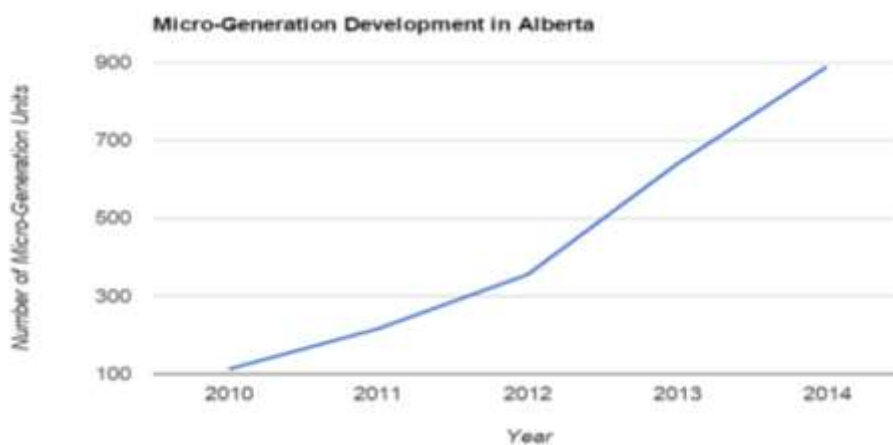
#### Enhanced net metering for distribution connected customers

- Customers receive credit on energy produced in excess of their consumption; if at the end of the year production still exceeds consumption, customers are provided cash payment for their surplus energy at an equal rate to the cost of energy from the grid<sup>12</sup>
- Further information on rates can be found [here](#)
- Two classes of services available: units generating 100kW or less (Class 1) and larger commercial or industrial customers generator 101kW up to 1000kW (Class 2)

#### ALBERTA: NET METERING

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- Support for renewable energy projects through the Climate Change and Emissions Management Fund
- Support for biomass-based electricity from Alberta's Bioenergy Programs (Bioenergy Producer Credit Program, Bio-refining and Commercialization and Market Development Grant, and Infrastructure Development Grant Program)
- Support for renewable energy projects through Alberta Innovates – Energy and Environment Solutions
- Net billing for micro-generation
  - Set to expire at the end of 2015 and is up for review
  - Generators may choose to install a meter that allows them to receive credit for excess electricity based on wholesale market prices rather than retail rates
  - Current regulations allow customers to decide the terms of compensation or excess electricity; if not stated, micro-generators receive credit at the retailer's retail energy rate
  - Overall, program has been successful since its inception in 2009<sup>13</sup>
- Alberta carbon offset program



<sup>12</sup><http://www.nspower.ca/en/home/for-my-home/make-your-own-energy/enhanced-net-metering/default.aspx>

<sup>13</sup> <http://callmepower.ca/en/ab/electricity/micro-generation>

## BRITISH COLUMBIA: NET METERING

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- FIT program has been suspended since 2012; there is no indication that the program will be renewed
- Net metering available through BC Hydro
  - Credit can applied to future electricity use
  - Excess generation credits remaining on a customer's account are paid at a rate of 9.99 cents per kWh
  - Additional details can be found [here](#)

## SASKATCHEWAN: NET METERING

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- Target of doubling wind power capacity by 2017 to 9% of total generating capacity
- Net metering for small producers
  - Currently offers a one-time rebate equivalent to 20 percent of eligible costs to a maximum payment of \$20,000 on net metering projects
  - Similar to other programs, system is credit based and lasts for a 12 month period; at the end of the 12 month period, credits are reset to zero
  - Micro-generators are credited at the same rate of purchase (i.e. current purchase/credit rate is 10.63 cents per kWh)
- Small Power Producer Program
  - Enables customers interested in generating power up to 100kWh to sell it back at an agreed rate
  - Customers have the option of either 1) selling all of their production to the retailer or 2) sell the excess of what isn't used; once the agreement is made, customers cannot switch between programs
  - 2015 price rates is 10.4 cents/kWh; the price rate will increase by 2% each following year
  - Additional information can be found [here](#)
- Financial assistance for renewable energy projects

