

A Progress Report on Contracted Electricity Supply



2014
First 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.

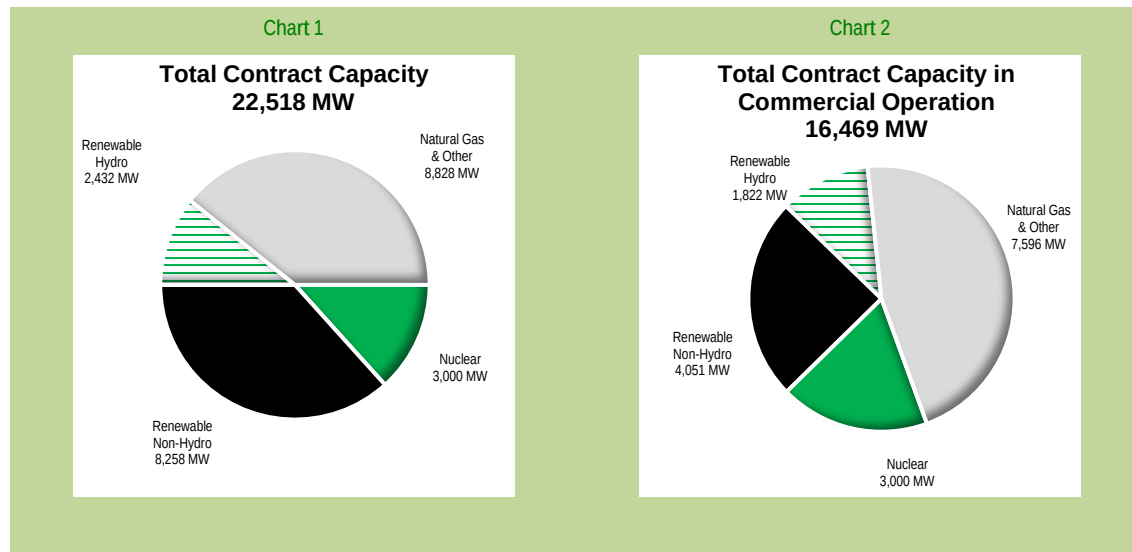
In accordance with the Ontario Energy Board (OEB) Order EB-2005-0489, dated March 3, 2006, the OPA posts regular updates on its website on the progress of procurement initiatives, including the progress of selected projects, subject to confidentiality constraints. *A Progress Report on Contracted Electricity 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.

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Report Summary

Overview



As of the end of the first quarter of 2014, the OPA administered contracts for 22,518 megawatts (MW) of electricity supply generation, of which 16,469 MW or 73 percent were already in commercial operation.

Of the 22,518 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 17,850 MW was procured from new development, expansion, redevelopment or refurbishment of existing facilities.

Since the last reporting period, the overall contracted capacity increased by 71 MW. This resulted mainly from the addition of new contracts under the second version of the Feed-in Tariff Program (FIT 2) Program, the Hydroelectric Standard Offer Program (HESOP) and the Combined Heat and Power Standard Offer Program (CHPSOP).

By the end of the reporting period, the OPA had 8,258 MW of renewable non-hydroelectric, 2,432 MW of renewable hydroelectric, 8,828 MW of natural gas and other fuel sources, and 3,000 MW of nuclear capacity under contract (see Chart 1).

Of this total capacity, 4,051 MW from renewable non-hydroelectric, 1,822 MW from renewable hydroelectric, 7,596 MW from natural gas and other fuel sources, and 3,000 MW from nuclear generation were in commercial operation, for a total of 16,469 MW (see Chart 2). The remaining 6,103 MW of the OPA's contracted capacity (including the Smoky Falls 53-MW

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

facility that will be decommissioned in 2015) were in various stages of development. Chart 3 below illustrates the contracted generation capacity by fuel type.

