



**Peterborough
Distribution Inc.**

Your Partner in Energy Conservation

2011-2014

**Conservation and
Demand Management
Strategy**

Conservation and Demand Management Strategy

1. Distributor's Name: Peterborough Distribution Inc. (PDI)
2. Total Reduction in Peak Provincial Electricity Demand (MW) Target: 9 MW
3. Total Reduction in Electricity Consumption (MWh) Target: 39,000 MWh
4. CDM Strategy:

Peterborough Distribution Inc. (PDI) has previously participated in both Third Tranche OEB conservation programs as well as all OPA programs available since their inception. PDI has developed and implemented custom programs in the past that have benefited all consumer classes, specifically Low Income customers.

It has historically been PDI's focus to ensure that a segment of their conservation portfolio be targeted towards Low Income consumers. This has been demonstrated with the Thermal Storage Heating program, replacing consumers baseboard heating with more efficient "Off Peak" Thermal Storage Heating. We have also partnered with our Low Income Housing providers to replace all Incandescent Lighting with CFL bulbs in addition to Low Flow Shower Heads and Tap Aerators in over 1688 Social Housing units.

PDI enrolled over 9,000 Water Heaters as part of the 2007 *peaksaver*® program. This resulted in the single most significant dispatchable load in one LDC at that time. Since then, PDI has participated in all OPA programs and has consistently either met or exceeded all their annual program targets.

Where possible, PDI has employed local contractors and channel partners to assist in administering the CDM programs. This has not only realized significant savings for consumers in all rate classes, but has also injected money into our local economy. It has been a win-win outcome for all involved.

With the introduction of the OEB Conservation and Demand Management Code for 2011-2014, PDI will utilize these past experiences to assist all rate classes in the successful progression of both OPA-Contracted programs, and in planning and implementing a blend of our own custom programs.

PDI will strive to be a partner in conservation to their consumers in reducing energy consumption and costs, and to the province by attaining the demand reduction targets specified.

Statement of the annual milestones we hope to achieve:

2011

- Participate in all available OPA-Contracted Tier 1 Programs
- Commence Long Term Initiatives for Industrial, Business and Institutional Demand Response Programs (DR1 and DR3)
- Re-Enroll 9,562 Water Heaters in the new Consumer DR (*peaksaver*) Program
- Initiate contact with Low Income Housing providers for base board electric heating sites, prior to the Low Income Conservation Program release (April 2011), to seek out potential participants for conversion to Thermal Storage Heating
- Develop strategy for a Custom Industrial Program to convert Street Lighting to Inductive Lighting
- Co-ordinate and file proposals with the OEB for approval of all Custom CDM Programs outlined
- Organize the first of three Holiday Light Exchange Events for the fall of 2011
- Initiate the first of three Incandescent/CFL Exchange Events for the Spring of 2011
- Offer pre-programmed Energy Power Bars after new version of Consumer Program DR has been introduced (July 2011)

2012

- Participate in all available OPA-Contracted Tier 1 Programs
- Enact DR1 and DR3 contracts for Industrial, Business and Institutional Programs with PDI Consumers
- Fully Integrate Low Income OPA Program with the Thermal Storage and Electric Water Heater “Load Shifting” Program
- Continue with the Inductive Street Light Conversion
- Consider LED/CFL Light Exchange Spring 2012
- Continue with offering of pre-programmed Power Bars and investigate option for Intelligent Power Strips
- Investigate implementation of Water Heater Load Control plan in conjunction with Go-Live of Time of Use Billing (Spring 2012)

2013

- Participate in all available OPA-Contracted Tier 1 Programs
- Continue accumulation of DR1 and DR3 contracts for Industrial, Business and Institutional Programs with PDI Consumers
- Continue integration of Low Income OPA Program with the Thermal Storage and Electric Water Heater “Load Shifting” Program
- Continue with the Inductive Street Light Conversion

- **Holiday Light Exchange Fall 2013**
- **Continue with offering of pre-programmed Power Bars or Intelligent Power Strips**

