



Toronto Hydro

500/500

Renewable Power and

Conservation Plan

Summary

October 16, 2009

This document is for discussion purposes only, consistent with Toronto Hydro's strategy, but subject to regulatory approval.

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2 Overview

The Ontario Green Energy and Green Economy Act (GEA) presents opportunity for Toronto Hydro Electric System Ltd. (Toronto Hydro) to further enhance its customer service, help improve the security and supply of electricity, and expand beyond its traditional business to contribute to the overall health and economic well being of Toronto.

The GEA has mandated Local Distribution Companies (LDCs) to achieve specified conservation targets as a condition of their license. This plan proposes conservation initiatives that include programs for all market sectors inclusive of residential, commercial and industrial customers. Some of the programs are based on the expansion of, or extension from, the current conservation programs. Others are new programs based on target market research and measures that are considered to be economically viable. The plan also recognizes the importance of facilitating conservation in the low-income sector and includes tailored programs that address the unique challenges of this market segment. The main focus of the conservation programs is peak system demand reduction, and financial incentives that will be based on verifiable kW reductions achieved.

The GEA provides the foundation for the extensive deployment of renewable distributed generation (DG). DG is generation located close to the demand and connected to the distribution grid. Toronto Hydro will be required to implement measures to enable and to expedite the deployment of renewable DG within its service territory. The extensive deployment of solar DG anticipated by the GEA will require a significant investment; comprehensive marketing, well developed channel partners and incentives to achieve market penetration and targets. Toronto Hydro's active involvement beyond enabling and facilitating solar DG connections will be needed to help create the initial market demand and transform the market to become self-sustaining. Toronto Hydro will therefore take a leadership role in investing directly in solar DG based on a business model that will be in compliance with the governing regulations and utility investment guidelines. The deployment of Toronto Hydro owned renewable generation will give the highest priority to the transmission constrained areas of the City.

Funding for the conservation programs will be secured via multi-year applications to the OEB as well as through contractual arrangements with the OPA as appropriate. Renewable Energy (RE)

projects will be funded using the OPA’s Feed-in Tariff (FIT) program and the 20 year power purchase agreements that FIT offers.

Toronto Hydro's Plan includes a balanced portfolio of conservation programs and renewable energy with a focus on solar DG to help address security of supply. The proposed megawatt (MW) and megawatt-hour (MWH), as well as the resulting annual carbon emission reduction targets for the milestone years of 2014, 2020, and 2025 are shown in the following table:

Program	2014			2020			2025		
	MW	MWH	GHG-t/yr	MW	MWH	GHG-t/yr	MW	MWH	GHG-t/yr
Renewable Power & Conservation	636	3,671,714	1,170,019	1,018	20,768,143	1,182,778	1,255	38,572,385	1,828,491
Renewable Power	306	963,418	648,467	497	8,928,667	616,705	652	16,673,693	1,094,361
Conservation	329	2,708,296	521,553	522	11,839,477	566,073	603	21,898,692	734,130

3 Objectives

The objectives of the plan are as follows:

- ❖ To meet Toronto Hydro’s legislative and regulatory obligations resulting from the GEA
- ❖ To help to improve supply security
- ❖ To provide opportunities for Toronto Hydro to evolve and expand beyond the traditional distribution-only business
- ❖ To enable Toronto Hydro to raise the level of customer service
- ❖ To help reduce carbon emissions, in support of the City Sustainable Energy Plan
- ❖ To transform the electricity market in Toronto consistent with the vision and objectives set out by the Ontario Government;
- ❖ To deliver a cost effective portfolio of programs that considers both societal and program manager perspectives and the perspective of potential participants.

4 Program Funding

At the time of plan development, the Ministry of Energy and Infrastructure has developed a Global Adjustment (GA) funding mechanism that will be used to socialize the cost of the GEA to all rate payers in Ontario. Toronto Hydro is obligated to charge customer the GA surcharge each billing period, regardless of CDM and RE participation.

