GREEN ENERGY PLAN

EXECUTIVE SUMMARY

The Hydro One Distribution Green Energy Plan (the "Plan") presents the Company's response to the *Green Energy and Green Economy Act, 2009* ("GEGEA") in alignment with Hydro One's corporate strategy. The Plan covers the five year period from 2010 to 2014 and includes the incorporation of renewable energy generation, development of Hydro One Distribution's Smart Grid and promotion of energy conservation.

Hydro One Distribution considers this to be a prudent and responsible Plan. Its development is based on the Company's experience with the development of renewable energy generation connections in Ontario since 2006, its Conservation and Demand Management ("CDM") programs since 2004, and a measured approach to Smart Grid investment focused on studies, demonstration projects, planning and training. The spending reflected in the Plan went through the same business planning and approval process as all other investments presented in this Application.

The total cost of investments contained in the Plan are summarized in the table below.

($ million)	**2010**		**2011**		**2012 - 2014**	
	OM&A	**Capital**	**OM&A**	**Capital**	**OM&A**	**Capital**
Renewable Generation	3	168	3	296	10	930
Smart Grid (SG)	10	30	10	62	45	250
Energy Conservation	>20	-	>20	-	>60	-
Total Costs in the Plan	*>33*	*198*	*>33*	*358*	*>115*	*1180*
Less Generator Funded Costs	-	13	-	27	-	40
Less Externally Funded Costs	>20	139	>20	236	>60	780
Net Costs in the Plan funded by Hydro One customers	***13***	***46***	***13***	***95***	***55***	***360***

Hydro One Distribution has determined cost responsibility for Expansion and Renewable Enabling Improvement investments for renewable generation in accordance with the proposed Distribution System Code amendments issued by the Board on June 5, 2009 and subsequently updated on September 11, 2009. With respect to cost recovery, Hydro One Distribution has assumed that the revenue requirement associated with a portion of the capital investments contained in the Plan will be recovered through an external funding mechanism that recovers the required revenue from all electricity consumers in Ontario. This assumption is consistent with the requirements of Regulation 330/09 which came into effect on September 9, 2009 and deals with cost recovery under Section 79.1 of the *OEB Act, 1998*.

Hydro One Distribution's service territory covers large parts of the Province with high potential for renewable energy generation development and the generation expected to connect to Hydro One's distribution system will provide benefits to all electricity consumers in Ontario. The capital investments to be funded through external revenues are based on proposed criteria that identify the portion of investments expected to provide a benefit to Hydro One Distribution's load customers. The revenue requirement associated with the net capital portion of the investments that will provide a benefit to Hydro One Distribution's customers will be recovered through the distribution rates requested in this Application. The revenue requirement associated with the balance of the investments will be collected from all electricity consumers in the Province via an external funding mechanism to be administered by the IESO, as prescribed in Regulation 330/09. The revenue requirement to be collected via external funding is forecast to be $8.0 million in 2010 and $30.7 million in 2011.

The Plan also assumes that Conservation and Demand Management program costs will continue to be externally funded, similar to the funding currently provided by the Ontario

Power Authority for CDM programs. Smart Grid investments are assumed to be fully funded by Hydro One Distribution's customers as they will provide significant benefits to Hydro One Distribution's customers.

Hydro One Distribution's comprehensive and forward-looking Plan meets customer needs in a responsible and prudent manner, fulfilling the Ontario Government's green vision expressed in the GEGEA.

1.0 INTRODUCTION

Hydro One Distribution's Plan is a response to two major drivers: meeting the requirements set out in the government's GEGEA and accomplishing elements of the Corporation's strategy.

The GEGEA, which received Royal Assent on May 14, 2009, will change the investment climate in Ontario through several new government policy objectives for the electricity sector. These include:

- Fostering the growth of renewable energy projects; and
- Promoting and expanding energy conservation in Ontario

The GEGEA also sees the implementation of a Smart Grid as critical to meeting these objectives.

This exhibit is Hydro One Distribution's response to the requirements for filing a Green Energy Plan set out in the GEGEA and by the Ontario Energy Board ("the Board") in their Guidelines for Deemed Conditions of Licence regarding Distribution System Planning (Board file G-2009-0087) issued June 16, 2009.

Increasing renewable generation is one of the key objectives of the GEGEA. In particular, the GEGEA establishes an objective for the Board "to promote the use and generation of electricity from renewable energy sources in a manner consistent with the policies of the Government of Ontario, including the timely expansion or reinforcement of transmission systems and distribution systems to accommodate the connection of renewable energy generation facilities". The investments proposed in the Plan target facilities which will enable new renewable energy generation, while development work on Smart Grid facilities will also drive changes to the distribution system that will enable more timely connection of new renewable generation. Hydro One Distribution does not have any plans to invest directly in renewable energy generation and as a result there are no expenditures relating to such investments in the Plan.

The existing CDM expenditures are $20 million on an annual basis. Hydro One expects that CDM expenditures going forward will likely exceed the current level. At this time, new CDM targets have not yet been established for LDCs and thus, Hydro One has not included any additional CDM expenditures in this Application. In any case, Hydro One expects that such programs will continue to be funded by all customers in the Province through the Ontario Power Authority. As such, the costs of these CDM programs do not impact Hydro One Distribution's Application. Once the targets are established, Hydro One Distribution's Plan will be updated to reflect the associated CDM programs necessary to achieve the targets.

