



# Methodology Report – Tracking the Energy Revolution – Canada 2015

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## Clean Energy Canada

Clean Energy Canada is a program of Simon Fraser University's Centre for Dialogue. We work to accelerate Canada's transition to a clean and renewable energy system. We build awareness of and support for solutions that address climate disruption and foster an energy efficient, environmentally responsible, and prosperous economy. We do so in collaboration with civil society, governments, and the private sector.

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## Outline

Tracking the Energy Revolution Canada is a data rich summary of the biggest trends and news stories in 2015. Clean Energy Canada compiled the information from a range of sources and attempts to present it in a way that is meaningful to a broad audience. The report contains the sources for direct references. However, in some instances the report includes Clean Energy Canada's own estimates. This document summarizes the approach, assumptions and results of these calculations. The report is divided into 2 sections. Section 1 – Common Sources and Assumptions are those sources and assumptions that apply to most calculations in the report. Section 2 – Calculations and Assumptions per Report Section summarizes the calculations and assumptions per report section in the report

## Common Sources and Assumptions

This section includes estimates, assumptions and sources for new capacity and investment.

### New Capacity

All capacity estimates, except solar, for 2010 to 2013 come from the Canadian Industrial Energy End-Use Data and Analysis Centre (CIEEDAC). We used Bloomberg's database for solar power because Bloomberg includes distributed solar estimates. CIEEDAC does not have data for 2014 so we estimated data from Bloomberg New Energy Finance, provincial major project inventories and review by renewable industry associations. The estimates include capacity for the following renewable energy types:

- **Biomass & Waste:** Biogas, biomass, landfill gas and waste-to-energy projects
- **Geothermal:** Electricity from geothermal heat
- **Large Hydro:** Hydro projects >50 MW
- **Small Hydro:** Hydro projects <50 MW
- **Solar:** Includes solar photovoltaic at the utility (>1,000 kW) and distributed (< 1,000 kW)
- **Wind:** Onshore

Table 1 summarizes the total installed capacity (GW) by type of resource for 2010 to 2014.

Table 1: Total Capacity by type 2010 to 2014

Total Capacity (GW)

TYPE	2010	2011	2012	2013	2014	Difference 2010 to 2014
Large Hydro	71.1	71.5	71.7	71.7	72.5	1.4
Small Hydro	2.7	2.7	2.8	2.8	3.0	0.2
Wind	4.0	5.4	6.3	7.9	9.8	5.8
Biomass	1.8	1.8	1.8	1.8	2.0	0.2
Biogas	0.1	0.2	0.2	0.2	0.2	0.0
Solar	0.3	0.6	0.9	1.3	1.9	1.7

Table 2 summarizes the capacity additions (GW) per year, per resource type.

*Table 2: Capacity additions per year*

TYPE	2010	2011	2012	2013	2014
Large Hydro	-0.44	0.35	0.20	0.00	0.83
Small Hydro	0.01	0.01	0.03	0.01	0.18
Wind	0.60	1.35	0.93	1.60	1.87
Biomass	0.43	0.05	-0.03	0.00	0.20
Biogas	0.01	0.01	0.00	0.00	0.00
Solar	0.18	0.29	0.31	0.43	0.62

## Investment

Table 3 and Table 4 summarize cumulative and annual investment per resource type. We estimated these values using the methodology discussed in the next section.

*Table 3: Cumulative investment in billion CAD (2014)*

Resource Type	2010	2011	2012	2013	2014
Large Hydro	0.00	0.00	1.30	1.51	4.93
Small Hydro	0.04	0.06	0.16	0.20	0.82
Wind	1.58	5.14	7.59	11.81	16.89
Biomass	2.06	2.30	2.30	2.30	2.49
Biogas	0.03	0.08	0.08	0.09	0.09
Solar	0.82	2.19	3.22	4.55	6.14
Total	4.52	9.78	14.66	20.46	31.37

*Table 4: Annual investment in billion of CAD (2014)*

Resource Type	2010	2011	2012	2013	2014
Large Hydro	0.00	0.00	1.30	0.21	3.43
Small Hydro	0.04	0.03	0.10	0.04	0.62
Wind	1.58	3.57	2.45	4.22	5.08
Biomass	2.06	0.24	0.00	0.00	0.19
Biogas	0.03	0.05	0.00	0.01	0.00
Solar	0.82	1.37	1.04	1.32	1.59
Total	4.52	5.26	4.88	5.80	10.91

## Investment estimates approach (2010 to 2013)

We estimated investment using one approach for 2010 to 2013 and a slightly different approach for 2014. Wherever possible we used actual investment data for projects, but often had to rely on capital cost multipliers to fill the gap.