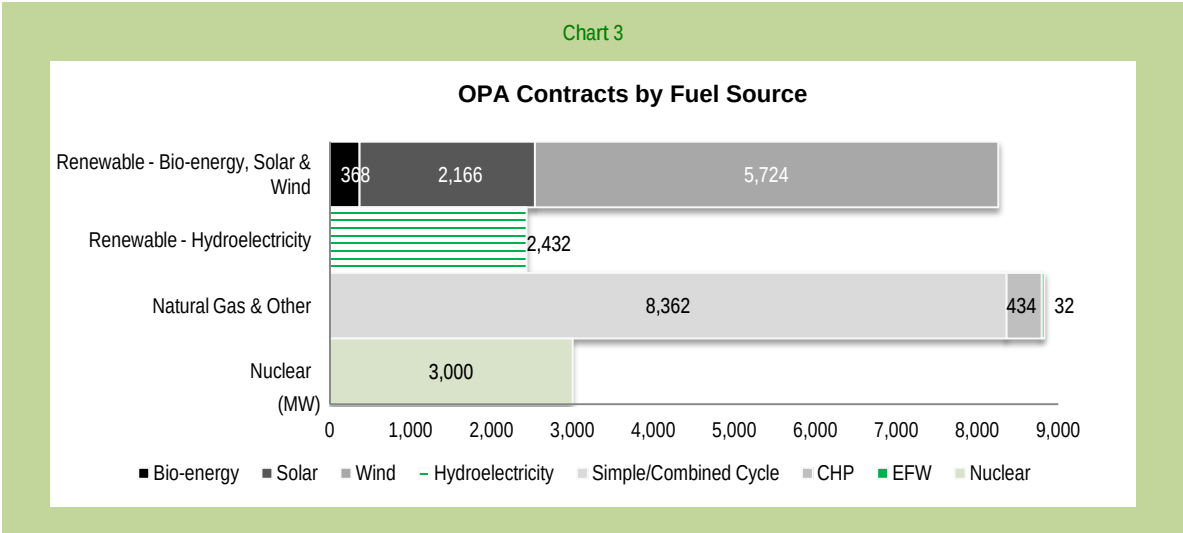


Table 1: Breakdown of Total Contracted Capacity as of March 31, 2014

	Total (MW)	Under Development (MW)	Commercial Operation (MW)
Renewable			
Bio-energy	368	248	120
Solar	2,166	998	1,168
Wind	5,724	2,962	2,763
Non-Hydroelectric – Subtotal	8,258	4,207	4,051
Hydroelectric	2,432	663	1,822 ²
Renewable – Subtotal	10,690	4,870	5,873
Natural Gas and Other Fuel Sources			
Combined Heat and Power (CHP)	434	14	420
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	8,828	1,233	7,596
Nuclear			
Bruce A	3,000	0	3,000
Nuclear – Subtotal	3,000	0	3,000
Total Contract Capacity (MW)	22,518	6,103	16,469

New Contracts

Natural Gas

A new CHPSOP contract was executed on February 1, 2014 with Envida Community Energy Inc. for the development and operation of a 10.2-MW facility (Hanlon Creek District Energy Project) in Guelph.

Renewable Energy – Non-Hydroelectricity

Solar

Within the reporting period, 4.6³ MW of combined capacity was contracted through the micro Feed-in Tariff (microFIT) Program and 18 MW of combined capacity was contracted through the FIT 2 Program.

Renewable Energy – Hydroelectricity

The OPA entered into one new Hydroelectric Contract Initiative (HCI) contract with Ragged Chute Energy Inc. for its existing 6.6-MW Ragged Chute Eco Power Centre located in Latchford.

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 OPA entered into three new municipal stream contracts under the Hydroelectric Standard Offer Program (HESOP) for a combined capacity of 35.3 MW:

- Chaudiere Hydro LP for a new 29.4-MW facility (Chaudiere Hydro GS2 Facility) to be constructed in Ottawa
- Renfrew Power Generation Inc. for a new 1.7-MW facility (First Chute Generating Station) to be constructed in Renfrew
- St. Catharines Hydro Generation Inc. for a new 4.2-MW facility (Shickluna Hydro Electric Generating Station) to be constructed in St. Catharines.

Contracts That Reached Commercial Operation

Clean Energy

Natural Gas

Within the reporting period, 5.9 MW of capacity came into commercial operation under CHPSOP. The commissioning date for the Birchmount Energy Centre was December 23, 2013, while the Bur Oak Energy Centre was commissioned on February 20, 2014. Both of these facilities are located in Markham.

Renewable Energy – Hydroelectricity

Within the reporting period, 74.5 MW of capacity came into commercial operation under the Hydroelectric Energy Supply Agreement (HESA). The Little Long expansion and runner upgrade located in Kapuskasing were commissioned on January 19, 2014.

Renewable Energy – Non-Hydroelectricity

Bio-energy

Within the reporting period, the Becker Cogeneration Plant in Hornepayne (8 MW) came into commercial operation on February 15, 2014 under the Combined Heat and Power III Power Purchase Agreement (CHP III). Another 0.5 MW came into commercial operation under the FIT Program.

Solar

Within the reporting period, further to the 4.6 MW of combined capacity from the new microFIT Program, 136.6 MW of combined capacity came into commercial operation under the FIT Program and 8.5 MW came into commercial operation under the Renewable Energy Standard Offer Program (RESOP).

Wind

Within the reporting period, 6 MW of capacity came into commercial operation under RESOP. An additional 270 MW of capacity came into commercial operation as the South Kent Wind project, a part of the Korean Consortium, was commissioned on March 28, 2014.

Contract Amendments

Renewable Energy – Non-Hydroelectricity

Energy-from-Waste

Within the reporting period, capacity was decreased by 0.1 MW through a contract amendment.

Solar

Within the reporting period, capacity was decreased by 0.2 MW through contract amendments under the FIT Program.

Wind

Within the reporting period, capacity was decreased by 8.8 MW through contract amendments under the FIT Program.

Contract Terminations

Renewable Energy – Non-Hydroelectricity

Wind

Within the reporting period, 0.5 MW of capacity from one FIT contract 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 2022⁴.

