

A Progress Report on Contracted Electricity Supply



2013
Fourth
Quarter



ONTARIO
POWER AUTHORITY



Preface

The Ontario Power Authority (OPA) was established by the Ontario government under the *Electricity Restructuring Act, 2004* (amending the *Electricity Act, 1998*), as Ontario's long-term energy planner to ensure a clean, reliable, cost-effective and sustainable supply of electricity for Ontarians.

Together with our partners, we ensure that electricity needs are met for the benefit of Ontario both now and in the future. We plan and procure electricity supply from diverse resources and facilitate the measures needed to achieve ambitious conservation targets.

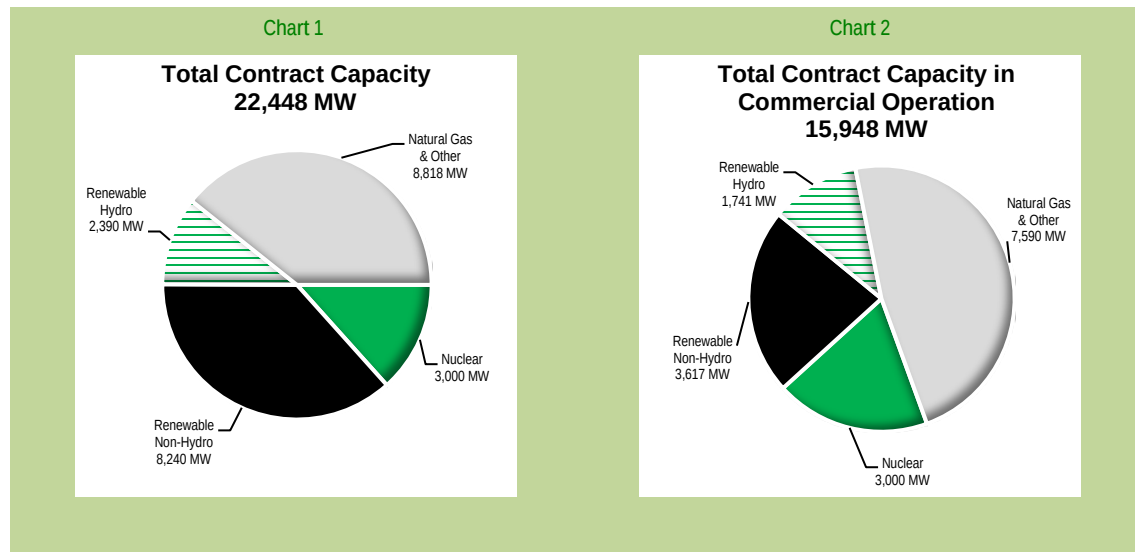
In accordance with the Ontario Energy Board (OEB) Order EB-2005-0489, dated March 3, 2006, the OPA posts regular updates on its website on the progress of procurement initiatives, including the progress of selected projects, subject to confidentiality constraints. *A Progress Report on Contracted Electricity Supply* is updated quarterly to provide the status of the OPA's contracted electricity supply projects and procurement initiatives. The numbers and information provided in this report include only electricity projects and initiatives in Ontario contracted by the OPA.

Table of Contents

Preface.....	1
Report Summary.....	3
Overview.....	3
New Contracts	5
Contracts That Reached Commercial Operation.....	6
Contract Amendments.....	6
Contract Terminations.....	6
Contract Capacity – Progress Table.....	7
Aboriginal and Community Participation.....	7
Additional Details and Related Links.....	8
Renewable Energy	9
Non-Hydroelectric Projects	9
Hydroelectric Projects	11
Renewable Program Projects – Development Status.....	13
Natural Gas and Other Fuel Sources	17
Simple Cycle and Combined Cycle Projects.....	17
Combined Heat and Power Projects.....	18
Energy-from-Waste Projects.....	20
Nuclear	20
Bruce A Restart and Refurbishment Projects	20
Photo Gallery	21
Appendices	28
Appendix I: OPA Contracts and Contract Capacity.....	28
Appendix II: Non-Standard Offer Program Contracted Facilities in Commercial Operation.....	30
Appendix III: Non-Standard Offer Program Contracted Facilities Under Development	36
Appendix IV: Summary of RESOP and FIT Contracts.....	39

Report Summary

Overview



As of the end of the fourth quarter of 2013, the OPA administered contracts for 22,448 megawatts (MW) of electricity supply generation, of which 15,948 MW or 71 percent were already in commercial operation.

Of the 22,448 MW of supply capacity, 4,668¹ MW were procured from existing generating facilities, which required minimal or no new capital investment. The remaining capacity of 17,832 MW was procured from new development, expansion, redevelopment or refurbishment of existing facilities. This new capacity represents about \$37.6 billion of capital investment in power generation in Ontario's electricity system since 2005. Facilities resulting from \$16.9 billion of the investment have already reached commercial operation.

Since the last reporting period, the overall contracted capacity increased by 79 MW. This resulted mainly from the addition of new contracts under the second version of the Feed-in Tariff Program (FIT 2) Program, reduced capacity and terminations under the Renewable Energy Standard Offer Program (RESOP) and a new Energy-from-Waste contract.

By the end of the reporting period, the OPA had 8,240 MW of renewable non-hydroelectric, 2,390 MW of renewable hydroelectric, 8,818 MW of natural gas and other fuel sources, and 3,000 MW of nuclear capacity under contract (see Chart 1).

Of this total capacity, 3,617 MW from renewable non-hydroelectric, 1,741 MW from renewable hydroelectric, 7,590 MW from natural gas and other fuel sources, and 3,000 MW from nuclear

¹ Includes the existing Smoky Falls Generating Station with a capacity of 53 MW, which will be decommissioned in January 2015

generation were in commercial operation, for a total of 15,948 MW (see Chart 2). The remaining 6,553 MW of the OPA's contracted capacity were in various stages of development.

Within the total renewable generation capacity, about 1,238 MW were contracted with Aboriginal participation and 170 MW were contracted with community and municipal participation. This represented about 8.5 percent of the OPA's total procured generation capacity. Chart 3 below illustrates the contracted generation capacity by fuel type.