2014

- **Participate in all available OPA-Contracted Tier 1 Programs**
- **Continue accumulation of DR1 and DR3 contracts for Industrial, Business and Institutional Programs with PDI Consumers**
- **Continue integration of Low Income OPA Program with the Thermal Storage and Electric Water Heater “Load Shifting” Program.**
- **Continue with the Inductive Street Light Conversion**
- **Holiday Light Exchange Fall 2014**
- **Continue with offering of pre-programmed Power Bars or Intelligent Power Strips**

5. OPA-Contracted Province-Wide CDM Programs

Consumer Programs

Program Objectives: To help consumers improve the energy efficiency of their homes, empower them with information (consumption and price) to help them better manage their electricity use and to allow the IESO/LDCs to manage consumer demand to meet overall distribution system needs.

To maximize participation, the programs provide energy efficiency opportunities for multiple areas of the home and demonstrate to consumers how they are interconnected.

Customer Type: These initiatives are geared to residential consumers.

Projected Budget: Due to lack of final program detail, we do not feel we can provide adequate budget estimates for funding consideration at this time.

Years of Operation: We plan to initiate all of the programs in 2011 and operate them for the full 4 years.

Total projected reduction in peak provincial electricity demand for OPA-Contracted Consumer Programs is 5.01 MW. This does not include reductions for the New Construction Initiative as we require additional program information in order to complete these projections.

Total projected reduction in electricity consumption for OPA-Contracted Consumer Programs is 12,879 MWh. This does not include reductions for

the New Construction Initiative as we require additional program information in order to complete our projections.

Consumer Program Specifics

(1) DR - Residential Demand Response (previously *peaksaver*®)

Program Description: This is a re-design of *peaksaver*, the residential demand response initiative. The new Residential and Small Commercial Demand Response initiative has been designed to include two options available for residential consumers.

- **Option A - Participation with Demand Response in which participants will get load control devices installed at no charge and will have access to real time consumption and price information**
- **Option B - Participation without Demand Response in which consumers have the opportunity to access price and real-time consumption information**

PDI plans to participate in the new version of the *peaksaver* program in 2011 enrolling consumers to allow province wide curtailment during critical peak events. The current *peaksaver* contract, which includes 9,562 of our electric water heater consumers, expires at the end of 2010. We will market directly to these consumers to re-enroll them into the new Residential Demand Response Program.

(2) Non DR - Appliance Retirement, Exchange Events, Instant Rebates

Program Description: Participants turn in their old fridge, freezer, window air conditioner or dehumidifier for free pickup and environmentally friendly decommissioning. Additional incentive provided for exchange of room air conditioner or dehumidifier at Retailer Events. In-store discounts are also provided on energy efficient products and on-line rebates for high efficiency replacement of heating/cooling systems.

- **PDI will continue participation in the Appliance Retirement Program and with the addition of the window air conditioning to the program, we anticipate an increase in participation. We will support local retailers in promotion and delivery of all midstream events and support the OPA in the Rebate and Incentive portions of the program in contract recruitment, marketing and consumer education efforts to ensure the highest level of success in these programs is reached.**

(3) New Construction

Program Description: This initiative includes incentives for builders to construct new, single family homes that include energy efficiency standards that are above current building codes. It providing incentives for Prescriptive measures, Custom measures, Performance Incentives and Enabling Initiatives.

- PDI will provide first level support through our call centre as well as direct channel engagement with local builders, marketing and contract recruitment as well as consumer education efforts to ensure the highest level of success in these programs is achieved.
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Low Income Program

Program Objectives: To give low income consumers the opportunity to improve the energy efficiency of their homes, empower them with information (consumption and price) to help them better manage their electricity use.

Customer Type: This initiative is geared to low income residential consumers.

Projected Budget: Due to lack of final program detail, we do not feel we can provide adequate budget estimates for funding consideration at this time.

Years of Operation: We plan to initiate all of the programs in 2011 and operate them for the full 4 years.

Total projected reduction in peak provincial electricity demand and consumption is yet to be determined as we require additional program information in order to complete our projections.

Low Income Program Specifics

(1) Low Income Single Family Home Program

Program Description: Free in-home energy audit that includes in-home education components. Direct installation of electricity conservation measures at no cost to participants. Comprehensive eligible measures list with emphasis on deep measures (e.g. appliance replacement and building envelope improvements).