The GEGEA defines the Smart Grid and, through revisions to the OEB Act, sets out the Board's responsibility to "facilitate the implementation of a Smart Grid in Ontario". The Smart Grid will help meet the objectives of:

- increasing use of renewable energy
- expanding capabilities to provide demand response, price information and load control
- accommodating the use of innovative and energy saving technologies and system control applications

Hydro One Distribution's Plan meets the GEGEA's Smart Grid objectives and is consistent with the Ontario Government's vision of a conservation-oriented and more environmentally-conscious province.

The Plan provides a basis for planning investment activities required to meet the objectives set by the GEGEA, while also aligning with the Company's strategic drivers of Innovation, Stewardship, Excellence and Safety. As discussed in more detail in Section 2 of the Plan, collectively Hydro One's strategic drivers result in a comprehensive and forward looking Green Energy Plan to meet customer needs in an environmentally responsible manner.

The Plan is divided into six sections. Section 2 describes the criteria and process Hydro One Distribution has used to plan investment activities required to meet the objectives set by the GEGEA and Hydro One's corporate strategy. Sections 3, 4 and 5 summarize the Renewable Generation, Smart Grid, and CDM work programs related to the Plan that are included in this Application. These sections also detail Hydro One Distribution's assumptions on cost responsibility and cost recovery for this work, including an estimate of the revenue requirement to be collected from all electricity consumers in the province of Ontario. Section 6 provides concluding remarks and proposed criteria for approval of the Plan.

2.0 OBJECTIVES OF HYDRO ONE'S GREEN ENERGY PLAN

The objectives Hydro One set for the Plan span the requirements established by the GEGEA and align with Hydro One's corporate strategy.

The GEGEA proposes a series of structural changes and amendments to several Acts that will streamline regulatory and approval processes and modify Hydro One's existing system planning. Particularly relevant to this Application are the proposed provisions expected to be included in Hydro One Distribution's licence requiring the preparation, submission and execution of work plans to facilitate renewable energy generation connection and Smart Grid implementation.

The Plan follows the Company's strategic drivers of Innovation, Stewardship, Excellence and Safety. Innovation drives reductions in the carbon footprint of the electricity industry and seeks to leverage new technology to improve overall system performance for customers. Stewardship compels a long-term asset management approach to ensure an environmentally sustainable electricity system. Excellence propels performance improvements in meeting customer needs responsibly and leadership in realization of new technological advancement. Safety is the paramount strategic driver ensuring that the Plan consistently addresses public and employee safety requirements. Hydro One's corporate strategy drives the Plan's vision for a conservation-oriented and more environmentally-conscious culture.

The Renewable Energy Standard Offer Program ("RESOP") launched by the Ontario Power Authority ("OPA") in 2006 has demonstrated the tremendous level of interest in connecting renewable energy generation to distribution systems in Ontario. Hydro One Distribution received the majority of applications under this program, reflecting the fact that the best sites for much of the province's renewable potential are in areas served by

Hydro One. The experience with RESOP provides Hydro One Distribution with a good base for evaluating the level of interest in connecting to its system and the ability of its system to accommodate increasing levels of renewable generation connections. The table below summarizes Hydro One Distribution's experience to date with processing requests for Connection Impact Assessment ("CIAs"):

Date Ending	Total CIAs Requested	CIAs Outside Threshold*		CIAs Completed	Connection Cost Estimates Completed	Connection Cost Recovery Agreements Completed
		#	%			
2006	312	142	46%	90	0	0
2007	914	430	47%	347	43	58
2008	1518	664	44%	664	128	119
Apr 2009	1553	645	42%	869	147	127

* Projects that fall outside Hydro One Distribution's technical limits (i.e. 60% threshold on transformer loading, station short circuit limits and the 400 Amp limit on feeder current).

The number of CIAs requested represent about 12,000 MW of capacity, but as shown in the table above, 42% of the CIA requests received as of April, 2009 are outside the threshold for processing because of technical limitations.

The level of interest in RESOP is indicative of the interest Hydro One expects in the Feed-in Tariff ("FIT") program soon to be launched by the OPA. In fact, given that FIT prices are higher than RESOP, and the Board's proposed Distribution System Code ("DSC") amendments that reduce the portion of distribution investment costs to be borne by generation developers, Hydro One Distribution expects to see higher levels of connection of new renewable generation than under RESOP.

Hydro One Distribution projects that as much as 3,500 MW of renewable energy generation could seek connection by 2011 and an additional 3,500 MW could seek

connection by 2014, given technical feasibility (e.g. transmission and distribution capacity available at specific locations). This forecast is based on consideration of the following factors:

- FIT program is expected to be launched by the OPA in 2009.
- Information gathered from the large volume of connection applications received to date including generator size, type, and location.
- The number of technically feasible renewable generation projects that have completed CIAs but have not moved forward. These pending projects are located in areas with no transmission constraints (e.g. "Green Zone" as defined by the OPA) and it is expected that a major portion will proceed after the FIT program is launched.
- Experience with the timeline for the different stages of the connection process.

Hydro One Distribution's goal is to support the enablement of renewable generation in Ontario. However, there remain areas in which the connection of renewable generation is not currently feasible due to existing system constraints. Under the Green Energy Act, distributors and transmitters are obligated to respond to the potential for additional connections where these are deemed economic. Therefore, connection requests that are in excess of existing available system capacity will be assessed with respect to whether they can be enabled with economic additions to wires facilities. The OPA will do this assessment for transmission, Hydro One Distribution and other LDC's will do the assessment of distribution enabling investments. In both cases, the assessments will be guided by the Board's direction with respect to cost allocation and the degree of risk that expected generation projects will not proceed.