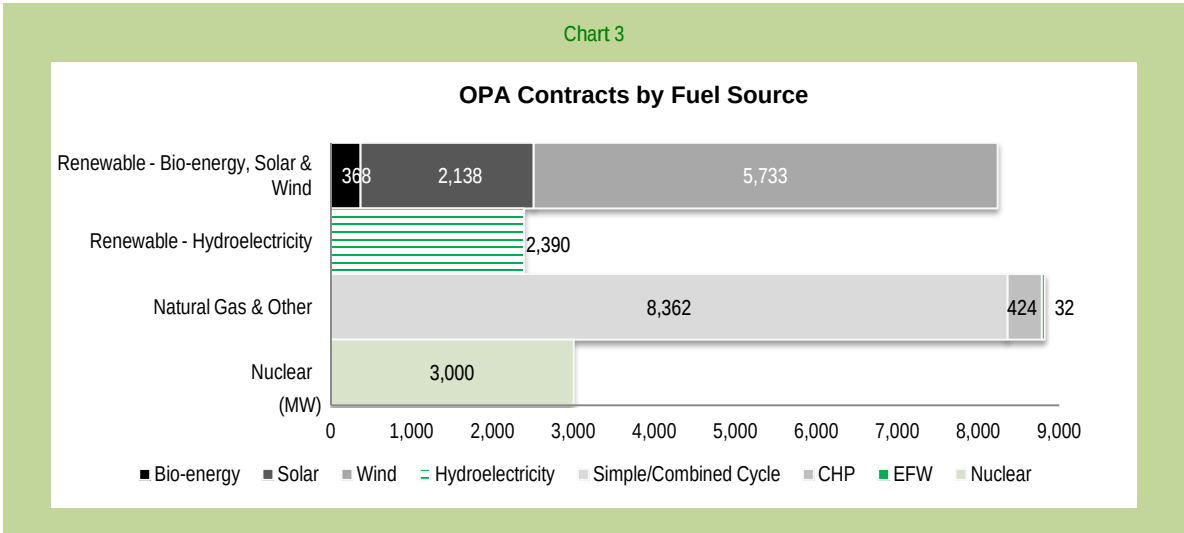


Table 1: Breakdown of Total Contracted Capacity as of December 31, 2013

	Total (MW)	Under Development (MW)	Commercial Operation (MW)
Renewable			
Bio-energy	368	256	112
Solar	2,138	1,120	1,019
Wind	5,733	3,247	2,487
Non-Hydroelectric – Subtotal	8,240	4,623	3,617
Hydroelectric	2,390	702	1,741 ²
Renewable – Subtotal	10,629	5,325	5,358
Natural Gas and Other Fuel Sources			
Combined Heat and Power (CHP)	424	10	414
Simple Cycle and Combined Cycle (SC/CC)	8,362	1,189	7,173
Energy-from-Waste (EFW)	32	29	3
Natural Gas and Other – Subtotal	8,818	1,228	7,590
Nuclear			
Bruce A	3,000	0	3,000
Nuclear – Subtotal	3,000	0	3,000
Total Contract Capacity (MW)	22,448	6,553	15,948

New Contracts

Renewable Energy – Non-Hydroelectricity

Bio-energy

Within the reporting period, 3 MW of combined capacity was contracted through the FIT 2 Program.

Solar

Within the reporting period, 7.7³ MW of combined capacity was contracted through the micro Feed-in Tariff (microFIT) Program and 82 MW of combined capacity was contracted through the FIT 2 Program.

Energy from Waste

The OPA entered into a new Energy-from-Waste (EFW) contract for a contract capacity of 9.45 MW. This contract is with Elementa Algoma LP for a new facility to be built in Sault Ste Marie.

² Includes existing Smoky Falls Generating Station with a capacity of 53 MW which will be decommissioned in January 2015.

³ The capacity of the executed microFIT contracts is in-service capacity.

The initial term of the contract will be two years with the possibility of extension for a maximum term of 20 years.

Contracts That Reached Commercial Operation

Renewable Energy – Non-Hydroelectricity

Bio-energy

Within the reporting period, 0.3 MW of combined capacity came into commercial operation under the initial version of the FIT Program.

Solar

Within the reporting period, further to the 7.7 MW of combined capacity from the new microFIT Program, 86.3 MW of combined capacity came into commercial operation under the FIT Program.

Waterpower

Within the reporting period, 5.5 MW of capacity came into commercial operation under the FIT Program.

Wind

Within the reporting period, 104.9 MW of capacity came into commercial operation under the FIT Program.

Contract Amendments

Renewable Energy – Non-Hydroelectricity

Solar

Within the reporting period, capacity was decreased by 0.8 MW through contract amendments under the FIT Program.

Wind

Within the reporting period, capacity was decreased by 1.6 MW through contract amendments under the FIT Program. Capacity also decreased by another 0.5 MW through contract amendments under RESOP.

Contract Terminations

Renewable Energy – Non-Hydroelectricity

Wind

Within the reporting period, 20 MW of combined capacity from two RESOP contracts was terminated by mutual agreement.

Contract Capacity – Progress Table

The following table shows the OPA-contracted capacity that has achieved commercial operation since 2005, and the capacity that will reach commercial operation up to 2018⁴.

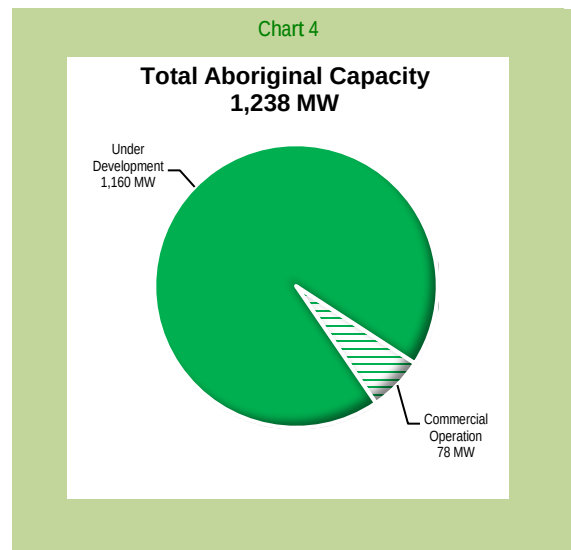
Table 2: Contract Capacity (MW) – Commercial Operation Progress Table as of December 31, 2013

Energy Supply	2005-2010	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
Renewable	3,348	776	313	921	3,016	1,828	128	0	300	10,629
Natural Gas and Other Fuel Sources	7,260	0	393	(63) ⁵	10	0	20	289	909	8,819
Nuclear	1,500	0	1,500	0	0	0	0	0	0	3,000
Total	12,108	776	2,206	858	3,026	1,828	148	289	1,209	22,448
Cumulative Total	12,108	12,883	15,090	15,948	18,974	20,802	20,949	21,238	22,448	

Aboriginal and Community Participation

Aboriginal Participation

By the end of the reporting period, First Nations and Métis communities were participating in 241 contracts to develop renewable generation facilities throughout Ontario. This included 50 MW of solar, 534 MW of wind and 653 MW⁶ of hydroelectric generation projects.



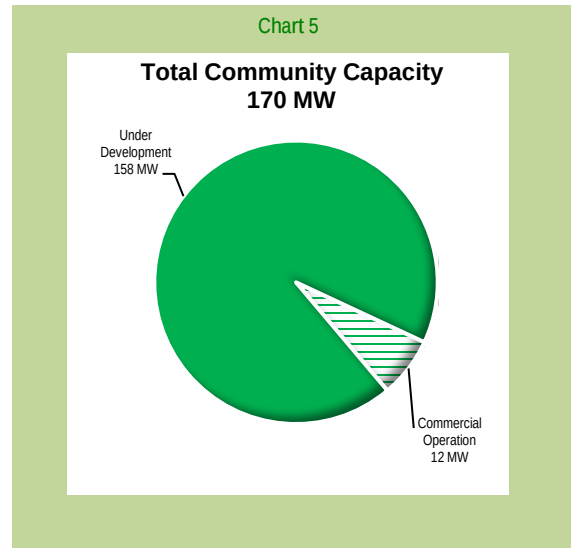
⁴ The schedule of contracted capacity is based on milestone commercial operation dates and projected in-service dates.

⁵ The new contract capacity of the Lennox Generating Station for its 10-year contract is 2,000 MW, a reduction of 140 MW from the original contract. Within the same period, the OPA also entered into an Energy-from-Waste pilot contract with Plasco Trail Road Inc. for the 2.8-MW Plasco Trail Road Energy-from-Waste facility. A new NUG contract was signed for 73.7 MW. Therefore the net change in capacity was -63 MW.

⁶ Previously all of Lower Mattagami and Twin Falls were considered as having Aboriginal participation. As of Q4 2013, each Lower Mattagami and Twin Falls facility is evaluated separately, which results in only part of the capacity being included in the total.

Community Participation

By the end of the reporting period, Ontario communities were participating in 209 renewable generation projects throughout Ontario. This included 14 MW of bio-energy, 53 MW of solar, 98 MW of wind and 5 MW of hydroelectric generation projects.