We defined investment as the value of projects commissioned in a given year.

Table 5 summarizes the cost multipliers we used for each clean energy source.

Table 5: Summary of project cost multipliers

Generation Type	Million \$/MW Installed	Source and Rationale
Conventional Hydro	Based on actual project costs	BC Hydro invested \$205 million for the Brilliant expansion <sup>1</sup> . Manitoba Hydro \$1,300 million for the Wuskwatim project <sup>2</sup> .
Run-of-river	\$3.21	Bloomberg New Energy Finance – based on the average of four recent deals run-of-river projects. Within range of B.C. Hydro estimates for new run-of-river projects. Estimates range from \$2 million /MW to \$4.3 million/MW depending on the project.
Wind	\$2.64	Based on Bloomberg New Energy Finance data and is the average of five wind projects built across Canada for which there is public financing data. This estimate is within the range of capital cost for new wind development from B.C. Hydro and the Energy Information Administration. New installation cost estimates range from \$1.78 million/MW to \$4.29 million/MW depending on the resource.
Biomass	\$4.74	Based on BC Hydro's resource options report <sup>3</sup> . Installed costs range from \$4.73 to \$5.42 million/MW.
Biogas	\$4.74	Installed costs range from \$2.67 million/MW to \$7.60 million /MW. The \$4.74 million/MW is an average value from construction estimates from BC Hydro's resource options report <sup>4</sup> .
Solar	N/A	See note below

For Ontario solar we used per \$/MW estimates per solar type following the cost schedule per year below.

Table 6: Cost estimates per solar resource type<sup>5</sup>

Solar Type	2010	2011	2012	2013	2014
Utility (\$/MW)	4.00	3.50	2.80	2.88	2.30
Commercial (\$/MW)	6.00	5.27	4.00	3.27	2.55
Residential (\$/MW)	7.25	6.79	4.00	3.44	3.50

<sup>1</sup> Columbia Power (2014) Brilliant Expansion Generating Station. <http://columbiapower.org/projects/brilliant-expansion-generating-station/>

<sup>2</sup> Wuskwatim Power Limited Partnership (2015) About the Wuskwatim Generating Station. <http://www.wuskwatim.ca/project.html>

<sup>3</sup> B.C. Hydro (2013) Resource Options Report

<sup>4</sup> IBID

<sup>5</sup> Personal Correspondence CanSIA (2015) based on a as yet unpublished National Survey Report of PV Power Applications in Canada. The 2013 addition is available here [http://cansia.ca/sites/default/files/201409\\_cansia\\_2013\\_pvps\\_country\\_report.pdf](http://cansia.ca/sites/default/files/201409_cansia_2013_pvps_country_report.pdf)

## Investment estimates approach (2014)

Since the CIEEDAC database was unavailable for 2014, we developed capacity and investment numbers project by project from Bloomberg New Energy Finance Database, provincial capital project databases, and review by renewable energy associations.