- PDI will participate in the Low Income Retrofit Plan. Although the program has not been finalized, there are over 1688 social housing units in PDI's distribution area that are in dire need of upgrades to building envelope as well as appliance replacement. This program will compliment our plans for a Custom Thermal Storage Program.
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Commercial and Institutional Programs

Program Objectives: Assist owners and operators of C&I buildings and multi-family residences achieve reduced demand and energy savings through the purchase and operation of energy efficient equipment and to participate in demand response initiatives. Provide education to tenants and occupants, particularly with respect to multi-family buildings, regarding in-suite energy efficiency and demand response opportunities, and to Facilitate a culture of conservation among these communities and the supply chains that serve them.

Projected Budget: Due to lack of final program detail, we do not feel we can provide adequate budget estimates for funding consideration at this time.

Years of Operation: We plan to initiate all of the programs in 2011 and operate them for the full 4 years

Total projected reduction in peak provincial electricity demand for non DR C&I Programs is 3.40 MW. We have yet to complete projections for reductions relating to C&I DR Programs.

Total projected reduction in electricity consumption is 19,661 MWh. We have yet to complete projections for reductions relating to C&I DR Programs.

Commercial and Institutional Program Specifics

(1) DR - Small Commercial Demand Response (previously *peaksaver*)

Program Description: This is a re-design of *peaksaver*, the residential demand response initiative. The new Residential and Small Commercial Demand Response initiative has been designed to include two options available for small business consumers.

- **Option A - Participation with Demand Response - Participants will receive load control devices installed at no charge and will have access to real time consumption and price information.**

- **Option B - Participation without Demand Response – consumers have the opportunity to access price and real-time consumption information.**
- **PDI will co-promote the new Commercial DR (*peaksaver*) program in conjunction with PSB allowing commercial consumers to Shift Load from On Peak to Off Peak using new technology that integrates to the new *peaksaver* model. This concept will be part of a custom plan if not included in the *peaksaver* for Commercial Businesses.**

(2) Demand Response 1 (DR1)

Program Description: DR1 is an initiative where distribution-connected electricity consumers voluntarily provide DR capability to reduce system peak demand and increase system reliability.

Customer Type: DR1 is available to consumers with peak demand of 50kW or more that have, at a minimum, hourly Interval Meter capabilities.

- **PDI will search for potential consumers within its distribution area for DR1 backup generation as a portfolio of dispatchable load. Most consumers with backup power units could be included as part of the DR1 portfolio. Some consumers may require meter upgrades to allow the granularity of data required for the measurement of curtailment during an event.**

(3) Demand Response 3 (DR3)

Program Description: DR3 is an initiative for distribution-connected electricity consumers to provide DR capability to mandatorily reduce system peak demand and increase system reliability.

Customer Type: DR3 will be available to consumers with a peak demand of 5,000 kW or more that have Interval Meters supported by recorders with 5 minute interval capability or, the aggregate of lower demand industrial consumers with a combined total of 5,000 kW

- **PDI's plans for DR3 are covered under the Industrial section**

(4) Non DR - Commercial and Institutional Programs

Program Description: Retrofits to existing buildings as well as equipment purchase to exceed Codes and Standards for new buildings or additions. The specific program offerings available to consumers are largely determined by their electricity demand. Energy efficient equipment replacement is on a Prescriptive, Engineered, or Custom basis.

Customer Type: The C&I Program covers both existing and new buildings in all business market segments including Commercial, Institutional and Multi-Family Buildings.

- PDI has seen great success in past years with the Power Savings Blitz (PSB) program. Although it is an OPA assumption that participation be at around 90%, we find that we have exhausted the number of “Early Adopters” and to achieve further targets will require some “Heavy Lifting” on promotion and in engaging the consumer to participate in the program. One strategy will be to co-promote the new business DR (*peaksaver*) program in conjunction with PSB allowing commercial consumers to shift load from On Peak to Off Peak using new technology that integrates to the new *peaksaver* model. This concept will be part of a custom plan if not included in the *peaksaver* for commercial businesses.
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Industrial Programs

Program Objectives: Achieve maximum cost effective peak demand reduction and energy savings, increase conservation awareness and contribute to the creation of a culture of conservation.