Additional Details and Related Links

For further information on the OPA's electricity supply projects, visit:

<http://www.powerauthority.on.ca/current-electricity-contracts>.

For further information on the OPA's multiple FIT programs, visit:

<http://fit.powerauthority.on.ca>.

For further information on programs offered to First Nations and Métis communities, visit:

<http://www.powerauthority.on.ca/first-nations-metis-relations/aboriginal-energy-partnership-program>.

Renewable Energy

Non-Hydroelectric Projects

By the end of the reporting period, the OPA was managing 8,240 MW of combined capacity from renewable non-hydroelectric energy projects, of which 3,617 MW were in commercial operation and 4,623 MW were under development. The breakdown is shown in Charts 6 and 7 below.

Chart 6

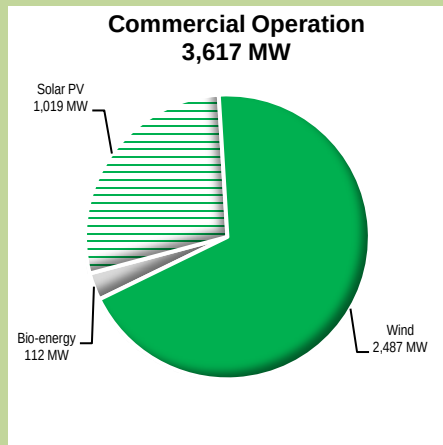
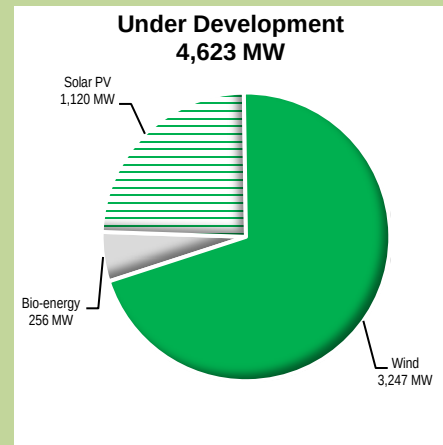


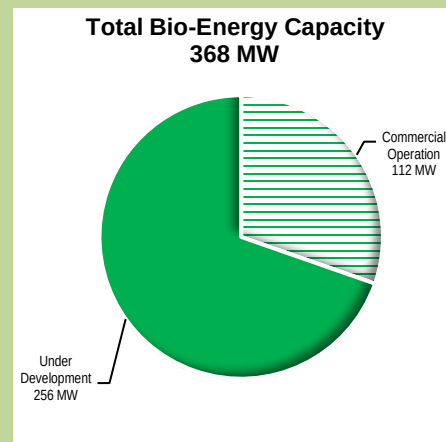
Chart 7



Bio-Energy

By the end of the reporting period, the OPA was managing 368 MW of combined capacity from bio-energy projects. Of the total capacity, 112 MW were in commercial operation and 256 MW were under development. All of the capacity from projects that were under development is scheduled to be in service at or before the end of 2016.

Chart 8



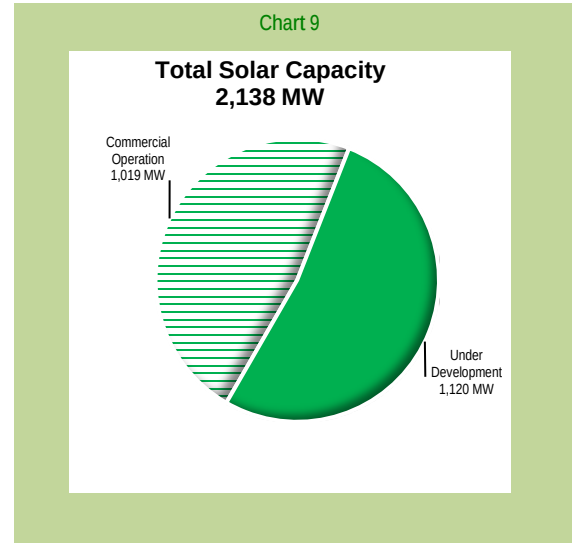
The status of the non-FIT bio-energy projects under development, as submitted by developers to the OPA, is shown in Table 3 below.

Table 3: Progress Status of non-FIT Bio-Energy Projects as of December 31, 2013

Developer	Project
Ontario Power Generation	Atikokan Generating Station Conversion, Atikokan Capacity: 205 MW Status: - Silo conveyor installation and cladding continued - Silo emergency fuel dump conveyor installed - Modifications to the pulverizer completed - Installation of controls integration, transfer tower internal conveyor and primary air cooler systems completed
	Becker Cogeneration Plant, Hornepayne Capacity: 8 MW Status: - Performance tests completed on several sub-systems ahead of full commissioning of the plant - Facility connected to the distribution system as the plant underwent commissioning tests

Solar

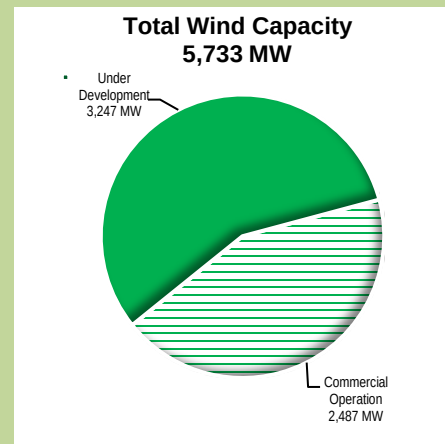
By the end of the reporting period, the OPA was managing 2,138 MW of combined capacity from solar projects. Of the total capacity, 50 MW were developed with Aboriginal participation. All of the capacity from projects that were under development is scheduled to be in service at or before the end of 2016.



Wind

By the end of the reporting period, the OPA was managing 5,733 MW of combined capacity from wind projects. Of the total capacity, 534 MW included Aboriginal participation and 3,247 MW were under development. All of the capacity from projects that were under development is scheduled to be in service at or before the end of 2018.

Chart 10

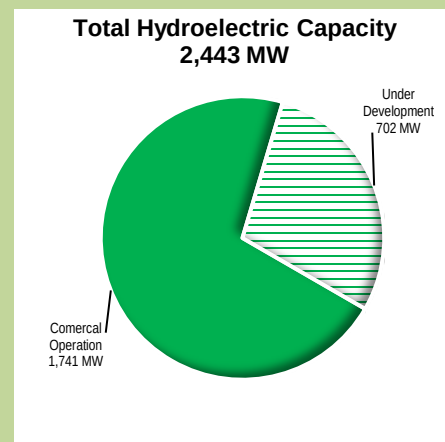


Hydroelectric Projects

Hydroelectricity

By the end of the reporting period, the OPA was managing 2,443⁷ MW of combined capacity from hydroelectric projects. Of the total capacity, 653 MW included Aboriginal participation and 702 MW were under development. All of the capacity from projects that were under development is scheduled to be in service at or before the end of 2018.

Chart 11



⁷ Including the existing Smoky Falls Generating Station with a capacity of 53 MW which will be decommissioned in January 2015.

The status of the non-FIT hydroelectric projects under development, as submitted by developers to the OPA, is shown in Table 4 below.