In determining what connections would be economic, Hydro One has and will continue to work closely with the OPA on enabling transmission investments and distribution

investments that are tied to those transmission investments (e.g. where a transmission enabler is needed to provide for new renewable generation which includes some distribution connected generation). Hydro One is also working with the OPA to ensure the availability of distribution capacity is considered in the processes related to issuing and managing FIT contracts.

Hydro One Distribution notes that the incorporation of large amounts of renewable energy generation into its system will be an extensive and time consuming process that will require substantial investment, close monitoring and careful planning in order to enhance system capacity in a timely, prudent and responsible manner. Under the proposed FIT application framework, Hydro One will continue to track and monitor the connection requests that have capacity allocations and make adjustments to its system expansion and enhancement plans according to changing conditions that would provide opportunity for these applicants to obtain a FIT contract.

Hydro One is addressing the economics of investment in new distribution facilities. In particular, Hydro One Distribution expects that the effective "economic test" for distribution investments required to provide for new renewable energy generators will be twofold under the proposed amendments to the DSC addressing cost allocation:

- Any Renewable Enabling Improvement ("REI") investments will need to be justified either through a Board-approved plan, or through subsequent prudence reviews where such investments are necessary to meet unplanned demand arising out of new generation proposals.
- Any Expansion investments will need to be justified either through a Board-approved plan, in which case Hydro One Distribution is responsible for the investment cost, or through a subsequent prudence review, in which case the investment will be funded by Hydro One Distribution up to a specified cap of

$90,000 per MW of connecting generation capacity. Generators are responsible for the balance of costs above the proposed cap.

In line with the proposed amendments to the DSC, Hydro One expects that any Connection Asset investments will be paid for by generator contributions and thus will not be subject to any distributor "economic test".

Based on past RESOP experience, Hydro One Distribution has identified the regions where the potential for renewable energy generation development is highest and has identified the constraints that currently exist on its equipment and facilities. Planning system enhancements (i.e. Expansions and REI) to reduce constraints in areas receiving the highest number of applications will ensure Hydro One Distribution enables the maximum amount of renewable generation connection in the first two years of the plan.

Similar to the approach used in determining the program spending level required to meet anticipated demand from load connection customers, the proposed spending on Expansion and REI work programs is based on anticipated demand from generation customers, taking into account the factors noted above and the planning considerations discussed in Section 3. The REI program also includes work in areas of high interest for renewable energy generation that needs to be completed in a timely fashion in order to minimize any delay to specific generator connection projects, as they are approved.

Hydro One Distribution's proposed investment strategy is expected to:

- Enable timely expansion and enhancement of the distribution grid in accordance with the GEGEA.
- Improve economic efficiency by allowing businesses to plan their expansions more confidently.

- Dovetail distribution system enhancement with Smart Grid strategies and plans.
- Reduce wait times by having more capacity readily available to connect large volumes of generation facilities reliably, safely, and at minimum impact to load customers.

Closely related to, and strongly supporting, the enablement of renewable energy generation in Ontario is the development of a Smart Grid to allow for advanced exchange of information, enhanced control, advanced security, increased reliability and improved overall safety of the distribution system.

Hydro One Distribution's process for defining Smart Grid investments for future deployment consists of establishing a "Smart Zone" sandbox in the Owen Sound area as a testing ground for piloting new technologies and systems in a proactive manner. Furthermore, Hydro One Distribution has taken an active role in forums to develop concepts and standards of Smart Grid and regularly commissions universities and other consultants to examine, test and report on specific aspects of Smart Grid initiatives and technologies.

Hydro One Distribution's role in CDM is to provide customers with information and tools that allow them greater understanding and control over their electricity consumption, and help them reduce and shape that consumption. Given the GEGEA requirement to "promote electricity conservation and demand management", Hydro One Distribution believes that CDM expenditures going forward will exceed current levels. However, the cost of these programs are not recovered through the rates in this Application as Hydro One Distribution expects that CDM programs will continue to be funded by the OPA through the Global Adjustment Mechanism ("GAM").

3.0 RENEWABLE ENERGY GENERATION CONNECTION

3.1 Planning Considerations

Over the next 20 years, Ontario will see substantial investment in generation capacity given load growth, aging generation equipment, advancing technology and the need for cleaner, more renewable supply. To ensure a reliable and sustainable long-term supply of electricity, the Government and the OPA have undertaken a number of procurements for the supply of electricity including requests-for-proposal ("RFPs") and standard offer programs.

The GEGEA specifically encourages extensive development of new renewable resources (Wind, Solar (PV), Waterpower, Renewable Biomass, Bio-gas, Landfill Gas) and the OPA is in the process of replacing the RESOP program with a new FIT program that is expected to further increase the development of renewable generation in the province.

Hydro One Distribution is obliged to connect generation facilities and employ good utility practice consistent with its Distribution Licence, requirements set out in the DSC and other applicable codes, standards and rules. Hydro One Distribution effectively plans for investments for renewable energy generation by:

- Considering past experience with RESOP and other distribution generation connections, including information on what transformer stations and distribution facilities have high volumes of Connection Impact Assessment ("CIA") applications.
- Utilizing information gathered from previous connection requests including generator size and type and volume of applications to anticipate impending generation connections.

- Determining the need and type of technical modifications required at different locations on Hydro One Distribution's system to accommodate the different types of renewable energy generation connections anticipated.
- Considering system constraints (i.e. when total proposed generation amount is significantly higher than the existing transfer capability).

Hydro One Distribution's system spans the vast majority of the province and serves many areas where the potential for renewable energy development is highest. In addition, the incentives anticipated from OPA's FIT program are expected to further increase the volume of applications desiring to connect to Hydro One's distribution system.