Table 7: Summary of projects included in the 2014 investment estimate

<b>Project Name</b>	<b>Type</b>	<b>Capacity (MW)</b>	<b>Investment (Million CAD)</b>	<b>Location</b>	<b>Source</b>
Jamie Creek Small Hydro Plant	Small Hydro	22	\$ 66.67	British Columbia	BNEF
Kwagis Power LP	Small Hydro	45	\$ 200.00	British Columbia	BNEF
Koksih Small Hydro Power Plant Canada	Small Hydro	50	\$ 180.00	British Columbia	BNEF
Kwoiek Creek Small Hydro Plant	Small Hydro	25	\$ 92.00	British Columbia	BNEF
Skookum Creek Small Hydro Plant	Small Hydro	16	\$ 40.00	British Columbia	BNEF
Volcano Creek Hydroelectric Project	Small Hydro	18	\$ 41.00	British Columbia	BNEF
NorthWest Stave	Large Hydro	195	\$ 725.00	British Columbia	Major Projects Inventory
Forrest Kerr	Large Hydro	195	\$ 725.00	British Columbia	Major Projects Inventory
Black Ridge Wind Farm	Wind	299	\$ 600.00	Alberta	BNEF
Box Spring	Wind	6	\$ 15.84	Alberta	BNEF
Oldman 2 Wind Farm Phase II	Wind	46	\$ 90.00	Alberta	BNEF
Atikokan Biomass Conversion	Biomass	200	\$ 188.89	Ontario	BNEF
BlackRock nc	Solar	20	See Table 6	Ontario	BNEF
Canada PV Portfolio	Solar	12	See Table 6	Ontario	BNEF
BlueEarth Little Creek	Solar	14	See Table 6	Ontario	BNEF
Candian Solar and Sky Power	Solar	14	See Table 6	Ontario	BNEF
Canadian Solar and SkyPower GoodLight	Solar	14	See Table 6	Ontario	BNEF
Canadian Solar and SkyPower RayLight PV Plant	Solar	14	See Table 6	Ontario	BNEF
Canadian Solar New Likseard 3 & 4	Solar	28	See Table 6	Ontario	BNEF
Cleave Energy	Solar	3	See Table 6	Ontario	BNEF
Dymon Ottawa Rooftop PV Portfolio	Solar	12	See Table 6	Ontario	BNEF
EffiSolar Beckwith PV Plant	Solar	12	See Table 6	Ontario	BNEF

<i>Fiera Axiom Hearst PV Plant</i>	Solar	12.5	See Table 6	Ontario	BNEF
<i>Fiera Axiom Wainwright PV Plant</i>	Solar	12.5	See Table 6	Ontario	BNEF
<i>GDF Mitsui &amp; Fiera Axiom Beckwith PV Plant</i>	Solar	10	See Table 6	Ontario	BNEF
<i>Mighty Solar PV Plant</i>	Solar	14	See Table 6	Ontario	BNEF
<i>Northland Power Burks Falls West PV Plant</i>	Solar	11.8	See Table 6	Ontario	BNEF
<i>Ontario Solar PV Fields Ramore PV Plant</i>	Solar	10	See Table 6	Ontario	BNEF
<i>Oro-Medonte PV Plant</i>	Solar	12	See Table 6	Ontario	BNEF
<i>RE Adelaide 1 PV Plant</i>	Solar	14.3	See Table 6	Ontario	BNEF
<i>RE Breen</i>	Solar	14	See Table 6	Ontario	BNEF
<i>RE Ingersoll</i>	Solar	12	See Table 6	Ontario	BNEF
<i>Re Midhurst</i>	Solar	5	See Table 6	Ontario	BNEF
<i>RE Midhurst 3</i>	Solar	5	See Table 6	Ontario	BNEF
<i>RE Midhurst 4</i>	Solar	9	See Table 6	Ontario	BNEF
<i>RE midhurst 6</i>	Solar	11	See Table 6	Ontario	BNEF
<i>RE Orillia</i>	Solar	14	See Table 6	Ontario	BNEF
<i>RE orillia</i>	Solar	14	See Table 6	Ontario	BNEF
<i>RE Orillia</i>	Solar	10	See Table 6	Ontario	BNEF
<i>RE Smiths Falls</i>	Solar	13	See Table 6	Ontario	BNEF
<i>RE Smiths Falls 3</i>	Solar	11	See Table 6	Ontario	BNEF
<i>RE Smiths Falls 4</i>	Solar	13	See Table 6	Ontario	BNEF
<i>RE Sunningdales 1 PV Plant</i>	Solar	10	See Table 6	Ontario	BNEF
<i>Resco and Cleave Energy Toronto Rooftop PV</i>	Solar	2	See Table 6	Ontario	BNEF
<i>Sinvercreek Aylmer PV</i>	Solar	14	See Table 6	Ontario	BNEF
<i>Solray Sunderland PV Plant</i>	Solar	14	See Table 6	Ontario	BNEF
<i>SunEdison Lyalist PV Plant</i>	Solar	12	See Table 6	Ontario	BNEF
<i>SunEdison Welland PV Plant</i>	Solar	12	See Table 6	Ontario	BNEF
<i>TransCanada New Liskeard 1 PV Plant</i>	Solar	14	See Table 6	Ontario	BNEF
<i>401 Energy &amp; Longyuan Duffering Win</i>	Wind	99	\$ 365.71	Ontario	BNEF
<i>Adelaide Wind Farm</i>	Wind	59	\$ 155.76	Ontario	BNEF
<i>Bornish Wind Farm</i>	Wind	72	\$ 190.08	Ontario	BNEF