Conservation and demand management (CDM) programs will require multi-year funding from the OEB and/or the OPA. Sustained and adequate funding will be critical for Toronto Hydro to build on, and to extend, Toronto Hydro's existing CDM business functions to develop and deploy the programs proposed in this plan.

For renewable energy programs, basic funding from the OEB will be necessary to establish the business infrastructure to enable and support customer-owned distributed generation. Funding for Toronto Hydro owned generation will be budgeted as a capital investment. The investment in generation ownership will be debt and/or equity financed. Any such investment will be expected to undergo the rigorous Toronto Hydro executive business decision process, based on business justification, risk assessment, ratepayer-shareholder impact analysis, and consistency with Toronto Hydro's business strategic objectives.

5 Program Design and Implementation

Toronto Hydro will establish the necessary business functions and organization to develop and deploy the programs proposed in this plan. Where appropriate, market studies will be carried out and market segmentation performed to properly position the conservation programs for deployment. Each program for implementation will be screened and assessed based on the following considerations as part of the program development:

- a) Technology viability (cost, maturity, supply chain, etc)
- b) Market analysis (market potential, delivery channels, etc.)
- c) Economic analysis (value proposition - Customer, Toronto Hydro)
- d) Incentive requirement (payback assessment)
- e) Operational support required (back, middle and front office)
- f) Sales and marketing assessment
- g) Total Resource Cost (TRC) Test and Program Administration Cost (PAC) Test
- h) Market transformation cycle (entry incentives, maturity, exit)
- i) Risk assessment and mitigation
- j) Critical success factors

6 Measurement and Verification

A Measurement and Verification (M&V) plan will be required from each incentive application. This plan will specify the loads controlled, the operational characteristics before/after the

implementation of the energy management system, and the rationale for the demand/energy savings claimed. Assessment will be based on the plan submitted. A post-implementation inspection will be conducted to confirm that the proposed energy management system energy efficiency configuration has been implemented.

7 Co-ordination with the City’s Sustainable Energy Plan

Toronto Hydro has developed the Renewable Power and Conservation Plan in line with the City’s Sustainable Energy Strategy and Climate Change targets. As a key delivery partner, Toronto Hydro is committed to the targets set out in the plan and will strive to coordinate its Renewable Power and Conservation Plan with the City’s Sustainable Energy Plan to avoid overlap and to maximize market penetration and collaborate with the City so that each party’s efforts are synergistic and complimentary. City programs would include, but not be limited to the Mayor’s Tower Renewal, Home Energy Assistance Toronto, Solar Neighbourhoods, the Eco-Roofs Program and the Toronto Green Development Standard. Toronto Hydro will report to the City on an annual basis plan inclusive of CDM and RP results and corresponding greenhouse gas emission reductions.

8 Conservation and Demand Management Programs

The portfolio of conservation programs contained in the plan address three key customer sectors: Residential (including low-income), Commercial – Institutional and Industrial. Toronto Hydro’s Conservation initiative targets and milestones are shown in the following tables:

Conservation Long Term Target

Program	2014			2020			2025		
	MW	MWH	GHG-t/yr	MW	MWH	GHG-t/yr	MW	MWH	GHG-t/yr
Conservation Programs	329	2,708,296	521,553	522	11,839,477	566,073	603	21,898,692	637,657
Residential Sector CDM	115	1,595,269	301,122	182	7,047,466	315,833	202	13,043,845	351,277
CII Sector CDM	154	990,387	202,034	265	4,340,871	231,844	306	8,075,207	267,984
Low-Income CDM	10	122,640	18,396	15	451,140	18,396	15	779,640	18,396
Demand Response	50	0	0	60	0	0	80	0	0
Market Transformation	0	0	0	0	0	0	0	0	0

8.1 Residential Sector

For residential conservation programs, proper promotion and customer communication will be particularly critical to ensure program success and comprehensive marketing programs will be needed to reach the large number of residential and small business customers.