Projected Budget: Due to lack of final program detail, we do not feel we can provide adequate budget estimates for funding consideration at this time.

Years of Operation: We plan to initiate all of the programs in 2011 and operate them for the full 4 years.

Total projected reduction in peak provincial electricity demand for non DR Industrial Programs is .59 MW. We have yet to complete projections for reductions relating to DR.

Total projected reduction in electricity consumption for non DR Industrial Programs is 7,196 MWh. We have yet to complete projections for reductions relating to DR

Industrial Program Specifics

(1) Industrial Accelerator

Program Description: Industrial Accelerator is an initiative aimed at improving the energy efficiency of equipment and production processes offering capital incentive and enabling initiatives.

Customer Type: The Accelerator Initiative will serve larger Industrial, Commercial and Institutional consumers with a level of potential savings consistent with the component offerings under the Accelerator.

(2) Equipment Replacement (previously ERIP)

Program Description: Equipment replacement projects have traditionally been categorized in ERIP and other similar programs as either Prescriptive or Custom. The Prescriptive approach utilizes a list of specific measures for which the incentive is prescribed. The Custom approach requires a more sophisticated, and in some cases complex, process to determine the potential for demand reductions or energy savings. The Program will continue these two approaches, but will also include an “Engineered” approach providing the consumer with potential for additional incentives for the equipment to be installed.

Customer Type: The Equipment Replacement initiative will serve Industrial, Commercial and Institutional Consumers not eligible for the Accelerator Initiative due to the required level of savings.

- PDI will continue this new version of the ERIP program. There are still many businesses that have not participated in this program. PDI will plan deeper, more direct marketing measures to access businesses that can benefit from retrofits other than just lighting. This will require more comprehensive promotion of the program to potential clients and direct discussion with plant managers to discuss deeper retrofit measures.

(3) Demand Response 1 (DR1)

Program Description: DR1 is an initiative where distribution-connected electricity consumers voluntarily provide DR capability to reduce system peak demand and increase system reliability.

Customer Type: DR1 is available to the consumers in the PDI service area with peak demand of 50kW or more that have, at a minimum, hourly Interval Meter capabilities.

- PDI’s plans for DR1 are covered under the C&I section.

(4) Demand Response 3 (DR3)

Program Description: DR3 is an initiative for distribution-connected electricity consumers to provide DR capability to mandatorily reduce system peak demand and increase system reliability.

Customer Type: DR3 will be available to consumers in PDI service area with peak demand of at least 5,000 kW or, the aggregate of lower demand industrial consumers with a combined total of 5,000 kW. Participants must have Interval Meters supported by recorders with 5 minute interval capability.

- PDI plans to engage consumers in our Large User rate category to look at DR3 options. We will investigate opportunities for assistance of a third party consultant. We will also approach Industrial consumers with less than 5,000 kW of demand, who are in the higher bandwidth of the rate classification, for potential DR3 contracts.
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6. Potential Board-Approved CDM Programs

2011 - 2014 – Custom LDC Programs

Program Objectives for Custom LDC Programs: PDI plans to compliment the OPA-Contracted Programs making additional kW/kWh savings accessible with a cross section of Custom Programs covering most rate classes with a focus on Low Income consumers.

We will use our initiatives to help bring awareness to consumers and contribute to the creation of a culture of conservation.

Custom Consumer Programs

Customer Type: Our Consumer programs will be geared to Residential and Small Commercial consumers.

Projected Budget: We are currently investigating costs related to the design, delivery and implementation of these programs. Additional required detail will be provided with our submissions for Board approval.

Years of Operation: We plan to co-ordinate all of these programs in 2011 and expand on the portfolio each year building momentum and savings over the four year period.

We have yet to complete projections for reductions relating to peak provincial electricity demand or reductions in electricity consumption relating to our Consumer programs.