Table 4: Progress Status of non-FIT Hydroelectric Projects as of December 31, 2013

Developer	Project
Ontario Power Generation and Moose Cree First Nation Partnership	Lower Mattagami Hydroelectric Station Expansion, Kapuskasing: Mattagami River Capacity: 516 MW (station expansion/redevelopment 491 MW; runner upgrade 25 MW) Status: Harmon GS • Installation of new intake gate completed • Marine pad and spillway bridge removed • Operational testing to start in Q1 2014 Kipling GS • Concrete pouring continued • Earth berm and Cell 2 of the downstream cofferdam removed • Powerhouse superstructure erected and enclosed • Generator step-up transformer installed Little Long GS • Work focused on operational testing of the new unit in preparation for commissioning in Q1 2014 Smoky Falls • Concrete pouring continued in service bay, intake and powerhouse areas • Unit 1 stator winding and rotor assembly completed • Unit 2 stator core loop test completed and the stator frame placed in generator pit • Steel superstructure erection over unit 3 completed and powerhouse fully enclosed with pre-cast panels • Erection of retaining walls to protect east and west tailrace walls from erosion continued
	Thomas Low Generating Station, Renfrew: Bonnechere River Capacity: 3.5 MW Status: • Repairs to canal outer wall completed • Construction of new intake headworks completed • Construction of new upper dam wing wall completed • Demolition of upper dam deck completed • Repairs to upper dam concrete piers and installation of the penstock under way
Renfrew Power Generating Inc.	

H2O Power Limited	Twin Falls Expansion, Iroquois Falls: Abitibi River
	Capacity: 27 MW
	Status:
	• Assembly, commissioning and testing of Generator 5 completed • Generator 3 taken out of service, dewatered and disassembled • Onsite machining of Generator 3 turbine mating surfaces completed • Generator 3 turbine parts being reconditioned and will be shipped back to site with new runner in Q1 2014
Yellow Falls Power Limited Partnership	Yellow Falls Generating Station, Smooth Rock Falls: Mattagami River
	Capacity: 16 MW
	Status:
	• Stakeholdering activities continued • Design and procurement activities continued

Renewable Program Projects – Development Status

Renewable Energy Standard Offer Program

A total of 830 MW were contracted through RESOP; 802 MW or 96.6 percent of the contracted capacity was in service by the end of the reporting period, and the remaining 28 MW have milestone commercial operation dates prior to the end of 2014.

Feed-in Tariff Program

By the end of the reporting period, 4,624 MW of combined capacity was contracted through the FIT Program, of which 62 MW were from bio-energy, 1,306 MW were from solar, 3,070 MW were from wind, and 185 MW were from hydroelectricity. Of this total capacity, 1,147 MW or 24.8 percent of the contracted capacity was in commercial operation. In addition, 159 MW of combined contract capacity from solar generation was in commercial operation under the microFIT Program.

Furthermore, 1,091 MW or 23.6 percent of the contracted capacity reached the notice to proceed (NTP) stage of development. Of these, 31 MW were from bio-energy, 589 MW were from solar, 426 MW were from wind and 46 MW were from hydroelectric generation. The remaining 2,385 MW or 51.6 percent of the contracted capacity was in the pre-NTP stage of development, of which 9 MW were from bio-energy, 322 MW were from solar, 1,937 MW were from wind and 118 MW were from hydroelectric generation.

Feed-in Tariff Projects – Progress Table

The status of selected large FIT projects under development, as reported by developers to the OPA, is shown in Table 5 below.

Legend

C	Complete or not required	CIA	Connection Impact Assessment
CON	Construction	DCP	Domestic Content Plan
FIN	Financing Plan	NTP	Notice to Proceed
Reg EA	Regulatory Environmental Approvals	SIA	System Impact Assessment
U	Under Way		

Table 5: Progress Status of Selected Feed-in Tariff Projects (including the Korean Consortium Projects) Under Development as of December 31, 2013⁸

Developer (Total capacity under development)	Project Name	Location	MW	Pre-NTP								Achieved NTP	CON	
				Reg EA		SIA/CIA		DCP		FIN			U	C
				U	C	U	C	U	C	U	C			
Algonquin Power	Amherst Island Wind Project	Stella	75	✓			✓		✓	✓				
Capital Power GP Holdings Inc.	Port Dover Nanticoke Wind Project ⁹	Walpole	105		✓		✓		✓		✓	✓		✓
Capstone Infrastructure Corporation (93 MW)	Goulais Wind Farm	Sault Ste. Marie	25		✓		✓	✓		✓				
	Grey Highlands Zero Emission People	Singhampton	10	✓			✓		✓	✓				
	Grey Highlands Clean Energy	Singhampton	18	✓			✓		✓	✓				
	Settlers Landing Wind Park	Pontypool	10	✓			✓		✓	✓				
	Snowy Ridge Wind Park	Bethany	10	✓			✓		✓	✓				
	Wind Farm Ganaraska	Orono	20	✓			✓		✓	✓				
China Longyuan Power Group Corporation Limited	Dufferin Wind Farm	Shelburne	100		✓		✓		✓		✓	✓	✓	

⁸ The information presented in this table is based on data provided by suppliers to the OPA in their quarterly status reports as at the end of the quarter.

⁹ Achieved commercial operation in November 2013.

Developer (Total capacity under development)	Project Name	Location	MW	Pre-NTP								Achieved NTP	CON	
				Reg EA		SIA/CIA		DCP		FIN			U	C
				U	C	U	C	U	C	U	C			
DP Energy (60 MW)	Bow Lake Phase 1 (wind)	Montreal River Harbour	20		✓		✓		✓	✓				
	Bow Lake Phase 2b (wind)	Montreal River Harbour	40		✓		✓		✓	✓				
Henvey Inlet First Nation	Nigig Power Corporation (wind)	Pickerel	300		✓	✓			✓	✓				
Inverenergy Wind Canada ULC	Conestogo Wind Energy Centre 1	Drayton	69	✓			✓	✓		✓				
NextEra Energy (469 MW)	Adelaide Wind Energy Centre	Middlesex County	60		✓		✓		✓		✓	✓	✓	
	Bluewater Wind Energy Centre	Zurich	60		✓		✓		✓		✓	✓		
	Bornish Wind Energy Centre	Keyser	74		✓		✓		✓		✓	✓	✓	
	East Durham Wind Energy Centre	Priceville	23	✓			✓	✓		✓				
	Goshen Wind Energy Centre	Dashwood	102	✓			✓	✓		✓				
	Jericho Wind Energy Centre	Thedford	150	✓			✓	✓		✓				
Niagara Region Wind Corporation	Niagara Region Wind Farm	Smithville	230	✓			✓		✓	✓				
Northland Power (160 MW)	Grand Bend Wind Farm	Zurich	100	✓			✓		✓					
	McLean's Mountain Wind Farm 1	Little Current	50		✓		✓		✓		✓	✓	✓	
	McLean's Mountain Wind Farm 3	Little Current	10		✓		✓		✓		✓	✓	✓	
Pic Mobert First Nation and White River Hydro Limited Partnership (a wholly owned subsidiary of Regional Power Inc.) (19 MW)	Gitchi Animki Bezhig Generating Station	Brothers Township	9		✓		✓		✓		✓	✓	✓	
	Gitchi Animki Niizh Generating Station	Brothers Township	10		✓		✓		✓		✓	✓	✓	