Capstone Skyway 8 Wind Farm	Wind	10	\$	26.40	Ontario	BNEF
Jericho Wind Farm	Wind	145.6	\$	384.38	Ontario	BNEF
Niagra Wainfleet	Wind	9	\$	23.00	Ontario	BNEF
Northland Power Manitoulin Island Wind Farm	Wind	68.4	\$	180.58	Ontario	BNEF
Senvion Oxley Wind Farm	Wind	6	\$	15.84	Ontario	BNEF
Sout Branch Wind Farm	Wind	30	\$	79.20	Ontario	BNEF
Sount Kent Wind Farm	Wind	270	\$	736.40	Ontario	BNEF
Haf Energy	Wind	9	\$	23.76	Ontario	BNEF
Manitoulin Island	Wind	60	\$	158.40	Ontario	BNEF
Whittington Wind Farm	Wind	6.5	\$	17.16	Ontario	BNEF
Spring wood	Wind	8.2	\$	21.65	Ontario	BNEF
Grand Renewable Wind	Wind	149	\$	393.36	Ontario	BNEF
Residential/Commer cial	Solar	183	\$	666.12	Ontario	BNEF
Glencore Raglan Mine Wind Farm	Wind	3	\$	7.92	Quebec	BNEF
Invenergy Des Moulins Wind Farm Phase II	Wind	21	\$	55.44	Quebec	BNEF
Inveenergy Le Plateau II Wind Farm	Wind	21	\$	40.00	Quebec	<a href="#">Major Project Inventory</a>
La Mitis Wind Farm	Wind	25	\$	66.00	Quebec	BNEF
Le Granit Wind Farm	Wind	25	\$	60.00	Quebec	<a href="#">Major Project Inventory</a>
Riviere Du Moulin Famr Phase I	Wind	150	\$	342.86	Quebec	BNEF
Seigneurie De Beaupre Wind Farm Phase III	Wind	68	\$	200.00	Quebec	<a href="#">Major Project Inventory</a>
St-Damase Wind Farm	Wind	24	\$	63.36	Quebec	BNEF
Temiscouata Community I Wind Farm	Wind	24	\$	63.36	Quebec	BNEF
Vens du Kempt Wind Farm	Wind	101	\$	326.67	Quebec	BNEF
Romaine II	Large Hydro	640	\$	2,700.00	Quebec	<a href="#">Major Project Inventory</a>
Chebucto Pockworck Wind Farm	Wind	10	\$	26.40	Maritimes	BNEF
Millbrook Community Windfarm	Wind	6	\$	15.84	Maritimes	BNEF
PEI Hermanville	Wind	30	\$	79.20	Maritimes	BNEF

Wind Farm Scotian WindFields St. Rose Community	Wind	2	\$	5.28	Maritimes	BNEF
Truro Heights Community Wind Farm	Wind	4	\$	10.56	Maritimes	BNEF
Whynotts Community Wind Farm	Wind	4	\$	10.56	Maritimes	BNEF
Independent	Wind	4	\$	10.56	Maritimes	Major Project Inventory
Independent	Tidal	4	\$	14.44	Maritimes	Major Project Inventory

## Section 2 – Calculations and Assumptions per Report Section

Each heading below corresponds with a section of Tracking the Energy Revolution – Canada 2015. Beneath each heading we include “**Statements**” from the report that require further explanation.

### 1. By the Numbers: Canadian Clean Energy Leaders

**Statement:** Last year, the province welcomed nearly half of all Canadian investment in new clean energy generation. It also notched the biggest wind power stake in Canadian history (CAD\$2.8 billion), and the highest solar tally (CAD\$1.6 billion).