Table 2: Contract Capacity (MW) – Commercial Operation Progress Table as of March 31, 2014

Energy Supply	2005-2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Renewable	4,436	938	2,995	1,736	129	9	400	11	0	0	35	10,629
Natural Gas and Other Fuel Sources	7,654	(63) ⁵	10	0	20	289	909	10	0	0	0	8,829
Nuclear	3,000	0	0	0	0	0	0	0	0	0	0	3,000
Total	15,090	874	3,005	1,736	149	298	1,310	21	0	0	35	22,518
Cumulative Total	15,090	15,964	18,969	20,705	20,854	21,152	22,462	22,483	22,483	22,483	22,518	

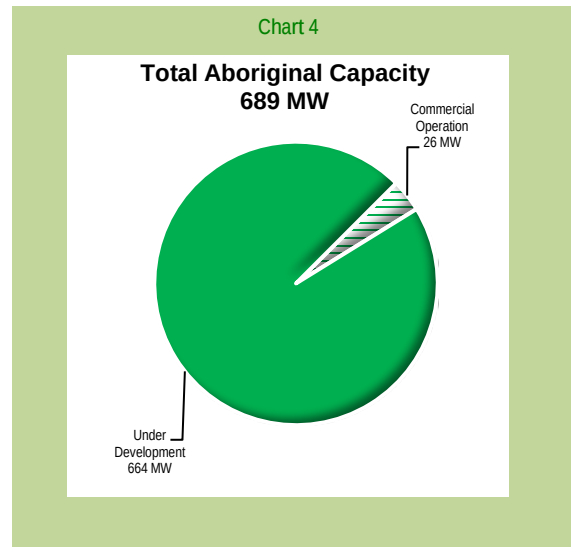
⁴ The schedule of contracted capacity is based on milestone commercial operation dates and projected in-service dates.

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.

Aboriginal and Community Participation under the FIT Program⁶

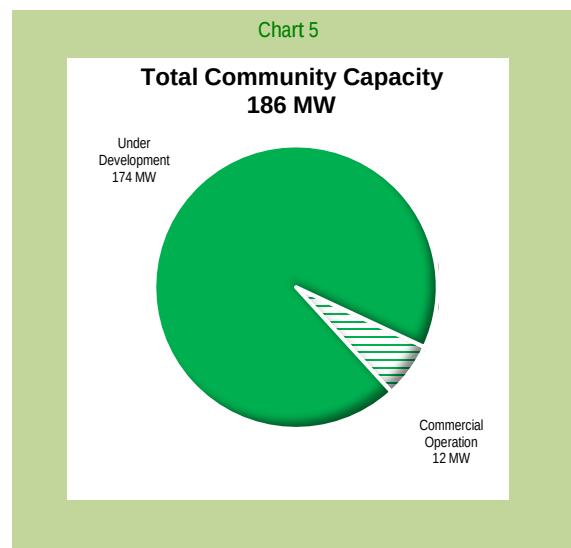
Aboriginal Participation

By the end of the reporting period, First Nations and Métis communities were participating in 243 FIT Program projects throughout Ontario. This included 76 MW of solar, 534 MW of wind and 80 MW of hydroelectric generation projects.



Community Participation

By the end of the reporting period, Ontario communities were participating in 214 renewable generation projects throughout Ontario. This included 14 MW of bio-energy, 53 MW of solar, 114 MW of wind and 5 MW of hydroelectric generation projects.



⁶ This section includes only FIT contracts for which the supplier has indicated Aboriginal or community participation under the rules of the FIT Program. Non-FIT contracts that have Aboriginal or community revenue and profit-sharing arrangements or co-ownership are not included.

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.aboriginalenergy.ca/aboriginal-energy-partnerships-program-qas>.

Renewable Energy

Non-Hydroelectric Projects

By the end of the reporting period, the OPA was managing 8,258 MW of combined capacity from renewable non-hydroelectric energy projects, of which 4,051 MW were in commercial operation and 4,207 MW were under development. The breakdown is shown in Charts 6 and 7 below.

Chart 6

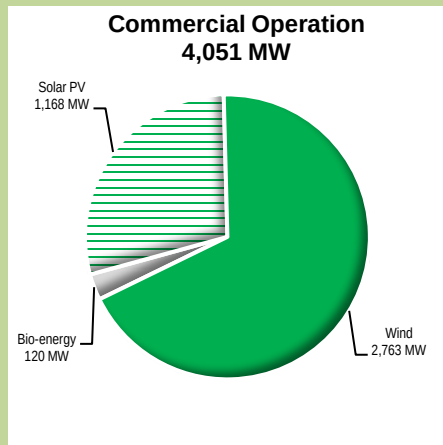
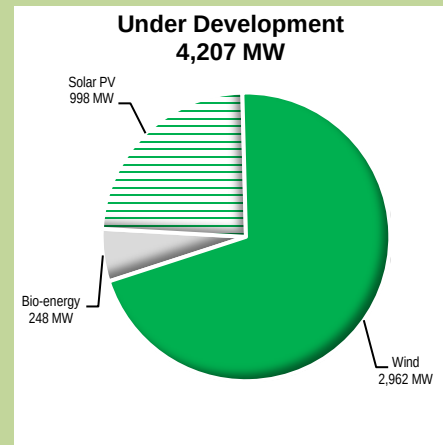