Developer (Total capacity under development)	Project Name	Location	MW	Pre-NTP								Achieved NTP	CON	
				Reg EA		SIA/CIA		DCP		FIN			U	C
				U	C	U	C	U	C	U	C			
Korean Consortium: Samsung C&T Corporation and Korea Electric Power (1,069 MW)	Armow (wind)	Kincardine	180		✓		✓	✓		✓				
	Grand Renewable Energy Park (wind)	Haldimand County	149		✓		✓		✓		✓	✓	✓	
	K2 (wind)	Ashfield-Colborne-Wawanosh	270		✓		✓	✓		✓				
	South Kent (wind)	Chatham-Kent	270		✓		✓		✓		✓	✓	✓	
	Grand Renewable Energy Park (solar)	Haldimand County	100		✓		✓		✓		✓	✓	✓	
	Sol-Luce Kingston Solar Energy Project	Kingston and Loyalist Township	100	✓			✓							
Suncor Energy Products Inc. (140 MW)	Adelaide Wind Power Project	Strathroy	40		✓		✓		✓					
	Cedar Point Wind Power Project Phase II	Forest	100	✓			✓	✓		✓				
Veresen Inc. (73 MW)	Grand Valley Wind Farms Phase 3	Grand Valley	40	✓			✓		✓					
	St. Columban 1 Wind Energy Project	Seaforth	18		✓		✓		✓		✓			
	St. Columban 2 Wind Energy Project	Seaforth	15		✓		✓		✓		✓			
wpd Canada Corp. (90 MW)	Fairview Wind Farm	Stayner	18	✓			✓	✓						
	Sumac Ridge Wind Farm	Pontypool	12		✓		✓	✓						
	White Pines Wind Farm	Milford	60	✓			✓	✓						

Natural Gas and Other Fuel Sources

Chart 12

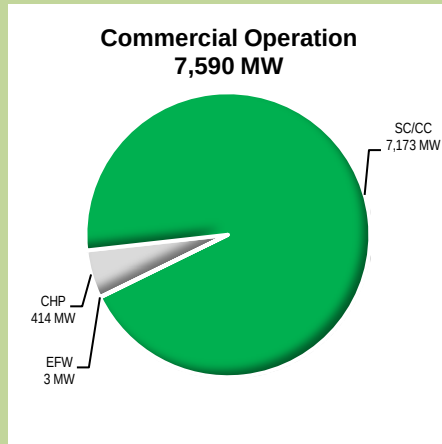
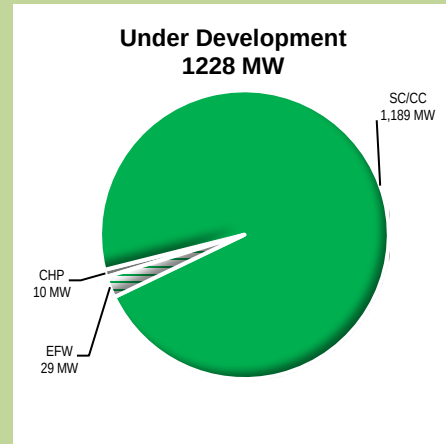


Chart 13



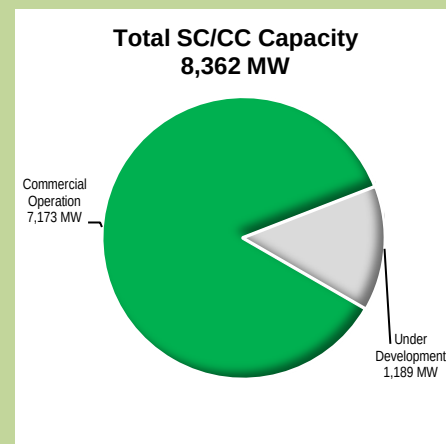
By the end of the reporting period, the OPA was managing 8,818 MW of combined capacity from natural gas-fired projects and projects with other fuel sources. This capacity included 8,362 MW from simple cycle and combined cycle facilities, 424 MW from combined heat and power contracted facilities and 32 MW from energy-from-waste facilities. Of this capacity, 7,590 MW were under commercial operation and 1,228 MW were under development.

Simple Cycle and Combined Cycle Projects

Simple Cycle and Combined Cycle

By the end of the reporting period, the OPA was managing 8,362 MW of combined capacity from simple cycle and combined cycle projects. Of this capacity, 7,173 MW were already in operation and 1,189 MW were under development.

Chart 14



The status of the combined cycle projects under development, as submitted by developers to the OPA, is shown in Table 6 below.

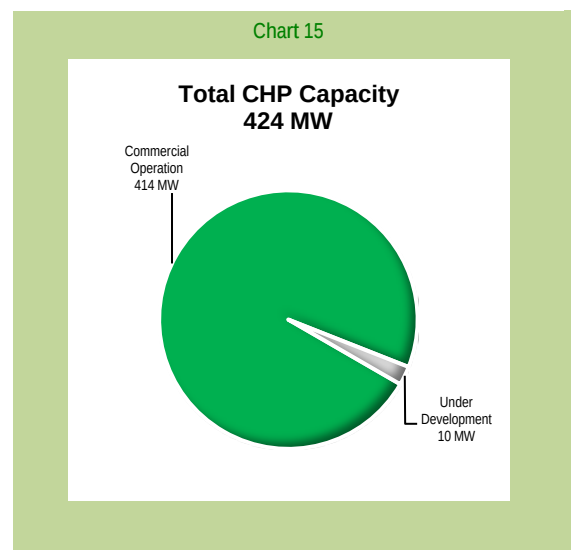
Table 6: Progress Status of Combined Cycle Projects as of December 31, 2013

Developer	Project
Greenfield South Power Corporation	Green Electron Power Plant, Sarnia Capacity: 289 MW Status: - Foundation work for the heat recovery steam generator completed - Casing installation and stack assembly for the heat-recovery steam generator commenced - Foundation work for the steam turbine, gas turbine and cooling continued
	Napanee Generating Station, Napanee Capacity: 900 MW Status: - Environmental and municipal permitting in progress - Stakeholder activities continued with a second project open house held in October - Engagement continued with the two Aboriginal groups that expressed interest in the project - Detailed plant engineering and procurement of engineering equipment continued - Major equipment procurement activities continued - Turbines and generators were placed in storage at the fabrication facilities
TransCanada Energy Ltd.	

Combined Heat and Power Projects

Combined Heat and Power

By the end of the reporting period, the OPA was managing 424 MW of combined capacity from combined heat and power contracted projects. The 10 MW of capacity from the three projects listed in the table below is scheduled to be in service by 2014.



The status of the combined heat and power projects under development, as submitted by developers to the OPA, is shown in Table 6 below.

Table 7: Progress Status of Combined Heat and Power Projects as of December 31, 2013

Developer	Project
Markham District Energy Centre Inc.	Birchmount Energy Centre, Markham Capacity: 2.6 MW Status:
	• Final electrical and mechanical work completed • Performance and commissioning tests completed
Markham District Energy Centre Inc.	Bur Oak Energy Centre, Markham Capacity: 3.3 MW Status:
	• Electrical and mechanical installation largely completed • Performance and commissioning tested scheduled for Q1 2014
Rosa Flora Growers Limited	Rosa Flora Growers, Dunnville Capacity: 4 MW Status:
	• Building to house generator units completed • Generator units and cogeneration equipment ordered • Procurement process for heat-recovery system commenced

Energy-from-Waste Projects

By the end of the reporting period, the OPA was managing 32 MW of combined capacity from energy-from-waste projects. Of this capacity, 3 MW were already in operation and 29 MW were under development. The 29 MW of capacity from the projects listed in the following table is scheduled to be in service by late-2018.

The status of the energy-from-waste projects under development, as submitted by developers to the OPA, is shown in Table 8 below.