Custom Consumer Program Specifics

(1) Holiday Lighting Exchange

Program Description: We plan to partner with local stores to offer exchange days for old strings of Christmas Lights to new LED lights. PDI has not participated in a seasonal light exchange in the past. We plan to partner with retail outlets to conduct multiple light exchanges in the fall of each year.

(2) CFL Lighting Exchange

Program Description: As with the Christmas Light exchange, we will offer replacement of incandescent lights with CFL lights in partnership with local stores. Consumers will receive a straight one to one exchange. This differs from the retail offering by the OPA as this program not only provides full funding for the exchange, it also guarantees that the incandescent bulb is pulled from the system. Light exchange would only occur if the incandescent light is actually functioning.

Since incandescent lights are being phased out by 2012, a new approach to light bulb exchange must be investigated. Compact florescent technology has been readily available for the last 18 years and LED lighting technology has come into the market place with consumer products that are reliable and offer additional savings to the consumer. PDI will consider augmenting the Light Exchange program in the spring of 2012 to replace old version CFL's with LED Lighting.

(3) Phantom Energy Power Bar

Program Description: Phantom power has been a focus of late to assist consumers in further reduction of their energy bills. Unlike major connected loads like CAC, Water Heating and Electric Clothes Dryers which are easily identified, Phantom Power usage from devices that use electricity during standby mode or devices utilizing chargers that consume electricity when they are not being used, can account for up to 15% of an average households consumption.

Intelligent Power bars (Zigbee enabled) or pre-programmed power bars will empower consumers to control this phantom load. This program could compliment the 2011- 2014 Residential and Small Commercial Demand Response program as the new installations utilize Zigbee controls within the home. Consumers that have the new Demand Response devices installed can precisely control the connected load to the intelligent power strip for high consuming electronic devices (i.e. Plasma and LCD Flat

screens). For consumers who prefer the low tech solution, the simple pre-programmed power bar will be offered as a standalone option.

(4) Off Peak Water Heater Load Shifting

PDI will investigate opportunities to take advantage of 'Off Peak' water heating by utilizing existing control system to assist consumers in shifting load to Off Peak times. Since the existing load control system is only used during critical peak events, the full potential of the current system and potential savings to the consumer are not presently being realized.

PDI will investigate implementation of this plan in conjunction with Go-Live of Time of Use Billing. (Spring 2012)

Custom Low Income Programs

Customer Type: Residential Low Income and/or Social Housing Consumers

Projected Budget: We are currently investigating costs related to the design, delivery and implementation of this Custom program. We do have excellent information from previously running a similar program, but have to establish components for this new version (ie. Potential number of participants, qualifications and incentives and limits) in order make realistic budget projections. We are exploring the opportunity of partnering with other LDC's in this program to take advantage of shared costs and volume pricing. Additional required detail will be provided with our submission for Board approval.

Years of Operation: 4

Custom Low Income Program Specifics

(1) Low Income/Social Housing Thermal Storage Heater (TSH) Retrofit Program and Water Heater Load Shifting

Program Description: PDI has had experience in the installation of TSH in Low Income Housing where the main heat source is electric baseboard. Although this is not a "Summer Peak" load shifting program nor is the kWh reduction significant, the impact for a consumer on Time of Use rates is substantial. Combined with load shifting of electric water heater to Off Peak hours, this program has demonstrated significant savings for the consumer and improvement to the comfort level in the home compared to baseboard heating.

The annual savings in electricity costs is approximately \$383 per unit or \$47,492 for current 124 units converted. This was calculated by taking a case study of 20 units and comparing the direct cost difference between Time of Use and Price Protected rates as well as the overall shift of consumption to a reduced rate time period. The residential load profile found that with baseboard heat, consumption was Off Peak for 34% of the total consumption. After the conversion to Thermal Storage Electric Heat, the Off Peak consumption increased to 88% with majority of the remaining portion being for Hot Water Tanks.

Most electrically heated social housing units also have an electric water heater. In our previous TSH program, we included “Load Shifting” of the water heater in conjunction with the TSH. This has realized a 92% shift of electricity for the TSH and Electric water heater usage to Off Peak, thereby providing Low Income consumers with a significant reduction in their monthly energy charges compared to baseboard heating without load shifting.