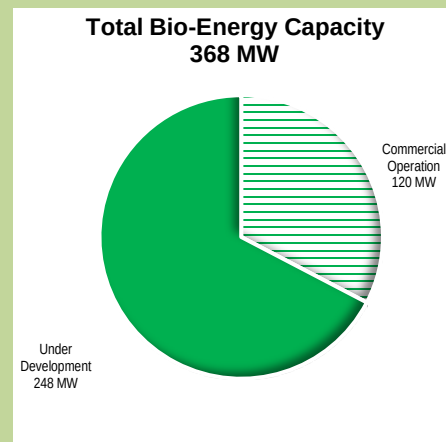
Chart 7



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, 120 MW were in commercial operation and 248 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



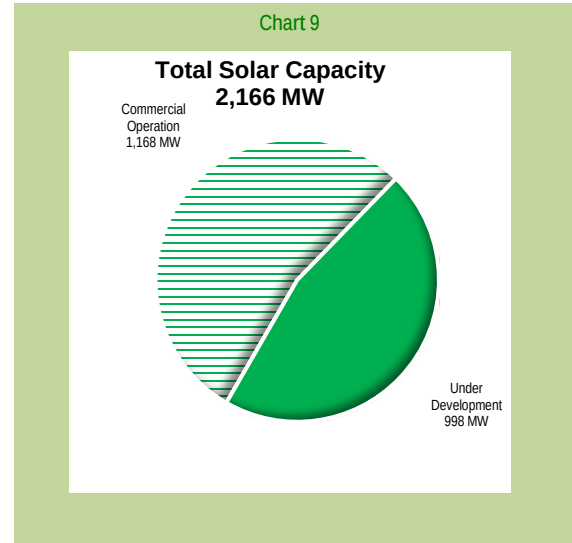
The status of the non-FIT bio-energy projects under development in the reporting period, as submitted by developers to the OPA, is shown in Table 3 below.

Table 3: Progress Status of non-FIT Bio-Energy Projects as of March 31, 2014

Developer	Project
Ontario Power Generation	Atikokan Generating Station Conversion, Atikokan Capacity: 205 MW Status: - Fuel and combustion system commissioning continued - Controls integration commissioning continued - The facility was synchronized to the transmission grid - Work on the transfer tower and silo electrical and mechanical systems and insulation continued
	Becker Cogeneration Plant, Hornepayne Capacity: 8 MW Status: Commissioning tests successfully completed and the facility now in commercial operation

Solar

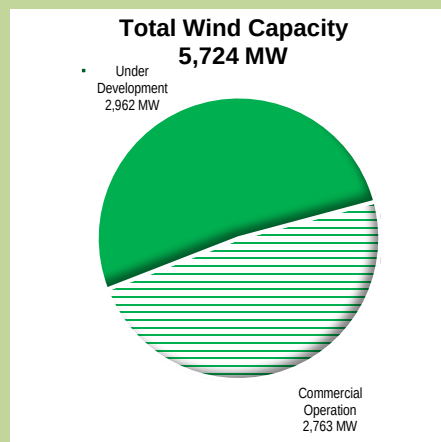
By the end of the reporting period, the OPA was managing 2,166 MW of combined capacity from solar projects. All of the capacity from projects that were under development is scheduled to be in service at or before the end of 2017.



Wind

By the end of the reporting period, the OPA was managing 5,724 MW of combined capacity from wind projects. Of the total capacity, 2,962 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



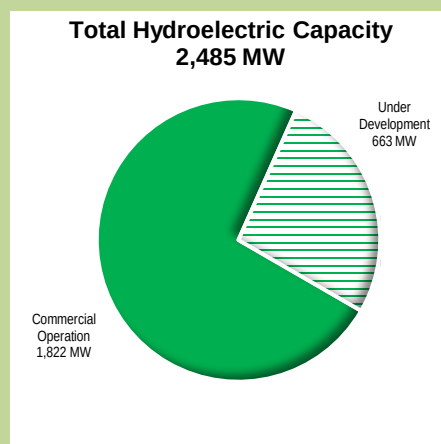
Hydroelectric Projects

Hydroelectricity

By the end of the reporting period, the OPA was managing 2,485⁷ MW of combined capacity from hydroelectric projects. Of the total capacity, 663 MW were under development.

On June 26, 2013, the Minister of Energy directed the OPA to offer a three-year extension to the milestone date for commercial operation. The capacity from projects that were under development is therefore scheduled to be in service at or before the end of 2021.

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 in the reporting period, as submitted by developers to the OPA, is shown in Table 4 below.