## MANITOBA: NET METERING

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- If a generator produces less than 200 kW, excess energy is purchased at 6.3 cents per kWh; generators producing at a greater rate will be required to negotiate a Power Purchase Agreement (PPA) based on hours of operation, type, reliability, etc.
- Additional information on program can be found [here](#)

## QUEBEC: NET METERING

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- 4000 MW of wind power installed capacity by 2015
- Requests for proposals for 800 MW of wind power
- Net metering for small producers
  - Credit program allows generators to get credits in exchange for excess generation
  - As current legislation prohibits the direct purchase of electricity without a call for tenders
  - Additional information can be found [here](#)

## NEW BRUNSWICK: NET METERING

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- Legislated renewable portfolio standard of 10% 2016
- Policy commitment to increase renewable portfolio standard to 40% by 2020
- Net metering programs for micro and small generators
  - Production cannot exceed 100kW
  - Credit years begin and end in March; excess returns to zero
- Embedded Generation Program
  - Embedded generator's energy output is purchased at a set price
  - Current rate is 9.728 cents/kWh

## PRINCE EDWARD ISLAND: NET METERING

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- Policy target of 30% of renewable energy by 2013
- Net metering for small energy producers
  - Targeted at producers below the 100kW range
  - Credits expire in October of each and do not carry over
- Potential introduction of FIT program
- Additional information is available [here](#)

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## ASSOCIATIONS IN CANADA

### National

- [Canadian Wind Energy Association](#) (CanWEA)
- [Distributed Wind Energy Association](#) (U.S. based, partnership with CanWEA)
- [Wind Energy Institute of Canada](#) (Weican - Testing, certification)

### Regional

- [Ontario Sustainable Energy Association](#) (OSEA)
- [Quebec Association for the Production of Renewable Resources](#)
- [BC Sustainable Energy Association](#)
- [OMAFRA](#)

## STEP 2: MARKET STUDY IN CANADA

In this section of the report we will present a more in-depth understanding of the market for Danish small-wind manufacturers in Canada, developing a Go-to-market strategy and stakeholder mapping based on a analysis of the market opportunities and areas of greatest potential success under current FIT schemes.

### OVERALL MARKET POTENTIAL

Despite generous incentives at the provincial level in Ontario, the market continues to be largely underutilized. As Canada's economic centre and most populous province, Ontario provides a striking combination of economic means and market that should be attractive to potential small wind ventures. Outside of the city of Toronto, rural Ontario represents the ideal target market for small wind technologies.

### STAKEHOLDER MAPPING

While wind continues to be relatively under-utilized in Canada, a pre-existing network of distributors and servicing companies exist concentrated in the Greater Toronto Area, as well a small network of distributors in Nova Scotia. A full list of our targeted partners is in [Appendix II: Contact Database](#) included along with this report.

#### **Sample of Distributors of Small Wind Generators:**

- [The Wind Guy](#): Exclusively distributes small wind products
- [Btek Renewable Energy](#): Provides distribution and servicing for small wind, solar, and hydro
- [Eco-City Group](#): Provides green-energy alternatives, including wind.
- [Evolve Green](#): Possesses multiple lines of wind, hydro, and solar products
- [Rematek](#): Whole-sale distributor of energy related products
- [Matrix Energy](#): Whole-sale distributor of sustainable energy solutions (including small wind turbines)
- [Ralgatta Energy Inc.](#): Currently acting as a distributor for a vertical axis wind turbine manufacturer based in Finland.