Table 8 summarizes the investment per resource type from 2009 to 2014. In 2014 total investment in Ontario totalled more than 4.5 billion CAD or 41% of Canada’s total 10.91 billion CAD investment.

*Table 8: Summary of investment estimates for Ontario (Million CAD 2014)*

	2009	2010	2011	2012	2013	2014
Conventional Hydro	0.00	0.00	0.00	0.00	0.00	0.00
Run-of-River Hydro	52.97	0.00	0.00	0.00	0.00	0.00
Wind	1497.94	736.82	1378.87	194.57	1128.07	2771.68
Biomass	0.00	87.69	0.00	0.00	0.00	188.89
Biogas	0.00	24.65	8.53	0.00	0.00	0.00
Solar	229.32	823.25	1365.68	1035.60	1324.08	1592.90

**Statement:** Of course, all that money is going straight into steel and silicon, which is why Ontario also leads in capacity—that is, the ability to produce clean power—adding 1,810 MW of clean power to the grid in 2014.

Table 9 shows that total capacity in 2014 was 14.30 GW, a 1.81 GW increase from the 12.49 GW in 2013. No other province installed that much additional capacity.

Table 9: Summary of total annual capacity in Ontario (GW)

	2010	2011	2012	2013	2014
Conventional Hydro	7.13	7.13	7.13	7.13	7.13
Rung-of-River Hydro	1.12	1.12	1.12	1.12	1.12
Wind	1.63	2.16	2.23	2.66	3.66
Biomass	0.20	0.20	0.20	0.20	0.40
Biogas	0.07	0.08	0.08	0.08	0.08
<b>Solar</b>	<b>0.28</b>	<b>0.57</b>	<b>0.88</b>	<b>1.31</b>	<b>1.92</b>
Utility	0.20	0.37	0.54	0.81	1.11
Commercial	0.00	0.03	0.08	0.18	0.36
Residential	0.08	0.17	0.26	0.32	0.45
<b>TOTAL</b>	<b>10.43</b>	<b>11.25</b>	<b>11.63</b>	<b>12.49</b>	<b>14.30</b>

**Statement:** Clean Power Generation Investment by Province in 2014

Table 10 summarizes the data used in the chart “Clean Power Generation Investment by Province in 2014” included in the report. We calculated the data in Table 10 using the investment approach and assumptions explained earlier in this document.

Table 10: Data for the investment graph

Province	Investment Billion CA (2014)
British Columbia	1.34
Alberta	0.71
Saskatchewan	-
Manitoba	-
Ontario	4.55
Quebec	3.93
Atlantic Canada	0.16
North	0.00

**Statement:** Provincial Ranking

In the report we rank provinces based on renewable investment, percentage of the grid that is renewable, growth in that percentage over the last five years and policy presence. The results of this analysis, as presented in the report, are summarized below.

Table 11: Provincial ranking summary

Rank	Province	Investment CAD\$ Billions (2010 to 2014)	Percentage of grid renewable capacity (2014)	Growth in RE as % of grid capacity, 2010-2015	Policy Presence
1	Ontario	12.7	39%	50%	
2	Quebec	8.6	98%	6%	
3	British Columbia	5.2	96%	12%	
4	Manitoba	1.7	95%	5%	
5	Alberta	2.3	19%	37%	

For each measure – investment, percentage renewable, growth in renewable energy, and policy presence – we assigned scores from 0 to 3. For investment, percentage renewable and growth in renewable energy we divided the range of provincial values by four. For example, provincial investment ranged between \$12.7 and \$0.03 billion. We divided that span into four equal investment buckets - 0.03 to 3 billion, 3 billion to 6 billion, 6 billion to 9 billion and finally 9 billion to 13 billion. Those provinces in the bottom bucket get 0 points, those in the second 1 point, third 2 points and the top bucket received three points. We used the same approach for percentage renewable and growth in renewable energy. Table 12 summarizes the point breakdown per measure.

To evaluate policy presence we assigned one point each for having renewable energy targets, a clean energy standard or renewable portfolio standard and accelerated coal phase out or ban on new coal development. These policies are common to jurisdictions leading on renewable electricity generation as we found in our last “Tracking the Energy Revolution – Canada 2014”.