Table 4: Progress Status of non-FIT Hydroelectric Projects as of March 31, 2014

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 - Unit water-up, first rotation and offline overspeed tests completed - Operational testing scheduled for Q1 2014 - Backfeed completed and first synchronization to the grid forecasted for Q2 2014 Kipling GS - Structural concrete pouring completed - Cellular cofferdam removal completed - Unit 3 runner assembly started and stator frame assembly completed - Stacking of stator laminations and the core loop test completed - Stator winding continued Little Long GS - Commissioning tests successfully completed and the upgraded facility in commercial operation at the end of the quarter Smoky Falls - Many Unit 1 components installed including: wicket gates, outer head cover, inner head cover, turbine runner, turbine shaft, and rotor - Unit 2 stator winding and rotor assembly continued and the bottom ring, discharge ring and wicket gates installed - Concrete pouring for Unit 3 generator enclosure walls completed and the discharge ring and bottom ring installed in the turbine pit - Unit 3 rotor assembly commenced - Runner delivered to the site
	Thomas Low Generating Station, Renfrew: Bonnechere River Capacity: 3.5 MW Status: Renfrew Power Generating Inc. - Penstock installation continued - Repairs to east side of the dam completed and the coffer dam removed - Construction of inner canal wall under way - Construction of powerhouse foundation under way

H2O Power Limited	Twin Falls Expansion, Iroquois Falls: Abitibi River
	Capacity: 27 MW
	Status:
	• Cleaning and painting of the Unit 3 stator completed • Unit 3 rotor poles removed, refurbished and returned to site • Refurbished turbine components and new turbine runner returned to site • Major components reinstalled and unit scheduled to return to service in Q2 2014
Yellow Falls Power Limited Partnership	Yellow Falls Generating Station, Smooth Rock Falls: Mattagami River
	Capacity: 16 MW
	Status:
	• Stakeholder engagement 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; 817 MW or 98.4 percent of the contracted capacity was in service by the end of the reporting period, and the remaining 13 MW have milestone commercial operation dates prior to the end of 2014.

Feed-in Tariff Program

By the end of the reporting period, 4,638 MW of combined capacity was contracted through the FIT Program, of which 62 MW were from bio-energy, 1,329 MW were from solar, 3,061 MW were from wind, and 185 MW were from hydroelectricity. Of this total capacity, 1,284 MW or 27.7 percent of the contracted capacity was in commercial operation. In addition, 163 MW of combined contract capacity from solar generation was in commercial operation under the microFIT Program.

Furthermore, 1,170 MW or 25.2 percent of the contracted capacity reached the notice to proceed (NTP) stage of development. Of these, 31 MW were from bio-energy, 548 MW were from solar, 546 MW were from wind and 46 MW were from hydroelectric generation. The remaining 2,184 MW or 47.1 percent of the contracted capacity was in the pre-NTP stage of development, of which 8 MW were from bio-energy, 250 MW were from solar, 1,808 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 in the reporting period, as submitted 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 March 31, 2014

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	✓			✓		✓	✓				
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		✓		✓		✓		✓	✓		
DP Energy (60 MW)	Bow Lake Phase 1 (wind)	Montreal River Harbour	20		✓		✓		✓		✓			
	Bow Lake Phase 2b (wind)	Montreal River Harbour	40		✓		✓		✓		✓			

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			
Henvey Inlet First Nation	Nigig Power Corporation (wind)	Pickerel	300	✓		✓			✓	✓				
Inverenergy Wind Canada ULC	Conestogo Wind Energy Centre 1	Drayton	69	✓			✓	✓		✓				
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) ⁸	Chatham-Kent	270		✓		✓		✓		✓	✓		✓
	Grand Renewable Energy Park (solar)	Haldimand County	100		✓		✓		✓		✓	✓	✓	
	Sol-Luce Kingston Solar Energy Project	Kingston and Loyalist Township	100		✓		✓							
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	✓			✓		✓	✓				

⁸ Achieved commercial operations in March 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			
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		✓		✓		✓		✓	✓	✓	
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

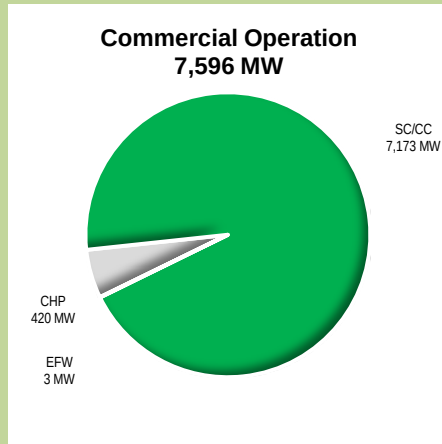
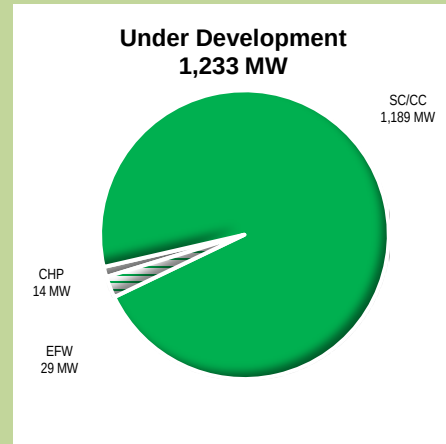