Table 8: Progress Status of Energy-from-Waste Projects as of December 31, 2013

Developer	Project
Elementa Algoma LP	Elementa Algoma Generating Station, Sault Ste Marie Capacity: 9.45 MW Status: A new contract was signed with the supplier in December 2013
Regional Municipality of Durham-York	Durham York Energy Centre, Clarington Capacity: 20 MW Status: - Construction activities continued on the boiler and the boiler enclosure - Installation of the generator step-up transformer completed

Nuclear

Bruce A Restart and Refurbishment Projects

The OPA had 3,000 MW of nuclear energy supply capacity under contract; 1,500 MW were from the restart of units 1 and 2, which was completed at the end of October 2012. The other 1,500 MW were from units 3 and 4, which were in operation prior to contract execution and continued operations during the reporting period. Planning activities for refurbishment of units 3 and 4 continued.

For additional information on the Bruce A Restart Project, visit:

- <http://powerauthority.on.ca/nuclear/bruce-restart-and-refurbishment-project-3000-mw-tiverton>
- <http://www.brucepower.com>

Photo Gallery

Adelaide Wind Energy Centre (FIT)



Photo 1 – Site preparation work: stripping a roadway



Photo 2 – Site preparation work: laying drain pipes

Atikokan Generating Station



Photo 3 – Installing cladding on the silo conveyor



Photo 4 – View of assembled boiler system components

Bornish Wind Energy Centre (FIT)



Photo 5 – Site preparation work: cutting an access road



Photo 6 – Erecting the containment for a generator step-up transformer

Dufferin Wind Farm (FIT)



Photo 7 – Building the foundation of a wind turbine stack



Photo 8 – Installing the collection system cables

Durham York Energy Centre



Photo 9 – Southeast aerial view



Photo 10 – Northeast aerial view

Gitchi Animki Niizh/Gitchi Animki Bezhig Generating Stations (FIT)



Photo 11 – Site preparation work: clearing and stacking trees



Photo 12 – Building the sand-crushing borrow pit

Green Electron Power Plant



Photo 13 – Pouring concrete for the base of the heat-recovery steam generator



Photo 14 – Building the casing and stack assembly for the heat-recovery steam generator

Lower Mattagami Hydroelectric Station Expansion

Harmon Generating Station

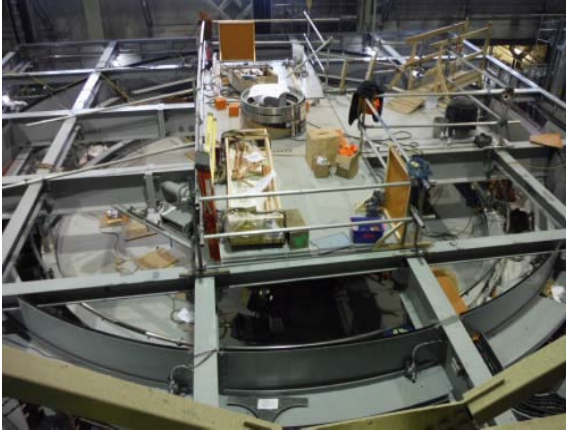


Photo 15 – Unit 3 under construction

Kipling Generating Station



Photo 16 – Rotor assembly in the service bay

Little Long Generating Station



Photo 17 – Plant infrastructure near completion

Smoky Falls Generating Station



Photo 18 – Building the retaining walls of the dam

McLean's Mountain Wind Farm (FIT)



Photo 19 – Installing a wind turbine stack



Photo 20 – Installing the collection system cables

South Kent Wind



Photo 21 – Assembling the components of a turbine stack



Photo 22 – Erecting a wind turbine stack

Thomas Low Generating Station



Photo 23 – Demolishing the deck of the upper dam



Photo 24 – Building the foundation of the headworks

Twin Falls Generating Station (Runner Upgrade)



Photo 25 – Generator 3 turbine pit work completed



Photo 26 – Generator 5 completed and awaiting commissioning

Appendices

Appendix I: OPA Contracts and Contract Capacity

Table 9: All Contract Capacity as of December 31, 2013

Energy Source	Contract Type	Number of Contracts			New Capacity (MW) Post-OPA Inception		Total Capacity (MW) Pre- and Post-OPA Inception		In Service and Under Development (MW)
		Total	In Service	Under Development	In Service	Under Development	In Service	Under Development	Total
Bio-energy	FIT 1	48	30	18	22.6	35.1	22.6	35.1	58
	FIT 2	12	0	12	0	4.2	0	4.2	4
	microFIT	0	0	0	0	0	0	0	0
	RESOP	19	18	1	39.7	4	39.7	4	44
	CHP III	2	1	1	40	8	40	8	48
	RES	3	3	0	9.3	0	9.3	0	9
	Atikokan	1	0	1	0	205	0	205	205
	Subtotal	85	52	33	111.6	256.3	111.6	256.3	368
Solar	FIT 1	1,520	830	690	394.8	772.7	394.8	772.7	1,168
	FIT 2	914	0	914	0	138.5	0	138.5	139
	microFIT	18,260	18,260	0	158.7	0	158.7	0	159
	RESOP	57	56	1	465.2	8.5	465.2	8.5	474
	KC	2	0	2	0	200	0	200	200
	Subtotal	20,753	19,146	1,607	1,018.7	1,119.8	1,018.7	1,119.8	2,138
Wind	FIT 1	69	14	55	707.7	2,362.5	707.7	2,362.5	3,070
	microFIT	5	5	0	0	0	0	0	0
	RESOP	35	33	2	269.4	15.5	269.4	15.5	285
	RES	15	15	0	1,509.4	0	1,509.4	0	1,509
	KC	4	0	4	0	868.6	0	868.6	869
	Subtotal	128	67	61	2,486.5	3,246.6	2,486.5	3,246.6	5,733
Renewable Non-Hydro Subtotal		20,966	19,265	1,701	3,616.8	4,622.71	3,616.8	4,622.71	8,240
Hydroelectricity	FIT 1	44	4	40	22	163.4	22	163.4	185
	FIT 2	1	0	1	0	0.1	0	0.1	0
	RESOP	16	16	0	28.2	0	28.2	0	28
	RES	3	2	1	31	16	31	16	47
	HCI	53	52	1	10.5	6.5	1,086.7	6.5	1,093
	HESA	4	3	1	62.9	516	573	516	1,036
Renewable Hydro Subtotal		121	77	44	154.6	702	1,740.9	702	2,390 ¹⁰

¹⁰ The existing Smoky Falls Generating Station with a capacity of 53 MW will be decommissioned in January 2015.

Energy Source	Contract Type	Number of Contracts			New Capacity (MW) Post-OPA Inception		Total Capacity (MW) Pre- and Post-OPA Inception		In Service and Under Development (MW)
		Total	In Service	Under Development	In Service	Under Development	In Service	Under Development	Total
Natural Gas, Other Fuel and Nuclear									
Natural Gas (SC/ CC)	CES	5	3	2	1,672	1,189	1,672	1,189	2,861
	ACES	3	3	0	2,030.6	0	2,030.6	0	2,031
	EMCES	5	5	0	985.3	0	1,003.6	0	1,004
	NUG	1	1	0	73.7	0	73.7	0	74
	Lennox	1	1	0	0	0	2,000	0	2,000
	PGS	1	1	0	393	0	393	0	393
	Subtotal	16	14	2	5,080.9	1,189	7,172.9	1,189	8,362
Natural Gas(CHP)	CHP I & CHPSOP	11	8	3	414.2	9.9	414.2	9.9	424
Other	EFW	3	1	2	2.8	29.45	2.8	29.45	32
Natural Gas and Other Subtotal		30	23	7	5,497.9	1,228.35	7,589.9	1,228.35	8,818
Nuclear	Bruce	1	1	0	3,000	0	3,000	0	3,000
Nuclear Subtotal		1	1	0	3,000	0	3,000	0	3,000
Subtotal			19,366	1,752	12,269	6,553	15,948	6,553	22,448
Total			21,118		18,822		22,448 ¹¹		

Table 9 Acronyms

ACES = Accelerated Clean Energy Supply

CES = Clean Energy Supply

CHPSOP = Combined Heat and Power Standard Offer Program

EFW = Energy-from-Waste

EMCES = Early Movers Clean Energy Supply

HCI = Hydroelectric Contract Initiative

HESA = Hydroelectric Energy Supply Agreement

KC = Korean Consortium

PGS = Peaking Generation Supply

RES = Renewable Energy Supply

¹¹ The existing Smoky Falls Generating Station with a capacity of 53 MW will be decommissioned in January 2015.