#### **Servicing Companies**

- [CSS Wind Corp](#): Services small and big wind projects.
- [Carlsun Energy Solutions](#): Does both small and big wind servicing along with solar.
- [North Wind Solutions](#): Services small and big wind projects.
- [Prowind Canada](#): Deals exclusively with small wind in a rural context.
- Grenaa Grenada Gearbox Service Inc.(GGS) – new Danish Joint venture servicing gearboxes

#### **School/Training Programs teaching servicing of wind turbines**

- [St. Lawrence College](#)
- [Durham College](#)
- [Conestoga](#)

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## REGULATORY

Current regulations in Canada have allowed for the development of a favourable regulatory environment for small wind projects. Highlighted by the programs found in Ontario, the FIT regime provides clear incentives for consumers at guaranteed rates for 20 year contracts. Recent changes to local content requirements have liberalized the market even further by removing domestic content requirements from both the FIT and microFIT schemes on all contracts offered after [July 25<sup>th</sup>, 2014](#). As noted earlier in the report, current rates offer generous pricing for both projects under and above 10 kW, the threshold that differentiates between the FIT and microFIT programs. Barring any significant changes at the provincial level, the combination of net-metering and fixed add-on tariffs make Ontario the ideal point of entry into the Canadian small wind market.

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## COMPETITIVE LANDSCAPE

While there are a number of manufacturers present in Canada, the general feeling from Weican – the wind energy institute of Canada President Scott Harper is that ‘Canada is still lacking quality small wind turbines, a majority of the turbines on the market are coming from China and don’t provide enough ease of mind and long term commitment to the communities for their full support in FIT programs’.

Canada has several early stage and small wind technology companies, but lack of technological know-how, and the growth barriers mentioned earlier have prevented many Canadian manufacturers from coming on the market. Most competitors are importing equipment and technology from outside Canada.

### **Turbines Manufacturers present in Canada:**

- [Bergey Wind Power](#): Specializes in small wind and distributed energy
- [Wenvor Technologies](#): Manufacturer of 30 kW turbines in the Guelph area
- [True North Power](#): Small wind manufacturer in the 1 kW- 2kW range
- [Xzeres Wind](#): U.S. based manufacturer with Canadian distributor presence; has acquired multiple small wind manufacturers in the U.S. that used to have a presence in Canada in the past
- [Hummer Wind](#): Chinese based manufacturer with Canadian distributor presence
- [Primus Wind Power](#): U.S. based manufacturer with Canadian distributor presence
- [Wipo Wind Power](#): German company with China based manufacturing, distributing in Canada
- [Ventura Wind](#): U.S. based manufacturer with Canadian distributor presence
- [Tycon Power](#): U.S. based manufacturer with Canadian distributor presence
- [Luminous Renewable Energy](#): Indian based manufacturer with Canadian distributor presence
- [Wind Side](#): Finnish based manufacturer with Canadian distributor presence

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## PROPOSED GO-TO-MARKET STRATEGY

A potential opportunity to gain access to local turbine customers (and FIT partner) with strong community support is to form a partnership with another complementary company / university / municipality and to create a strong partnership with a local distributor or sales agent agreement.

An example of a successful Danish exporter to Canada is the Danish gearbox manufacturer Grenaa Motorfabrik A/S which recently signed a joint venture agreement in Ontario. CMI Heavy Industries, a machining company in St. Catharines, has partnered with A/S Grenaa Motorfabrik of Denmark and Synova International Business Development of Milton to form Grenaa Grenada Gearbox Service Inc.(GGS). The joint venture allows for the transfer of Grenaa's European wind turbine gearbox experience to the Canadian operation, where GGS will deliver the same high quality standards Grenaa has been providing in Europe. The joint venture is starting with an extensive training program in Denmark and Ontario for some CMI employees; and, ongoing technical support of the Canadian operation by Grenaa Motorfabrik. More found [here](#).

A complete introduction to the Canadian small wind market will be the objective of the delegation's visit to Toronto October 5-7 where the Trade Council Toronto will prepare three days of keynote presentations, b2b meetings, networking events and one on one advice involving stakeholders from various areas of the supply chain. We will aim to engage with academic researchers (York University), potential Distributors and service companies, wind associations (Weican and Canwea), regulators and consultants managing FIT programs (IESO) and potential small scale generators (municipality, university, community, farmer, individual).

What cannot be achieved in the 3 days while in Canada will be part of the follow-up work to take place after the Canwea conference.