Table 12: Point breakdown per measure

	Investment CAD\$ Billions (2010 to 2014)	Percentage of grid renewable capacity (2014)	Growth in RE as % of grid capacity, 2010-2014
Top quarter (3 points)	>9.5	>78%	>37%
2 <sup>nd</sup> quarter (2 points)	>6.35	>58%	>25%
3 <sup>rd</sup> quarter (1 point)	>3.19	>39%	>12%
Bottom quarter (0 points)	>0.03	>19%	>00

Table 13 summarizes the points per measure, per province and the total point score. Higher scores denote better performance. The highest possible score is 12.

*Table 13: Summary of points per province and measure*

Rank	Province	Investment CAD\$ Billions (2010 to 2014)	Percentage of grid renewable capacity (2014)	Growth in RE as % of grid capacity, 2010-2015	Policy Presence	Total
1	Ontario	3	1	3	2.5	9.5
2	Quebec	2	3	0	3	8
3	British Columbia	1	3	0	2.5	6.5
4	Manitoba	0	3	0	3	6
5	Alberta	0	0	3	0	3

Alberta is an anomaly in this table because it has relatively little policy support or renewable energy, but has seen meaningful investment in renewable energy. Investors continue to build renewable energy projects in Alberta largely thanks to policies in other jurisdictions. For example in 2014, developers created three new projects in Alberta. Developers of the largest, Blackspring Ridge Wind Farm, financed the project with California clean energy credits that are no longer available. The second biggest was purchased outright by IKEA as part of the company's global corporate commitment to renewable energy. The third was a 1 MW solar thermal plant owned by the City of Medicine Hat. These were all anomalies, or the result of decisions or policies made beyond the province's borders. Unless and until the government introduces enabling policy, we don't expect significant new projects in the province.

## 2. Where Canada Stands

**Statement:** The final number came in at CAD \$10.9 billion, as our nation maintained its standing from the previous year. And while we didn't move up the global ranks, dollars flowing into clean-energy generation jumped a significant 88 percent over the previous year.

Investment in 2013 was \$5.8 billion and that increased to \$10.9 billion in 2014, or an 88 percent increase.

**Statement:** In the past five years, largely thanks to policy leadership in Ontario, Canadian utilities have shut down 4,600 MW worth of coal power plants. That's the equivalent of taking 8.7 million vehicles off the nation's roads.

We estimated coal capacity from Bloomberg New Energy Finance's data base for power plants in Canada. According to that database, coal capacity in 2010 was 14,123 MW, that fell to 9,504 MW in 2014, a difference of 4,619 MW.