Expanding and enabling Hydro One's distribution infrastructure to accommodate the connection of renewable energy generation facilities will require significant investments. Renewable energy generation work programs are subject to the same rigorous Hydro One business planning and approval process used for all other Hydro One investments presented in this application. A detailed discussion of Hydro One's overall business planning process is filed at Exhibit A, Tab 14, Schedules 1 and Schedules 3 to 8.

For the reasons discussed in Section 2.0, Hydro One Distribution plans on connecting over 3,500 MW of renewable energy generation by the end of 2011 and an additional 3,500 MW by the end of 2014.

The sections below describe the activities and investments that Hydro One Distribution will undertake to facilitate the achievement of these targets in a timely and prudent manner.

3.2 OM&A Associated with Renewable Generation Connections

OM&A costs included in this Plan cover Development work related to generation connections. Investments in this area allow Hydro One Distribution to undertake further research and development to understand and address the complexities associated with generation connections and the development of new standards for generation connections. Investments in this area will also address the increasing needs to interface with generator connection proponents as a result of the forecasted increases in connection volumes.

Exhibit C1, Tab 2, Schedule 3 describes in detail all the development OM&A expenditures. The development OM&A expenditure related to renewable energy generation is:

($ Million)	**2010**	**2011**	**2012 to 2014**
OM&A related to Renewable Generation Connections	3	3	10

The on-going OM&A costs associated with maintaining the portion of Expansion and REI capital investments to be funded by all customers in Ontario are assumed to be negligible over the test year period. However, if these OM&A costs are determined to have increased to material levels at some point in the future, Hydro One Distribution will seek approval to include them as part of the revenue requirement to be externally funded.

3.3 Capital Investments for Renewable Energy Generation

This section discusses capital investments on the distribution system for Connection, Expansion, and Renewable Enabling Improvements ("REI") assets required to connect renewable energy generation to the distribution system.

3.3.1 Connection Assets for Renewable Energy Generation

Hydro One Distribution has assumed that a Connection Asset investment covers only the work associated with providing isolating devices or other assets required for the specific generator's connection to Hydro One Distribution's system. Consistent with the proposed DSC amendments issued by the Board on September 11, 2009, Hydro One Distribution does not include the expansion of its main distribution system to build a new line to the ownership demarcation point serving one or more generation customers as a Connection Asset.

The gross capital cost of work on Connection Assets is $13.3 M in 2010 and $26.8 M in 2011. This work is included in the development capital work program described in Exhibit D1, Tab 3, Schedule 3.

The total capital costs associated with Connection Assets for connecting renewable energy generation are:

($ million)	**2010**	**2011**	**2012 to 2014**
Gross Capital Investment	13	27	40
Less Generator Funded Capital	13	27	40
Net Capital Investment	**0**	**0**	**0**

Generators are responsible for all costs associated with Connection Assets. As such, the costs associated with work on the main distribution system to physically tap and isolate Connection Assets are covered by capital contributions from customers and result in no net capital additions to Hydro One Distribution's rate base, and no impact on distribution rates.

3.3.2 Expansion of the Distribution System to Connect Renewable Energy Generation

Hydro One Distribution has based this Plan on its assumption that Expansion of the distribution system to connect renewable energy generation includes the following types of investments carried out to serve one or more renewable energy generation facilities:

- Expand or build out the distribution system to the ownership demarcation point of the renewable energy generation facility;
- Rebuilding a single-phase line to three-phase;
- Rebuilding an existing line with a larger size conductor;
- Rebuilding or overbuilding an existing line to provide an additional circuit;
- Converting a lower voltage line to operate at higher voltage;
- Replacing a transformer to a larger MVA size;
- Upgrading a voltage regulating transformer or station to a larger MVA size;
- Adding or upgrading capacitor banks to increase system capacity to facilitate the connection of the renewable energy generation facility;
- Building new express feeders to connect renewable energy generation;
- Providing new distribution stations and/or additional capacity at existing distribution stations.

These capital investments modify/upgrade the distribution lines and stations to allow the connection of one or more renewable energy generation facilities to Hydro One Distribution's system while preserving reliability and power quality. An example of such an Expansion investment is the planned construction of 6 express feeders that will each be approximately 25 km long and will emanate from a new transmission station in south western Ontario. These feeders are to be constructed in 2011, with a route that will be finalized after connection applications related to the OPA's FIT Program are received. The costs associated with Expansion investments required to connect all anticipated

renewable generation facilities over the test year period are assumed to be covered by the funding requested in this Plan. For Expansion investments beyond the work covered in this Plan Hydro One Distribution will contribute up to the maximum expansion cost cap of $90,000 per MW of connecting generator capacity established under the DSC. Any incremental Expansion costs beyond the proposed cap are to be borne by the generator(s).

Hydro One Distribution's service territory spans the vast majority of the Province and covers regions where strong demand for renewable energy generation development is foreseen. The renewable generation that is anticipated to connect to Hydro One Distribution's system is expected to provide benefits to all electricity consumers in the Province. There are circumstances where Expansion investments are also expected to provide a benefit to Hydro One Distribution's load customers. Consistent with the requirements of Regulation 330/09 a portion of this investment cost has been identified for recovery through the distribution rates requested in this Application, with the balance to be recovered from all electricity consumers in the Province.