Chart 13



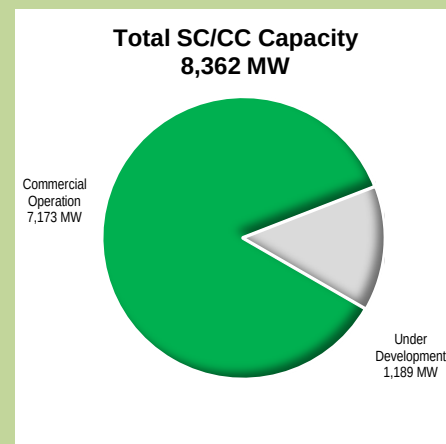
By the end of the reporting period, the OPA was managing 8,828 MW of combined capacity from natural gas-fired projects and projects with other fuel sources. This capacity included 8,362 MW from simple cycle and combined cycle facilities, 434 MW from combined heat and power contracted facilities and 32 MW from energy-from-waste facilities. Of this capacity, 7,596 MW were under commercial operation and 1,233 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 in the reporting period, as submitted by developers to the OPA, is shown in Table 6 below.

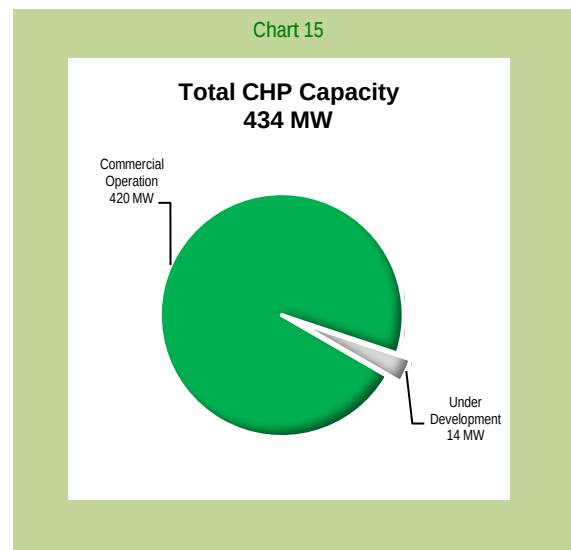
Table 6: Progress Status of Combined Cycle Projects as of March 31, 2014

Developer	Project
Greenfield South Power Corporation	Green Electron Power Plant, Sarnia Capacity: 289 MW Status: - Construction of the foundations for the combustion turbine, steam turbine and heat-recovery steam generators completed - Construction of the steam turbine pedestal continued with the first concrete pour completed - Concrete pouring for the cooling tower foundation and pump house continued - Combustion turbine, high pressure and intermediate pressure turbines on site - Heat-recovery steam generators and stack construction continued
	Napanee Generating Station, Napanee Capacity: 900 MW Status: - Environmental and municipal permitting continued - Stakeholder activities continued with the two Aboriginal groups that have expressed interest in the project (Tyendinaga and Alderville First Nations) - Detailed plant engineering and procurement of engineering equipment continued - Major equipment procurement activities continued - Turbines and generators 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 434 MW of combined capacity from combined heat and power contracted projects. The 14 MW of capacity from the two projects under development listed in the table below is scheduled to be in service by 2019.



The status of the combined heat and power projects under development in the reporting period, as submitted by developers to the OPA, is shown in Table 7 below.

Table 7: Progress Status of Combined Heat and Power Projects as of March 31, 2014

Developer	Project
Envida Community Energy Inc.	Hanlon Creek District Energy Project, Guelph Capacity: 10.2 MW Status: New contract executed with supplier
Markham District Energy Centre Inc.	Birchmount Energy Centre, Markham Capacity: 2.6 MW Status: Commissioning tests successfully completed and the facility now in commercial operation
Markham District Energy Centre Inc.	Bur Oak Energy Centre, Markham Capacity: 3.3 MW Status: Commissioning tests successfully completed and the facility now in commercial operation
Rosa Flora Growers Limited	Rosa Flora Growers, Dunnville Capacity: 4 MW Status: - A fire occurred on site destroying the building that will house the generator units - Negotiations for the heat-recovery system on hold due to the fire - Equipment ordered in Q4 2013 on schedule for delivery

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 in the reporting period, as submitted by developers to the OPA, is shown in Table 8 below.