## STEP 3: MARKET APPROACH - CANWEA

### CANWEA DRAFT PROGRAMME – OCTOBER 5-7 TORONTO CANADA

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CANWEA PACKAGE Includes:

- Denmark small wind near the 'Innovation Zone'
- Tradefloor exhibit space, one rollup banner per company (stool, table provided)
- Canwea conference access passes
- Networking Reception at Consul General's residence, with CanWea and Canadian key stakeholders, invitations open for companies to invite guests
- Keynote Presentations from Canadian small wind experts (Fit scheme, Zoning bylaws)
- B2b meetings arrange by consulate during Canwea

### PROPOSED PROGRAMME BREAKDOWN:

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#### **Sunday October 4**

*Delegation Flies to Canada*

#### **Monday October 5,**

- Welcome session and introductions to Canadian Small Wind
- Booth Setup
- Opening Reception on tradeshow floor
- Delegation reception at Consul general residence



***Tuesday October 6***

Tradeshow all day, b2b meetings

***Wednesday October 7***

Tradeshow all day, b2b meetings

Optional: Banquet Dinner Canwea \$100

Depart Toronto for Denmark in evening 20:55 flight

**STEP 4: FOLLOW UP AND FURTHER MEETINGS**

Key Takeaways from Canwea, B2B summary to be included, as well as proposed next steps.  
To be added after Canwea Oct 5-7.

## APPENDIX

### APPENDIX I: FEED IN TARIFF PROGRAMS AROUND THE WORLD<sup>14</sup>:

**Table. Small Wind Feed-in Tariff Pricing Worldwide**

Country/ Region	Size Limit	EUR/kWh	Country/ Region	Size Limit	EUR/kWh
Chinese Taipei	1-10kW	0,185	Japan	< 20kW	0,418
Canada				≥ 20kW	0,167
Ontario	< 10kW	0,074	Lithuania	< 10kW	0,095
Nova Scotia	< 50kW	0,332		10-350kW	0,092
Cyprus	< 30kW	0,220	Portugal	< 3,68kW	0,432
	Off-grid	0,190	Slovenia	< 50kW	0,095
Greece	< 50kW	0,250	Switzerland	< 10kW	0,247
	> 50kW	0,090	UK	< 100kW	0,207
	Off-grid	0,100	USA		
Italy	1-20kW	0,285	Indiana	5-100kW	0,130
	20-200kW	0,262	Hawaii	< 20kW	0,123
	0,2-1,0MW	0,146		20-100kW	0,105
Israel	< 15kW	0,250	Vermont	< 15kW	0,181

### APPENDIX II: CONTACT DATABASE

Included as a separate excel sheet

### APPENDIX III: CANWEA TENTATIVE PROGRAM

Included as a separate word document for delegation planning

### APPENDIX III: ELECTRIC UTILITY AND TRANSMISSION BODIES IN CANADA Y PROVINCE

## QUEBEC

### Hydro-Québec

[www.hydroquebec.com](http://www.hydroquebec.com)

Overview: Hydro-Québec is Canada's largest electricity producer. To meet the growing demand for electricity, Hydro-Québec must build generating stations, substations and power lines, and maximize the

<sup>14</sup> [http://www.fcirce.es/static/2014\\_SmallWindWorldReport.pdf](http://www.fcirce.es/static/2014_SmallWindWorldReport.pdf)

capacity of existing facilities. The company also invests extensively to ensure the quality and reliability of its assets. In 2010 alone, 'Hydro-Québec Équipement et services partagés' and 'Société d'énergie de la Baie James' carried out activities in Québec worth a total of \$3.1 billion.

### **Hydro-Québec TransÉnergie**

[www.hydroquebec.com/transenergie](http://www.hydroquebec.com/transenergie)

*Overview:* Hydro-Québec TransÉnergie is a leader in transmission system design, operation and maintenance. Recognized the world over for the reliability of its grid, it spares no effort to stay at the forefront of the industry in this regard. Its transmission system is the most extensive in North America, comprising 516 substations and more than 33,639 km of lines at various voltages. The division's fixed assets total \$19.1 billion. 33,639 km of lines, 516 substations (2014).