The following criteria is proposed for assessing the benefits that Expansion work will provide to Hydro One Distribution customers:

- Asset Replacement - Expansion activity will extend the useful life of the affected assets and defer the need for future investment (e.g. replacement of aged wood poles). Investments that result in the replacement of existing assets would be subject to a financial evaluation to determine the benefit to Hydro One Distribution load customers based on the Net Present Value ("NPV") of the "consumed portion" of the asset replaced on a "like-for-like" basis.

- Load Growth - There is potential benefit to Hydro One Distribution customers when generation facilities are connected in areas experiencing load growth. Capital

investments to serve generation facilities located in areas with OEB approved load growth projects, or locations where area studies been done and documented, would be subject to a financial evaluation to determine the benefit to Hydro One Distribution load customers based on the NPV of future planned investments needed to address the anticipated load growth.

The benefit of replacing assets on an existing distribution line is assumed to derive from the replacement of wood poles. Pole-mount transformers are "run to failure" and are not planned to be replaced until the end of their useful life, while the long asset life of wire conductors and their available capacity to connect generation facilities means that Hydro One Distribution does not expect any planned conductor replacements in the near future to facilitate generation connections. Currently, Hydro One Distribution does not anticipate needing to upgrade any power transformers to accommodate the connection of renewable energy generation.

Hydro One Distribution has applied the above criteria to estimate the proportion of Expansion investments in its Plan that will benefit its load customers, and should be included as net Capital costs to be recovered through the rates requested in this Application.

Hydro One Distribution has applied the Asset Replacement criteria to the investment programs proposed in this Application by using the existing age distribution of its pole population, an assumed average pole replacement cost, and a typical number of poles per kilometre of line, to determine an Asset Replacement benefit to Hydro One Distribution customers of 15%.

The Load Growth criteria has been applied by using current feeder loading information and an assumed 1% load growth (net of CDM) per year to estimate the number of

feeders that will reach their capacity over the next 20 years. It was also assumed that the planned generation-driven Expansion projects would provide a benefit for only 20% of the investments required in areas experiencing load growth. The typical cost of replacing a feeder to accommodate load growth was then put into a financial evaluation model which calculated the NPV of this load growth-driven work and compared it to the NPV of planned generation-related work to determine a Load Growth benefit to Hydro One Distribution customers of 3%.

The combined benefit to Hydro One Distribution customers of Expansion investments is therefore assumed to be 18% (15% +3%).

Expansion work included in Hydro One Distribution's Development Capital program is discussed in the Exhibit D1, Tab 3, Schedule 3, and is part of the investments detailed in the Investment Summary Document ("ISD") D27, D28 and D29, provided in Exhibit D2, Tab 2, Schedule 3.

The total capital costs for Expansion work included in the Plan are:

($ million)	**2010**	**2011**	**2012 to 2014**
Gross Capital Investment	72	143	480
Less Externally Funded Capital	60	118	390
Net Capital Investment	**12**	**25**	**90**

The Net Capital investment shown in the table above is included in Hydro One Distribution's rate base to be funded by the rates proposed in this Application.

3.3.3 Renewable Enabling Improvements to the Distribution System

Renewable Enabling Improvements ("REI") address modifications or additions to the main distribution system in order to accommodate increased levels of renewable energy generation.

REI investments include the following:

- Modifications or additions to manage and control 2-way electrical flows or reverse flows (e.g. bidirectional reclosers, tap changer controls or relays, replacing breaker protection relays)
- Modifications to, or the addition of, electrical protection equipment.
- Modifications to, or the addition of, voltage regulating transformer or station controls.
- Provision of protection against islanding (transfer trip or equivalent).
- Design and installation of Supervisory Control and Data Acquisition ("SCADA") systems and telecommunication equipment.

Implementation of these REI investments will facilitate and streamline the connection of renewable energy generators. For example, Hydro One Distribution is proposing to upgrade feeder reclosers and voltage regulating transformer or station controls to accommodate bi-directional flow that can exist when generators connect onto a feeder. Reclosers will be upgraded to sense the direction of current feeding into a fault, while voltage regulating transformer or station controls will be upgraded to compensate for load flow in both directions. These upgrades will streamline the generation connection approval process by eliminating some of the technical limitations to the connection of

new generation. In addition, REI investments will also dovetail with the development of the Smart Grid.

REI investments will ensure proper protection, automation and control measures are in place to facilitate the connection and operation of renewable energy generation. The majority of these investments will provide benefits to the Province as a whole, while a relatively small portion of these investments are also expected to provide some benefits to Hydro One Distribution's load customers. Consistent with the requirements of Regulation 330/09 a portion of the REI investment cost has been identified for recovery through the distribution rates requested in this Application, with the balance to be recovered from all electricity consumers in Ontario via an external funding mechanism.

Hydro One Distribution has used the following criteria to determine the portion of REI investments that provide a benefit to Hydro One Distribution's customers:

- Any REI work expected to improve existing Hydro One Distribution processes that also impact load customers should be partially funded through customer rates.
- REI work that extends the life of existing assets provide benefits to load customers as the need for asset replacement would be deferred.
- Technology advancements or procedural changes undertaken solely to facilitate the connection of renewable energy generation provide benefits to the Province and are appropriately funded by all electricity consumers in Ontario.

The above methodology was applied to each REI investment detailed in Exhibit D1, Tab 3, Schedule 3 to determine the allocation of costs between all electricity consumers in Ontario and Hydro One Distribution's customers.

The REI work in this Application includes a number of specific investments that are being undertaken for the sole purpose of accommodating generation connections on the distribution system and are assumed to be funded via an external funding mechanism. These investments include: Distribution Wholesale Revenue Metering Changes; Load Rejection at Distribution Stations; Protection Modification for DS with Downstream Generation; Voltage Regulator Control; and, Wireless Telecommunication Stopgap.