Appendix II: Non-Standard Offer Program Contracted Facilities in Commercial Operation

Table 10: Renewable Energy – Bio-energy as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Commercial Operation/Term Commencement Date	Contract Expiry Date
Eastview Landfill Gas Energy Plant	1.7	18-Aug-05	Q3 2025
Hamilton (Digester Gas) Cogeneration Project	1.6	10-Jul-06	Q3 2026
Trail Road Landfill Generating Facility	6	31-Jan-07	Q1 2027
Thunder Bay Condensing Turbine Project	40	20-Mar-13	Q1 2023
Subtotal	49		

Table 11: Renewable Energy – Wind as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Commercial Operation/Term Commencement Date	Contract Expiry Date
Enbridge Ontario Wind Farm	181.5	19-Feb-09	Q1 2029
Erie Shores Wind Farm	99	24-May-06	Q2 2026
Gosfield Wind Project	50.6	16-Sep-10	Q4 2032
Greenwich Wind Farm	98.9	14-Oct-11	Q4 2031
Kingsbridge I Wind Power Project	39.6	16-Mar-06	Q1 2026
Kruger Energy Chatham Wind Project	99.4	01-Jan-11	Q4 2031
Kruger Energy Port Alma Wind Power Project	101.2	31-Oct-08	Q4 2028
Melancthon I Wind Plant	67.5	04-Mar-06	Q1 2026
Melancthon II Wind Plant	132	24-Nov-08	Q4 2028
Prince I Wind Power Project	99	21-Sep-06	Q3 2026
Prince II Wind Power Project	90	19-Nov-06	Q4 2026
Raleigh Wind Energy Centre	78	29-Jan-11	Q1 2031
Ripley Wind Power Project	76	22-Dec-07	Q4 2027
Talbot Wind Farm	98.9	16-Dec-10	Q4 2031
Wolfe Island Wind Project	197.8	26-Jun-09	Q2 2029
Subtotal	1,509		

Table 12: Renewable Energy – Hydroelectricity as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Commercial Operation/Term Commencement Date	Contract Expiry Date
Andrews Generating Station	47	1-Dec-09	Q4 2029
Appleton Eco Power Centre	1.4	1-Jan-11	Q4 2030
Aubrey Falls Generating Station	162	1-Dec-09	Q4 2029
Ayton Mills NUGS	0.3	1-Apr-13	Q2 2033
Barrie Small Hydro Limited	0.1	17-Jul-10	Q3 2030
Bracebridge Falls Generating Station	2.6	1-May-10	Q2 2030
Brewers Mills	0.9	1-May-10	Q2 2030
Burk's Falls	1.1	1-May-10	Q2 2030
Calm Lake Generating Station	9	1-Dec-09	Q4 2029
Campbellford-Seymour Electric Generation Inc. – Plant No. 1	2	1-Jan-10	Q4 2029
Casselman Generating Station	0.5	1-Nov-11	Q4 2031
Chaudiere No. 2. Generating Station	8.4	1-Apr-10	Q1 2030
Chaudiere No. 4 Generating Station	9.3	1-Apr-10	Q1 2030
Clergue Generating Station	52	1-Dec-09	Q4 2029
Conestogo Dam Generating Station	0.6	1-Jan-13	Q1 2033
Current River Hydro	0.5	1-Mar-10	Q1 2030
Devil's Gap Generating Station	0.5	1-Jun-10	Q2 2030
Domtar, Espanola Mill	18	1-Jan-12	Q1 2032
Drag River GS	0.3	11-Mar-13	Q1 2033
Dunford Generating Station	45	1-Dec-09	Q4 2029
Enerdu Power Systems Ltd.	0.3	1-Mar-11	Q1 2031
Fort Frances Generating Station	10	1-Dec-09	Q4 2029
Galetta Eco Power Centre	1.6	1-Jan-11	Q4 2030
Gananoque	0.7	1-May-10	Q2 2030
Gartshore Generating Station	23	1-Dec-09	Q4 2029
Glen Miller Generating Station	8	19-Dec-05	Q4 2025
Harmon Generating Station	141	22-Jun-10	Q4 2065
Harris Generating Station	12	1-Dec-09	Q4 2029
Healey Falls Generating Station	15.7	7-Apr-10	Q2 2060
Heywood Generating Station	7.2	1-Jan-10	Q4 2029
High Falls Generating Station #1	0.8	1-Oct-10	Q3 2030
Hogg Generating Station	18	1-Dec-09	Q4 2029
Hollingsworth Generating Station	23	1-Dec-09	Q4 2029

Hound Chute Generating Station	9.5	27-Oct-10	Q4 2060
Hurdman Dam	0.6	1-Jun-11	Q2 2031
Iroquois Falls Generating Station	29	1-Dec-09	Q4 2029
Island Falls Generating Station	38	1-Dec-09	Q4 2029
Jones Falls	2.4	1-May-10	Q2 2030
Kagawong Generating Station	0.8	1-Jan-10	Q4 2029
Kenora Generating Station	6	1-Dec-09	Q4 2029
Kingston Mills	1.9	1-May-10	Q2 2030
Kipling Generating Station	157	22-Jun-10	Q4 2065
Lac Seul/Ear Falls Generating Station	29.3	18-Feb-09	Q1 2059
Little Burgess Generating Station	0.2	1-Aug-13	Q3 2033
Little Long Generating Station	133	22-Jun-10	Q4 2065
London Street Generating Station	4.1	1-Jan-10	Q4 2029
Long Slide GS	0.7	1-Mar-13	Q1 2033
Lower Sturgeon Generating Station	14	27-Oct-10	Q4 2060
MacKay Generating Station	62	1-Dec-09	Q4 2029
Maple Hill	0.6	1-Dec-10	Q4 2030
Marmora GS	1	27-Jul-13	Q2 2033
Matthias Generating Station	3	1-Jan-10	Q4 2029
McPhail Generating Station	13	1-Dec-09	Q4 2029
Minden Generating Station	4	1-Jan-10	Q4 2029
Mission Generating Station	16	1-Dec-09	Q4 2029
Moose Rapids Generating Station	1.4	1-Jan-11	Q4 2030
Norman Generating Station	10	1-Dec-09	Q4 2029
Parry Sound PowerGen Corporation – Cascade Street Generating Station	1.2	1-Mar-10	Q1 2030
Rayner Generating Station	46	1-Dec-09	Q4 2029
Red Rock Falls Generating Station	41	1-Dec-09	Q4 2029
Renfrew Power Generation Inc. – Lower Plant	1	1-Jan-10	Q4 2029
Renfrew Power Generation Inc. – Upper Plant	1	1-Jan-10	Q4 2029
Rideau Falls	2	1-May-10	Q2 2030
Sandy Falls Generating Station	5.5	27-Oct-10	Q4 2060
Saugeen Generating Station	0.3	1-Aug-12	Q3 2032
Scone Generator	0.1	1-Jan-10	Q4 2029
Scott Falls Generating Station	22	1-Dec-09	Q4 2029
Shand Dam Generating Station	0.7	1-Sep-10	Q3 2030
Smoky Falls Generating Station	53	22-Jun-10	Q4 2065
Stanley Adamson Powerhouse	3.9	16-Jun-13	Q2 2033
Steephill Generating Station	16	1-Dec-09	Q4 2029