## **ONTARIO**

The Ontario Ministry of Energy develops all aspects of energy policy for Ontario, including electricity, natural gas, oil and alternative energy. The ministry also sets the legislative and policy framework for the safe and reliable supply and delivery of electricity and natural gas and oversees three energy agencies: The Ontario Power Authority, The Ontario Energy Board and The Independent Electricity System Operator.

The ministry represents the Ontario government in dealings with Hydro One (a provincially owned electricity transmission and distribution company) and Ontario Power Generation (a provincially owned electricity generation company).

### **Ontario Power Authority**

<http://microfit.powerauthority.on.ca/ontario-ministry-energy>

*Overview:* The Ontario Power Authority is a not-for-profit corporation with a mandate from the Ontario government to ensure a reliable, sustainable supply of electricity for the province.

### **Ontario Energy Board**

<http://www.ontarioenergyboard.ca/OEB/Industry>

*Overview:* The Ontario Energy Board oversees the province's electricity and natural gas sectors through effective, fair and transparent regulation and in accordance with the objectives set out in the governing statutory framework, in accordance with The Ontario Energy Board Act, 1998, The OEB licenses all market participants including the IESO, generators, transmitters, distributors, wholesalers and retailers. Board approval is required for the construction of electricity transmission lines longer than two kilometres. As well, the Board is responsible for approving specific business arrangements involving the regulated parts of Ontario's electricity industry.

### **Independent Electricity System Operator**

<http://www.ieso.ca>

*Overview:* The Independent Electricity System Operator and transmitters work together to ensure energy is connected and transmitted reliably and safely across the province. The Independent Electricity System Operator is responsible for ensuring overall system reliability and balancing both supply and demand for the province in real time. It is responsible for forecasting demand and supply of electricity, and for rules, settlements and financial operation of the \$13 billion wholesale electricity market.

There are six transmitters in the province, the two largest being Hydro One with 29,000 kilometres of high- and low-voltage transmission lines and Great Lakes Power with 644 kilometres of high-voltage transmission lines. Ontario's other transmitters are Canadian Niagara Power, Five Nations Energy, Cat Lake Power Utility Limited and Niagara West Transformation Corporation.

### **Hydro One**

[www.hydroone.com](http://www.hydroone.com)

*Overview:* One of North America's largest electricity delivery companies in geographic scope and asset value. Achieved \$745 million in net income in 2012. Hydro One is renewing Ontario's transmission and distribution grid to continue to connect customers to safe and reliable electricity.

Current transmission projects: <http://www.hydroone.com/Projects/Pages/Default.aspx>

## ALBERTA

### **ESBI Alberta Ltd. - AESO Alberta Electric System Operator**

[www.aeso.ca/](http://www.aeso.ca/)

*Overview:* ESBI Alberta Ltd (AESO) is the Transmission Administrator of Alberta responsible for the safe, reliable and economic planning and operation of the Alberta Interconnected Electric System (AIES). AESO provides open and non-discriminatory access to Alberta's interconnected power grid for generation and distribution companies and large industrial consumers of electricity. In doing so, the AESO contracts with transmission facility owners to acquire transmission services and, with other parties to provide fair and timely access to the system.

### **ATCO Electric (Formerly Alberta Power)**

[www.atcoelectric.com](http://www.atcoelectric.com)

*Overview:* ATCO Electric is an electric utility company. Based in Edmonton, Alberta, ATCO Electric transmits and distributes electricity to two thirds of Alberta, namely in north and east-central Alberta. ATCO Electric serves nearly 220,000 customers and has approximately 2,900 employees serving 245 communities. The company builds, operates and maintains a safe, reliable system of approximately 11,000 kilometres of transmission lines and 68,000 km of distribution lines. In addition, ATCO Electric operates approximately 9,000 km of distribution power lines on behalf of Rural Electrification Associations in its service territory.