One REI investment whose costs Hydro One Distribution proposes be split between all electricity consumers in Ontario and Hydro One Distribution customers is the cost of installing SCADA at existing distribution stations ("DSs"). Work relating to SCADA replaces the reclosers at a DS with electronic reclosures and adds the necessary infrastructure and SCADA systems to the DS. Hydro One Distribution was considering adding DS monitoring at some of its heavily loaded distribution stations, which requires adding infrastructure and SCADA systems, accounting for about 3/5 of the costs of this investment, but does not require the reclosers to be changed. Hydro One Distribution also estimates that only 30% of the stations being modified to accommodate distributed generation are also among the heavily loaded stations that Hydro One was considering for SCADA investment. Hydro One proposes that the infrastructure and SCADA portion of this investment be shared equally for the 30% of DSs impacted by this investment, resulting in an estimated benefit to Hydro One Distribution customers of 9%. Accordingly 9% of the cost of this investment will be recovered through Hydro One Distribution rates, with the balance of the investment being allocated to electricity customers in the Province and recovered via an external funding mechanism.

The other REI investment whose costs will be allocated between all electricity consumers in Ontario and Hydro One Distribution's customers is the work on Remote Protection and Control of Sub-Transmission Reclosers. The ability to remotely control reclosers has the

potential to reduce travel time of field crews and allow for faster restoration for customers. The benefit to Hydro One customers was estimated to be 5% based on examining the potential improvements in reliability indicators.

Renewable Enabling Improvement work included in Hydro One Distribution's Development Capital program is discussed in Exhibit D1, Tab 3, Schedule 3 and is part of the investments detailed in ISDs D28, D29, D30, D31, D32 and D33 provided in Exhibit D2, Tab 2, Schedule 3.

The capital costs for Renewable Enabling Improvements included in the Plan are:

($ million)	**2010**	**2011**	**2012 to 2014**
Gross Capital Investment	83	127	410
Less Externally Funded Capital	79	118	380
Net Capital Investment	**4**	**8**	**30**

The Net Capital investment shown in the table above is included in Hydro One Distribution's rate base to be funded by the rates proposed in this Application.

3.4 Summary of Renewable Energy Generation Connection Capital

The total capital work on Connection Assets, Expansions and Renewable Enabling Improvements included in the Plan and described in the preceding sections is summarized in the table below.

$ millions	2010	2011	2012 to 2014
Gross Capital Investment	169	296	930
Less Generator Funded Capital	13	27	40
Less Externally Funded Capital	139	236	780
Net Capital Investment	**17**	**33**	**110**

The revenue requirement associated with a significant amount of the gross capital investment for renewable energy generation is assumed to be recovered from all electricity consumers in the Province via an external funding mechanism in accordance with the requirements of Regulation 330/09. This is expected given Hydro One Distribution's service territory covers the majority of regions in the Province with high potential for renewable energy generation development, and consequently much of the investment required to accommodate renewable generation will be on Hydro One's distribution infrastructure. Hydro One Distribution has proposed a number of criteria that provide a reasonable approach for identifying the benefits of generation-driven investments to its customers.

Hydro One has determined the revenue requirement associated with the externally funded capital investments to be $8.0 million in 2010 and $30.7 million in 2011. The determination of this revenue requirement is based on applying the same cost of capital structure and rates of return on debt and equity as is applied to Hydro One Distribution's regulated rate base, consistent with the requirements of the Board Report on Cost of Capital issued December 20, 2006. The assets associated with investments made to accommodate renewable generation are assumed to be straight line depreciated over a 20 year period consistent with the typical contract period for the renewable generation facilities anticipated to be served by these assets.

4.0 SMART GRID DEVELOPMENT

4.1 Planning Considerations

The evolution of Hydro One Distribution's system into a Smart Grid offers value to both Hydro One's generation and load customers. A smarter distribution system will enhance the reliability, security and power quality of the system through automation and enablement of increased amounts of cleaner, renewable distributed generation; it will allow for new conservation and demand management programs by improving load management and overall understanding of customer load profiles through innovative two-way communication; and it will improve asset condition monitoring and trouble call responses with more accurate data and enhanced system controls.

The GEGEA calls for effective and timely implementation, standardization, operation and overall development of Smart Grid technologies and will oblige transmitters and distributors to grant priority to the connection of renewable energy generation facilities.

In addition to enabling the goals of the GEGEA, Hydro One Distribution's vision of a Smart Grid strongly also supports other government green initiatives, including:

- The phase-out of coal fired generation (by 2014) initiated in 2005 as part of the Climate Change initiative.
- The Smart Meter program (with currently over 1,000,000 smart meters installed in Hydro One Distribution's service territory).

Hydro One Distribution followed a three step process to develop the Smart Grid plan. The first step was to focus on integrating renewable energy generation, CDM, and system automation by leveraging the new communication infrastructure put into place for Smart

Meters. Secondly, the Company formulated plans to utilize pilots and targeted development work to investigate, understand and prepare for new innovative technologies to enable Smart Grid. Hydro One Distribution plans to fund targeted studies in the area of green energy technologies such as automated home energy networks and energy storage. The final step is implementation of pilot projects to confirm viability of new technologies and products before widespread deployment.