Based on the Ontario Energy Board calculation model, the Total Resource Cost Guide (TRC), anticipated energy savings over the 18 year life cycle of the 124 units we have installed is 4,124 MWh.

These two programs, combined with the OPA’s Low Income Energy savings program will magnify the benefits to Low Income Consumers by improving the building envelop and the efficiency of the heating.

Custom Industrial Programs

Customer Type: This program will be specifically designed for the City of Peterborough’s street lighting.

Projected Budget: We are currently investigating costs related to the design, delivery and implementation of this program. We do know that the capital costs of the asset replacement will be in the range of 2.5 million dollars. Additional required detail will be provided with our submission for Board approval.

Years of Operation: 4

Custom Industrial Program Specifics

(1) Streetlight Retrofit to Inductive Lighting**

Program Description: Our municipality street lighting system has remained unchanged for decades. Although most of the lights have long ago been upgraded from Mercury Vapour to High Pressure Sodium, there are now much more efficient forms of lighting readily available for commercial use.

In conjunction with the City of Peterborough, PDI will be conducting a pilot project to test replacement of the current aging and inefficient High Pressure Sodium and Mercury Vapour Street Lights with Inductive lighting. Preliminary studies show that a complete retrofit of the current street lighting system to Inductive Lighting will reduce the connected load by more than 50% for both demand and consumption.

The estimated payback period of the entire system conversion to Inductive Lighting is less than 5 years. The calculated savings do not include the ongoing reduced maintenance costs due to the extended bulb life for Inductive Lighting.

Total projected reduction in peak provincial electricity demand is .70 MW.

Total projected reduction in electricity consumption will be 3,000 MWh per year upon completion of retrofit. We anticipate a reduction of approximately 5,000 MWh over the 4 year term of the program.

****This program may qualify for one of the OPA-Contracted Industrial programs. This will be determined when details are released from the OPA.**

7. Program Mix by Rate Class

Residential:

- Demand Response
- Appliance Retirement and Exchange
- Holiday Light Exchange
- New construction Initiative
- Coupon Program
- CFL Exchange
- HVAC Rebates
- Pool Pump Initiatives
- Electronic Incentives

GS<50 kW Demand – Small Commercial:

- Demand Response DR1
- Appliance Retirement and Exchange
- Existing Building Retrofits

- **Coupon Program**
- **CFL Exchange**
- **HVAC Rebates**
- **Electronic Incentives**
- **New Building Construction**

GS> 50 kW Demand – Industrial:

- **Existing Building Retrofits**
- **Demand Response (DR1, DR3)**
- **New Building Construction**
- **Street Lighting Retrofit**

PLUSR > 5,000 kW Demand – Large User:

- **Existing Building Retrofits and Commissioning**
- **Demand Response (DR1, DR3)**
- **New Building Construction**

Low Income:

- **Thermal Storage Heating**
- **Off Peak Water Heating**
- **OPA Low Income Initiative for Existing Buildings**

8. CDM Programs Co-ordination

PDI plans to pursue efficiencies and co-ordinate activities as follows:

- **Join forces with London Hydro to manage our Low Income Thermal Storage Heating Program. Efficiencies will be gained by combining EM&V, as well as combined purchasing power and marketing.**
- **Co-ordinate with Social Service agencies and Housing Providers to determine Low Income contacts, eligibility and promotion of program benefits for both OPA-Contracted and Custom Low Income programs.**
- **Utilize our experience with conservation and momentum with current OPA programs, marketing along with LDC Branding, tracking, financial set up etc.**
- **Utilize existing Channel Partner who has been chosen to run the OPA Gas Low Income Program, to run the OPA Electric Low Income Program**
- **Contract or combine efforts with third party aggregators to collect DR3 consumers**

With projections for estimates as provided by the OPA Resource Tool for Conservation Portfolio Development, we have already accounted for savings of 9 MW and 39,793 MWh. We feel confident that we can fulfill the targets mandated by the OEB however, a refinement of our projected targets may be required as full details of the OPA programs have not yet been revealed and custom programs require further research and development.