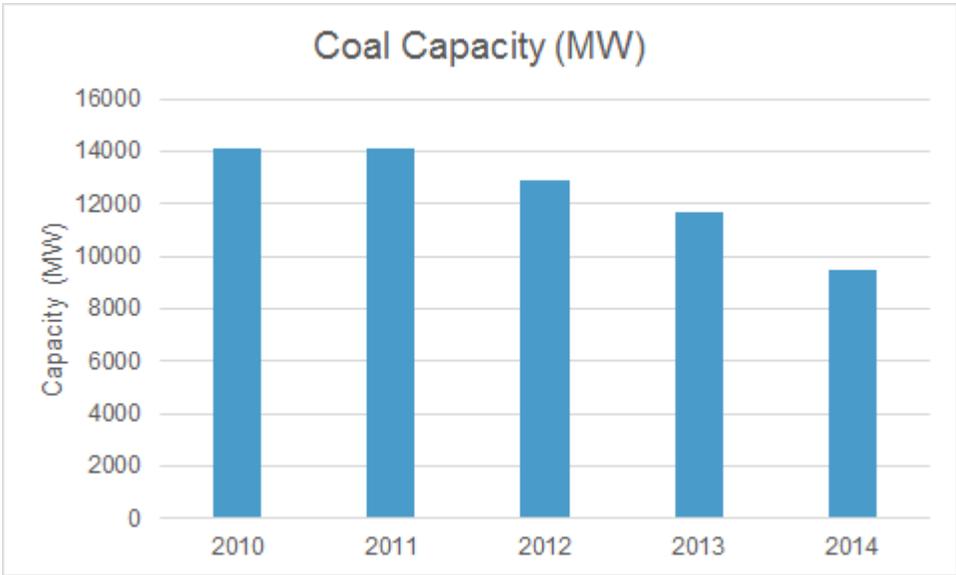


Figure 1: Coal capacity (MW) for Canada from 2010 to 2014

At an 85% capacity factor the 4,619MW of coal that came offline would have produced 34,393,074 MWhr of electricity. On average, coal power plants in Canada produce 1 tonne CO<sub>2eq</sub> per MWhr<sup>6</sup>. So the coal power that has come offline reduced emissions by approximately 34 MTCO<sub>2eq</sub> per year. The average Canadian car emits 3,878 kg CO<sub>2eq</sub>/yr<sup>7</sup>. Divide 34 MTCO<sub>2eq</sub> per year by 3,878 kg CO<sub>2eq</sub>/yr and we get 8.7 million vehicles.

### 3. Moments and Milestones

We selected moments and milestones primarily from our weekly Clean Energy Review news summaries from January to December of 2014. We cross-referenced these selected headlines with experts from Ontario, Quebec and Atlantic Canada.

### 4. Notable New Projects: Concrete, Steel, And Silicon

**Statement:** Developers and utilities brought enough new wind power online in 2014 to meet the needs of 500,000 homes.

Project developers built 1,875 MW of new wind capacity. At a capacity factor of 0.33<sup>8</sup> those turbines will produce an estimated 5,419 GWhr or electricity. On average 1 GWhr can power 91<sup>9</sup> Canadian homes. 5,419 GWhr can therefore power 492,839 homes – or 500,000 when rounded.

<sup>6</sup> Independent Power Producers Society of Alberta (2013) Trends in GHG emissions in the Alberta Electricity Market. [http://www.ippsa.com/IP\\_pdfs/Analysis%20of%20GHG%20Emissions%20in%20the%20Alberta%20Electricity%20Market%20-%20May%202013.pdf](http://www.ippsa.com/IP_pdfs/Analysis%20of%20GHG%20Emissions%20in%20the%20Alberta%20Electricity%20Market%20-%20May%202013.pdf)

<sup>7</sup> Assuming 20,000 km driven per year, average fuel economy of 8.34l/100km and a gasoline GHG intensity of 2,325 gCO<sub>2eq</sub>/L

<sup>8</sup> CIEEDAC (2014) Renewable Energy in Canada. [http://www2.cieedac.sfu.ca/media/publications/Renewables\\_Report\\_Final.pdf](http://www2.cieedac.sfu.ca/media/publications/Renewables_Report_Final.pdf)

<sup>9</sup> Based on the average electricity use for Canadian homes from StatsCanada (2013) Energy Use Data Handbook.

**Statement:** Distributed and utility solar

Figure 2 summarizes the distributed and utility cumulative capacity additions between 2010 and 2014. Table 14 provides the data for this table. Utility solar projects include all projects over 1,000 kW. Distributed solar include all projects < 1,000 kW.