Table 8: Progress Status of Energy-from-Waste Projects as of March 31, 2014

Developer	Project
Elementa Algoma LP	Elementa Algoma Generating Station, Sault Ste Marie Capacity: 9.45 MW Status: Post contract and pre-construction activities commenced
Regional Municipality of Durham-York	Durham York Energy Centre, Clarington Capacity: 20 MW Status: - Civil structural steel construction - concrete and steel work essentially completed in all buildings - Electrical construction of the switchyard completed - Activities in preparation for commercial operations in Q4 2014 continued, including first fire on waste and mechanical and electrical testing

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



Photo 1 – Substation work: setting the control house



Photo 2 – Turbine work: erecting Nacelle T2 -3

Atikokan Generating Station



Photo 3 – Installing cladding on the silo conveyor



Photo 4 – View of conveyor at the silo base

Bornish Wind Energy Centre



Photo 5 – Site preparation work: cutting an access road



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

Dufferin Wind Farm



Photo 7 – Installing the collection system cables



Photo 8 – Constructing the substation

Durham York Energy Centre



Photo 9 – Aerial view



Photo 10 – Aerial view

Gitchi Animki Niizh/Gitchi Animki Bezhig Generating Stations



Photo 11 – Drilling shear lines for the diversion channel



Photo 12 – Removing rocks in the spillway channel

Grand Renewable Energy Park (Korean Consortium)



Photo 13 – Assembling the components of a turbine stack



Photo 14 – Erecting a wind turbine stack

Green Electron Power Plant



Photo 15 – View of the casing and stack assemblies for the heat-recovery steam generator



Photo 16 – Building the casing and stack assembly for the heat-recovery steam generator

Lower Mattagami Hydroelectric Station Expansion

Harmon Generating Station



Photo 17 – Interior view of the turbine hall

Kipling Generating Station



Photo 18 – Stator winding in progress

Little Long Generating Station



Photo 19 – View of the facility now in commercial operation

Smoky Falls Generating Station



Photo 20 – View of the dam intake

McLean's Mountain Wind Farm



Photo 21 – Switchyard emergency diesel generator set on pad



Photo 22 – Installing fiber-optic collector cable and conduit

Thomas Low Generating Station



Photo 23 – Constructing the inner canal wall



Photo 24 – Constructing the headworks of the dam

Twin Falls Generating Station (Runner Upgrade)



Photo 25 – Lowering the bottom ring of Generator 3 into position



Photo 26 – Reassembling Generator 3

Appendices

Appendix I: OPA Contracts and Contract Capacity

Table 9: All Contract Capacity as of March 31, 2014

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	31	17	23.1	34.6	23.1	34.6	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	2	0	48	0	48	0	48
	RES	3	3	0	9.3	0	9.3	0	9
	Atikokan	1	0	1	0	205	0	205	205
	Subtotal	85	54	31	120.1	247.8	120.1	247.8	368
Solar	FIT 1	1,522	908	614	531.4	640.8	531.4	640.8	1,172
	FIT 2	970	0	970	0	156.8	0	156.8	156.8
	microFIT	18,807	18,807	0	163.3	0	163.3	0	163.3
	RESOP	57	57	0	473.7	0	473.7	0	474
	KC	2	0	2	0	200	0	200	200
	Subtotal	21,358	19,772	1,586	1,168.4	997.5	1,168.4	997.5	2,166
Wind	FIT 1	68	14	54	707.7	2,353.7	707.7	2,353.7	3,061
	microFIT	5	5	0	0.03	0	0	0	0.03
	RESOP	35	34	1	275.4	9.5	275.4	9.5	285
	RES	15	15	0	1,509.4	0	1,509.4	0	1,509
	KC	4	1	3	270	598.6	270	598.6	869
	Subtotal	127	69	58	2,762.5	2,961.8	2,762.5	2,961.8	5,724
Renewable Non-Hydro Subtotal		21,570	19,895	1,675	4,051	4,207	4,051	4,207	8,258
Hydroelectricity	FIT 1	44	4	40	22	163.4	22	163.4	185
	FIT 2	1	0	1	0	0.1	0	0.1	0.1
	HESOP	3	0	3	0	35.3	0	35.3	35.3
	RESOP	16	16	0	28.2	0	28.2	0	28
	RES	3	2	1	31	16	31	16	47
	HCI	54	53	1	16.5	6.5	1,093.3	6.5	1,100
	HESA	4	3	1	137.4	441.5	647.5	441.5	1,036
Renewable Hydro Subtotal		125	78	47	235.1	662.7	1,822	662.7	2,432 ⁹

⁹ 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	12	10	2	420	14.2	420	14.2	434
Other	EFW	3	1	2	2.7	29.45	2.8	29.45	32
Natural Gas and Other Subtotal		31	25	6	5,503.7	1,232.7	7,595.8	1,232.7	8,828
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			19,999	1,728	12,789.8	6,102.6	16,468.88	6,102.5	22,518
Total			21,727			18,892		22,518 ¹⁰	

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

HESOP = Hydroelectric Standard Offer Program

KC = Korean Consortium

NUG = Non-utility Generator

PGS = Peaking Generation Supply

RES = Renewable Energy Supply

¹⁰ 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 March 31, 2014

Contract Facility	Contract Capacity (MW)	Commercial Operation/Term Commencement Date	Contract Expiry Date
Becker Cogeneration Plant	8	15-Feb-14	Q1 2024
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	57		