Residential 5 Year Target

Program	2010		2011		2012		2013		2014	
	MW	MWH	MW	MWH	MW	MWH	MW	MWH	MW	MWH
Residential Sector CDM	8.5	27,110	21.6	58,842	53.8	149,344	14.8	46,852	16.8	52,108
Appliances Efficiency	0.2	1,080	0.4	2,700	0.9	5,400	0.9	5,400	0.9	5,400
Room AC Efficiency	0.3	145	0.6	289	0.6	289	0.6	289	0.6	289
Central AC Efficiency	1.3	1,661	2.5	3,323	2.5	3,323	2.5	3,323	2.5	3,323
Programmable Thermostats	0.9	6,603	0.9	6,603	0.9	6,603	0.9	6,603	0.9	6,603
Electric Water-Heater Timers	0.0	0	3.0	3,120	3.0	3,120	3.0	3,120	3.0	3,120
Geo-thermal Cooling/Heating	0.0	0	0.1	1,320	0.1	1,320	0.1	1,320	0.1	1,320
Solar Water Heating	0.0	0	0.4	990	0.4	990	0.4	990	0.4	990
MURB Submetering	0.0	0	2.0	5,256	2.0	5,256	3.0	7,884	5.0	13,140
In-home Display	0.9	4,481	1.7	8,961	3.4	17,923	3.4	17,923	3.4	17,923
Smart-Meters and TOU	5.0	13,140	10.0	26,280	40.0	105,120	0.0	0	0.0	0

Residential Long Term Target

Program	2010-2014		2015-2020		2021-2025	
	MW	MWH	MW	MWH	MW	MWH
Residential Sector CDM	115.5	1,595,269	66.2	1,441,794	20.4	251,387
Appliances Efficiency	3.2	77,220	5.2	194,400	4.4	135,000
Room AC Efficiency	2.6	5,929	3.5	10,411	2.9	7,230
Central AC Efficiency	11.3	68,117	15.1	119,621	12.6	83,070
Programmable Thermostats	4.5	165,075	4.5	198,090	0.0	0
Electric Water-Heater Timers	12.0	49,920	3.0	18,720	0.0	0
Geo-thermal Cooling/Heating	0.5	21,120	0.6	37,565	0.5	26,087
Solar Water Heating	1.5	15,840	2.2	35,640	0.0	0
MURB Submetering	12.0	99,864	11.6	182,120	0.0	0
In-home Display	12.8	264,364	20.5	645,227	0.0	0
Smart-Meters and TOU	55.0	827,820	0.0	0	0.0	0

8.1.1 Key Strategies

The focus of this market sector is to provide incentive to achieve real demand and energy savings through a multitude of measures.

- Toronto Hydro will conduct appliance manufacturer research to identify and qualify high-efficiency appliances and design appropriate incentives to support incremental cost.
- Toronto Hydro will coordinate the CDM incentive with other potential incentives from different levels of government (e.g., NRCan EcoEnergy program) to leverage and maximize market penetration.
- On-bill payment will be made available to further assist consumers participate in CDM programs.
- Toronto Hydro will design marketing campaigns, in concert with government and retailers and other utility partners to reach all residential market segments.
- Where it is necessary for program management control, Toronto Hydro may engage contractors to directly install the conservation devices at the customers' premises.

8.1.2 Residential Programs

Appliance Efficiency Upgrade and Take-Back Program - This program will provide an incentive to motivate customers to upgrade old appliances or electronics to high-efficiency units. The program also includes a “take-back” program where collected appliances and electronics will be recycled in an environmentally friendly manner. An offer for extended warranties and tune-ups with the option for on-bill payment through a third party for large purchases will also be offered.

Room AC Efficiency Upgrade Program - Room air conditioners 10 years and older represent a large portion of residential load during peak summer periods. An incentive programs to encourage the purchase of new high-efficiency units when replacing old units will be developed.