In order to undergo pilot testing, Hydro One Distribution plans to create a geographic subset of its system as a Smart Grid demonstration area. Located in the Owen Sound area, the "Smart Zone" will pilot and incubate Smart Grid applications, flesh out requirements for solution sets while assessing opportunities for system-wide rollout, and establish design parameters and standards prior to full roll-out. Actual devices will be installed, various solutions built or upgraded as required, and business processes developed and tested. In addition, education and training may be required in the "Smart Zone" for local field resources needed to support the demonstration projects.

Investments in the Smart Grid work program will fund the development of the Smart Grid through:

- acquisition of "smart devices" to showcase proposed technologies
- acquisition of system integration technologies (both real-time and enterprise applications) that monitor, control and remediate faults, outage management/restoration systems, Geographic Information System ("GIS") technology, Energy Storage devices such as battery/compressed air energy storage ("CAES") as well as stationary power systems such as hydrogen fuel cells that can be used to power station services
- deployment for proving both technology and inter-operability as well as business benefits which will drive further adoption in other areas of Hydro One's networks.

Similar to all other Hydro One investments, Smart Grid work programs have gone through a controlled and responsible business planning process to ensure expenditures are necessary and prudent. A detailed discussion of Hydro One's overall business planning process is filed at Exhibit A, Tab 14, Schedules 1 and Schedules 3 to 8.

The Board's planning guideline G-2009-0087 states that costs incurred related to Smart Grid should be collected in a variance account and a funding adder requested to provide advance funding for this work. While Hydro One Distribution is not against the use of a variance account and funding adder, the company believes that its Smart Grid investments are necessary, used and useful, and sufficiently well defined to include as part of its rate base expenditures for the test years.

4.2 Development OM&A for Smart Grid

In order to better understand the new emerging technologies available for implementing a Smart Grid and possible implications to the power system, Hydro One's development OM&A expenditures will fund the Company's participation in an extensive information sharing and development network with parties including Edison Electric Institute, Electric Power Research Institute, Institute of Electrical and Electronics Engineers, International Council on Large Electric Systems ("CIGRE"), International Electrotechnical Commission, Utilities Telecom Council, Utilimetrics, Utility Standards Board and National Institute of Standards and Technology. These collaborative networks are international in their reach and include utilities, academics, vendors and system integrators as members and participants. These networks will assist Hydro One Distribution in developing concepts and standards for Smart Grid investments and keeping abreast with new technology development.

In addition, Hydro One Distribution funds specific development efforts through the above networks and commissions universities and consultants to investigate specific aspects of Smart Grid as they impact the distribution utility system. Examples of these specific development efforts include funding studies to evaluate the need for dynamic reactive support ("DVAR") and energy storage, as well as the development and testing of new business processes in the Owen Sound Smart Zone.

The planned investments related to Smart Grid development work are further discussed in Exhibit C1, Tab 2, Schedule 3.

Total development OM&A expenditures on Smart Grid programs are:

($ million)	**2010**	**2011**	**2012 to 2014**
Development OM&A	10	10	45

Hydro One Distribution includes these development OM&A costs in this Application.

4.3 Capital for Development of Smart Grid

Hydro One Distribution's capital investment for development of the Smart Grid is centered in its "Smart Zone" pilot site around Owen Sound. Hydro One will build a Wide Area Network ("WAN") in the "Smart Zone" to lay down the framework for its Smart Grid pilot. Then, Hydro One Distribution will roll out enablers (i.e. Wimax and GIS deployment) to facilitate CDM programs and connection of renewable energy generation.

In addition, investment will be made in the areas of Geographical Information Systems ("GIS") technology, Intelligent Electronic Devices, mobile workforce tools, Outage.

Management System ("OMS"), operating facilities and systems upgrades, distribution monitoring and automation, SCADA, customer demand response, in-home conservation tools, energy storage, operating procedures and training materials.

Furthermore, Hydro One will field test Plug-in Hybrid Electric Vehicles ("PHEV") as part of the Owen Sound Smart Zone with third-party collaboration, as well as implementing CDM controllers and smart appliance interfaces.

The bulk of the costs for this work, accounting for $20.8 M in 2010 and $49.9 M in 2011, are captured in the Smart Grid development program described in Development Capital Exhibit D1, Tab 3, Schedule 3 and detailed in ISD D35 that is part of Exhibit D2, Tab 2, Schedule 3.

There is also some Smart Grid related work required in the Operation Capital program (e.g. OMS and facilities/system upgrades), which accounts for $6.7 M and $9.8 M in the test years, as well as some information technology work (e.g. GIS mapping), which accounts for $2.7 M and $2.6 M in each of the test years. Details on these Smart Grid related capital investments are provided in Operations Capital Exhibit D1, Tab 3, Schedule 4, and Shared Services – Information Technology Exhibit D1, Tab 3, Schedule 6. Additional information is also provided in ISDs O1, O2, O3, O4, O5, O6, O8 and IT5 that are part of Exhibit D2, Tab 2, Schedule 3.

A summary of the development capital expenditures for Smart Grid are provided below:

($ million)	**2010**	**2011**	**2012 to 2014**
Gross Capital Investment	30	62	250
Less Externally Funded Capital	0	0	0
Net Capital Investment	**30**	**62**	**250**

Smart Grid investments will facilitate the connection of renewable energy generation to Hydro One Distribution's system. These investments will also provide significant benefits to Hydro One Distribution customers for the future enablement of the Smart Grid. Accordingly, it is appropriate to include these costs in the rate base that is part of this Application.

5.0 CONSERVATION AND DEMAND MANAGEMENT

5.1 Summary of Conservation and Demand Management Plan

Hydro One Distribution currently offers the full suite of core OPA CDM program and some customer programs to its customers. The costs for these OPA funded programs amount to approximately $20 million on an annual basis and are funded externally through the GAM.