Stewart Generating Station	0.2	5-Jun-10	Q2 2030
Sturgeon Falls Generating Station	7	1-Dec-09	Q4 2029
Swift Rapids Generating Station	7.9	1-Jan-10	Q4 2029
Tembec, Smooth Rock Falls Facilities	8	14-Mar-10	Q1 2030
Truisler Chute Generating Station	0.6	1-Jun-11	Q2 2031
Tweed Generating Station	0.2	1-Nov-10	Q4 2030
Twin Falls Generating Station	22	1-Dec-09	Q4 2029
Umbata Falls Generating Station	23	12-Nov-08	Q4 2028
Washburn	0.2	1-May-10	Q2 2030
Water Street Pumphouse	1.3	1-Mar-13	Q1 2033
Wawaitin Generating Station	15	27-Oct-10	Q4 2060
Wells Generating Station	239	1-Dec-09	Q4 2029
West Nipissing Power Generation	6.5	1-Mar-10	Q1 2030
Wilson's Falls	2.9	1-May-10	Q2 2030
York River Generating Station	0.6	1-Sept-13	Q3 2033
635294 Ontario Inc.	0.5	1-Feb-10	Q1 2030
1149377 Ontario Limited	2.3	1-Jan-10	Q4 2029
Subtotal	1,691		

Table 13: Natural Gas and Other Fuel Sources – Simple Cycle and Combined Cycle as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Commercial Operation/Term Commencement Date	Contract Expiry Date
Brighton Beach Power Station	541.3	01-Jan-06	Q3 2024
Goreway Station	839.1	04-Jun-09	Q2 2029
Greenfield Energy Centre	1,005	16-Oct-08	Q4 2028
GTAA Cogeneration Plant	90	01-Feb-06	Q1 2026
Halton Hills Generating Station	641.5	01-Sep-10	Q3 2030
Lennox Generating Station	2,000	01-Jan-13	Q3 2022
Ottawa Health Sciences Centre	73.7	1-Jan-14	Q1 2034
Portlands Energy Centre	550	22-Apr-09	Q2 2029
Sarnia Regional Cogeneration Plant	444	01-Jan-06	Q4 2025
St. Clair Energy Centre	577	30-Mar-09	Q1 2029
Sudbury District Energy Cogeneration Plant	5	01-Jan-06	Q4 2024
Sudbury District Energy, Hospital Cogeneration	6.7	01-Jan-06	Q4 2024
Trent Valley Cogeneration Plant	6.7	01-Jan-06	Q4 2015
York Energy Centre	393	09-May-12	Q2 2032
Subtotal	7,173		

Table 14: Natural Gas and Other Fuel Sources - Combined Heat and Power Contracts as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Commercial Operation/Term Commencement Date	Contract Expiry Date
Durham College District Energy Project	2.3	11-Mar-08	Q1 2028
East Windsor Cogeneration	84	06-Nov-09	Q4 2029
Essar Cogeneration Facility	63	13-Jun-09	Q2 2029
Great Northern Tri-Gen Facility	11.3	31-Oct-08	Q4 2028
London Cogeneration Facility	12	31-Dec-08	Q4 2028
Thorold Cogen	236.4	28-Mar-10	Q1 2030
Warden Energy Centre	5	04-Jun-08	Q2 2028
Villa Colombo Vaughan	0.2	1-Aug-13	Q1 2030
Subtotal	414		

Table 15: Natural Gas and Other Fuel Sources – Energy-from-Waste as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Commercial Operation Date	Forecasted Contract Expiry Date
Plasco Trail Road Facility	2.8	1-Jan-08	Q4 2014
Subtotal	2.8		

Table 16: Nuclear Energy as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Term Commencement Date	Contract Expiry Date
Bruce A Units 1 – 4	3,000	31-Oct-05	Q4 2037
Subtotal	3,000		

Appendix III: Non-Standard Offer Program Contracted Facilities Under Development

Table 17: Renewable Energy – Bio-energy as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Atikokan Generating Station	205	Q2 2014	Q4 2023
Becker Cogeneration Plant	8	Q4 2013	Q4 2033
Subtotal	213		

Table 18: Korean Consortium Renewable Energy – Solar as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Grand Renewable Energy Park	100	Q1 2014	Q1 2034
Sol-Luce Kingston Solar Energy Project	100	Q4 2014	Q4 2034
Subtotal	200		

Table 19: Korean Consortium Renewable Energy – Wind as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Armow Wind Project	180	Q4 2014	Q4 2034
Grand Renewable Energy Park	148.6	Q3 2014	Q3 2034
K2	270	Q3 2015	Q3 2035
South Kent Wind Project	270	Q3 2014	Q3 2034
Subtotal	869		

Table 20: Renewable Energy – Hydroelectricity as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Harmon Generating Station (Expansion)	78	Q4 2015	Q4 2065
Harmon Generating Station (Runner Upgrade)	17.6	Q4 2016	Q4 2065
Kipling Generating Station (Expansion)	78	Q4 2015	Q4 2065
Little Long Generating Station (Expansion)	67	Q4 2015	Q4 2065
Little Long Generating Station (Runner Upgrade)	7.5	Q4 2017	Q4 2065
Smoky Falls Generating Station (Redevelopment)	267.9	Q4 2015	Q4 2065
Thomas Low Generating Station	1.5	Q1 2014	Q4 2029
Twin Falls Generating Station (Runner Upgrade)	5	Q1 2014	Q4 2029
Yellow Falls Hydroelectric Project	16	Q3 2016	Q3 2036
Subtotal	538		

Table 21: Natural Gas and Other Fuel Sources – Simple Cycle/Combined Cycle as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Green Electron Power Plant	289	Q3 2017	Q3 2037
Napanee Generating Station	900	Q4 2018	Q4 2038
Subtotal	1,189		

Table 22: Natural Gas and Other Fuel Sources – Combined Heat and Power Contracts as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Birchmount Energy Centre	2.6	Q3 2014	Q3 2034
Bur Oak Energy Centre	3.3	Q3 2014	Q3 2034
Rosa Flora Growers	4	Q4 2014	Q4 2034
Subtotal	10		

Table 23: Natural Gas and Other Fuel Sources – Energy-from-Waste as of December 31, 2013

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Elementa Algoma	9.45	31-Dec-18	Q4 2018
Durham York Energy Centre	20	Q3 2016	Q3 2036
Subtotal	29		

Appendix IV: Summary of RESOP and FIT Contracts

Table 24: RESOP and FIT Program as of December 31, 2013

Program	Fuel Source	Under Development (MW)	Commercial Operation (MW)	Total (MW)
RESOP	Bio-Energy	4	40	830
	Hydroelectric	0	28	
	Solar	9	465	
	Wind	15	269	
	Subtotal	28	802	
FIT 1	Bio-Energy	35	23	4,481
	Hydroelectric	163	22	
	Solar	773	395	
	Wind	2,363	708	
	Subtotal	3,334	1,147	
FIT 2	Bio-Energy	4	0	143
	Hydroelectric	0	0	
	Solar	139	0	
	Wind	0	0	
	Subtotal	143	0	
microFIT	microFIT Solar Contracts (Total 17,352)	0	159	159
Total (MW)		3,505	2,108	5,613



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