Central AC Efficiency Program - Central air-conditioners consume the largest amount of electricity amongst the household appliances during summer peak periods. Incentives will be developed to encourage customer to upgrade to a high efficiency unit or depending on age, undergo a tune-up of an existing air conditioner to ensure operational efficiency and cost savings while enhancing the unit's life.

Programmable Thermostat Program - Based on a market study conducted by Toronto Hydro in 2006, there are still about 30% of homes do not have a programmable thermostat. This conservation program will target these homes and provide a programmable thermostat.

peaksaver - Toronto Hydro's residential direct load control demand response program has been in place for 3 years and has built the capacity to reduce system demand by at least 50MW. Toronto Hydro will continue to expand on the peaksaver capacity.

Electric Water-Heater Timers Program - There are approximately 80,000 electric water heaters in Toronto. A significant amount of electricity demand can be reduced by installing timers to cycle the water heater off during peak periods. A program will be developed to install timers to cycle off during peak demand.

Geothermal Cooling and Heating - A geothermal heat pump can save homeowners 40%-70% in heating costs, and 30%-50% in cooling costs compared to conventional systems. An incentive program will be developed to encourage the installation of geo thermal heat pumps.

In-Home Display Program - Toronto Hydro will pilot and implement an incentive program to make In-Home Displays available to all residential customers on time of use rates. The display

technology will eventually be integrated into smart thermostats and provide information on consumption, current usage rates, electricity prices, carbon footprint impacts, etc.

Solar Water-Heating Incentive Program - Solar water heating significantly reduces the electric water heater load when solar energy is available. Solar water heating can also complement natural gas water heaters, and will serve to mitigate carbon emissions. Toronto Hydro will offer an incentive for solar water heater installations to supplement electric water heater tanks.

MURB (Multi-Unit Residential Building) Sub-metering - Bulk-metered Multi-Unit Residential Buildings use 15% to 20% more electricity than individually metered buildings. There are about 420,000 bulk-metered units in Toronto which will be targeted for sub metering installations using incentive based programs.

Smart-Meters and Time of Use (TOU) Rates - Toronto Hydro has completed the deployment of smart meters and is implementing TOU rates. TOU education programs will be developed along with tips to save using smart appliances and other in-home devices will be rolled out in 2010 and 2011.

Residential New Construction - The proposed New Construction Program (NCP) will seek to move builders towards constructing homes which are more efficient and sustainable homes than the current OBC standards. Incentives will be developed to assist customers with incremental cost as it relates to electricity savings.

Conservation Culture and Education - Educating customers on electricity conservation and helping bring about a conservation culture in Toronto are key elements of Toronto Hydro's residential effort. Toronto Hydro will promote conservation using mass communication to its customers. The overarching marketing approach is to provide integrated Conservation and Demand Management key messages to the customer throughout the year as a strategy to manage TOU rates. Additional messages will help drive participation in specific programs.

8.2 Commercial-Industrial-Institutional Sector

Toronto Hydro's conservation programs for the Commercial, Industrial and Institutional (CII) sector will serve all segments of the sector, including small General Service customers below 50kW as well as the medium and large General Service customers over 50kW. Efforts will be made to identify unique segments within the markets (i.e. retail, foodservices, hotel/motel etc.)

that may require tailored program offerings and mechanisms to meet their specific needs. This sector-based program will include two key components; energy efficient audit and efficiency upgrades. Each of these components are designed to engage customers throughout the continuum of the equipment retrofit process. The CII sector conservation targets for 2010-2025 are illustrated below:

Commercial-Industrial-Institutional 5 Year Targets

Program	2010		2011		2012		2013		2014	
	MW	MWH	MW	MWH	MW	MWH	MW	MWH	MW	MWH
CII Sector CDM	16.2	23,561	39.0	55,355	29.6	44,008	29.8	40,988	39.4	47,852
Deep-Lake Water Cooling	0.0	0	0.0	0	0.0	0	2.0	1,043	8.0	4,171
Chiller Replacement	0.0	0	6.5	3,255	1.8	893	1.1	525	1.8	893
Chiller Efficiency Upgrade	0.0	0	12.4	19,468	3.4	5,338	2.0	3,140	3.4	5,338
Roof-top AC Replacement	0.9	224	2.1	523	3.0	748	3.0	748	3.0	748
Roof-top AC Efficiency Upgrade	0.3	330	0.5	550	0.8	880	0.8	880	0.8	880
Parking Garage CO Detector	0.0	0	0.6	2,318	0.6	2,318	0.6	2,318	0.6	2,318
Occupancy Sensors	0.5	900	0.5	900	0.9	1,800	0.9	1,800	0.9	1,800
Energy Management System	0.5	585	1.0	1,170	2.0	2,340	2.0	2,340	3.0	3,510
Window Film	0.0	0	0.0	0	0.3	159	0.5	317	0.5	317
Lighting Efficiency Upgrade	12.0	11,990	12.0	11,990	12.0	11,990	12.0	11,990	12.0	11,990
Peak-load Shifting Technologies	0.0	0	0.0	0	0.9	0	1.4	0	1.8	0
Computer Power Management	0.0	0	2.0	8,760	2.0	8,760	2.0	8,760	2.0	8,760
Data Center Incentive Program	1.0	4,380	1.0	4,380	1.0	4,380	1.0	4,380	1.0	4,380
Office Equipment Efficiency Program	0.0	0	0.0	0	0.5	2,363	0.5	2,363	0.5	2,363
Vending Machines Energy Mgt	1.1	5,152	0.3	1,656	0.3	1,656	0.0	0	0.0	0
Buildings of Faith	0.0	0	0.1	385	0.1	385	0.1	385	0.1	385

Commercial-Industrial-Institutional Long Term Targets

Program	2010-2014		2015-2020		2021-2025	
	MW	MWH	MW	MWH	MW	MWH
CII Sector CDM	153.9	990,387	111.0	809,194	41.3	267,938
Deep-Lake Water Cooling	10.0	7,300	0.0	0	0.0	0
Chiller Replacement	11.1	29,715	18.0	54,000	3.3	8,250
Chiller Efficiency Upgrade	21.2	177,724	0.0	0	0.0	0
Roof-top AC Replacement	12.0	12,409	18.0	26,910	15.0	18,688
Roof-top AC Efficiency Upgrade	3.2	14,740	4.8	31,680	4.0	22,000
Parking Garage CO Detector	2.4	37,086	3.5	83,444	0.0	0
Occupancy Sensors	3.6	30,600	5.4	64,800	0.0	0
Energy Management System	8.5	35,685	6.0	42,120	0.0	0
Window Film	1.3	2,062	2.5	9,518	0.0	0
Lighting Efficiency Upgrade	60.0	299,744	30.0	179,846	0.0	0
Peak-load Shifting Technologies	4.1	0	10.8	0	9.0	0
Computer Power Management	8.0	140,160	0.0	0	0.0	0
Data Center Incentive Program	5.0	109,500	10.0	262,800	10.0	219,000
Office Equipment Efficiency Program	1.5	21,263	1.5	42,525	0.0	0
Vending Machines Energy Mgt	1.7	66,240	0.0	0	0.0	0
Buildings of Faith	0.4	6,160	0.5	11,550	0.0	0

8.2.1 Key Strategies

The following strategies will be used to deliver the programs:

- For each program initiative, Toronto Hydro will perform a study to analyze the incremental cost of the relevant efficiency upgrade.
- Toronto Hydro will establish an appropriate incentive level for each program initiative based on a customer incremental cost payback period of less than 3 years
- Where feasible, a target customer list will be developed for each initiative based on information from Toronto Hydro's Customer Information System and by working with industry stakeholders.
- In conjunction with the direct marketing and sales activities based on specific target customer list, the delivery plan will include:
 - Education, seminars and special information sessions
 - Partnership with other non-electric utility and third party channels
 - Develop a network of trade allies and energy consultants
 - Leveraging of opportunities developed from energy audits
 - Direct sales calls where necessary

8.2.2 Commercial-Industrial-Institutional Programs

Chiller Replacement Program - As the customers' chillers become due for replacement, due to age or CFC prohibition legislation, this program will provide an incentive for the customers to install replacement chillers with efficiency exceeding the minimum efficiency mandated by code.