Table 11: Renewable Energy – Wind as of March 31, 2014

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
South Kent Wind (Korean Consortium)	270	28-Mar-14	Q1 2034
Talbot Wind Farm	98.9	16-Dec-10	Q4 2031
Wolfe Island Wind Project	197.8	26-Jun-09	Q2 2029
Subtotal	1,779		

Table 12: Renewable Energy – Hydroelectricity as of March 31, 2014

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	207.5	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
Ragged Chute Eco Power Centre	6.6	1-Nov-13	Q2 2029
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 2015
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	1,772		

Table 13: Natural Gas and Biomass as of March 31, 2014

Contract Facility	Cogeneration Facility	Contract Capacity (MW)	Commercial Operation/Term Commencement Date	Contract Expiry Date
Birchmount Energy Centre	✓	2.6	23-Dec-13	Q4 2033
Bur Oak Energy Centre	✓	3.3	20-Feb-14	Q1 2034
Brighton Beach Power Station		541.3	01-Jan-06	Q3 2024
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
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
London Cogeneration Facility	✓	12	31-Dec-08	Q4 2028
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
Thorold Cogen	✓	236.4	28-Mar-10	Q1 2030
Trent Valley Cogeneration Plant	✓	6.7	01-Jan-06	Q4 2015
Warden Energy Centre	✓	5	04-Jun-08	Q2 2028
Villa Colombo Vaughan	✓	0.2	14-Nov-13	Q3 2030
York Energy Centre		393	09-May-12	Q2 2032
Subtotal		7,593		

* Biomass fuel.

Table 14: Natural Gas and Other Fuel Sources – Energy-from-Waste as of March 31, 2014

Contract Facility	Contract Capacity (MW)	Commercial Operation Date	Forecasted Contract Expiry Date
Plasco Trail Road Facility ¹¹	2.7	1-Jan-08	Q4 2014
Subtotal	2.7		

Table 15: Nuclear Energy as of March 31, 2014

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		

¹¹ This facility operates a pilot project only.

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

Table 16: Renewable Energy – Bio-energy as of March 31, 2014

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Atikokan Generating Station	205	Q2 2014	Q4 2024
Subtotal	205		

Table 17: Korean Consortium Renewable Energy – Solar as of March 31, 2014

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 18: Korean Consortium Renewable Energy – Wind as of March 31, 2014

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
Subtotal	599		

Table 19: Renewable Energy – Hydroelectricity as of March 31, 2014

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Chaudiere Hydro GS2 Facility	29.4	Q1 2022	Q1 2062
First Chute Generating Station	1.7	Q1 2022	Q1 2062
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
Shickluna Hydro Electric Generating Station	4.2	Q1 2022	Q1 2062
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	Q4 2014	Q4 2029
Yellow Falls Hydroelectric Project	16	Q3 2016	Q3 2036
Subtotal	499.3		

Table 20: Natural Gas and Biomass as of March 31, 2014

Contract Facility	Cogeneration Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Hanlon Creek District Energy Project	✓	10.2	Q1 2019	Q1 2039
Green Electron Power Plant		289	Q3 2017	Q3 2037
Napanee Generating Station		900	Q4 2018	Q4 2038
Rosa Flora Growers	✓	4	Q4 2014	Q4 2034
Subtotal		1,203.2		

Table 21: Natural Gas and Other Fuel Sources – Energy-from-Waste as of March 31, 2014

Contract Facility	Contract Capacity (MW)	Scheduled Commercial Operation Date	Forecasted Contract Expiry Date
Elementa Algoma	9.45	Q4 2018	Q4 2020 ¹²
Durham York Energy Centre	20	Q3 2016	Q3 2036
Subtotal	29		

¹² With a right to extend the term to Q4 2038.

Appendix IV: Summary of RESOP and FIT Contracts

Table 22: RESOP as of March 31, 2014

Program	Fuel Source	Under Development (MW)	Commercial Operation (MW)	Total (MW)
RESOP	Bio-Energy	4	40	830
	Hydroelectric	0	28	
	Solar	0	474	
	Wind	9	275	
	Total	13	817	

Table 23: FIT Program as of March 31, 2014

Program	Fuel Source	Under Development (MW)			Commercial Operation (MW)	Total (MW)
		Pre-NTP	NTP	Total UD		
FIT 1	Bio-Energy	3.8	30.8	34.6	23.1	4,476.7
	Hydroelectric	117.9	45.5	163.4	22	
	Solar	117.7	523.1	640.8	531.4	
	Wind	1807.7	546.1	2353.7	707.7	
	Subtotal	2,047.0	1,145.5	3,192.5	1,284.2	
FIT 2	Bio-Energy	4.2	0	4.2	0	161.1
	Hydroelectric	0.1	0	0.1	0	
	Solar	132.3	24.5	156.8	0	
	Wind	0	0	0	0	
	Subtotal	136.7	24.5	161.1	0	
microFIT	Solar				163.3	163.3
	Wind				0.03	
Total (MW)		2,183.7	1,169.9	3,353.6	1,447.6	4,801.2

NTP = Notice to Proceed

UD = Under Development

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