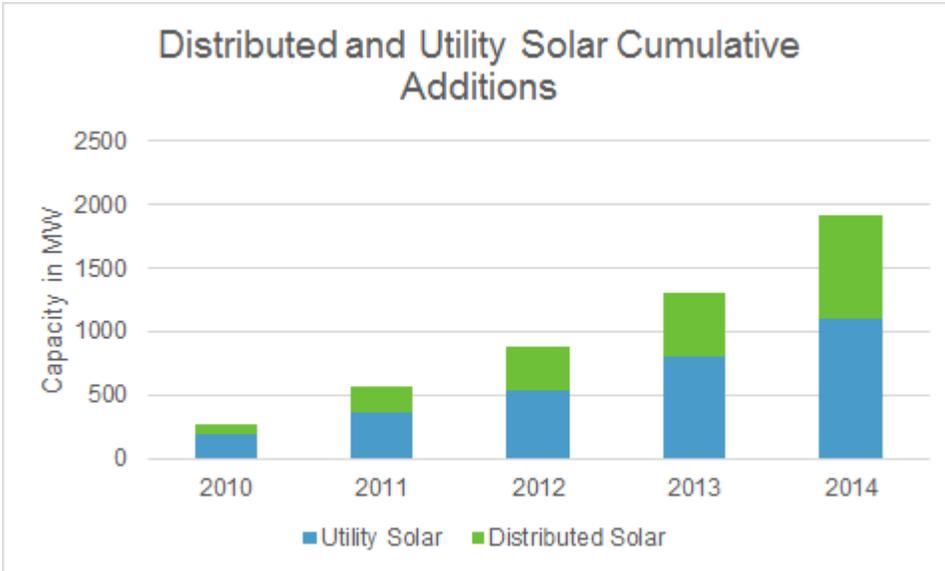


Figure 2: Cumulative capacity additions in utility and distributed solar

Table 14: Data for Figure 2

	Utility Solar	Distributed Solar
2010	199	76
2011	372	194
2012	539	336
2013	809	500
2014	1105	810

**Statement:** 2014 Capacity additions.

The data for Figure 3 – as presented in the report – is available in Table 2.

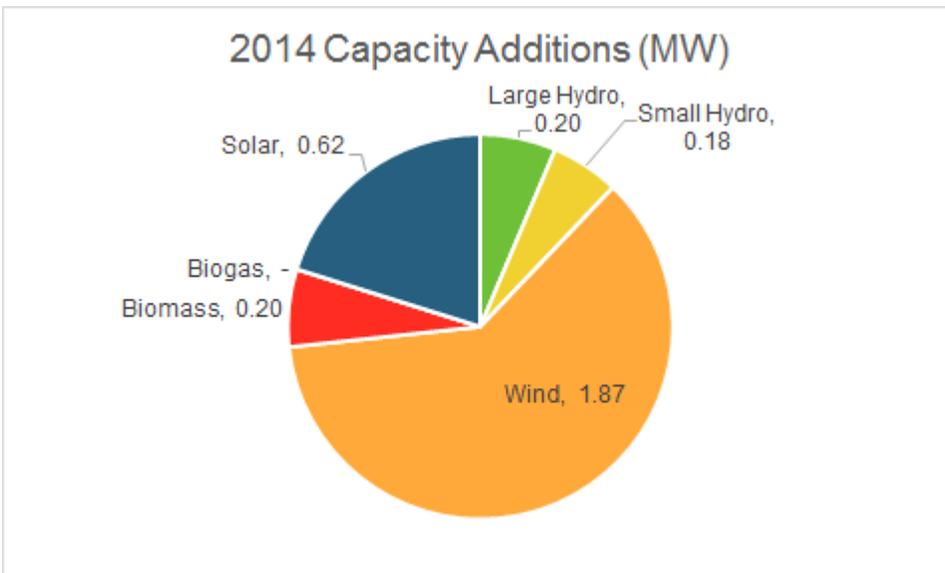


Figure 3: 2014 capacity additions (GW) by resource type

**Statement:** Project examples

We highlight a number of clean energy projects in the report. We attempted to highlight projects for each renewable energy type based on money invested and capacity for 2014 projects.

## 5. Clean Energy Champions

We selected Clean Energy Champions through a call for nominations in the following categories:

1. Business
2. Finance
3. Grassroots advocate
4. Labour
5. Academia

Following the call for nominations, we received suggestions from a wide variety of energy and climate leaders from across the country. We compiled external nominees along with our own research to make a list that was vetted through an in-house process. We then conducted interviews and evaluated candidates against a range of indicators based on geographic and technology diversity and a focus on the unsung heroes who work behind the scenes as well as leaders made an impact.

## 6. Circuits and Steel: Canada's Clean Energy Manufacturing Base

**Statement:** Clean Energy Direct Employment Table

Clean energy employment includes a range of sectors. In our report we direct employment in biorefinery products, power generation, energy infrastructure/smart grid, energy efficiency and green buildings and transportation. In total employment increased 14% between 2012 and 2013, from 23,700 to 26,900.

Table 15: Clean Energy direct employment

Clean Energy Direct Employment		
	2012	2013
Biorefinery Products	1,600	1,700
Power Generation	5,100	6,900
Energy Infrastructure/Smart Grid	3,200	4,000
Energy Efficiency and Green Buildings	8,100	8,200
Transportation	5,700	6,100
<b>Total</b>	<b>23,700</b>	<b>26,900</b>

## 7. Policy and progress

The policy and progress section contains no statements requiring further explanation.