Chiller Efficiency Enhancement Program – For newer CFC compliant chillers, Toronto Hydro's conservation program will provide an appropriate incentive for customers to install various chiller technology available on the market that improves the chiller efficient and reduces kW demand and kWh consumption.

Rooftop AC Replacement Program – A rooftop AC incentive program will be developed to target replacement units and encourage customer to upgrade to a unit with an efficiency that will exceed the minimum code requirement. The incentive will be based on the incremental cost between the standard and more efficient equipment.

Rooftop AC Efficiency Improvement Program - This incentive program will provide an incentive for rooftop AC owners to install efficiency improvement devices.

Deep-Lake Water Cooling - This program will provide incentive to Enwave to increase their load displacement capacity.

Occupancy Sensor Incentive Program - This conservation program initiative will provide incentive for the installation of infrared and ultrasonic sensors for occupancy control systems.

Parking Garage CO Sensor Program - This program will provide an incentive for the installation of CO detectors to decrease run-hours of underground parking garage exhaust fans systems.

Building Automation System (BAS) Incentive Program – The BAS incentive program will be targeted at customers that do not currently have a BAS or need to upgrade to a newer more efficient system with greater management control. Target markets will be established based on building size, load characteristics and need for control.

Building Window Film Program - This conservation program will provide an incentive for the building owners or managers to install window films to lower cooling related loads and improve thermal efficiency of windows.

peaksaver Direct Load Control Program - Toronto Hydro already has a residential direct load control Demand Response program, peaksaver, which in only 3-years has built the capacity to reduce the system demand by at least 50MW on a very hot day. There is also direct evidence of measurable load reduction based on 27,000 smart meter interval data. Toronto Hydro will continue to expand on the peaksaver capacity, and will expand on the Demand Response capacity by deploying Demand Response programs for commercial customers.

Lighting Efficiency Retrofit Program - It is proposed that an appropriate incentive be provided to encourage the customers to retrofit all existing T12 fixtures to more efficient lighting. In addition, opportunities exist to encourage customers to upgrade other non-T12 inefficient lighting systems to more efficient alternatives including, T8 to T5, HID and LED technology.

Peak Load Shifting Program – A load shifting program will be developed to encourage the use of thermal storage equipment and off-peak load shifting for cooling based loads. An example of such technology is from Ice Energy, which essentially makes ice at night to be used for cooling during the day.

PC Power Management Program - Current estimates are the average PC is only in active use 4 hours each work day while idle for another 5.5 hours. Deploying network-based software, or configure computers for power management mode will significantly reduce PC power and related space cooling usage. A incentive will be developed to encourage the use of PC management programs.

Datacenter Incentive Program - Energy use in data centers is growing rapidly and outpacing the growth in all other commercial building types. There is significant potential for improving the efficiency of these facilities by consolidating servers and lower space cooling requirements. An incentive program will be developed to encourage the re-design of the data centre using consolidation of servers and other virtualization software.

Office Equipment Efficiency Program - Most office equipment and desktop computers are inefficient. New technologies, including possibly returning to the very-thin-client network computing environment, can reduce the electricity usage significantly. Other potential measures can include Printers or Current Sensing Power Bars, which can also be upgraded to reduce standby power usage. For planning purposes, this program will focus on the efficiency upgrading of imaging equipment, such as printers, copiers, and fax machines.