The installation of smart meters and the development of a smarter distribution system (or Smart Grid) will place the Company in an opportune position to develop and monitor more effective customer CDM programs. Progress in this area will be essential to meeting the new demand reduction targets expected to be set by the Board. These programs will also support the Board's expanded responsibilities for the advancement of conservation efforts for the province as set out in the GEGEA requirement to "promote electricity conservation and demand management". Therefore, Hydro One Distribution believes that CDM expenditures going forward will exceed the current level. However, the costs of these programs are not reflected in this rate application as Hydro One Distribution expects that these CDM programs will be funded by the GAM.

If it is subsequently determined that these costs are not recovered under the GAM, then Hydro One Distribution would amend the Plan to include these costs as part of OM&A expenditures for recovery through distribution rates. This is estimated to impact distribution rates by 2% in 2010 and 0% in 2011, with the impact on total bill estimated to be 0.7% in 2010.

5.2 Introduction

The Ontario government has established a plan that capitalizes on CDM and renewable generation to help meet projected demand over the next 20 years and to enable the shut down of coal plants by 2014.

Recognizing that while governments and utilities can encourage certain behaviours, only customers can change their own actions, Hydro One Distribution's role in CDM is to provide customers with information and tools that allow them greater understanding and control over their electricity consumption, and help them reduce and shape that consumption if they choose to do so. To this end, Hydro One Distribution has undertaken a number of initiatives to enable customers to respond in the manner they choose, including directly managing their own behaviour, offering incentive programs to dispose of energy inefficient appliances, purchase energy efficient equipment/technology, and to allow direct utility intervention and automation of their demand response.

5.3 Conservation and Demand Management Work Programs

Hydro One Distribution currently offers four core OPA CDM programs to its customers, with contracts in place to continue doing so through 2010. These include: Great Refrigerator Roundup, Electricity Retrofit Incentive Program, PeakSaver®, and Power Saving Blitz. In addition, Hydro One is delivering one demand response custom program

approved by the OPA, Double Return and a rate-funded program, PowerSaver® Plus online audit for its customers. Hydro One Networks Inc., in cooperation with Enersource Hydro Mississauga and Hydro One Brampton, has also recently concluded a very successful zero interest loan and rebate pilot program for renewable energy technologies for the Ministry of Energy and Infrastructure.

The proposed transformational changes adopted in the GEGEA and the advent of widespread Time-of-Use ("TOU") rates in 2010 will lead to a significant increase in Hydro One Distribution's CDM activity. Amongst the many structural changes taking place, it is expected that the costs incurred by a utility for CDM programs beyond the core offering of the OPA, would be recovered from all ratepayers via the GAM as opposed to directly through distribution rates. This means that although the Board is still mandated to approve funding for CDM programs, the costs will be recovered through part of the electricity commodity charge (Global Adjustment uplift).

Hydro One Distribution understands that there are a number of processes under way to operationalize the GEGEA, including: preparation of GEGEA regulations/directives; development of CDM targets for each distributor; development of CDM portfolio/program requirements/tests, etc. Resolution of these issues, as well as developing CDM programs tailored to low income energy consumers, is not a trivial exercise and such fundamental issues as whether the CDM targets will focus on reducing peak demand or total energy consumption remain to be resolved. The timely completion of these processes is critical to enabling Hydro One Distribution to ensure that the new breed of CDM programs, those designed specifically for TOU rates, are available to customers as they are switched over to TOU billing in 2010.

Once these processes have been completed, Hydro One Distribution will be in a position to assemble a portfolio of CDM programs for the Board's review and approval. Hydro

One Distribution is aiming to develop an initial CDM portfolio by the end of 2009 which will likely contain a mix of the current OPA core programs and new program offerings.

6.0 ACCEPTANCE OF HYDRO ONE DISTRIBUTION'S GREEN ENERGY PLAN

The policy objectives of the GEGEA have been outlined in this Plan and the message is clear:

- Foster the growth of renewable energy projects.
- Promote and expand energy conservation in Ontario.
- Develop a Smart Grid to help achieve the two objectives above.

Hydro One Distribution's Green Energy Plan details specific and substantial investments that meet these objectives in a prudent and timely manner. This Plan also provides a reasonable basis for allocating the cost of these investments between Hydro One Distribution's customers and all electricity customers in Ontario.

Hydro One Distribution submits that at this point in time the key criteria to be met is whether the Plan satisfies the GEGEA objectives. While a more specific set of criteria against which to measure this Plan is a desirable goal, Hydro One Distribution believes it is too early to detail specific measures/criteria such as requiring the plan to deliver on a specific level of capacity increase, or delivering on specific timelines. Hydro One believes its Plan meets the GEGEA objectives by bringing forward a set of concrete investments that will allow it to expand and enable the distribution system in those specific areas of the Province necessary to foster the growth of renewable energy projects. Hydro One Distribution has experience with the over 1,500 applications it has

received under the RESOP program which have helped the Company to identify and target its investments to those parts of its system that will provide the maximum benefit.

The Plan also initiates necessary work on the development of a Smart Grid that will facilitate the growth of renewable generation, while promoting the efficient use of energy in Ontario. Proceeding with the capital investments planned for the Owen Sound Smart Zone, and the development work that goes along with them, is a prudent approach that will confirm the viability and benefits of numerous smart grid technologies and products before widespread deployment across Hydro One Distribution's vast service territory.

In conclusion, Hydro One Distribution requests the Board to accept this Plan.