### **Fortis Alberta**

[www.fortisalberta.com](http://www.fortisalberta.com)

*Overview:* An investor-owned electricity utility and wire service provider, serving customers throughout the province. FortisAlberta delivers electricity in Alberta communities, maintains local electrical lines and poles, and is responsible for reading customer meters. FortisAlberta is a wholly owned subsidiary of Fortis Inc. and has more than half a million residential, farm and business customers in more than 200 communities in Alberta, 118,000 kilometres of power lines and 225,000 square kilometre service area.

### **Altalink Alberta**

<http://www.altalink.ca/>

*Overview:* AltaLink is Alberta's largest regulated electricity transmission company. AltaLink has 800 employees committed to maintaining top quality and reliable electrical transmission services for Albertans, and to providing innovative technical and financial solutions to enable Alberta's growing electricity market.

### **TransAlta**

<http://www.transalta.com/>

*Overview:* TransAlta is Canada's largest publicly traded generator and marketer of electricity and renewable power. With approximately \$3 billion in annual revenue, more than \$9 billion in assets, and power plants in Canada, the United States and Australia.

## NOVA SCOTIA

### **Nova Scotia Power**

[www.nspower.ca](http://www.nspower.ca)

*Overview:* Nova Scotia's primary electricity provider since the early 1900s and provides 95 per cent of the generation, transmission and distribution of electricity in Nova Scotia, and serve 500,000 residential, commercial and industrial customers across the province.

Our 1,700 dedicated, safety-focused employees help manage \$4.1 billion worth of generation, transmission and distribution assets and produce more than 10,000 gigawatt hours of electricity each year.

We use a fuel mix including hydro, tidal, wind, coal, oil, biomass and natural gas to generate electricity. Our facilities can generate as much as 2,453 megawatts of electricity that is delivered across 32,000 km of transmission and distribution lines throughout Nova Scotia. We're working to balance the range of energy sources we use, including having 40% of Nova Scotia's electricity come from renewable sources by 2020.

## NEW BRUNSWICK

### **NB Power**

[www.nbpower.com](http://www.nbpower.com)

*Overview:* NB Power, formerly known as New Brunswick Power Corporation and New Brunswick Electric Power Commission is the primary and former monopoly electrical utility in the Canadian province of New Brunswick.

New Brunswick's new Electricity Act (the "Act") was proclaimed on October 1, 2013 which established the amalgamation of the New Brunswick System Operator (NBSO) with New Brunswick Power Corporation ("NB Power"). The New Brunswick System Operator (NBSO) was an independent not-for-profit statutory corporation responsible for the adequacy and reliability of the integrated electricity system, and for facilitating the development and operation of the New Brunswick Electricity Market.

## BRITISH COLUMBIA

### **BC Hydro and Power Authority**

[www.bchydro.com](http://www.bchydro.com)

*Overview:* BC Hydro is a commercial Crown corporation owned by the Province of British Columbia. BC Hydro is one of North America's leading providers of clean, renewable energy, and the largest electric utility in British Columbia, serving approximately 95 per cent of the province's population and approximately 1.9 million customers. BC Hydro is responsible for reliably generating between 43,000 and 56,000 gigawatt hours (GWh) of electricity per year. BC Hydro has a network of over 76,000 kilometres of transmission and distribution lines, approximately 300 substations, approximately one million utility poles and 325,000 individual transformers.

## MANITOBA

### **Manitoba Hydro**

[www.hydro.mb.ca](http://www.hydro.mb.ca)

*Overview:* Manitoba Hydro is a Crown Corporation and the province's major energy utility. Serve 548,700 electric customers throughout Manitoba and 269,700 natural gas customers in various communities throughout southern Manitoba. Manitoba Hydro also has capital assets-in-service at original cost exceeding \$15 billion, making them one of the largest energy utilities in Canada.

## SASKATCHEWAN

### **SaskPower**

[www.saskpower.com](http://www.saskpower.com)

*Overview:* SaskPower is the principal electric utility in Saskatchewan, Canada. Established in 1929 by the provincial government, it serves more than 490,000 customers and manages \$7 billion in assets.