Vending Machines Energy Management Program - Toronto Hydro will provide incentives for the purchase of refrigerated vending machine controllers, which allow machines to assume a low power mode when the surrounding area is unoccupied.

Buildings of Faith Conservation Program - This conservation program is targeted at buildings of faith – churches, mosques, synagogues, and temples. Incentives will be made available for conservation work that will reduce electricity usage.

8.3 Low-Income Sector

While low-income properties will be included within many of the residential conservation programs, additional financial assistance will be directed to this sector to ensure fair and active participation.

8.3.1 Key Strategies

In keeping with the OEB's consultation process to examine issues associated with low-income energy consumers in relation to their use of natural gas and electricity, this sector-based program will differ from other residential programs in the following ways.

- Program will be delivered to the participants of this group free of charge. Measures will be purchased and installed by the program delivery agency and will not generally financially impact the participants.
- Measures will include lighting retrofits, weatherization, and appliance upgrade, as well as education and training for building staff and residents.
- Measures to be installed will be determined after a qualified auditor has completed an energy audit. Inspections will be performed to ensure the work has been properly completed.
- Toronto Hydro will leverage funding from various agencies without duplication but provide participants with a one-stop shop type service.
- Where appropriate, delivery with gas DSM measures and services will be integrated by the program delivery agency.

The Low-Income conservation targets for 2010-2025 are illustrated below:

Low-Income 5 Year Targets

Program	2010		2011		2012		2013		2014	
	MW	MWH	MW	MWH	MW	MWH	MW	MWH	MW	MWH
Low-Income Sector CDM	2.0	4,380	3.0	6,570	2.0	4,380	2.0	4,380	1.0	2,190
Social Housing Conservation	2.0	4,380	3.0	6,570	2.0	4,380	2.0	4,380	1.0	2,190

Low-Income Long Term Targets

Program	2010-2014		2015-2020		2021-2025	
	MW	MWH	MW	MWH	MW	MWH
Low-Income Sector CDM	10.0	122,640	5.0	65,700	0.0	0
Social Housing Conservation	10.0	122,640	5.0	65,700	0.0	0

8.3.2 Low-Income Sector Conservation Programs

Social Housing Conservation Program - Over the past few years, Toronto Hydro has worked closely with Social Housing Services Corporation (SHSC) to bring conservation programs to the residents of publicly owned social / low income housing. Since many residents of social housing do not pay their own utility bills, increasing the participation levels of this group remains a challenge. Therefore a critical part of a conservation program will continue to be energy conservation education for both the residents and the staff of low income social housing.

Building and Suite Conservation Program – The program will provide incentives to the property managers and landlords to carry out lighting and other retrofit projects for the apartment units. Where the appliances in the apartment units are due for replacement, incentive will bridge the difference between the costs of higher-efficiency and lower-efficiency options. Property managers and landlords also will be able to access incentives to carry out retrofit projects for the common areas. Building retrofit incentive programs will be based on load reduction opportunities and will include various measures including the following potential measures:

- Weatherization
- Thermal insulation and air sealing
- HVAC up-grades
- Programmable thermostats
- Common area and exterior lighting retrofit and controls
- Window air conditioner replacement
- Solar water heating
- Educational programs

Electric Car Share Pilot Project - SHSC shall partner with Toronto Hydro on developing a car share pilot project that is based on the use of electric cars. This would also incorporate solar electric car plug-in outlets. This initiative would be connected to a resident education program.

9 Renewable Energy

Toronto Hydro's Renewable Power initiative capacity targets are listed in the tables below:

Renewable Energy 5 Year Targets

Program	2010		2011		2012		2013		2014	
	MW	MWH	MW	MWH	MW	MWH	MW	MWH	MW	MWH
Renewable Power	5.0	3,194	12.1	7,884	24.1	45,479	30.1	53,053	234.8	492,933
Customer-Owned Generation	3.0	1,916	7.1	4,690	10.1	6,607	14.1	9,162	16.1	10,439
TH-Owned Generation	2.0	1,278	5.0	3,194	14.0	38,873	16.0	43,891	218.7	482,494

Renewable Energy Long Term Targets

Program	2010-2014		2015-2020		2021-2025	
	MW	MWH	MW	MWH	MW	MWH
Renewable Power	306.1	963,418	190.5	734,745	155.0	495,031
Customer-Owned Generation	50.4	121,034	110.5	428,145	85.0	271,469
TH-Owned Generation	255.7	842,384	80.0	306,600	70.0	223,563

9.1.1 Key Strategies

Toronto Hydro will establish the necessary business functions and infrastructure to promote, support, enable, expedite, and sustain renewable energy and solar power in particular.

Toronto Hydro will work closely with the solar power industry to build the necessary supply chain capability to support the various aspects of solar energy deployment. Toronto Hydro will support the current viable technologies, but will also work with the industry and the local universities to promote the research and development of better technologies, in particular electricity storage to improve the reliability and lower the cost of renewable power.

Toronto Hydro will establish solar DG business functions to promote and support the extensive deployment of Residential, Community Power, and investor-owned solar DG.

Toronto Hydro will also establish a Solar DG business function to develop, implement and operate solar power generation using Toronto Hydro facilities, public properties, and other customer owned properties through contractual arrangements. The Solar DG facilities will be installed, operated and maintained as part of the Toronto Hydro assets. As will be explained in the various solar DG program descriptions in this section, this will be crucial to facilitate the full deployment of solar DG in Toronto.

9.1.2 Renewable Energy Programs

Customer-owned Renewable DG - For customers who choose to pay for and own DG facilities, Toronto Hydro will develop processes and resources to expedite the DG grid connection and the FIT settlement payments as per the regulations and obligations imposed by the OEB.

TH-Owned Renewable Energy - In accordance with Toronto Hydro's business direction, Toronto Hydro will invest in the ownership and operation of renewable power generation, including solar, wind and biogas. Investments will be based on rigorous and detailed business justifications and business plans supported by sound financial economics.

Solar DG - Toronto Hydro will establish a business function to systematically develop, install, maintain, and operate solar DG facilities within Toronto. The Solar DG function will operate as part of the Toronto Hydro distribution business to serve the Toronto community. The method of financing the Solar DG will depend on what is permitted by regulation, and business-case justification based on benefits and risks. The Toronto Hydro solar DG is intended to complement the market-based solar DG deployment by the customers and investors.

In addition to the societal and environment benefits, concerted solar DG deployment directly by Toronto Hydro will enable Toronto Hydro to further serve its ratepayers by improving the reliability and security of supply and making more effective use of the distribution assets. It is proposed that Toronto Hydro Solar DG will be deployed using Toronto Hydro Properties, Toronto Public Properties and Customer-owned Properties

9.1.3 Other Toronto Hydro Renewable Energy Projects

TH Energy, a company within the Toronto Hydro group, is engaged in the development of the following biogas and wind generation facilities:

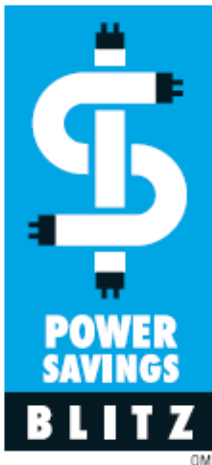
Project	Capacity (MW)	Fuel Type
Ashbridges Bay Treatment Plant	8	Biogas Co-Gen
Green Lane Landfill	5	Biogas Co-Gen
Dufferin/Disco Transfer Stations	4	Biogas
Exhibition Place Wind	3.2	Wind
Toronto Zoo	5.5	Biomass

Offshore Wind Generation - Off-Shore Wind Generation is identified in this plan as contributing to the overall Toronto Hydro generation capacities; however it is recognized that the project will need much more analysis and technical research to support a go-forward decision.

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